DRAFT
ENVIRONMENTAL IMPACT REPORT
FOR THE
ENERGY SOURCE MINERAL ATLIS PROJECT
IMPERIAL COUNTY, CALIFORNIA

Prepared for:

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EXECUTIVE SUMMARY

ES.1 INTRODUCTION

This Draft Environmental Impact Report (Draft EIR or DEIR), prepared in accordance with the California Environmental Quality Act (CEQA), addresses potential environmental effects associated with the development of a commercial lithium hydroxide production plant within the Salton Sea geothermal field in Imperial County, California. The DEIR provides an overview of the Project and considered alternatives, identifies the anticipated environmental impacts from the Project and the alternatives, and identifies mitigation measures designed to reduce the level of significance of any impact.

ES.2 PURPOSE OF THE ENVIRONMENTAL IMPACT REPORT

The primary purpose of the CEQA process is to inform the public and decision makers as to the potential impacts of a project and to allow an opportunity for public input to ensure informed decision-making by the Lead Agency. CEQA requires all State and local government agencies to consider the environmental effects of projects over which they have discretionary authority. CEQA also requires each public agency to mitigate or avoid the significant environmental impacts resulting from proposed projects, when feasible, and to identify a range of feasible alternatives to the proposed project that could reduce those environmental effects.

Under CEQA, an EIR analyzes the impacts of an individual activity or specific project and focuses primarily on changes in the environment that would result from that activity or project. The Draft EIR must include the contents required by CEQA and the CEQA Guidelines and examine all phases of the project, including planning, construction, operation, and any reasonably foreseeable future phases.

ES.3 PROJECT DESCRIPTION

Energy-Source Minerals, LLC (Applicant) is proposing to construct and operate a commercial lithium hydroxide production plant within the Salton Sea geothermal field in Imperial County (County), California (Project). The facility (ALTiS Plant) will process geothermal brine from the neighboring Hudson Ranch Power I Geothermal Plant (HR1) to produce lithium hydroxide as well as zinc and manganese products which would be sold commercially. Project facilities would be built on three parcels privately owned by Hudson Ranch Power I LLC in the County of Imperial: APNs 020-100-025, 020-100-044, 020-100-046. The Project site is zoned M-2-G-PE (Medium Industrial /Geothermal Overlay), and the County General Plan designates the Project site as Agriculture land use.

Project construction would begin when all necessary permits are obtained, expected to be Quarter Three (Q3) of 2021. Construction is expected to be complete in Quarter Two (Q2) of 2023. All work would occur in one phase, with approximately 90 percent of work occurring during daylight hours over five or six days per week over an intermittent 24-month period. The remaining 10 percent of work would occur during nighttime hours to avoid extreme summer temperatures. Approximately 200 to 250 workers are anticipated at peak periods. Construction workers will commute to the site, and no workers will be housed on site. Construction parking will be in the 15-acre laydown area, which will be located at the southeast corner of Davis Road and McDonald Road on what is currently Assessor Parcel Number (APN) 020-100-025.

ES.4 INTENDED USES OF THIS EIR

This Draft EIR examines the environmental impacts of the Proposed Project. It is the intent of this Draft EIR to enable the County, other responsible agencies, and interested parties to evaluate the environmental impacts of the Proposed Project and identify feasible measures to mitigate such impacts, thereby enabling them to make informed decisions with respect to the requested entitlements.

The CEQA Guidelines require an EIR to include a statement briefly describing the intended uses of the EIR, including a list of agencies expected to use the EIR in their decision-making and the list of the permits and other approvals required to implement the Project.

The County will use this Draft EIR to provide information on the potential environmental effects of the following proposed actions:

- Imperial County Planning Department – Minor Subdivision
- Imperial County Planning Department – Water Supply Assessment
- Imperial County Planning Department – Conditional Use Permit
- Imperial County Building Department – Building and Grading Permits
- Imperial County Public Works Department – Encroachment Permit(s)

ES.5 PROJECT OBJECTIVES

The Proposed Project has the following objectives:

- To produce quantities of lithium, manganese, zinc, and other strategic minerals from geothermal brine for commercial sale

- To collocate near a geothermal flash plant to minimize the distance required to pipe the brine between the geothermal plant and the mineral extraction plant

- To provide a supplemental domestic source of lithium, a designated critical material identified by the U.S. Department of Energy

- To minimize and mitigate any potential impact to sensitive environmental resources within the Project area

ES.6 SUMMARY OF ALTERNATIVES AND ENVIRONMENTALLY SUPERIOR ALTERNATIVE

CEQA requires that an EIR describe a range of reasonable alternatives to the Proposed Project, or to the location of the Proposed Project, which could feasibly avoid or lessen any significant environmental impacts while substantially attaining the basic objectives of the project. An EIR should also evaluate the comparative merits of the alternatives.

Only one alternative was considered feasible and analyzed in this analysis. A comparison of the Project's impacts and the No Project Alternative impacts is shown in Table 5.0-2. The No Project Alternative would be considered the environmentally superior alternative, as it would avoid or reduce all of the potential impacts associated with construction and operation of the Project. Additionally, the No Project Alternative would not allow for full utilization of the existing HR1 site and would not allow for a secondary extraction process to extract additional minerals prior to injection back into the ground. The No Project Alternative would not meet most of the Project objectives including that it would not (1) produce quantities of lithium, manganese, zinc, and other strategic minerals from geothermal brine for commercial sale; (2) collocate a mineral extraction plant near a geothermal flash plant to minimize the distance required to pipe the brine between the geothermal plant and the mineral extraction plant; or (3) provide a supplemental domestic source of lithium, a designated critical material identified by the U.S. Department of Energy. Furthermore, by not producing lithium under the No Project Alternative, the need for lithium production to meet certain technical processing needs would remain and may result in future mining projects other than and potentially with greater impacts than the Proposed Project.

CEQA Guidelines requires that, if the No Project Alternative is determined to be the environmentally superior alternative, an environmentally superior alternative must also be identified among the remaining alternatives. However, reducing the Project size and relocating the Project to another site in the area were deemed to be infeasible alternatives. Thus, the only environmentally superior alternative identified is the No Project Alternative.

ES.7 TABLE OF SIGNIFICANT IMPACTS AND MITIGATION MEASURES

A summary of the potential environmental impacts of the Proposed Project is provided below for each topic addressed in this Draft EIR. Table ES-1 summarizes the significance of the impacts of the Project based on the information and analysis in Chapter 4.0 of this Draft EIR.

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
Air Quality			
Threshold a) Conflict with or obstruct implementation of the applicable air quality plan?			
Both construction and operational emissions created from the Proposed Project would be within their respective ICAPCD thresholds. According to the ICAPCD Handbook, projects that are within the ICAPCD thresholds are consistent with the regional air quality plans. Furthermore, the standard mitigation measures provided in the ICAPCD Handbook have been incorporated into the Project Description for the Proposed Project as Project Design Features (see Section 2.5), and the Proposed Project will be required to implement all of the ICAPCD Regulation VIII, fugitive dust control measures during construction and operation of the Proposed Project. Furthermore, any stationary sources of emissions operated on site will be required to adhere to ICAPCD Rule 207, New and Modified Stationary Source Review and Rule 201 that require permits to construct and operate stationary sources. Therefore, the Proposed Project would not conflict with or obstruct implementation of the applicable air quality plans.	Less than Significant	No Mitigation Required.	Less than Significant
Threshold b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard?			
The standard mitigation measures from the ICAPCD Handbook for both construction and operations have been incorporated into the Project Description as Project Design Features (see Section 2.5 of the Project Description). Furthermore, the Proposed Project would be required to implement all of the ICAPCD Regulation VIII, fugitive dust control measures during construction and	Less than Significant	No Mitigation Required.	Less than Significant

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
operation of the Proposed Project. Furthermore, any stationary sources of emissions operated on site will be required to adhere to ICAPCD Rule 207, New and Modified Stationary Source Review and Rule 201 that require permits to construct and operate stationary sources. Therefore, the Proposed Project would result in a less than significant cumulatively considerable net increase of any criteria pollutant.			
Biological Resources			
Threshold 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 Game or U.S. Fish and Wildlife Service?			
No special status plant species have potential to occur within the Project site. However, one special status wildlife species, the burrowing owl, does have the potential to occur. The burrowing owl is a California SSC. Approximately 10 artificial burrowing owl burrows are located within 130 feet west of the Project boundary and were installed as mitigation for other projects in the surrounding area. One burrowing owl was observed foraging within the southwest portion of the Project site during the biological reconnaissance-level survey. The artificial burrows are outside the Project boundary and will be avoided during construction activities; nonetheless, the potential for impacts to the burrowing owl during construction and operation of the Project may exist. With implementation of Mitigation Measures BIO-1 through BIO-5, impacts to burrowing owls would be less than significant. No impacts to jurisdictional waters/wetlands are anticipated; therefore, a USACE 404 permit, State 401	Potentially Significant	BIO-1: The Applicant shall ensure that prior to and during construction, onsite occupied burrows shall be avoided during nesting season (February 1 – August 31). BIO-2: The Applicant shall conduct a preconstruction survey within 30 days of ground-breaking activities to identify any burrowing owls on site. BIO-3: If burrowing owls are found within the Project site, a Burrowing Owl Mitigation Plan must be prepared by a qualified biologist and approved by CDFW prior to any ground disturbing activities. BIO-4: The construction or site manager shall ensure that no construction occurs within 250 feet of the artificial burrows or other active or occupied burrows unless active or occupied burrows are sheltered with hay bales and monitored by a qualified biologist; if this is done, work may occur within 20 feet of active or occupied burrows. If qualified biologists observe burrowing owls agitation, work in the vicinity will stop. Additional	Less Than Significant

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
certification, or State Streambed Alteration Agreement will not be required for Project authorization.		shelter materials can be added until burrowing owls remain calm during construction activities. BIO-5: If passive relocation is required, it shall be done by a qualified biologist from September 1 to January 31 and will follow the CDFW Staff Report on Burrowing Owl Mitigation Guidelines (CDFW 2012).	
Threshold d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?			
The Project site is not situated within a known migratory wildlife corridor or nursery site. Following construction of the Project, ground-dwelling wildlife will continue to be able to move locally through the area using the surrounding agricultural lands, undeveloped lands, and margins of the nearby irrigation canals. Additionally, no construction activities would occur within IID canals, drains, or ditches.	Less than Significant	No Mitigation Required.	Less than Significant
Cultural Resources			
Threshold a) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5? **Threshold b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?**			
Based on the background research and results of the cultural pedestrian survey, Chambers Group does not recommend that any further archaeological testing or evaluation occur for any of the found archaeological sites prior to construction. Due to the highly disturbed nature of the Project site, archaeological monitoring is not required. Impacts to historical and archaeological resources would be less than significant.	Less than Significant	No Mitigation Required.	Less than Significant
Threshold c) Would the project disturb any human remains, including those interred outside of formal cemeteries?			
In the event of an unanticipated discovery of human remains, the Imperial County Medical Examiner-Coroner	Less than Significant	No Mitigation Required.	Less than Significant

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
would be notified immediately. If the human remains are determined to be prehistoric, the Medical Examiner-Coroner would notify the NAHC, which would notify a most likely descendant (MLD). The MLD would complete an inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials (NPS 1983). Compliance with these regulations would ensure impacts to human remains resulting from the Project would be less than significant.			
Energy			
Threshold a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?			
Construction activities associated with the Proposed Project would require limited electricity consumption that would not be expected to have an adverse impact on available electricity supplies and infrastructure. Therefore, the use of electricity during Project construction would not be wasteful, inefficient, or unnecessary. Since power lines currently exist in the vicinity of the Project site, it is anticipated that only nominal improvements would be required to IID distribution lines and equipment with development of the Proposed Project. Construction activities associated with the Project would be required to adhere to all State and ICAPCD regulations for off-road equipment and on-road trucks, which provide minimum fuel efficiency standards. As such, construction activities for the Proposed Project	Less than Significant	No Mitigation Required.	Less than Significant

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
would not result in the wasteful, inefficient, and unnecessary consumption of energy resources. The Proposed Project would consume 51,840,000 kilowatt-hours per year of electricity. This equates to 1.56 percent of the electricity consumed annually in the County of Imperial. As such, the operations-related electricity use would be nominal when compared to current electricity usage rates in the County. The Project would consume 22,985 gallons of transportation fuel per year. This equates to 0.024 percent of the gasoline and diesel consumed in the County annually. As such, the operations-related petroleum use would be nominal when compared to current petroleum usage rates in the County. Additionally, the Project would comply with all federal, State, and County requirements related to the consumption of transportation energy, including CCR Title 24, Part 11, the CALGreen Code, which requires all new parking lots to provide preferred parking for clean air vehicles.			
Threshold b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?			
The Project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. The applicable Renewable Energy and Transmission Element for the Project is included in the County's General Plan.	Less than Significant	No Mitigation Required.	Less than Significant
Geology and Soils			
Threshold a) ii) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?			
The Project site is considered likely to be subjected to moderate to strong ground motion from earthquakes in	Less than Significant	GEO-1: All grading operations and construction shall be conducted in conformance with the recommendations	Less than Significant

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
the region. In accordance with mitigation measure GEO-1, outlined below, the Project structural engineer shall confirm whether an exception applies to the Project. If none of the above exceptions apply, a qualified geo-engineer shall be consulted to perform a site-specific ground motion hazard analysis. Additionally, the Project shall adhere to all of the recommendations for construction and building as noted in the Preliminary Geotechnical Investigation and as summarized in GEO-1. With implementation of GEO-1, impacts resulting from seismic ground shaking would be less than significant.		included in the Preliminary Geotechnical Report on the Project site that has been prepared by LandMark Geo-Engineers and Geologists (LandMark) in August 2020. Design, grading, and construction shall be performed in accordance with the recommendations of the project geotechnical consultant as summarized in a final written report, subject to review by the County, prior to commencement of grading activities. A full description of recommendations in the Preliminary Geotechnical Investigation is provided in Section 4: Design Criteria of Appendix E. Recommendations are summarized below: **Site Preparation:** The site shall be properly cleared and grubbed. Any excavations resulting from site clearing shall be sloped to a bowl shape to the lowest depth of disturbance and backfilled under the observation of the geotechnical engineer's representative. Prior to placing any fills, the surface 12 inches of soil should be uniformly moisture conditioned by disking and wetting to a minimum of optimum plus 2 to 8 percent and compacted to a minimum of 90 percent of ASTM D1557 maximum density. Onsite native clays placed as engineered fill should be uniformly moisture conditioned by disking and wetting or drying to optimum plus 2 to 8 percent and compacted in 6 inch maximum lifts to a minimum of 90 percent relative compaction. Clods shall be reduced by disking to a maximum dimension of 1.0 inch prior to being placed as fill. The existing surface soil within the Project shall be removed to the appropriate recommended depths. An engineered building support pad shall be placed below mat foundations. Aggregate shall be compacted to a minimum of 95 percent of ASTM D1557 maximum density at 2 percent below to 4 percent above	

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
		optimum moisture. Imported fill soil shall be nonexpansive and should meet the Unified Soil Classification System (USCS) classifications of ML (nonplastic), SM, SP-SM, or SW-SM with a maximum rock size of 3 inches and no less than 5 percent passing the No. 200 sieve. The geotechnical engineer should approve imported fill soil sources before hauling material to the site. Imported fill should be placed in lifts no greater than 8 inches in loose thickness and compacted to a minimum of 95 percent of ASTM D1557 maximum dry density at optimum moisture ±2 percent. An engineered support pad consisting of 12 inches of Class 2 aggregate base shall be placed below mat foundations. The aggregate base shall be compacted to a minimum of 95 percent of ASTM D1557 maximum density at 2 percent below to 4 percent above optimum moisture. Structures that are not sensitive to settlements, not heavy loaded, or that can be economically replaced or repaired such as small tanks, pumps, and vessels, can be supported on shallow foundations on reinforced structural fill. The performance of structural fill with respect to resisting liquefaction failure mechanisms, and reducing some of the static differential settlements can be enhanced by reinforced the structural fill with geogrid fabrics. The native soils should be excavated from the designated foundation areas extending 5.0 feet beyond all exterior foundation lines to 3.0 feet below the planned bottom of foundation level. Exposed subgrade should be inspected by the geotechnical engineer and if found to be loose, shall be scarified to a depth of 8 inches, uniformly moisture conditioned to 2 to 8 percent above optimum and recompacted to a minimum of 90 percent of the maximum density determined in accordance with ASTM D1557 methods. A 6-ounce non-woven separation fabric equivalent to Mirafi 160N or equivalent should be placed over the subgrade prior to placing the	

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Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
		reinforced structural fill. In areas other than the basin backfill which are to receive housekeeping slabs or area concrete slabs, the ground surface should be presaturated (20 percent minimum moisture content) to a minimum depth of 24 inches and then scarified to 8 inches, moisture conditioned to a minimum of 5 percent over optimum, and recompacted to a minimum of 90 percent of ASTM D1557 maximum density just prior to concrete placement. All site preparation and fill placement should be continuously observed and tested by a representative of a qualified geotechnical engineering firm. Full-time observation services during the excavation and scarification process is necessary to detect undesirable materials or conditions and soft areas that may be encountered in the construction area. Auxiliary structures such as free-standing or retaining walls should have footings extended to a minimum of 30 inches below grade. The existing soil beneath the structure foundation should be prepared in the manner described for the building pad except the preparation need only to extend 24 inches below and beyond the footing. **Shallow Foundations, Structural Mats and Settlements:** The Project shall implement shallow spread footings and continuous wall footings to support the structures planned for offices, control rooms, and warehouses. Footings shall be founded on 3 feet of engineered granular fill as described in Appendix E. The foundations shall be designed using an allowable soil-bearing pressure of 2,000 pounds per square foot (psf). The allowable soil pressure shall be increased by one-third for short term loads induced by winds or seismic events. Resistance to horizontal loads shall be developed by passive earth pressure on the sides of footings and frictional resistance developed along the bases of footings and concrete slabs. Passive resistance to lateral earth pressure shall be calculated using an	

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
		equivalent fluid pressure of 300 equivalent fluid pressure (pcf) (for imported sands) to resist lateral loadings. The top 1 foot of embedment shall not be considered in computing passive resistance unless the adjacent area is confined by a slab or pavement. An allowable friction coefficient of 0.35 (for imported sands) shall also be used at the base of the footings to resist lateral loading. Foundation movement under the estimated static (non-seismic) loadings and static site conditions shall not exceed 0.75 inch with differential movement of about two-thirds of total movement for the loading assumptions stated above when the subgrade preparation guidelines given above are followed. Seismically induced liquefaction settlement shall be on the order of less than 0.75 inch. Mat foundations for lightly loaded structures like pumps, small tanks, generators, etc., shall be designed using an allowable soil bearing pressure of 1,500 psf when the foundation is supported on 12 inches of compacted Class 2 aggregate base (95 percent of ASTM D1557 maximum density to ±2 percent of optimum moisture). The native soils supporting the concrete structural mat and compacted aggregate base shall be moisture conditioned and recompacted as specified in Appendix E. The allowable soil pressure shall be increased by one-third for short-term loads induced by winds or seismic events. Design criteria for these mat foundations are provided in Appendix E. **Flexible Tank Foundations and Settlements:** The existing soils underlying the proposed tank area shall be removed to a depth of 36 inches below ground surface or a minimum of 24 inches below the bottom of the ring wall foundation (whichever is lower), extending to a minimum of 5 feet beyond the perimeter of the tank. Exposed subgrade shall be scarified to a depth of 8 inches, uniformly moisture conditioned to 2 to 8 percent above	

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
		optimum moisture content, and recompacted to a minimum of 90 percent of the maximum density determined in accordance with ASTM D1557 methods. If soft conditions are encountered at the bottom of the excavation and subgrade compaction is not achievable, the native soil at the sub-excavation and footing excavation level shall be overlain by a woven geotextile stabilizing fabric (Mirafi HP 370 or equivalent). The area shall then be brought to finish grade with engineered fill consisting of the following components: 36 inches of reinforced crushed aggregate base 8 inches of crushed rock (1” x No. 4) 4 inches of oiled sand The fill shall be crowned about 40 percent of the total center settlement to allow for differential settlement between the tank perimeter and center. If compaction of sub-excavation level is achievable, the 36 inches of aggregate base shall be placed in 8-inch maximum loose lifts and compacted to a minimum 95 percent of ASTM D1557 maximum density within 2 percent of optimum moisture. If bottom of excavation subgrade compaction is not achievable and the geotextile stabilizing fabric is utilized, the first 12-inch layer of aggregate base placed over the geotextile fabric shall be compacted to a minimum of 90 percent. The remaining engineered aggregate base fill shall be placed in 8-inch maximum loose lifts and compacted to a minimum 95 percent of ASTM D1557 maximum density within 2 percent of optimum moisture. The crushed rock tank underlayment shall meet the gradation requirements of ASTM C33, Size 57 (1” x No. 4 rock). The tank shall have a perimeter ring wall foundation which supports the tank wall and roof. The interior footings and the ring wall may be proportioned for a net load (in addition to the uniform tank liquid load) for dead load of roof weight (plus sustained live	

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
		load). The minimum depth of the ring wall footing shall be 24 inches below the finished ground surface. The minimum footing width shall be 12 inches. Flexible connections such "Flex-Tend" expansion joints shall be used to connect exterior piping with the tank. The tank shall be preloaded and monitored for settlement prior to making piping connections. It may be necessary to readjust piping connections after the loading sequence. The estimated settlement for the different proposed diameter tanks with an imposed pressure load of 1,500 and 2,000 psf are included in Appendix E. If estimated settlements are excessive even for the flexible steel tanks and connections supported by the engineered fill, the existing soils underlying the clarifier tank shall be improved by soil mixing or soil replacement (sand/cement) with 48-inch diameter shafts. The minimum surface area replacement ratio shall be 20 percent. Following soil mixing, the area shall be brought to finish grade with engineered fill consisting of the following components: 36 inches of reinforced crushed aggregate base 8 inches of crushed rock (1" x No. 4) 4 inches of oiled sand The fill may be crowned about 40 percent of the total center settlement to allow for differential settlement between the tank perimeter and center. Tank settlements with soil mixing improvement below the tank are shown in Appendix E. **Soil Mixing (Rigid Mats):** The use of soil improvement like soil mixing with cement or soil replacement (sand/cement) shall be used to reduce settlement to tolerable limits. The highly plastic native clays were found not to mix well with conventional soil mixing augers (Hudson Ranch 1 Plant site), and imported sands may be required for soil-cement mixing. Structural mat foundations placed over the improved soil shall be used to support the various structural elements of the plant. Mats	

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
		overlaying soil mixed columns shall be underlain by 3 feet of crushed aggregate base (Caltrans Class 2, 1-½-inch or ¾-inch grading). The existing soils shall be improved by soil mixing or soil replacement (sand/cement) with 48-inch diameter shafts. The minimum surface area replacement ratio shall be 20 percent. Soil-cement design shall be provided by a licensed specialty contractor. **Auger Cast Piles**: Auger cast piles (cast-in-place grout with steel cage reinforcement) has been used successfully to provide deep foundations for heavily loaded and critical elements of industrial plants. Estimated capacities of 24- and 30-inch-diameter auger cast pile are provided in Appendix E. The structural capacity of the piles shall be verified by the structural engineer. The geotechnical engineer shall observe the auger cast pile drilling and electronic logs to evaluate each pile on a case-by-case basis. **Driven Piles:** The use of driven steel pipes had been used successfully for elevated pipe rack supports. Special provisions for corrosion protection due to the corrosive nature of the subsurface soils shall be implemented. Steel-driven pipe for the elevated pipe rack supports have been preliminarily sized as 10-inch-diameter with a 0.5-inch-thick wall. Axial and lateral loads were applied at 2 feet above ground surface. Estimated axial and lateral capacities of a 10-inch-diameter driven steel pipe are provided in Appendix E. Complete documentation of the proposed pile driving hammer shall be submitted to the geotechnical engineer for approval prior to mobilization. Driving records shall be maintained on each pile. The numbers of blows required to drive a pile each foot shall be recorded. Driving energy necessary to insure development of full design capacity shall be established after each selection of the pile driver. The geotechnical engineer shall observe pile driving and	

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
		evaluate each pile on a case-by-case basis. Pre-drilling of pilot holes for piles to a depth of half the pile depth shall be allowed without reduction in pile capacity. **Concrete Mixes and Corrosivity:** A minimum of 6.5 sacks per cubic yard of concrete (4,500 pounds per square inch [psi]) of Type V Portland Cement with a maximum water/cement ratio of 0.45 (by weight) shall be used for concrete placed in contact with native soil on this Project (sitework including sidewalks, housekeeping slabs, and foundations). Admixtures may be required to allow placement of this low water/cement ratio concrete. Thorough concrete consolidation and hard trowel finishes shall be used due to the aggressive soil exposure. No metallic water pipes or conduits shall be placed below foundations. Foundation designs shall provide a minimum concrete cover of 5 inches around steel reinforcing or embedded components (anchor bolts, etc.) exposed to native soil. If the 5-inch concrete edge distance cannot be achieved, all embedded steel components (anchor bolts, etc.) shall be epoxy coated for corrosion protection (in accordance with ASTM D3963/A934) or a corrosion inhibitor, and a permanent waterproofing membrane shall be placed along the exterior face of the exterior footings. Additionally, the concrete shall be thoroughly vibrated at footings during placement to decrease the permeability of the concrete. A qualified corrosion engineer shall evaluate the corrosion potential on metal construction materials and concrete at the site to obtain final design recommendations. **Embankment Construction and General Site Fill:** All areas to receive new fill for the embankments shall be stripped of all vegetation. The surface 12 inches of native soil shall be uniformly moisture conditioned to 2 to 8 percent above optimum moisture by disking and compacted in 6 inch	

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
		maximum lifts to a minimum of 90 percent of ASTM D1557 maximum density. The embankment slopes shall be constructed no steeper than 3:1 (unless lined with concrete or high-density polyethylene/polyvinyl chloride [HDPE/PVC] sheeting) with a minimum crown width of 15 feet. Embankments shall be overbuilt by 6 inches and subsequently cut to the plan line and grade to remove loose material along the slope faces. Native cohesive soil from the site or adjacent land areas shall be used as general and embankment fill and as pond liner material. The fill soils shall consist of cohesive silty clay (CL) or clay (CH). The general and embankment fill shall be pulverized/disked to less than 1 inch maximum clod size, uniformly moisture conditioned to 2 to 8 percent over optimum, placed in 6-inch maximum lifts, and compacted to a minimum of 90 percent of ASTM D1557 maximum density. **Excavations:** All site excavations shall conform to California Division of Occupational Safety and Health (Cal/OSHA) requirements for Type B soil. The contractor is solely responsible for the safety of workers entering trenches. Temporary excavations with depths of 4 feet or less shall be cut nearly vertical for short duration. Excavations deeper than 4 feet shall require shoring or slope inclinations in conformance to Cal/OSHA regulations for Type B soil. Surcharge loads of stockpiled soil or construction materials shall be set back from the top of the slope a minimum distance equal to the height of the slope. All permanent slopes shall not be steeper than 3:1 to reduce wind and rain erosion. Slopes protected with ground cover may be as steep as 2:1; however, maintenance with motorized equipment shall not be implemented at this inclination. **Utility Trench Backfill:** Prior to placement of utility bedding, the exposed subgrade at the bottom of trench excavations shall be	

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
		examined for soft, loose, or unstable soil. Loose materials at trench bottoms resulting from excavation disturbance shall be removed to firm material. If extensive soft or unstable areas are encountered, these areas shall be over-excavated to a depth of at least 2 feet or to a firm base and replaced with additional bedding material. Pipe zone backfill (i.e., material beneath and in the immediate vicinity of the pipe) shall consist of a 4- to 8 inch bed of ⅜-inch crushed rock, sand/cement slurry, and/or crusher fines (sand) extending to a minimum of 12 inches above the top of the pipe. If crushed rock is used for pipe zone backfill for utilities, the crushed rock material shall be completed surrounded by a 6 ounce non-woven filter fabric such as Mirafi 160N or equivalent. The filter fabric shall cover the trench bottom, sidewalls, and over the top of the crushed rock to inhibit the migration of fine material into void spaces in the crushed rock, which may create the potential for sinkholes or depressions to develop at the ground surface. Pipe bedding shall be in accordance with the pipe manufacturer's recommendations and local codes and/or bedding requirements for specific types of pipes. Native backfill shall be placed and compacted only after buried pipes are encapsulated with suitable bedding and pipe envelope material. Mechanical compaction is recommended; ponding or jetting shall not be allowed, especially in areas supporting structural loads or beneath concrete slabs supported on grade, pavements, or other improvements. All trench backfill shall be placed and compacted in accordance with recommendations provided above for engineered fill. The pipe zone material (crusher fines, sand) shall be compacted to a minimum of 95 percent of ASTM D1557 maximum density. Pipe deflection shall be checked not to exceed 2 percent of pipe diameter. Soils used for trench backfill shall be placed in maximum 6-inch lifts (loose) and	

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
		compacted to a minimum of 90 percent of ASTM D1557 maximum density at a minimum of 4 percent above optimum moisture. Granular trench backfill used in building pad areas shall be plugged with a solid (no clods or voids) 2-foot width of native clay soils at each end of the building foundation to prevent landscape water migration into the trench below the building. Backfill soil of utility trenches within paved areas shall be uniformly moisture conditioned to a minimum of 4 percent above optimum moisture, placed in layers not more than 6 inches in thickness, and mechanically compacted to a minimum of 90 percent of the ASTM D1557 maximum dry density, except that the top 12 inches shall be compacted to 95 percent (if granular trench backfill). **Seismic Design:** Designs shall comply with the latest edition of the CBC for Site Class D using the seismic coefficients given in Appendix E. **Laydown Yard:** The new laydown yard shall consist of a minimum of 8.0 inches of Caltrans Class 2 aggregate base placed over 12 inches of moisture-conditioned native clay soil (minimum of 2 percent above optimum moisture) compacted to a minimum of 90 percent of the maximum dry density determined by ASTM D1557. Alternately, the access roads shall consist of 6 inches of aggregate base placed over 9 inches of lime-treated soil compacted to a minimum of 90 percent. Preliminary estimates of lime content required to stabilize the clay soils is 6 percent hydrated lime by weight of soil. **Pavements:** Pavements shall be designed according to the 2020 Caltrans Highway Design Manual or other acceptable methods. The public agency or design engineer shall decide the appropriate traffic index for the site. The Project structural engineer shall confirm whether an ASCE 7-16 Section 11.4.8 exception applies to the Project. If none of	

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
		the exceptions apply, a qualified geo-engineer shall be consulted to perform a site-specific ground motion hazard analysis. Development of building foundations and concrete flatwork shall include provisions for mitigating potential swelling forces and reduction in soil strength, which can occur from saturation of the soil. Typical measures considered to remediate expansive soil include: Capping silt/clay soil with a non-expansive sand layer of sufficient thickness (3 feet minimum) to reduce the effects of soil shrink/swell Moisture conditioning subgrade soils to a minimum of 5 percent above optimum moisture (ASTM D1557) within the drying zone of surface soils Designing foundations to be resistant to shrink/swell forces of silt/clay soil A combination of the methods described above.	
iii) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?			
According to the Preliminary Geotechnical Report, total induced settlements at the Project site are estimated to be less than ¼ inch should liquefaction occur. Additionally, ground failure in the form of small ground fissures, sand boil formation, and lateral spreading is unlikely because of the thickness of the overlying unliquefiable soil and the planar topography of the area. Based on the estimate of less than ¼ inch of liquefaction-induced settlements, no ground improvement or deep foundations are required to mitigate liquefaction settlement at the Project site. Impacts related to seismic-related ground failure would be less than significant.	Less than Significant	No Mitigation Required.	Less than Significant

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
Threshold 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?			
Collapsible soil generally consists of dry, loose, low-density material that has the potential to collapse and compact (decrease in volume) when subjected to the addition of water or excessive loading. Soils found to be most susceptible to collapse include loess (fine-grained wind-blown soils), young alluvium fan deposits in semi-arid to arid climates, debris flow deposits, and residual soil deposits. Due to the cohesive nature of the subsurface soils and shallow groundwater, the potential for hydro-collapse of the subsurface soils at the Project site is considered very low. The Project is not located on a geologic unit or soil that is unstable or that would become unstable as a result of the Project. Impacts would be less than significant.	Less than Significant	No Mitigation Required.	Less than Significant
Threshold d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?			
The native surface clays likely exhibit moderate to high swell potential (Expansion Index, EI = 70 to 110) when correlated to Plasticity Index tests (ASTM D4318) performed on the native soils. The clay is expansive when wetted and can shrink with moisture loss (drying). Thus, mitigation measure GEO-1 would be implemented to reduce potential impacts related to expansive soils at the Project site to a less than significant level.	Potentially Significant	Implementation of Mitigation Measure GEO-1.	Less than Significant
Threshold f) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?			
The Cultural Resources Assessment (Appendix D) determined that the Project has the potential to impact late Pleistocene to Holocene-age Lake Cahuilla Beds due	Potentially Significant	PALEO-1: Developer shall retain the services of a qualified paleontologist and require that all initial ground disturbing work be monitored by someone trained in	Less than Significant

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
to the high sensitivity of the Lake Cahuilla Beds and the potential for excavation activities extending down into undisturbed sediment. Although no recorded fossil localities have been identified within a 1-mile radius of the Project site, mitigation measures PALEO-1 through PALEO-5 would be implemented to ensure potential impacts to paleontological resources would be less than significant.		fossil identification in monitoring contexts. The consultant shall provide a supervising paleontological specialist and a paleontological monitor present at the Project construction phase kickoff meeting. PALEO-2: Just prior to commencing construction activities and thus prior to any ground disturbance in the Project Site, the supervising cultural resources specialist and cultural resources monitor shall conduct initial Worker Environmental Awareness Program (WEAP) training to all construction personnel, including supervisors, present at the outset of the Project construction work phase, for which the lead contractor and all subcontractors shall make their personnel available. This WEAP training will educate construction personnel on how to work with the monitor(s) to identify and minimize impacts to paleontological resources and maintain environmental compliance, and be performed periodically for new personnel coming on to the project as needed. PALEO-3: The contractor shall provide the supervising paleontological resources specialist with a schedule of initial potential ground disturbing activities. A minimum of 48 hours shall be provided to the consultant of commencement of any initial ground disturbing activities such as vegetation grubbing or clearing, grading, trenching, or mass excavation. A paleontological monitor shall be present onsite at the commencement of ground-disturbing activities related to the Project. The monitor, in consultation with the supervising paleontologist, shall observe	

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
		initial ground disturbing activities and, as they proceed, make adjustments to the number of monitors as needed to provide adequate observation and oversight. All monitors shall have stop-work authority to allow for recordation and evaluation of finds during construction. The monitor shall maintain a daily record of observations as an ongoing reference resource and to provide a resource for final reporting upon completion of the Project. The supervising paleontologist, paleontological monitor, and the lead contractor and subcontractors shall maintain a line of communication regarding schedule and activity such that the monitor is aware of all ground disturbing activities in advance in order to provide appropriate oversight. PALEO-4: If paleontological resources are discovered, construction shall be halted within 50 feet of any paleontological finds and shall not resume until a qualified paleontologist can determine the significance of the find and/or the find has been fully investigated, documented, and cleared. PALEO-5: At the completion of all ground disturbing activities, the consultant shall prepare a Paleontological Resources Monitoring Report summarizing all monitoring efforts and observations, as performed, and any and all prehistoric or historic archaeological finds, as well as providing follow-up reports of any finds to the SCIC, as required.	
Greenhouse Gases			
Threshold a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
The Proposed Project would have a 49.5-percent reduction in GHG emissions when compared to the BAU scenario without IID's implementation of the RPS. Since a 28.3-percent reduction is required, the Proposed Project would result in a less than significant impact. Furthermore, as detailed above, the Proposed Project would not exceed either the USEPA's 25,000-$MtCO_2e$ emissions threshold or ICAPCD Rule 903 20,000-$MtCO_2e$ emissions threshold, where exceedance of either threshold would require the Project to perform additional GHG emissions recordkeeping and reporting.	Less than Significant	No Mitigation Required.	Less than Significant
Threshold b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			
With implementation of the Project Design Features committed to by the project applicant and Statewide regulatory requirements including the CALGreen building standards, the Proposed Project would be consistent with all feasible mitigation measure for individual projects provided in the CARB's 2017 Scoping Plan. Therefore, implementation of the Proposed Project would not conflict with any applicable plan that reduces GHG emissions.	Less than Significant	No Mitigation Required.	Less than Significant
Hazards and Hazardous Materials			
Threshold a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			
During construction and operations of the Project, hazardous materials would be transported to and from the Project site. Traffic barriers would protect piping and tanks on the adjacent HR1 site from potential traffic hazards. The Applicant would be required to follow all applicable federal, State, and local laws and regulations. Further, transportation would be subject to licensing and	Less than Significant	No Mitigation Required.	Less than Significant

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
inspection by the California Highway Patrol. With adherence to the regulatory measures and requirements for hazardous materials, impacts would be less than significant.			
Threshold 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?			
During construction and operation of the Project, hazardous materials would be stored in chemical storage containers. Secondary containment would be provided in all petroleum hydrocarbon and hazardous material storage areas. In general, all areas where hazardous materials are stored would have concrete ponds, be bermed, or have curbs in order to prevent accidental releases. The Applicant would develop and implement a SWPPP and a Hazardous Materials Business Plan (HMBP) that would include procedures for the following: hazardous materials handling, use, and storage; emergency response; a spill prevention control and countermeasure (SPCC) plan; employee training; and reporting and recordkeeping.	Less than Significant	No Mitigation Required.	Less than Significant
Threshold 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, create a significant hazard to the public or the environment?			
The Phase I ESA determined that evaporite deposits containing potential hazardous substances have potential to be located around the abandoned carbon dioxide wells (mud pots) southwest of the Project site. The chemical characteristics of the deposits are unknown. However, no RECs are located within the Project site. Additionally, the Phase I ESA revealed de minimis conditions or environmental concerns in connection with the HR1	Less than Significant	No Mitigation Required.	Less than Significant

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
property. Impacts associated with hazardous materials on the Project site would be less than significant.			
Hydrology and Water Quality			
Threshold b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			
IID, as a water wholesaler, does not derive any of its supplies from groundwater (IWF 2012). Groundwater underlying the Imperial Valley is generally of poor quality and unsuitable for domestic or irrigation purposes; thus, the IID's only source of water is the Colorado River. Untreated Colorado River water will be supplied to the Project via the "O" Lateral, gate 32 and a new gate and connection via the "N" Lateral. The water supply will be under an IWSP Water Supply Agreement with IID and Schedule 7 General Industrial Use, which sets water rates. The Project will not decrease groundwater supplies or interfere with groundwater recharge; thus, impacts would be less than significant.	Less than Significant	No Mitigation Required.	Less than Significant
Threshold e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?			
The Project would not allow any offsite discharges that could violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. The Project would not conflict with or obstruct implementation of the CRB RWQCB's Water Quality Control Plan; therefore, impacts would be less than significant. The Applicant is proposing to draw water from two IID laterals for the Project's operational water needs. IID, as a water wholesaler, does not derive any of its supplies from	Less than Significant	No Mitigation Required.	Less than Significant

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
groundwater (IWF 2012). Groundwater underlying the Imperial Valley is generally of poor quality and unsuitable for domestic or irrigation purposes; thus, the IID's only source of water is the Colorado River. Untreated Colorado River water will be supplied to the Project via the "O" Lateral, gate 32 and a new gate and connection via the "N" Lateral. Therefore, the Project would not conflict with or obstruct implementation of a groundwater management plan.			
Noise			
Threshold a)	**Result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**		
The proposed construction activities would be below the County's 75-dBA noise standard at the nearest home. Additionally, the construction noise levels would be below the lowest measured ambient noise level in the Project vicinity of 48.5 dBA Leq and would be below both the residential sound level limits provided in Section 90702.00 of the County's Municipal Code of 50 dB between 7 a.m. and 10 p.m. and 45 dB between 10 p.m. and 7 a.m. The Proposed Project's temporary noise increases to the nearby homes from the generation of additional vehicular traffic during construction activities would not exceed the FTA's allowable increase thresholds detailed above. The effects of the Proposed Project's permanent noise increases to the nearby homes from the generation of additional vehicular traffic during operation of the Project would not exceed the FTA's allowable increase thresholds detailed above. Therefore, operation of the Proposed	Less than Significant	No Mitigation Required.	Less than Significant

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
Project would not result in a substantial permanent increase in ambient noise levels for the existing year conditions. Impacts would be less than significant.			
Transportation			
Threshold a)	**Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadways, bicycle and pedestrian facilities?**		
The construction phase of the Project would generate a maximum of 375 ADT total. The employee and miscellaneous portion of the construction phase would generate a maximum of 300 ADT, with 74 trips during the AM peak hour and 72 trips during the PM peak hour. Approximately 15 trucks are estimated during construction of the Project. In this analysis, a Passenger Car Equivalent (PCE) of 2.5 is applied to truck trips to account for the reduced performance characteristics (stopping, starting, maneuvering, etc.) of heavy vehicles in the traffic flow, resulting in a maximum of 75 truck trips total. The capacity analyses performed for the key roadway segments and unsignalized and signalized intersections indicate that impacts would be considered less than significant during the construction or day-to-day operations of the Project.	Less than Significant	No Mitigation Required.	Less than Significant
Threshold b)	**Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?**		
The VMT per employee for TAZ 5600, where the Project is located, is 20.84. The Project's VMT amount is 0.01 more than the significance threshold of 20.83; therefore, the Project is not 15 percent below the regional VMT average (Table 4.10-11). In accordance with OPR's Guidance for VMT, this concludes a significant transportation impact	Potentially Significant	TRA-1: A Commute Trip Reduction (CTR) program shall be implemented to discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking. The CTR program could include features such as carpooling encouragement, ride-matching assistance, preferential carpool parking, half-time	Less than Significant

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
would result from the Project and mitigation measures are needed. A Commute Trip Reduction (CTR) program would be required by Mitigation Measure (MM) TRA-1 to encourage carpooling, ride-matching assistance, preferential carpool parking, half time transportation coordination, vanpool assistance, and bicycle end-trip facilities. With implementation of MM TRA-1, the potential significant impacts would be mitigated and impacts would be less than significant.		transportation coordinator, vanpool assistance, and bicycle end-trip facilities (parking, showers, and lockers) and provide employees with assistance in using alternative modes of travel.	
Threshold c) **Substantially increases hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?**			
The Proposed Project would not directly result in any new roadways or design features and would not directly alter any existing roadways or design features. However, a significant safety impact could potentially occur from traffic going to the Project site if improvements are not implemented at the Highway 111/McDonald Road intersection. Mitigation Measure (MM) TRA-2 would require that Highway 111/McDonald Road intersection be improved to Caltrans' satisfaction prior to the Project's certificate of occupation, including the installation of a northbound left-turn pocket prior to the Project's opening utilizing one of the four intersection control methods (existing two-way stop, all-way stop, signal, roundabout) which was analyzed in an Intersection Control Evaluation (ICE). Providing a southbound right-turn lane was considered but rejected due to the low volumes. The maximum peak hour volume in this movement is 12 during construction and 7 during operations. With the implementation MM TRA-2, the potential significant	Potentially Significant	TRA-2: The Highway 111/McDonald Road intersection shall be improved to Caltrans' satisfaction prior to the Project's certificate of occupation, including the installation of a northbound left-turn pocket prior to the Project's opening, utilizing one of the four intersection control methods (existing two-way stop, all-way stop, signal, roundabout) which was analyzed in an Intersection Control Evaluation (ICE) analysis.	Less than Significant

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
impact would be fully mitigated; and impacts would be less than significant.			
Tribal Cultural Resources			
Threshold a) **Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place or object with cultural value to a California Native American tribe, and that is:** **Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as define in Public Resources Code Section 5020.1(k), or** **A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth is subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.**			
Based on the background research and results of the survey, Chambers Group archaeologists determined that the two newly discovered sites, 21268-001 and 21268-002, are unlikely to provide cultural value to any California Native American Tribes; and, since neither Tribe responded to the AB 52 consultation letters, do not require further archaeological testing or evaluation. No other sites listed or eligible for listing in a historical register were identified within or adjacent to the Project site. Additionally, AB 52 letters were sent to the Fort Yuma – Quechan Indian Tribe and the Torres-Martinez Indian Tribe. Both Tribes had until December 9, 2020, to respond. As of February 2021, neither Tribe has responded to the AB 52 letters that were sent in the consultation process.	Less than Significant	No Mitigation Required.	Less than Significant

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
Based on the Cultural Resources Assessment and the lack of response from the tribes, the County has determined there are no known tribal cultural resources within the Project Site and impacts would be considered less than significant.			
Utilities and Service Systems			
Threshold a)	**Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction of which could cause significant environmental effects?**		
No new facilities would be constructed for the purpose of water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications. Therefore, no significant environmental effects are expected to result. Impacts would be less than significant.	Less than Significant	No Mitigation Required.	Less than Significant
Threshold b)	**Have sufficient water supplies available to serve the project from existing and reasonably foreseeable future development during normal, dry and multiple dry years?**		
The Project represents 14 percent of the unallocated supply set aside in the IWSP for nonagricultural projects and approximately 14 percent of forecasted future nonagricultural water demands planned in the Imperial IRWMP through 2055.The amount of water available and the stability of the IID water supply along with on-farm and system efficiency conservation and other measures being undertaken by IID and its customers ensure that the Project's water needs will be met for the next 30 years. When drought conditions exist within the IID water service area, as has been the case for the past decade or so, the water supply available to meet agricultural and nonagricultural water demands remains the same as	Potentially Significant	UTIL-1: If the IID does not receive its annual 3.1 maf water apportionment according to the QSA obligations of Colorado River water during the Project's 30-year lifespan, the Applicant shall work with IID to ensure any reduction in water availability can be managed by the Project.	Less than Significant

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
normal year water supply because IID continues to rely on its entitlement for Colorado River water. Due to the priority of their water rights and other agreements, drought affecting Colorado River water supplies causes shortages for Arizona, Nevada, and Mexico, not California or IID. Therefore, the likelihood that IID will not receive its annual 3.1 million AF apportionment under the QSA obligations of Colorado River water is low due to the high priority of the IID entitlement relative to other Colorado River contractors (see Appendix I for further details on the IID's water rights). If such reductions were to come into effect within the life of the 30-year Project, a significant impact would occur. If such reductions do occur, Mitigation Measure (MM) UTIL-1 would be implemented, requiring the Applicant to work with IID to ensure any reduction in water availability during the life of the Project can be managed. Therefore with implementation of MM UTIL-1, impacts would remain less than significant.			
Threshold c)	**Result in a 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?**		
The total combined staff of HR1 and the Project will be a maximum of 100 employees, requiring at most 500 gallons per day of capacity. This would leave a remaining 1,600 gallons per day to be processed by HR1 which would be sufficient capacity. Additionally, if needed, the Project would have access to the Calipatria Waste Water Treatment Plant and Holtville Waste Water Treatment Plant both of which have sufficient capacity for the Project in the foreseeable future. The sludge retained in the HR1 septic tank will continue to be pumped by licensed	Less than Significant	No Mitigation Required.	Less than Significant

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
contractors as needed and transported to the Calipatria or Holtville wastewater treatment plants. The wastewater treatment plant serving the Project has adequate capacity for the Project; thus, impacts are less than significant.			
Threshold 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?**		
All nonhazardous and hazardous wastes generated during Project construction and operation would be handled and disposed of in accordance with applicable laws, ordinances, regulations, and standards. Nonhazardous solid waste would be disposed of using a locally licensed waste hauling service, Allied Waste. Wastes that exceed CCR toxicity standards would be required to be trucked out of state to Arizona. If Arizona toxicity standards are exceeded, hazardous wastes would be sent to Idaho or Nevada. All facilities have available capacity to support the Project. Therefore, solid waste facilities have adequate permitted capacity for solid waste materials generated by the Project. Impacts would be less than significant.	Less than Significant	No Mitigation Required.	Less than Significant
Threshold e)	**Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?**		
The Proposed Project would be operated in a manner that would be consistent with all source reduction and recycling goals set forth by the City to achieve compliance with the applicable regulatory plans consistent with the City's obligations under AB 939, including the Countywide Integrated Waste Management Plan for Imperial County, by appropriately distributing solid waste materials and recycling materials when feasible.	Less than Significant	No Mitigation Required.	Less than Significant

Table ES-1: Summary of Significant Impacts and Mitigation Measures

Project Impacts	Level of Significance before Mitigation	Mitigation	Level of Significance After Mitigation
Disposal of solid/hazardous wastes generated during Project construction and operations would be in compliance with local federal, State, and County regulations and disposed of at authorized facilities. Therefore, a less than significant impact would occur.			

CHAPTER 1.0 – INTRODUCTION

The Proposed Project is the construction and operation of a commercial lithium hydroxide production plant (ATLiS Plant) within the Salton Sea geothermal field in Imperial County, California. The ATLiS Plant will process geothermal brine from the neighboring Hudson Ranch Power I Geothermal Plant (HR1) to produce lithium hydroxide, as well as zinc and manganese products which would be sold commercially.

The Proposed Project would consist of the following activities:

- Construction and operation of a plant to extract lithium, manganese, zinc, and other commercially viable substances from geothermal brine and process the extracted substances to produce commercial quantities of lithium and, to the extent possible, manganese and zinc products and other products
- Construction and operation of brine supply and return pipelines and other associated interconnection facilities with the HR1 power plant
- Construction of a primary access road from McDonald Road (approximately 500 feet west of the HR 1 entrance), a second primary access about 800 feet west, and an emergency access entrance only from Davis Road
- Paving of McDonald Road from State Route 111 (Highway 111) to English Road (approximately 2 miles)
- Construction of a power interconnection line from the Imperial Irrigation District (IID) and HR1 switchyard located at the northeast corner of the HR1 site
- Construction of associated facilities between HR1 and the Project site to facilitate the movement of brine and other services
- Construction of a laydown yard that will also support temporary offices during construction as well as serve as a truck management yard during operations
- Construction of offices, repair facilities, shipping and receiving facilities, and other infrastructure including the relocation of the IID structures and road improvements at Highway 111

This section of the Draft Environmental Impact Report (EIR) will discuss the purpose of the Draft EIR, scope, content, and environmental review process. The Project is described in further detail in Chapter 2.0, Project Description.

1.1 PURPOSE OF THE ENVIRONMENTAL IMPACT REPORT

The Project requires discretionary approval of the County Environmental Evaluation Committee and Board of Supervisors and is subject to environmental review requirements in accordance with the California Environmental Quality Act (CEQA). All “projects” within the State of California are required to undergo environmental review to determine any potential environmental impacts associated with project implementation (Section 15021).

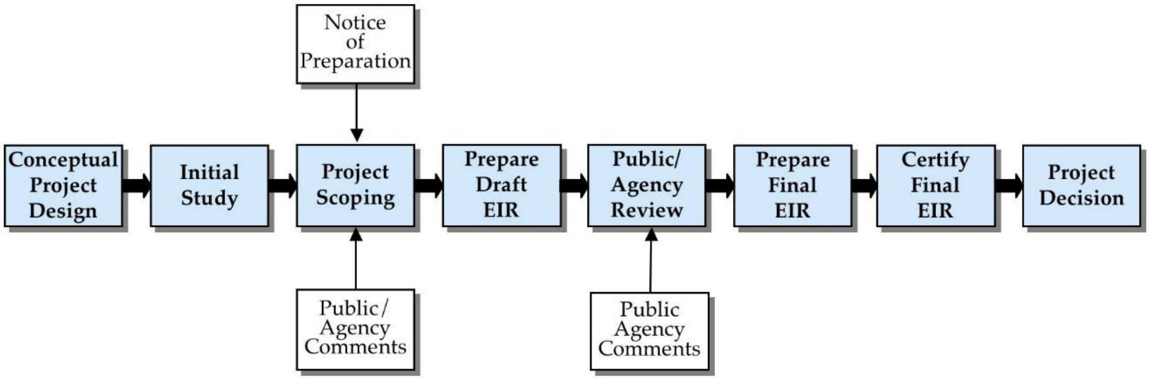
CEQA was enacted in 1970 by the California Legislature to disclose to decision-makers and the public the significant environmental effects of a proposed project and to identify possible ways to avoid or minimize significant environmental effects of a project by requiring implementation of mitigation measures or recommending feasible alternatives. CEQA applies to all California agencies at all levels, including local, regional, and State governments, as well as boards, commissions, and special districts. Imperial County

(County), the Lead Agency for the Project, is required to conduct an environmental review to analyze any potential environmental effects associated with project implementation.

A Project EIR or an EIR has been prepared to evaluate impacts of the Proposed Project. Section 15161 of the CEQA Guidelines states that a Project EIR "… *examines the environmental impacts of a specific development project. This type of EIR should focus primarily on the changes in the environment that would result from the development project. The EIR shall examine all phases of the project including planning, construction, and operation."*

The Draft EIR is then circulated to the public and affected agencies for review and comment. One of the primary objectives of CEQA is to enhance public participation in the planning process; public involvement is an essential feature of this process. Community members are encouraged to participate in the environmental review process, request to be notified, monitor newspapers for formal announcements, and submit substantive comments at every possible opportunity afforded by the lead agency. The environmental review process provides ample opportunity for the public to participate through scoping, public notice, and public review of CEQA documents. A diagram illustrating the CEQA process is shown in Figure 1.0-1 below. Additionally, a Lead Agency is required to respond to public comments in Final EIRs and consider comments from the scoping process in the preparation of the Draft EIR.

Figure 1.0-1: The Environmental Review Process



1.2 ENVIRONMENTAL REVIEW PROCESS

1.2.1 Scoping Process

In compliance with Section 15201 of the State CEQA Guidelines, the County has taken steps to provide opportunities for public participation in the environmental process. An Initial Study (IS) and Notice of Preparation (NOP) were distributed on December 11, 2020 to State, regional, local government agencies, and interested parties for a 34- day public review period to solicit comments and to inform agencies and the public of the Project. The proposed Project was described, potential environmental effects associated with Project implementation were identified, and agencies and the public were invited to review and comment on the IS and NOP.

The County received comments from two state agencies, Native American Heritage Commission and California Department of Transportation, and two local agencies, Imperial County Air Pollution Control District and Imperial Irrigation District. The IS, NOP, and received comments are contained in Appendix A of this Draft EIR. The purpose of the NOP was to formally convey to the public that the County was preparing a Draft EIR for the proposed Project and to solicit input regarding the scope and content of the environmental information to be included in this Draft EIR. Additionally, the Project was presented to the Environmental Evaluation Committee (EEC) and a scoping meeting was held, both on January 14, 2021. No participants attended the scoping meeting.

Topics evaluated in this Draft EIR have been identified based on the IS prepared for the Project, the responses to the NOP, the review of the proposed Project by County staff, and the comments made during the EEC meeting. Specific comments regarding the amount of and transportation of hazardous wastes were noted during the EEC meeting, which were address in Section 4.12: Utilities and Service Systems. The County determined through this initial review process that impacts related to the following environmental topics are potentially significant and require an assessment in this Draft EIR:

1. Air Quality
2. Biological Resources
3. Cultural Resources
4. Energy
5. Geology and Soils
6. Greenhouse Gas Emissions
7. Hazards and Hazardous Materials
8. Hydrology and Water Quality
9. Noise
10. Transportation
11. Tribal Cultural Resources
12. Utilities and Service Systems

Mitigation measures to reduce impacts to a less than significant level are proposed whenever feasible. Table 1.0-1 contains this list of sections required under CEQA Guidelines, along with reference to the chapter where these items can be found.

Table 1.0-1: Required EIR Contents

Chapter Title (CEQA Guidelines)	Location
Table of Contents (Section 15122)	Table of Contents
Summary (Section 15123)	Executive Summary
Introduction (Section 15122)	Chapter 1
Project Description (Section 15124)	Chapter 2
Environmental Setting (Section 15125)	Chapter 3
Consideration and Discussion of Environmental Impacts (Section 15126)	Chapter 4
Mitigation Measures (Section 15126.4)	Chapter 4.1-4.12
Cumulative Impacts (Section 15130)	Chapter 4.1-4.12
Alternatives to the Proposed Project (Section 15126.6)	Chapter 5
Growth-inducing Impacts (Section 15126.2)	Chapter 6
Effects Found Not to Be Significant (Section 15128)	Chapter 6
Organizations and Persons Consulted (Section 15129)	Chapter 7 and 8
List of Preparers	Chapter 8
Acronyms/Abbreviations	Chapter 9

1.2.2 Review and Comment on the Draft Environmental Impact Report

The Draft EIR for the Project is being distributed directly to numerous agencies, organizations, and interested groups and persons for comment during the formal review period. The Draft EIR is also available for review at the following locations in the County:

- City of El Centro Public Library, 539 State Street, El Centro, California

This document is available for review online at the Imperial County Planning and Development Services Department (ICPDSD) website: http://www.icpds.com

Interested individuals, organizations, responsible agencies, and other agencies can provide written comments about the Draft EIR addressed to:

David Black, Planner
Imperial County Planning & Development Services Department
801 Main Street
El Centro, CA 92243

Agency responses to the Draft EIR should include the name of a contact person within the commenting agency. Due to the time limits mandated by State law (CEQA Guidelines Section 15205[d]), comments must be sent to the County at the earliest possible date but not later than close of business on August 17, 2021, which is 50 days after publication of this notice.

1.3 ORGANIZATION OF THE DRAFT EIR

The Draft EIR is organized into the following chapters so the reader can easily obtain information about the Proposed Project and related environmental issues:

- Executive Summary – Presents a summary of the Proposed Project and alternatives, potential impacts and mitigation measures, and impact conclusions regarding growth inducement and cumulative impacts.

- Chapter 1: Introduction – Describes the purpose and use of the Draft EIR, provides a brief overview of the Proposed Project, and outlines the organization of the Draft EIR.

- Chapter 2: Project Description – Describes the project location, project details, and the City's overall objectives for the Project.

- Chapter 3: Environmental Setting – Describes the baseline environmental setting and existing physical conditions, including related projects in the area.

- Chapter 4: Environmental Analysis – Describes the existing conditions, or setting, before project implementation; methods and assumptions used in impact analysis; thresholds of significance; impacts that would result from the Proposed Project; and applicable mitigation measures that would eliminate or reduce significant impacts for each environmental issue.

- Chapter 5: Alternatives Analysis – Evaluates the environmental effects of project alternatives, including the No Project Alternative and Environmentally Superior Project Alternative.

- Chapter 6: Other CEQA Considerations – Includes a discussion of issues required by CEQA that are not covered in other chapters. This includes unavoidable adverse impacts, impacts found not to be significant, irreversible environmental changes, and growth-inducing impacts.

- Chapter 7: References – Identifies the documents and individuals consulted in preparing the Draft EIR.

- Chapter 8: Report Preparation – Lists the individuals involved in preparing the Draft EIR and organizations and persons consulted.

- Chapter 9: Acronyms/Abbreviations – Presents a list of the acronyms and abbreviations.

Appendices – Present data supporting the analysis or contents of this Draft EIR. The Appendices include the following:

- **APPENDIX A** – Initial Study and Environmental Analysis for the Energy Source Mineral ATLiS Project, December 2020, Chambers Group, Inc., NOP, and NOP Comment Letters.

- **APPENDIX B** – Air Quality Assessment Hudson Ranch Mineral Recovery, County of Imperial, June 17, 2021, Ldn Consulting, Inc.

- **APPENDIX C** – Biological Technical Report (BTR) for the Energy Source Mineral Project Imperial County, California, December 2020, Chambers Group, Inc.

- **APPENDIX D** – Archaeological and Paleontological Assessment Report for the Energy Source Mineral, LLC Project, Calipatria, Imperial County, California, January 2021, Chambers Group, Inc.

- **APPENDIX E** – Geotechnical Report, Proposed Mineral Extraction Facility, 409 West McDonald Road, Calipatria, California, October 2019, LandMark Consultants, Inc.

- **APPENDIX F** – Phase I Environmental Site Assessment, Hudson Ranch Geothermal Plant, 409 West McDonald Road, Calipatria, California, August 2020, LandMark Consultants, Inc.

- **APPENDIX G** – Hudson Ranch Greenhouse Gas Screening Letter – County of Imperial, June 6, 2021, Ldn Consulting, Inc.

- **APPENDIX H** – Energy Calculations, April 2021, Vista Environmental.

- **APPENDIX I** – Noise Worksheets, April 27, 2021, Vista Environmental.

- **APPENDIX J** – Water Supply Assessment – Energy Source Minerals, LLC, April 21, 2021, Dubose Design Group.

- **APPENDIX K** – Traffic Impact Analysis, Hudson Ranch Mineral Recovery, County of Imperial, California, June 22, 2021, Linscott Law & Greenspan Engineers.

- **APPENDIX L -** Assembly Bill (AB) 52 Tribal Consultation

CHAPTER 2.0 – PROJECT DESCRIPTION

2.1 PROJECT OVERVIEW

Energy-Source Minerals LLC (Applicant) proposes to construct and operate a commercial lithium hydroxide production plant within the Salton Sea geothermal field in Imperial County (County), California (Proposed Project; Figure 2.0-1). The facility (ATLiS Plant) will process geothermal brine from the neighboring HR1 to produce lithium hydroxide as well as zinc and manganese products which would be sold commercially.

2.2 PROJECT OBJECTIVES

The Proposed Project has the following objectives:

- To produce quantities of lithium, manganese, zinc, and other strategic minerals from geothermal brine for commercial sale
- To collocate near a geothermal flash plant to minimize the distance required to pipe the brine between the geothermal plant and the mineral extraction plant
- To provide a supplemental domestic source of lithium, a designated critical material identified by the U.S. Department of Energy
- To minimize and mitigate any potential impact to sensitive environmental resources within the Project area

2.3 PROJECT DESCRIPTION

Project facilities would be built on three parcels privately owned by Hudson Ranch Power I LLC in the County of Imperial: APNs 020-100-025, 020-100-044, 020-100-046. The Project site is zoned M-2-G-PE (Medium Industrial /Geothermal Overlay), and the County General Plan designates the Project site as Agriculture land use. The Proposed Project would consist of the following activities:

- Construction and operation of a plant to extract lithium, manganese, zinc, and other commercially viable substances from geothermal brine and process the extracted substances to produce commercial quantities of lithium and, to the extent possible, manganese and zinc products and other products
- Construction and operation of brine supply and return pipelines and other associated interconnection facilities with the HR1 power plant
- Construction of a primary access road from McDonald Road (approximately 500 feet west of the HR1 entrance), a second primary access about 800 feet west, and an emergency access entrance only from Davis Road
- Paving of McDonald Road from Highway 111 to English Road (approximately 2 miles)
- Construction of a power interconnection line from the IID and HR1 switchyard located at the northeast corner of the HR1 site

- Construction of associated facilities between HR1 and the Project site to facilitate the movement of brine and other services
- Construction of a laydown yard that will also support temporary offices during construction as well as serve as a truck management yard during operations
- Construction of offices, repair facilities, shipping and receiving facilities, and other infrastructure including the relocation of the IID structures and road improvements at Highway 111

2.3.1 Structures

The Project site, as shown in Figure 2.0-2, will include construction of the following buildings and structures:

- Plant offices (which will house offices and meeting rooms)
- Operations and employee facilities (which will house offices for supervisors, meeting rooms, breakroom/lunch room, locker/shower rooms)
- Maintenance shop and materials warehouse (which will house plant maintenance equipment and supplies and shops such as machine, paint, welding, and electronic)
- Materials warehouse (which will store equipment, reagents, etc.)
- Electrical building(s) (which will house motor control centers, electric power switchgear, and metering to provide power for plant operations)
- Emergency generator building
- Two reagent storage and preparation buildings
- Chemical laboratory building (which will contain a wet chemistry laboratory and analytical instruments for analysis of in-process and finished products)
- Filter press sheds (which will house filter presses)
- Lithium product production building (which will house the proprietary technology for manufacturing the lithium carbonate and lithium hydroxide products)
- Lithium product handling, packaging, and warehouse buildings (which will house the filtration and drying equipment for the lithium products and bagging and palletizing of finished products)
- Manganese product handling, production, and warehouse building (which will house the filtration and drying equipment for the manganese product and bagging and palletizing of finished products)
- Zinc product handling, production, and warehouse building (which will house the filtration and drying equipment for the zinc product and bagging, palletizing, and storage of finished products)

- Calcium oxide silo and slacker
- Limestone stockpile and solution tanks
- Hydrogen chloride offloading and storage tank(s)
- Gate guard house
- Cooling tower

The product production, handling, and warehouse buildings will be approximately 80 feet tall, and the various other components of the plan may be as high as 100 feet tall.

The sewage from the Project will be processed by the HR1 sewer treatment plant; hence, no further permitting for sewage treatment is required. Potable water will be provided from the HR1 permitted water treatment plant via an agreement between HR1 and the ATLiS Plant. An application to modify the HR1 water treatment plant by using both the existing approved plant and the former Simbol plant will be made to County Environmental Health and Safety.

2.3.2 Impurity Removal and Production Extraction Facilities

The impurity removal and the product extraction processing areas will be constructed within designated areas of the plant site on concrete pads with a containment curb. These processing areas may not be located within a building but will consist of a series of interconnected tanks and pipelines. The arrangement of these facilities is part of the Applicant's proprietary technology.

2.3.3 Product Production Facilities

Product production facilities consisting of a series of interconnected tanks and pipelines will also be constructed on the site. The processing facilities will also be erected within designated portions of the plant site on concrete pads with a concrete containment curb or in designated buildings. The arrangement of these facilities is also part of the Applicant's proprietary technology.

2.3.4 Pipe Rack and Process Pipelines

A pipe rack will be constructed from the Project's process area to the HR1 site. A post clarifier brine delivery pipeline from HR1 to the Project's process area and a depleted brine return pipeline from the process area to HR1 will be constructed on one or more pipe racks. A steam/steam condensate delivery pipeline will also be constructed on the pipe rack. The Project will be responsible for returning the depleted, barren brine to the HR1 site. Additional delivery or return pipelines may also be constructed onto the pipe rack as needed to handle the different fluids transported.

The delivery and return pipelines will be constructed with minimal usage of flanged connections to reduce the potential for pipe leaks. Automatic valves will be integrated into the pipeline system which would close quickly in the event of a pipe rupture to minimize the size of any potential spill. An Emergency Response Plan will be prepared and implemented should a fluid spill event occur.

2.3.5 Fire Water and Freshwater Pond

The Project will share the fire suppression system and the freshwater storage containment pond with HR1. The fire suppression system will be redesigned to accommodate the overall fire protection obligation to both plants along with the necessary controls. The raw water storage pond currently located on the east side of the HR1 plant will continue to receive canal water from the IID "O" lateral. However, a backup delivery line will also be installed from the "N" lateral located about 0.25 mile south of the plant. This redundancy is necessary for two reasons: First, when IID does maintenance work on canals a lateral can be out of service for several days; and, second, backup from the "N" lateral may be needed in the event of a natural interruption such as an earthquake that may render the "O" lateral out of service. The Imperial County Fire Department will be consulted as appropriate to review and approve the proposed fire water and freshwater pond facilities. A 500,000-gallon aboveground water tank will be constructed to serve as the primary water supply for the joint fire suppression system.

2.3.6 Stormwater Retention Basin

The Project may share the HR1 stormwater retention basin. The retention basin will be engineered and constructed to contain the combined stormwater storage requirements of both the HR1 and Project plant sites. If a basin cannot be shared for technical, legal, or other reasons, then the Project will construct its own basin on the far south side of the parcel. The current HR1 Plant site was constructed to eliminate any offsite discharge, and this site will be designed the same way.

2.3.7 Security Fence and Landscaping

A nominal 6-foot-high chain-link security fence, which may be topped with three-strand barbed wire, will be constructed around the Project plant site. The fence will be constructed to meet County standards for obscured fencing around processing areas. Due to security levels required for the HR1 power plant and because of the interconnectivity between HR1 and the Project, security protocols for both HR1 and the Project will be similar in nature.

2.3.8 Substation and Power Line Facilities

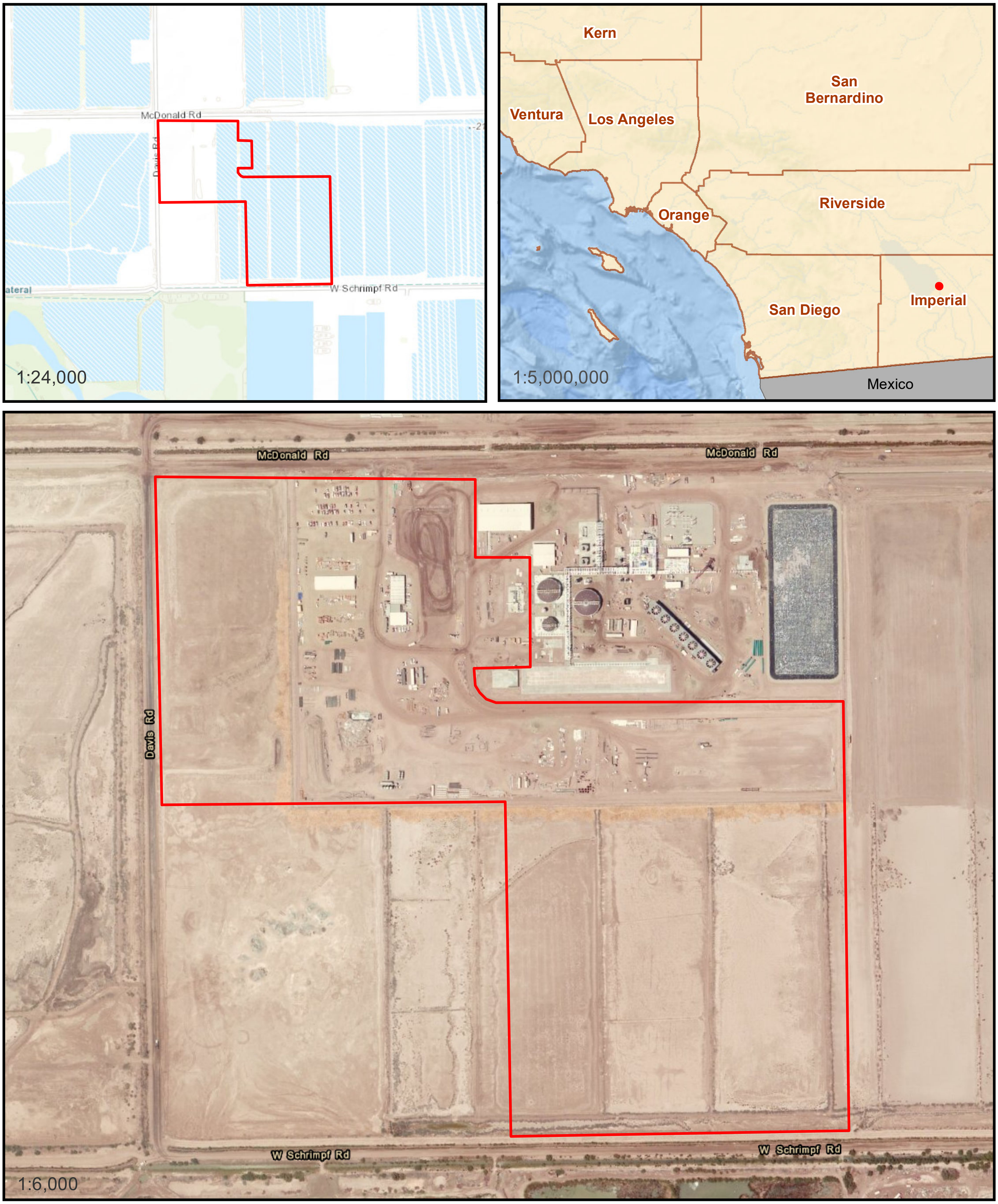
Up to 8 megawatt (MW) of electrical power will be needed for the Project operations. The power will be purchased from IID. The Project will construct an electrical substation on the Project site. An emergency 600-horsepower (hp) diesel generator(s) will be used to keep vital Project plant systems operating during power outages.

2.3.9 Road Improvements

At the junction of McDonald Road and Highway 111, improvements will also be constructed to meet the requirements of the IID, the County and Caltrans. As currently planned, these improvements will include:

- Relocation of the IID drain exit structure on the west side of Highway 111
- Relocation of the IID canal gates on the west side of Highway 111
- Northbound left turn lane on Highway 111 (or as required by an approved Traffic Study)

A short power line will be constructed along McDonald Road to the Project site between the current IID/HR1 switchyard and the plant site.



□ Project Location

Figure 2-1

Energy Source Mineral Project
Project Location & Vicinity

Name: 21268 PLAN Fig 2-1 Project Location and Vicinity.Mxd
Print Date: 3/2/2021, Author: pcarlos

CHAMBERS GROUP

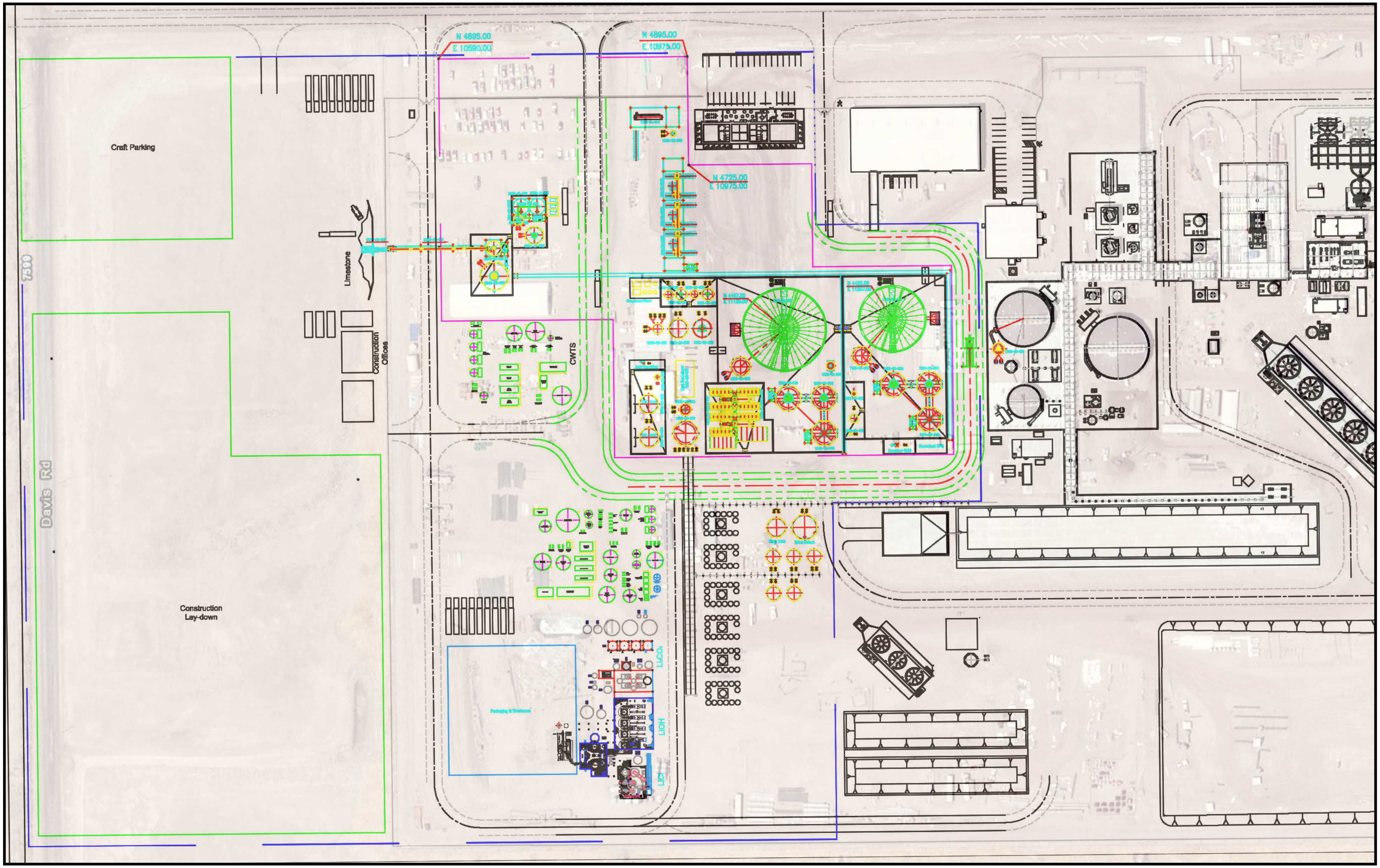


Figure 2-2

Energy Source Mineral Project
Project Site Plan

Name: 21268 PLAN Fig 2-2 Project Site Plan.Mxd
Print Date: 11/25/2020, Author: pcarlos

CHAMBERS GROUP

2.4 PROJECT COMPONENTS

The Project consists of construction and operation of the ALTiS Plant to process geothermal brine from the neighboring HR1 to produce lithium hydroxide, zinc, and manganese products to be sold commercially.

2.4.1 Project Construction

Construction will include light grading of approximately 30 acres of land that will include the Project site, new entry road off McDonald Road, and an emergency access road off Davis Road and a connection to the IID/HR1 electric substation. The Project site driveway, parking, and maneuvering areas will be constructed to County standards (generally a minimum of 3 inches of asphaltic concrete paving or higher quality material).

The Project will either be constructed to an elevation above the Imperial County designated special flood hazard for lands near the Salton Sea, or have the existing berm extended to the outer perimeter of the site. The Project will be constructed so that no offsite discharge of any waters will be allowed, and all water will be managed on site.

It is estimated that on average 20 to 25 trucks per day will travel in and out of the Project site during construction except during grading, when about 50 to 60 trucks will be traveling in and out of the Project site. An average of 100 workers will commute to the Project site during construction.

Construction Work Force and Schedule

Project construction would begin when all necessary permits are obtained, which is expected to be Quarter Three (Q3) of 2021. Construction is expected to be complete in Quarter Two (Q2) of 2023. All work would occur in one phase, with approximately 90 percent of work occurring during daylight hours over five or six days per week over an intermittent 24-month period. The remaining 10 percent of work would occur during nighttime hours to avoid extreme summer temperatures. Approximately 200 to 250 construction workers are anticipated at peak periods. Construction workers will commute to the site, and there will be no onsite housing of workers. Construction parking will be in the 15-acre laydown area, which will be located at the southeast corner of Davis Road and McDonald Road on what is currently APN 020-100-025.

Construction Equipment

Below is a list of construction equipment anticipated to be required for the Project:

- Off-highway trucks
- Rollers
- Crawler tractors
- Excavators
- Graders
- Water trucks
- Compactors
- Rubber-tired loaders
- Scrapers

- Cranes
- Generator sets
- Concrete pump
- Plate compactors
- Rough terrain forklifts
- Skid steer loaders
- Tractor/Loader/Backhoe
- Aerial lifts
- Welders
- Air compressors
- Pavers
- Paving equipment

Construction Water Supply Source and Requirements

It is estimated that up to 50,000 gallons per day of water will be needed during Project construction for fugitive dust control during Project site grading and construction activities. This water will be obtained from the existing onsite freshwater containment pond or from the Applicant's own generation at the HR1 facility.

2.4.2 Project Operations

The Project's plant will utilize post-secondary clarifier brine produced from the geothermal fluid management activities on the neighboring HR1 power plant site as the resource process stream for the commercial production of lithium hydroxide monohydrate (LIOH), and zinc, and manganese products. The production operations will consist of the following general processing steps:

1. Impurity removal
2. Lithium extraction as lithium chloride (LiCl)
3. Conversion and processing of LiCl to lithium products
4. Drying and packaging of lithium products
5. Zinc extraction and processing to zinc products
6. Manganese extraction and processing to manganese products
7. Offsite product shipping

The production processing steps may be altered over time as production methods and efficiencies evolve and new or revised product lines are developed at the facility. The arrangement of the processing equipment is part of the proprietary technology developed for the Project.

Impurity Removal

Post heat extraction geothermal brine from the secondary clarifier of the HR1 power plant site will be transported via pipeline to the impurity removal process area on the ATLiS plant site. A nominal 7,000 gallons per minute (gpm) of the brine will be processed by the facility. This projected process rate is used as the basis for the estimate provided throughout this Project description, but the actual rate of brine eventually processed on the site will be optimized to take advantage of the available facilities on the HR1 and ATLiS plant sites.

Iron (Fe) and silica (SiO_2) will be removed from the brine, followed by the removal of the manganese (Mn) and zinc (Zn) in a two-stage process. The separated Fe-SiO_2 material and the Mn-Zn material will be dewatered in the filter press sheds. The mineral-depleted brine will then be transported via pipeline to the Lithium (Li) extraction process area.

The separated Fe-SiO_2 material will be initially managed as a waste stream. The waste material will be collected and analyzed in conformance with appropriate laboratory testing protocols to ensure that it is handled and disposed of in an appropriate manner.

If and when, in the future, opportunities exist to use this material, the Applicant plans to market Fe- SiO_2 material as an additional product(s) to be shipped to a third party(ies) for use in other industrial processes; and it will no longer be a waste but a product. The market for Fe-SiO_2 material is currently being developed. Based on average production rates at the target nominal process rate of 7,000 gpm, approximately 136,200 metric tons of Fe-SiO2 material will be processed annually.

Li Extraction as Lithium Chloride

The treated brine will be fed to a Li extraction process located within the Li extraction process area on the ATLiS plant site. This area will be outside on a concrete pad. The area will contain proprietary Li extraction media. Li from the brine will be retained on the extraction media. A LiCl product stream will be produced from the extraction process. The LiCl will be transported via pipeline from the Li extraction area into the Li purification process area. Impurities will be removed from the LiCl product stream and handled as nonhazardous waste. The purified LiCl will then be concentrated in an evaporator or equivalent process.

Conversion and Processing of LiCl into Li Products

The purified, concentrated LiCl will be transported via pipeline from the Li purification area to the Li product production building. Proprietary technology will be used to convert the LiCl and then into lithium carbonate (Li_2CO_3) and then into the LiOH product stream.

Drying and Packaging of Li Products

The LiOH product stream will be transported to a lithium product handling, production and warehouse building where the crystals will be separated from the Li-rich process fluid in a dewatering system. LiOH crystals will be dried, sized, and cooled.

Packaging of the Li Products

The dried Li products will be packaged, palletized, staged, and loaded into trucks for distribution in the Li product handling, production, and warehouse buildings. The dried Li products will be loaded into bulk bags in a bagging station. Packaging is expected to be 500-kilogram (kg) to 1,000-kg super sacks.

Extraction of Zn and Mn

Zn/Mn filter cake will be acid-leached, separated, and purified in a two-part solvent extraction process. The separated streams will each then be dried and packaged for further processing by others.

Mn Extraction and Processing to Mn Products

The Mn removed by the solvent extraction process will be precipitated into Mn oxides/hydroxides products, then dewatered in filter presses into wet cake product. The products will be transported to the Mn product handling, production and warehouse building for further handling, packaging, and offsite shipment to market.

Product Shipping to Offsite Markets

The ATLiS plant may produce multiple products for offsite shipment to market by truck. The average annual amount of product shipped out of the ATLiS plant is estimated as 19,000 metric tons of Li product, 10,000 to 20,000 metric tons of Zn product(s), and up to 60,000 metric tons of Mn product(s). Products will be transported by freight truck on existing roadways to shipping distribution points. Other products of the production operations may be generated by the proprietary technology on the ATLiS plant site and would also be shipped offsite to market by truck. Trucking will generally be to markets in the greater Los Angeles basin, Arizona, and Texas.

Operational Truck Traffic

It is estimated that approximately 24 trucks per day will travel in and out of the Project site during normal operations. The truck traffic includes about 10 trucks per day of outgoing products, including one truckload of dry lithium, two truckloads of 31-percent hydrochloric acid (HCl), three truckloads of zinc, and four truckloads of manganese. Truck traffic also includes about eight truck deliveries of reagent chemicals, cooling tower treatment chemicals, consumptive media, product packaging materials, and fuel. The estimate also includes six trucks of outgoing waste generated on the site. The majority of the outgoing waste generated on site is expected to be delivered to and processed at the Burrtec Solid Waste Facility. However, it is estimated that up to 10 percent of trucks carrying filter cakes (waste debris mix of silica, sand, and iron) from the plant would be required to be delivered to a waste treatment facility in Arizona.

Operational Water Supply Source and Requirements

Approximately 90,000 gallons per hour (g/h) or about 3,400 acre-feet per year (AFY) of canal water will be purchased from IID for Project cooling water and additional process water. Approximately 112 g/h or about 3 AFY of the canal water to be purchased will be used for potable water purposes, including potable washbasin water, eyewash equipment water, water for showers and toilets in crew change quarters, and sink water in the sample laboratory.

Operational Plant Maintenance

Operation of the Project would be dependent on the ability of the HR1 facility to deliver spent geothermal brine for processing at the ATLiS facility. Thus, approximately every three years the Project facility will be shut down for about three weeks to complete a facility cleaning in alignment with the HR1 plant cleaning. This process would remove mineral scale from Project plant piping.

Operational Work Force and Schedule

Project operations will begin as soon as construction activities are completed, expected to be Q2 of 2023. Beginning with startup operations, the Project is expected to be operated by a total staff of approximately 62 full-time, onsite employees. Plant operations will continue 24 hours per day, 7 days per week. It is projected that up to 40 employees will be on site at any given time with 24 day-staff employees and two rotating shifts of 16 additional employees overlapping the day-staff and covering nights, weekends, and holidays.

2.4.3 Project Decommissioning

The projected life of the Project is a nominal 30 to 40 years. The Applicant will prepare a Site Abandonment Plan in conformance with Imperial County requirements, for consideration by the Planning Commission prior to Project approval. This plan would describe the proposed equipment dismantling and site restoration program in conformance with the wishes of the respective landowners/lessors and Imperial County requirements in effect at the time of abandonment and would be implemented at the end of Project operations. Decommissioning activities would be similar to Project construction activities; however, decommissioning is likely to be less intensive than construction. Because this phase would occur approximately 30 to 40 years in the future, decommissioning is anticipated to employ equipment that is more technologically advanced than that used during construction. Further, the need for site preparation and associated activities will be reduced.

2.5 PROJECT DESIGN FEATURES INCORPORATED INTO THE PROPOSED PROJECT

This analysis was based on implementation of the following project design features that the project applicant has committed to implementing.

The Project applicant will implement the following features during construction of the Project:

- All off-road diesel-powered equipment that is greater than 50 horsepower that is used onsite during construction of the project shall meet USEPA Tier 4 off-road emission standards.
- Use of alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel powered equipment.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes as a maximum.
- Limit, to the extent feasible, the hours of operation of heavy duty equipment and/or the amount of equipment in use.
- When commercially available, replace fossil fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).

The Project applicant will implement the following features during operation of the Project:

- Provide charging stations for electric vehicles
- Provide on-site eating, refrigeration and food vending facilities to reduce lunchtime trips.
- Provide shower and locker facilities to encourage employees to bike and/or walk to work.

- Provide for paving a minimum of 100 feet from the property line for commercial driveways that access County paved roads as per County Standard Commercial Driveway Detail 410B. It should be noted that the project would also pave McDonald Road form Highway 111 to English Road.

- Measures which meet mandatory, prescriptive/performance measures as required by Title 24.

2.6 REQUIRED PERMITS AND APPROVALS

As required by the CEQA Guidelines, this section provides, to the extent the information is known to the County, a list of permits and approvals to implement the Project and list of agencies that will review this Draft EIR and use it in their decision-making process. The following lists County entitlements and permits that may be required for the Project prior to construction and operation:

- Imperial County Planning Department – Minor Subdivision
- Imperial County Planning Department – Water Supply Assessment
- Imperial County Planning Department – Conditional Use Permit
- Imperial County Building Department – Building and Grading Permits
- Imperial County Public Works Department – Encroachment Permit(s)

The Final EIR must be certified by the Planning Commission as to its adequacy in compliance with CEQA prior to any actions being taken on the Project. The analysis of this Draft EIR is intended to provide environmental review for the Project, including the production of lithium hydroxide and zinc and manganese products, in accordance with CEQA requirements.

2.6.1 Other Required Permits And Approvals

Other required permits and approvals may be necessary in order to approve and implement the Project as the County finds appropriate. Approvals include, but are not limited to, architectural plan and design, landscaping, lighting, transportation permits and approvals for driveways and routes, grading, hauling, and public utilities. Potential responsible and trustee agencies may include:

- Caltrans – Encroachment Permit

- California Department of Toxic Substances/Certified Unified Program Agency (CUPA) – Hazardous Materials / Environmental Protection Agency Approvals and Permits

- Regional Water Quality Control Board – Water Discharge Requirement

- Imperial Irrigation District – Encroachment Permit

- Imperial County Air Pollution Control District – Permit to Construct and Permit to Operate

- Environmental Health Departments for HR1 – Potable Water Treatment Modified Permit

- Imperial County Public Works – Encroachment Permit

- Imperial County Fire Department and Office of Emergency Services

2.6.2 Reviewing Agencies

Reviewing Agencies include those agencies that do not have discretionary powers but that may review the Draft EIR for adequacy and accuracy. Potential Reviewing Agencies include the following:

- Caltrans
- California Department of Toxic Substances/Certified Unified Program Agency
- Regional Water Quality Control Board
- Imperial Irrigation District
- Imperial County Air Pollution Control District
- Environmental Health Departments for HR1
- Imperial County Public Works
- Imperial County Fire Department and Office of Emergency Services

CHAPTER 3.0 – ENVIRONMENTAL SETTING

3.1 EXISTING LAND USE

The Project's plant and facilities will be located at 477 West McDonald Road, Calipatria, California (Project site) which is approximately 3.8 miles southwest of the community of Niland. The Project site is located on three parcels privately owned by HR1 LLC in the County: APNs 020-100-025, 020-100-044, and 020-100-046. Currently, the HR1 power plant exists within the northeast corner of the 65.12-acre parcel, APN 020-100-044. The Project's plant facilities would be built on an approximately 37-acre area that would be subdivided out of the existing 65.12 acres. An additional 15 acres of the Project site located on the northwestern parcel APN 020-100-025 and approximately 40 acres of the Project site located on the southeast parcel APN 020-100-046 will be added to the 37 acres through a subdivision map application to form the new parcel for the Project.

All parcels that make up the Project site are zoned medium industrial (M-2) and are located within the geothermal overlay zone (G) and pre-existing allowed/restricted overlay zone (PE). The M-2 zone is used to designate areas for wholesale commercial, storage, trucking, assembly-type manufacturing, general manufacturing, research and development, medium intensity fabrication, and other similar medium-intensity processing facilities. Land in the PE overlay zone is also classified in another "base" zone and is intended to allow an existing base zoned use to continue with its current use even though, following the strict interpretation of the County General Plan and Zoning Ordinances, such use is a pre-existing, nonconforming use. Additionally, the geothermal overlay zone designates area for geothermal energy extraction and associated activities. The Project is located entirely within the Salton Sea Geothermal Overlay Zone.

Two primary entry driveways that serve as the access to the Project site will be constructed from McDonald Road. A secondary access entrance to the Project site will serve as an emergency-only access point and will be constructed off Davis Road. Primary highway access to the Proposed Project site will be via Highway 111. The Applicant will obtain encroachment permits from the County Department of Public Works for the driveway access. The unpaved portion of McDonald Road between Highway 111 and English Road will be paved.

3.1.1 Existing Site Uses

Currently, the location of the Proposed Project is partially on the existing HR1 site, which was previously permitted for the geothermal plant. In addition to the actual power plant, the rest of the land has been used for laydown areas, storage areas, and stormwater management. The additional land that will be included is an approximately 15-acre parcel, APN 020-100-025, located at the southeast corner of Davis Road and McDonald Road. This 15-acre site has been vacant for several decades and was previously used for geothermal testing. Also added to the Project site is an approximate 40-acre portion of APN 020-100-046, directly south of the HR1 plant site.

The western portion of the Project site is located within the Federal Emergency Management Agency (FEMA) "Zone A" flood zone, in which there is a 1-percent annual chance of flooding. However, to comply with FEMA regulations, during the construction of HR1, a berm was installed along the exterior boundary to eliminate the possibility of flooding.

3.1.2 Surrounding Land Uses

Zoning designations of the surrounding properties include M2G-PE to the north, east, and south and Open Space/Recreational (S-1) to the west. The properties bordering the Project site are designated for Agricultural land use in the County's General Plan (County 2007, 2015). The land surrounding the Project site is mainly undeveloped agricultural or vacant land. To the west of the Project site (on the west side of Davis Road) is generally IID-owned vacant marsh land adjoining the Salton Sea. To the north of the Project site is vacant land that now is mostly used for duck hunting clubs and the location of the production and injection wells for HR1. To the south is vacant land that has never been in any production and is also the site of numerous "mud-pots." The closest development in the vicinity is Synthetic Genomics Inc., a biotechnology company with an algae farm approximately 0.5 mile southeast of the Project site. The closest residence to the Project site is approximately 1.0 mile north on Pound Road. The topography of the area is generally flat.

Fire protection and emergency medical services in the Project area are provided by the Imperial County Fire District. The closest fire station to the Project site is the Niland Station, approximately 4 miles northeast, or an approximately nine-minute drive. Police protection services in the area are provided by the Imperial County Sheriff's Department. The closest police station to the Project site is the Imperial County Sheriff's office in Niland, approximately 4 miles northeast, or an approximately 10-minute drive.

Utility services that serve the existing area are as follows:

- Water: Imperial Irrigation District
- Sewer: Hudson Ranch Power I Geothermal Plant
- Electricity: Imperial Irrigation District
- Gas: None
- Telephone/Internet: AT&T and Beamspeed

3.1.3 Adopted Plans

General Plan

The City's General Plan was adopted in 1993. The General Plan outlines the goals, policies, and development regulations within the County. The 10 elements discussed in the General Plan are:

- Agricultural Element
- Circulation and Scenic Highways Element
- Conservation and Open Space Element
- Housing Element
- Land Use Element
- Noise Element
- Parks Element
- Renewable Energy and Transmission Element
- Seismic and Public Safety Element
- Water Element

All sections of the General Plan have been comprehensively updated since 1993. The Seismic and Public Safety Element and Water Element were updated in 1997; the Circulation and Scenic Highways Element and Parks Element in 2008; the Housing Element in 2013; the Agricultural Element, Land Use Element, Noise Element, and Renewable Energy and Transmission Element in 2015; and the Conservation and Open Space Element in 2016. In addition, the City's Zoning Map was updated in 2007, and the Zoning Code was updated in 2019. The Project land use category is Agriculture, according to the General Plan Land Use Element; however, a nonagricultural land use may be permitted within General Plan-designated agricultural land if the use does not conflict with agricultural operations and will not result in the premature elimination of agricultural operations (County 2015).

3.2 RELATED PROJECTS

CEQA requires that an EIR contain an assessment of the cumulative impacts that could result from a project and other related projects. As defined in the CEQA Guidelines, "[c]umulative impacts refer to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts." Although project-related impacts may be individually minor, the cumulative effects of these impacts, in combination with the impacts of other projects, could be significant under CEQA and must be addressed. Through the evaluation of cumulative impacts, CEQA attempts to ensure that large-scale environmental impacts will not be ignored.

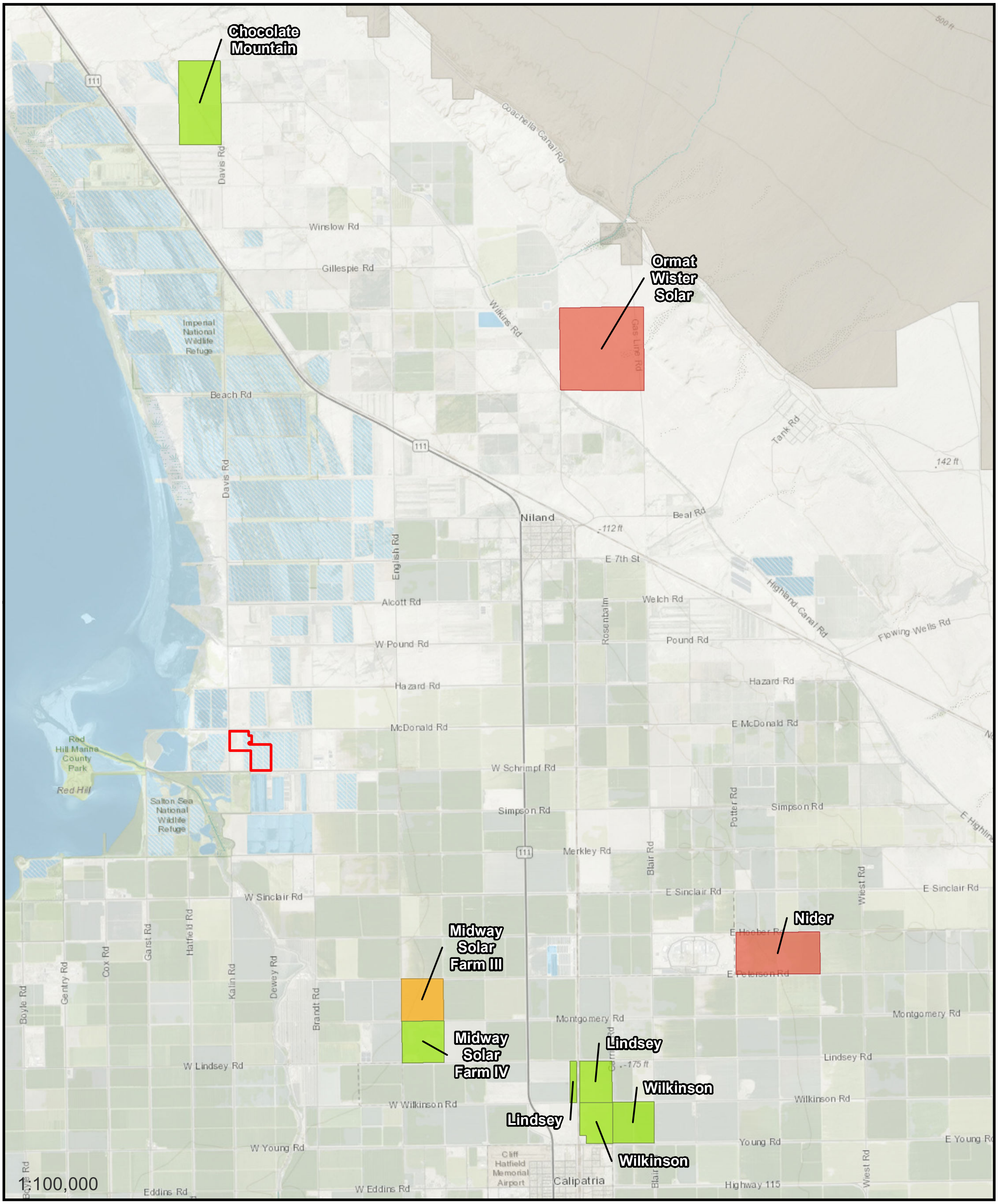
The analysis of cumulative effects "need not provide as great detail as is provided for the effects attributable to the project alone," but the discussion "shall reflect the severity of the impacts and their likelihood of occurrence." Where a Lead Agency concludes that the cumulative effects of a project, taken together with the impacts of past, present, and probable future projects, are significant, the Lead Agency then must determine whether the project's incremental contribution to such significant cumulative impact is "cumulatively considerable," and thus significant in and of itself.

The section additionally states, "when the combined cumulative impact associated with the project's incremental effect and the effects of other projects is not significant, the EIR shall briefly indicate why the cumulative impact is not significant and is not discussed in further detail in the EIR. A Lead Agency shall identify facts and analysis supporting the Lead Agency's conclusion that the cumulative impact is less than significant"(State CEQA Guidelines sec 15130[a]).

This Draft EIR considers the effects of the Project in relation to the full development forecasted by General Plan and other related projects either proposed, approved, or under construction in the area. A total of seven related projects within the County, illustrated in Figure 3.0-1, have been identified in relation to the Project based on their proximity to the Project site. Based on the timing of the NOP and in accordance with CEQA, these are projects which are considered reasonably foreseeable to be built in the near future. Table 3.0-1: Related Projects provides information on the land use, location, and size of these related projects. The list of related projects was used to assess cumulative conditions where appropriate.

Table 3.0-1: Related Projects

Project Name	Description	Approximate Distance from Project Site	Status
Chocolate Mountain	320 acres of 49.9 MW Solar Field	7.0 miles north	Approved Not Built
Lindsey	148 acres of 20 MW Solar Field	5.0 miles southeast	Approved Not Built
Midway Solar Farm III	162 acres of 20 MW Solar Field	3.0 miles southeast	Approved Under Construction
Midway Solar Farm IV	150 acres of 20 MW Solar Field	3.5 miles southeast	Approved Not Built
Nider	320 acres of 100 MW Solar Field	6.0 miles southeast	Pending Approval
Ormat Wister Solar	640 acres of 40 MW Solar Field	5.75 miles northeast	Pending Approval
Wilkinson	302 acres of 30 MW Solar Field	5.5 miles southeast	Approved Not Built



☐ Energy Source Mineral

Realted Projects Status

🟩 Approved Not Built

🟧 Approved Under Construction

🟥 Pending Approval

N

0 0.5 1 2

Miles

Figure 3-1

Energy Source Mineral
Related Projects

Name: 21268 PLAN Fig 3-1 Related Projects.Mxd
Print Date: 3/2/2021, Author: pcarlos

CHAMBERS GROUP

CHAPTER 4.0 – ENVIRONMENTAL IMPACT ANALYSIS

ENVIRONMENTAL ISSUES ADDRESSED

An Initial Study was prepared for the Project in December 2020. Based on the findings of the Initial Study, it has been determined that a Draft EIR is required for the Project. The County used the Initial Study as well as agency and public input received during the public comment period (December 11, 2020, to January 14, 2021), to determine the final scope for this Draft EIR. Environmental issue areas are listed by the level of significance of their impacts in Table 4.0-1: Environmental Issue Areas below, as determined by the analysis provided in the Initial Study.

Table 4.0-1: Environmental Issue Areas

No Impact	Less Than Significant Impact	Potentially Significant Impact
Agriculture and Forest Resources	Aesthetics	Air Quality
Land Use and Planning	Population and Housing	Biological Resources
Mineral Resources	Public Services	Cultural Resources
Recreation	Wildfire	Energy
		Geology and Soils
		Greenhouse Gas Emissions
		Hazards and Hazardous Materials
		Hydrology and Water Quality
		Noise
		Transportation
		Tribal Cultural Resources
		Utilities and Service Systems

The purpose of this section of the Draft EIR is to further analyze those impacts previously determined to be potentially significant in order to inform decision-makers and the public of the type and magnitude of the changes to the existing environment that would result from the Project. The following sections provide detailed discussion of the environmental setting for each topic addressed in this Draft EIR, the analysis of the potential impacts of the Project, potential cumulative impacts, and measures to mitigate potential significant impacts to the fullest extent feasible.

Impacts found to be less than significant in the Initial Study are further discussed in Section 6.1: Effects Not Found to be Significant of this Draft EIR.

TERMINOLOGY USED IN THIS ANALYSIS

For each CEQA checklist question listed in the Draft EIR, a determination of the level of significance of the impact is provided (CEQA Guidelines Appendix G). Impacts are determined in the following categories:

- **No Impact.** A designation of *no impact* is given when no adverse changes in the environment are expected.
- **Less Than Significant.** A *less than significant impact* would cause no substantial adverse change in the environment.

- **Less Than Significant with Mitigation.** A *potentially significant (but mitigable) impact* would have a substantial adverse impact on the environment but could be reduced to a less-than-significant level with incorporation of mitigation measure(s).

- **Potentially Significant.** A *significant and unavoidable impact* would cause a substantial adverse effect on the environment and no feasible mitigation measures would be available to reduce the impact to a less-than-significant level.

Please see Chapter 9.0: Acronyms and Abbreviations for a glossary of terms, definitions, and acronyms used in this Draft EIR.

4.1 AIR QUALITY

This section provides information on ambient air quality conditions in the vicinity of the Project site and identifies potential impacts to air quality as a result of the construction and operation of the Project. Information contained in this section is from the air quality modeling output prepared for the Project in the *Air Quality Assessment Hudson Ranch Mineral Recovery, County of Imperial*, dated June 17, 2021, prepared by Ldn Consulting, Inc. (Appendix B of this EIR).

4.1.1 Existing Environmental Setting

Regional Climate

The Project site is located within the central portion of Imperial County, which is part of the Salton Sea Air Basin (Air Basin). The Air Basin comprises the central portion of Riverside County and all of Imperial County. The Riverside County portion of the Air Basin is regulated by the South Coast Air Quality Management District (SCAQMD), and the Imperial County portion of the Air Basin is regulated by the Imperial County Air Pollution Control District (ICAPCD).

Air quality is a function of both the rate and location of pollutant emissions under the influence of meteorological conditions and topographical features. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients interact with physical features of the landscape to determine their movement and dispersal and, consequently, their effect on air quality. The combination of topography and inversion layers generally prevents dispersion of air pollutants in the Air Basin. The following description of climate of Imperial County was obtained from *Imperial County 2018 Redesignation Request and Maintenance Plan for Particulate Matter less than 10 Microns in Diameter*, prepared by ICAPCD, October 23, 2018.

The climate of Imperial County is governed by the large-scale sinking and warming of air in the semi-permanent high-pressure zone of the eastern Pacific Ocean. The high-pressure ridge blocks out most mid-latitude storms, except in the winter, when it is weakest and located farthest south. The coastal mountains prevent the intrusion of any cool, damp air found in California coastal areas. Because of the barrier and weakened storms, Imperial County experiences clear skies, extremely hot summers, mild winters, and little rainfall. The sun shines, on the average, more in Imperial County than anywhere else in the United States.

Winters are mild and dry with daily average temperatures ranging between 65 and 75 degrees Fahrenheit (°F). During winter months it is not uncommon to record maximum temperatures of up to 80 °F. Summers are extremely hot with daily average temperatures ranging between 104 and 115 °F. It is not uncommon to record maximum temperatures of 120 °F during summer months.

The flat terrain of the valley and the strong temperature differentials created by intense solar heating, produce moderate winds and deep thermal convection. The combination of subsiding air, protective mountains, and distance from the ocean all combine to severely limit precipitation. Rainfall is highly variable, with precipitation from a single heavy storm able to exceed the entire annual total during a later drought condition. The average annual rainfall is just over 3 inches, with most of it occurring in late summer or mid-winter.

Humidity is low throughout the year, ranging from an average of 28 percent in summer to 52 percent in winter. The large daily oscillation of temperature produces a corresponding large variation in the relative humidity. Nocturnal humidity rises to 50 to 60 percent but drops to about 10 percent during the day.

The wind in Imperial County follows two general patterns. Wind statistics indicate prevailing winds are from the west-northwest through southwest; a secondary flow maximum from the southeast is also evident. The prevailing winds from the west and northwest occur seasonally from fall through spring and are known to be from the Los Angeles area. Occasionally, Imperial County experiences periods of extremely high wind speeds. Wind speeds can exceed 31 miles per hour (mph), and this occurs most frequently during the months of April and May. However, speeds of less than 6.8 mph account for more than half of the observed wind measurements.

Air Pollutants of Concern

Criteria Air Pollutants

Federal and State laws regulate the air pollutants emitted into the ambient air by stationary and mobile sources. These regulated air pollutants are known as “criteria air pollutants” and are categorized as primary and secondary pollutants. Primary air pollutants are those that are emitted directly from sources. Carbon monoxide (CO), volatile organic compounds (VOC), nitrogen oxides (NOx), sulfur dioxide (SO_2), and most fine particulate matter (PM_{10}, $PM_{2.5}$) including lead (Pb) and fugitive dust are primary air pollutants. Of these CO, SO_2, PM_{10}, and $PM_{2.5}$ are criteria pollutants. VOC and NOx are criteria pollutant precursors and go on to form secondary criteria pollutants through chemical and photochemical reactions in the atmosphere. Ozone (O_3) and nitrogen dioxide (NO_2) are the principal secondary pollutants.

Toxic Air Contaminants

The public’s exposure to toxic air contaminants (TACs) is a significant environmental health issue in California. In 1983, the California Legislature enacted a program to identify the health effects of TACs and to reduce exposure to these contaminants to protect the public health. The Health and Safety Code defines a TAC as “an air pollutant which may cause or contribute to an increase in mortality or in serious illness, or which may pose a present or potential hazard to human health.” A substance that is listed as a hazardous air pollutant pursuant to subsection (b) of Section 112 of the Federal Act (42 U.S. Code [U.S.C.] Sec. 7412[b]) is a toxic air contaminant. Under State law, the California Environmental Protection Agency (CalEPA), acting through the California Air Resources Board (CARB), is authorized to identify a substance as a TAC if it determines the substance is an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health.

Cancer Risk

One of the primary health risks of concern due to exposure to TACs is the risk of contracting cancer. The carcinogenic potential of TACs is a particular public health concern because it is currently believed by many scientists that there is no “safe” level of exposure to carcinogens, that is, any exposure to a carcinogen poses some risk of causing cancer. Health statistics show that one in four people, or 250,000 in a million, will contract cancer over their lifetime from all causes, including diet, genetic factors, and lifestyle choices.

Noncancerous Health Risks

Unlike carcinogens, for most noncarcinogens it is believed that there is a threshold level of exposure to the compound below which it will not pose a health risk. The CalEPA and California Office of Environmental Health Hazard Assessment (OEHHA) have developed reference exposure levels (RELs) for noncarcinogenic TACs that are health-conservative estimates of the levels of exposure at or below which health effects are not expected. The noncancerous health risk due to exposure to a TAC is assessed by comparing the estimated level of exposure to the REL. The comparison is expressed as the ratio of the estimated exposure level to the REL, called the hazard index (HI).

Other Effects on Air Pollution

Just as humans are affected by air pollution, so too are plants and animals. Animals must breathe the same air and are subject to the same types of negative health effects. Certain plants and trees may absorb air pollutants that can stunt their development or cause premature death.

Air pollution also results in numerous impacts to the human economy, including lost workdays due to illness, a desire on the part of business to locate in areas with a healthy environment, and increased expenses from medical costs. Pollutants may also lower visibility and cause damage to property. Certain air pollutants are responsible for discoloring painted surfaces, eating away at stones used in buildings, dissolving the mortar that holds bricks together, and cracking tires and other items made from rubber.

4.1.2 Regulatory Setting

The Proposed Project site lies within the County of Imperial, which is managed by the ICAPCD. National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) have been established for the following criteria pollutants: carbon monoxide (CO), ozone, sulfur dioxide (SO_2), nitrogen dioxide (NO_2), inhalable particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), and lead. The CAAQS also set standards for sulfates, hydrogen sulfide, and visibility.

Areas are classified under the federal Clean Air Act as either "attainment" or "nonattainment" areas for each criteria pollutant, based on whether the NAAQS have been achieved or not. Attainment relative to the State standards is determined by the CARB. The Air Basin has been designated by the U.S. Environmental Protection Agency (USEPA) as a nonattainment area for ozone, PM_{10}, and $PM_{2.5}$. Currently, the Air Basin is in attainment with the NAAQS for CO, SO_2, and NO_2. **Error! Reference source not found.** presents the designations and classifications applicable to the proposed Project area.

Table 4.1-1: Designations/Classifications for the Project Area

Pollutant	National Classification	California Standards[2]
Ozone (O_3) - 2008 Standard	Nonattainment (Moderate)	Nonattainment
Inhalable Particulate Matter (PM_{10})	Nonattainment (Serious)	Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	Nonattainment (Moderate)	Attainment
Carbon monoxide (CO)	Attainment	Attainment
Nitrogen dioxide (NO_2)	Attainment	Attainment
Sulfur dioxide (SO_2)	Attainment	Attainment

Sources: https://ww3.arb.ca.gov/desig/adm/adm.htm; and
https://ww3.arb.ca.gov/planning/sip/planarea/imperial/staffreport121318.pdf

The ICAPCD has addressed each of three nonattainment pollutants in separate State Implementation Plans (SIPs). For ozone the most current SIP is the *Imperial County 2017 State Implementation Plan for the 2008 8-Hour Ozone Standard* (2017 Ozone SIP), prepared by ICAPCD, September 2017, which was prepared to detail measures to reduce ozone precursors (i.e., reactive organic gases [ROGs] and NOx) within the County in order to meet the 2008 NAAQS for 8-hour ozone standard of 0.075 parts per million (ppm) by July 20, 2018. Although the Ozone 2017 SIP demonstrates that the County met the 8-hour ozone standard of 0.075 ppm by the July 20, 2018, requirement, it should be noted that in 2015 the USEPA further strengthened its 8-hour ozone standard to 0.070 ppm, which will require an updated SIP for the County to meet the new ozone standard.

Since PM_{10} in the County has met the 24-hour NAAQS other than for exceptional events that include storms as well as from substantial PM_{10} concentrations blowing into the County from Mexico, the most current PM_{10} plan is the *Imperial County 2018 Redesignation Request and Maintenance Plan for Particulate Matter less than 10 Microns in Diameter* (2018 PM_{10} Plan), prepared by ICAPCD, October 23, 2018. The 2018 PM_{10} Plan shows that the monitoring of PM_{10} in the County found that other than exceptional events, no violation of the 24-hour PM_{10} NAAQS of 150 micrograms per cubic meter ($\mu g/m^3$) occurred over the 2014 to 2016 time period. As such, the ICAPCD has requested the USEPA to redesignate the Air Basin to maintenance. The redesignation was anticipated to occur sometime in the year 2020.

For $PM_{2.5}$ the most current SIP is the *Imperial County 2018 Annual Particulate Matter less than 2.5 Microns in Diameter State Implementation Plan* (2018 $PM_{2.5}$ SIP), prepared by ICAPCD, April 2018, which was prepared to detail measures to meet the 2012 NAAQS for annual $PM_{2.5}$ standard of 12 $\mu g/m^3$ by the end of 2021 for the portion of Imperial County (approximately from Brawley to Mexico border) that is designated nonattainment. The $PM_{2.5}$ Plan found that the only monitoring station in the County that has recorded an exceedance of $PM_{2.5}$ is the Calexico Monitoring Station and that the exceedance is likely caused by the transport of $PM_{2.5}$ across the border from Mexico. It is anticipated that the ICAPCD will submit a redesignation request for $PM_{2.5}$ in the near future.

Monitored Air Quality

The air quality at any site is dependent on the regional air quality and local pollutant sources. The air quality at any location in the Air Basin is determined by the release of pollutants throughout the Air Basin as well as from air pollutants that travel from the coastal areas and Mexico to the Air Basin. The ICAPCD operates a network of monitoring stations throughout the County that continuously monitor ambient levels of criteria pollutants in compliance with federal monitoring regulations.

Since not all air monitoring stations measure all of the tracked pollutants, the data from the following two monitoring stations, listed in the order of proximity to the Project site, have been used: Niland – English Road Monitoring Station (Niland Station) and Brawley-220 Main Street Monitoring Station (Brawley Station).

The Niland Station is located approximately 3.5 miles northeast of the Project site at 7711 English Road, Niland; and the Brawley Station is located approximately 16 miles south of the Project site at 220 Main Street, Brawley. It should be noted that due to the air monitoring stations' distances from the Proposed Project site, recorded air pollution levels at the air monitoring stations reflect with varying degrees of accuracy local air quality conditions at the Proposed Project site.

Table 4.1-2 presents the composite of gaseous pollutants monitored from 2017 through 2019.

Table 4.1-2: Ambient Air Quality Monitoring Summary

Air Pollutant	2017	2018	2019
Ozone (O_3)[1]			
Max 1 Hour (ppm)	0.072	0.060	0.060
Days > CAAQS (0.09 ppm)	0	0	0
Max 8 Hour (ppm)	0.061	0.055	0.054
Days > NAAQS (0.070 ppm)	0	0	0
Days > CAAQS (0.070 ppm)	0	0	0
Nitrogen Dioxide (NO_2) [2]			
Max 1 Hour (ppb)	50.9	48.8	34.1
Days > NAAQS (100 ppb)	0	0	0
Days > CAAQS (180 ppb)	0	0	0
Particulate Matter (PM_{10})[1]			
Max Daily California Measurement	**345.8**	**331.5**	**155.7**
Days > NAAQS (150 µg/m^3)	**4**	**10**	**1**
Days > CAAQS (50 µg/m^3)	**32**	**7**	**49**
State Average (20 µg/m^3)	**36.4**	**47.5**	**32.1**
Particulate Matter ($PM_{2.5}$) [2]			
Max Daily National Measurement	**46.1**	**55.1**	28.9
Days > NAAQS (35 µg/m^3)	**1**	**2**	0
National Average (12 µg/m^3)	9.4	10.4	8.3
State Average (12 µg/m^3)	9.4	10.4	8.3

Abbreviations:
> = exceed   ppm = parts per million   ppb = parts per billion   µg/m^3 = micrograms per cubic meter
CAAQS = California Ambient Air Quality Standard   NAAQS = National Ambient Air Quality
ND = Insufficient or No Data   **Bold** = exceedance
[1] Measurement taken from Niland Mesa Station
[2] Measurement taken from Brawley Station
Source: http://www.arb.ca.gov/adam/

Sensitive Receptors

Some land uses are considered more sensitive to air pollution than others due to the types of population groups or activities involved. As detailed in ICAPCD Regulation VIII, sensitive receptors include, but are not limited to, residential areas, schools, day care facilities, churches, hospitals, nursing facilities, and commercial and/or retail uses. Based on the above definition, the nearest sensitive receptor to the Project site is a single-family home that is located on the north side of Pound Road just over a mile north of the Project site.

4.1.3 Thresholds of Significance

In order to assist in determining whether a project would have a significant effect on the environment, the County utilizes the State CEQA Guidelines Appendix G Guidelines. Appendix G states that a project may be deemed to have an air quality impact if it would:

Threshold a) **Conflict with or obstruct implementation of the applicable air quality plan?**

Threshold b) **Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard?**

Threshold c) **Expose sensitive receptors to substantial pollutant concentrations?**

Threshold d) **Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?**

Please refer to **Section 6.1: Effects Found Not to Be Significant** for an evaluation of those topics that were determined to be less than significant or have no impact and do not require further analysis in the EIR**.**

4.1.4 Methodology

The air quality impacts related to construction and daily operations were calculated through use of the California Emissions Estimator Model (CalEEMod) Version 2016.3.2 and the operational TAC impacts were calculated through entering the TAC emissions calculated by the CalEEMod model into the USEPA AERMOD air dispersion Model, in order to calculate the TAC concentrations at the nearest sensitive receptors. The air quality modeling and air model printouts are provided in the Air Quality Analysis (Appendix B).

4.1.5 Project Impact Analysis

Threshold a) **Conflict with or obstruct implementation of the applicable air quality plan?**

The Proposed Project would not conflict with the applicable air quality plans, which include the 2017 Ozone SIP, 2018 PM_{10} Plan, and 2018 $PM_{2.5}$ SIP that are described above in the air quality regulatory setting. The *CEQA Air Quality Handbook* (ICAPCD Handbook), prepared by ICAPCD, December 12, 2017, details that for any project that emits less than the screening thresholds provided in Table 4.1-3 for construction and operations, the project is compliant with the most current ozone and PM_{10} attainment plans and no further demonstration of compliance with these plans is required.

Table 4.1-3: ICAPCD Thresholds of Significance

	Pollutant Emissions (Pounds/Day)					
	ROG	NOx	CO	SO_2	PM_{10}	$PM_{2.5}$
Construction	75	100	550	--	150	150
Operation	55	55	550	150	150	150

Source: ICAPCD, http://www.co.imperial.ca.us/AirPollution/PlanningDocs/CEQAHandbk.pdf

The Proposed Project's construction and operational air emissions have been calculated in the Air Quality Analysis (Appendix B). Table 4.1-4 shows the maximum daily emissions for each year of construction activities for the Proposed Project with implementation of the Project Design Features shown above in Section 2.5 of the Project Description. Table 4.1-4 shows that construction activities for the Proposed Project will not exceed the ICAPCD thresholds of significance.

Table 4.1-4: Construction-Related Criteria Pollutant Emissions

Construction Year	Pollutant Emissions in pounds/day								
	ROG	NO_X	CO	PM_{10} (Dust)	PM_{10} (Exhaust)	PM_{10} (Total)	$PM_{2.5}$ (Dust)	$PM_{2.5}$ (Exhaust)	$PM_{2.5}$ (Total)
2021	10.71	55.46	272.30	14.10	0.79	14.88	4.99	0.78	5.77
2022	30.31	42.61	182.21	6.99	0.46	7.45	1.90	0.46	2.36
2023	29.86	36.68	178.72	6.99	0.43	7.42	1.90	0.42	2.33
Significance Thresholds	**75**	**100**	**550**	**--**	**150**	**--**	**--**	**--**	**150**
Exceed Thresholds?	No	No	No		No				No

Source: CalEEMod Version 2016.3.2.

The operational daily criteria pollutant emissions for the Proposed Project have been calculated with implementation of the Project Design Features shown in Section 2.5 of the Project Description, and the results are shown in Table 4.1-5 for the summer emissions and Table 4.1-6 for winter emissions.

Table 4.1-5: Operational-Related Summer Criteria Pollutant Emissions

Emissions Sources	Pollutant Emissions in pounds/day					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Summer Scenario						
Area Source Emissions	3.03	0.00	0.01	0.00	0.00	0.00
Energy Source Emissions	0.00	0.00	0.00	0.00	0.00	0.00
Operational Vehicle Emissions	0.51	3.95	7.03	0.03	1.37	0.37
Off-Road Equipment	0.24	1.42	1.79	0.00	0.07	0.07
Stationary Equipment	2.17	6.17	5.76	0.01	0.35	0.35
Total Summer Emissions	**5.96**	**11.54**	**14.60**	**0.04**	**1.79**	**0.79**
ICAPCD Significance Thresholds	**55**	**55**	**550**	**150**	**150**	**55**
Exceed Thresholds?	No	No	No	No	No	No

Source: CalEEMod Version 2016.3.2.

Table 4.1-6: Operational-Related Winter Criteria Pollutant Emissions

Emissions Sources	Pollutant Emissions in pounds/day					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Winter Scenario						
Area Source Emissions	3.03	0.00	0.01	0.00	0.00	0.00
Energy Source Emissions	0.00	0.00	0.00	0.00	0.00	0.00
Operational Vehicle Emissions	0.38	3.94	5.25	0.02	1.37	0.37
Off-Road Equipment	0.24	1.42	1.79	0.00	0.07	0.07

Table 4.1-6: Operational-Related Winter Criteria Pollutant Emissions

Emissions Sources	Pollutant Emissions in pounds/day					
	ROG	NO_X	CO	SO_2	PM_{10}	$PM_{2.5}$
Stationary Equipment	2.17	6.17	5.76	0.01	0.35	0.35
Total Summer Emissions	**5.83**	**11.54**	**12.82**	**0.04**	**1.79**	**0.79**
ICAPCD Significance Thresholds	**55**	**55**	**550**	**150**	**150**	**55**
Exceed Thresholds?	No	No	No	No	No	No
Source: CalEEMod Version 2016.3.2.						

As shown above, both construction and operational emissions created from the Proposed Project would be within their respective ICAPCD thresholds. According to the ICAPCD Handbook, projects that are within the ICAPCD thresholds are consistent with the regional air quality plans. Furthermore, the standard mitigation measures provided in the ICAPCD Handbook have been incorporated into the Project Description for the Proposed Project as Project Design Features (see Section 2.5), and the Proposed Project will be required to implement all of the ICAPCD Regulation VIII, fugitive dust control measures during construction and operation of the Proposed Project. Furthermore, any stationary sources of emissions operated on site will be required to adhere to ICAPCD Rule 207, New and Modified Stationary Source Review and Rule 201 that require permits to construct and operate stationary sources. Therefore, the Proposed Project would not conflict with or obstruct implementation of the applicable air quality plans and impacts would be less than significant.

Threshold b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is nonattainment under an applicable federal or State ambient air quality standard?

The Proposed Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is in nonattainment under an applicable federal or State ambient air quality standard.

The ICAPCD Handbook provides project emissions limits that are provided in Table 4.1-3 for both construction and operation of projects within the County. The ICAPCD Handbook details that if the air emissions created from a project are below the air emissions thresholds shown in Table 4.1-3, then the Proposed Project's air emissions would result in a less than significant impact, provided that all standard mitigation measures listed in the ICAPCD Handbook are implemented as well as all applicable ICAPCD rules controlling emissions are adhered to.

As shown in Table 4.1-4, construction activities for the Proposed Project will not exceed the ICAPCD thresholds of significance for construction. Also, as shown in Table 4.1-5 and Table 4.1-6, daily operations of the Proposed Project will not exceed the ICAPCD thresholds of significance for operations. In addition, the Air Quality Analysis (Appendix B) analyzed the project TAC emissions impacts at the nearest sensitive receptor (a single-family home located over a mile north of the Project site), which found that the TAC emissions created from the Proposed Project would create a cancer risk of 0.55 per million persons, which is well below the 10 per million persons significance threshold.

The standard mitigation measures from the ICAPCD Handbook for both construction and operations have been incorporated into the Project Description as Project Design Features (see Section 2.5 of the Project Description). Furthermore, the Proposed Project would be required to implement all of the ICAPCD Regulation VIII, fugitive dust control measures during construction and operation of the Proposed Project. Furthermore, any stationary sources of emissions operated on site will be required to adhere to ICAPCD Rule 207, New and Modified Stationary Source Review and Rule 201 that require permits to construct and operate stationary sources. Therefore, the Proposed Project would result in a less than significant cumulatively considerable net increase of any criteria pollutant.

4.1.6 Cumulative Impacts

Cumulative impacts are defined in CEQA as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines Section 15355). Stated in another way, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing relating impacts" (CEQA Guidelines Section 15130 [a][1]).

Cumulative impacts would exist when either direct air quality impacts or multiple construction projects occur within the same area simultaneously. To illustrate this, if a project were to produce air quality emissions simultaneously to a nearby construction project, the addition of both project emissions to the environment could exceed significance thresholds. For this Project, the construction emissions were found to be less than significant as shown above in Table 4.1-4. If a nearby project was to be under construction at the same time, that project would need to produce an additive amount of emissions close to the Project site such that emissions would exceed thresholds. Based on discussions with the Project Applicant, no cumulatively considerable construction projects are within at least 1 mile of the site. Given this, a less than significant cumulative air quality impact would be expected during construction.

The Proposed Project site is zoned industrial, and the Project has been designed to be consistent with this zoning designation. The Project would generate less than significant direct and cumulative air quality impacts. Given this, since the Proposed Project would not have any significant direct impacts and would not have any significant cumulative impacts, the Project would not conflict with either the County's Air Quality Management Plan or SIP.

4.1.7 Mitigation Measures

No mitigation measures are required, as all Project impacts regarding air quality are less than significant.

4.1.8 Level of Significance After Mitigation

No mitigation measures are required; impacts related to air quality would remain less than significant.

4.2 BIOLOGICAL RESOURCES

This section provides a background discussion of the regulatory framework, the affected environment, and impacts to biological resources. The regulatory framework discussion focuses on the federal, State, and local regulations that apply to plants, animals and sensitive habitats. The affected environment discussion focuses on the topography and soils; general vegetation; general wildlife; sensitive biological resources; riparian habitat and sensitive natural communities; jurisdictional waters; and habitat connectivity and wildlife corridors. Information contained in this section is summarized from the Biological Technical Report (BTR) for the Energy Source Mineral Project Imperial County, California dated December 2020 (Appendix C of this EIR).

4.2.1 Existing Environmental Setting

Regional Setting

An extensive range of vegetation communities have been identified in the County, including native and nonnative communities on which sensitive and common plant and wildlife species are dependent. Native communities include wetland and riparian habitats within fresh and saltwater systems and high and low elevation woodland and scrub habitats, some with saline and alkali soil conditions. Nonnative communities include agriculture, annual grasslands, and tamarisk or salt cedar stands.

A number of sensitive vegetation communities, identified by the California Department of Fish and Wildlife (CDFW) and others as rare and worthy of consideration in California, occur in Imperial County. Of the total 2,942,080 acres in the County, approximately 215,220 acres include sensitive habitats. Sensitive vegetation and habitats are a conservation priority for local, State, and federal regulatory agencies because they have limited distribution and support a variety of sensitive plants and wildlife.

Several areas in Imperial County have been designated as environmentally sensitive areas by various public agencies or entities. These include US Fish & Wildlife Service (USFWS)-designated critical habitat, USFWS National Wildlife Refuges, Bureau of Land Management (BLM), National Landscape Conservation System (NLCS) lands, BLM Desert Wildlife Management Areas (DWMAs) and Areas of Critical Environmental Concern (ACECs), wilderness and wildlife areas, State parks, and other protective designations by federal and State agencies in the County. Many of these areas have development restrictions or prohibitions to facilitate conservation of biological resources or other sensitive resources.

A number of species listed or candidates for listing as endangered or threatened under the Endangered Species Act or California Endangered Species Act, or listed as rare under the California Native Plant Protection Act, have been recorded or potentially occur in Imperial County. Several California Species of Special Concern are of particular conservation focus within Imperial County including the burrowing owl and flat-tailed horned lizard. Approximately two-thirds of the burrowing owl population in California occurs in agricultural areas in the Imperial Valley. There are three regional populations of flat-tailed horned lizard in California; two of these (representing the majority of the range in the State) occur in Imperial County. These are on the west side of the Salton Sea/Imperial Valley and on the east side of the Imperial Valley; both populations extend south into Mexico.

Project Site

The Project site is approximately 3.8 miles southwest of the community of Niland on three parcels privately owned by HR1 in Imperial County, California. The Project is located within the U.S. Geological Survey (USGS) *Niland*, California 7.5-minute topographic quadrangle. The Project site is partially on the existing Hudson Ranch 1 Power Plant (HR1) site, while the remainder of the land has been used for laydown areas, storage areas, and stormwater management. The Project site is surrounded by open, vacant land. To the west of the Project site is IID-owned vacant marsh land adjoining the Salton Sea. To the north of the Project site is vacant land that is mostly used for duck hunting clubs and the location of the production and injection wells for HR1. To the south is vacant land that has never been in any production and is also the site of numerous “mud-pots.” The Project site is relatively flat and the elevation is approximately 225 feet below mean sea level (bmsl).

According to the results from the USDA NRCS Web Soil Survey (USDA 2020), the Project Site is located in the Imperial Valley Area, CA683 part of the soil map. One soil type is known to occur within and/or adjacent to the site: Imperial Silty Clay complex. The parent material is clayey alluvium derived from mixed or clayey lacustrine deposits. The available water capacity is classified as moderate (approximately 8.3 inches) with a depth to the water table of more than 80 inches (USDA 2020).

The Project is located within the designated boundaries of the Desert Renewable Energy Community Conservation Plan & Habitat Conservation Plan (NCCP/HCP). However, the Project is not located within or adjacent to an Area of Critical Environmental Concern.

4.2.2 Regulatory Setting

Federal

Federal Endangered Species Act

The federal ESA protects federally listed threatened and endangered species and their habitats from unlawful take and ensures that federal actions do not jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. Under the ESA, “take” is defined as to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. USFWS regulations define harm to mean “an act which actually kills or injures wildlife” (50 CFR 17.3).

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) prohibits the kill or transport of native migratory birds, or any part, nest, or egg of any such bird unless allowed by another regulation adopted in accordance with the MBTA. The prohibition applies to birds included in the respective international conventions between the U.S. and Great Britain, the U.S. and Mexico, the U.S. and Japan, and the U.S. and Russia. Disturbances that cause nest abandonment and/or loss of reproductive effort or the loss of habitats upon which these birds depend may be a violation of the MBTA.

Bald and Golden Eagle Protection Act of 1940

The Bald Eagle Protection Act of 1940 protects bald eagle (Haliaeetus leucocephalus) and golden eagle (*Aquila chrysaetos*) by prohibiting the taking, possession, and commerce of such birds and establishes civil penalties for violation of this Act. 'Take' is defined as "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb." 'Disturb' is defined as "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available: (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior" (72 Federal Register [FR] 31132; 50 CFR 22.3). All activities that may disturb or incidentally take an eagle or its nest as a result of an otherwise legal activity must be permitted by the USFWS under this Act.

Section 404 Permit (Clean Water Act)

The Clean Water Act establishes a program to regulate the discharge of dredge and fill material into waters of the U.S., including wetlands. Activities regulated under this program include fills for development, water resource projects (e.g., dams and levees), infrastructure development (e.g., highways and airports), and conversion of wetlands to uplands for farming and forestry. Either an individual 404b permit or authorization to use an existing USACE Nationwide Permit will need to be obtained if any portion of the construction requires fill into a river, stream, or stream bed that has been determined to be a jurisdictional waterway.

State

California Endangered Species Act

Provisions of CESA protect State-listed threatened and endangered species. CDFW regulates activities that may result in "take" of individuals ("take" means "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill"). Habitat degradation or modification is not expressly included in the definition of "take" under California FGC. Additionally, California FGC contains lists of vertebrate species designated as "fully protected" (California FGC §§ 3511 [birds], 4700 [mammals], 5050 [reptiles and amphibians], 5515 [fish]). Such species may not be taken or possessed.

In addition to state-listed species, CDFW has also produced a list of Species of Special Concern to serve as a "watch list." Species on this list are of limited distribution or the extent of their habitats has been reduced substantially such that threats to their populations may be imminent. Species of Special Concern may receive special attention during environmental review, but they do not have statutory protection.

Birds of prey are protected in California under California FGC. Section 3503.5 states it is "unlawful to take, possess, or destroy any birds of prey (in the order Falconiformes or Strigiformes) or to take, possess, or destroy the nest or eggs of any such bird except as otherwise provided by this Code or any regulation adopted pursuant thereto." Construction disturbance during the breeding season could result in the incidental loss of fertile eggs or nestlings or otherwise lead to nest abandonment.

California Fish and Game Code Section 1600 (as amended)

California Fish and Wildlife Code Section 1600 regulates activities that substantially divert or obstruct the natural flow of any river, stream, or lake or use materials from a streambed. This can include riparian habitat associated with watercourses.

California Fish and Game Codes 3503, 3503.5, and 3513

Under Sections 3503, 3503.5, and 3513 of the California FGC, activities that would result in the taking, possessing, or destroying of any birds-of-prey, taking or possessing of any migratory nongame bird as designated by the MBTA, or the taking, possessing, or needlessly destroying of the nest or eggs of any raptors or non-game birds protected by the MBTA, or the taking of any non-game bird pursuant to FGC Section 3800 are prohibited. Additionally, the State further protects certain species of fish, mammals, amphibians and reptiles, birds, and mammals through CDFW's Fully Protected Animals which prohibits any take or possession of classified species.

Native Plant Protection Act (California Fish and Game Code Sections 1900-1913)

California's Native Plant Protection Act prohibits the taking, possessing, or sale within the State of any plant listed by CDFW as rare, threatened, or endangered. This allows CDFW to salvage listed plant species that would otherwise be destroyed.

Porter-Cologne Water Quality Control Act

Under the Porter-Cologne Water Quality Control Act, all projects proposing to discharge waste that could affect waters of the State must file a waste discharge report with the appropriate regional board. The Project falls under the jurisdiction of the Colorado River RWQCB.

California Environmental Quality Act

Title 14 CCR 15380 requires the identification of endangered, rare, or threatened species or subspecies of animals or plants that may be impacted by a project. If any such species are found, appropriate measures should be identified to avoid, minimize, or mitigate the potential effects of projects.

Local

Imperial County General Plan

The Conservation and Open Space Element of the Imperial County General Plan provides detailed plans and measures for the preservation and management of biological and cultural resources, soils, minerals, energy, regional aesthetics, air quality, and open space (County 2016). The purpose of this element is to recognize that natural resources must be maintained for their ecological value for the direct benefit to the public and to protect open space for the preservation of natural resources, the managed production of resources, outdoor recreation, and for public health and safety. In addition, the purpose of this element is to promote the protection, maintenance, and use of the County's natural resources with particular emphasis on scarce resources, and to prevent wasteful exploitation, destruction, and neglect of the state's natural resources. Table 4.2-1 analyzes the consistency of the Project with specific policies contained in the Imperial County General Plan associated with biological resources.

Table 4.2-1: General Plan Consistency

General Plan Policies	Consistency with General Plan	Analysis
Conservation and Open Space Element		
Open Space and Recreation Conservation		
Policy No. 2 **–** The County shall participate in conducting detailed investigations into the significance, location, extent, and condition of natural resources in the County. Program – Notify any agency responsible for protecting plant and wildlife before approving a project which would impact a rare, sensitive, or unique plant or wildlife habitat	Consistent	A biological assessment has been conducted at the Project site to evaluate the Project's potential impacts on biological resources. Burrowing owl (California Species of Special Concern) was identified within the survey area. Applicable agencies responsible for protecting plants and wildlife will be notified of the Project and provided an opportunity to comment on this EIR prior to the County's consideration of any approvals for the Project.
Conservation of Environmental Resources for Future Generations		
Goal 1 **–** Environmental resources shall be conserved for future generations by minimizing environmental impacts in all land use decisions and educating the public on their value. Objective 1.6 – Promote the conservation of ecological sites and preservation of cultural resource sites through scientific investigation and public education.	Consistent	A biological assessment has been conducted at the Project site to evaluate the Project's potential impacts on biological resources. Burrowing owl (California Species of Special Concern) were identified within the survey area. With implementation of Mitigation Measures BIO-1 through BIO-5, the Project would not result in residual significant and unmitigable impacts on biological resources.

4.2.3 Thresholds of Significance

In order to assist in determining whether a project would have a significant effect on the environment, the County utilizes the State CEQA Guidelines Appendix G Guidelines. Appendix G states that a project may be deemed to have impacts to biological resources if it would:

Threshold 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?**

Threshold b) **Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?**

Threshold 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?**

Threshold d) **Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?**

Threshold e) **Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?**

Threshold 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?**

Please refer to **Section 6.1: Effects Found Not to Be Significant** for an evaluation of those topics that were determined to be less than significant or have no impact and do not require further analysis in the EIR**.**

4.2.4 Methodology

Chambers Group, Inc. (Chambers Group) was retained by the County to conduct a literature review and reconnaissance-level survey for the Project, which includes the development of a commercial lithium hydroxide production plant. The survey identified vegetation communities, potential for the occurrence of sensitive species, or habitats that could support sensitive wildlife species. Detailed descriptions of the findings are provided below.

Literature Review

Prior to performing the field survey, existing documentation relevant to the Project site was reviewed. The most recent records of the California Natural Diversity Database (CNDDB) managed by CDFW (CDFW 2020), the U.S. Fish and Wildlife Service (USFWS) Critical Habitat Mapper (USFWS 2020), and the California Native Plant Society's Electronic Inventory (CNPSEI) of Rare and Endangered Vascular Plants of California (CNPS 2020) were reviewed for the following quadrangles containing and surrounding the Project site: *Niland, Obsidian Butte, Westmorland West, Westmorland East, West, Iris, Iris Wash, Wister*, and *Frink*, California U.S. Geological Survey (USGS) 7.5-minute quadrangles. These databases contain records of reported occurrences of federally or state listed endangered or threatened species, California Species of Concern (SSC), or otherwise sensitive species or habitats that may occur within or in the immediate vicinity of the Project site.

The following information was used to determine the significance of biological resources potentially occurring within the Project site as outlined in Table 4.2-2: Criteria for Evaluating Sensitive Species Potential for Occurrence (PFO).

Table 4.2-2: Criteria for Evaluating Sensitive Species Potential for Occurrence (PFO)

PFO	CRITERIA
Absent:	Species is restricted to habitats or environmental conditions that do not occur within the Project site. Additionally, if the survey was conducted within the blooming period of the species and appropriate habitat was observed in the surrounding area but the species was not observed within the Project impact area, it was considered absent.
Low:	Historical records for this species do not exist within the immediate vicinity (approximately 5 miles) of the Project site, and/or habitats or environmental conditions needed to support the species are of poor quality.

PFO	CRITERIA
Moderate:	Either a historical record exists of the species within the immediate vicinity of the Project site (approximately 3 miles) and marginal habitat exists on the Project site, or the habitat requirements or environmental conditions associated with the species occur within the Project site, but no historical records exist within 5 miles of the Project site.
High:	Both a historical record exists of the species within the Project site or its immediate vicinity (approximately 1 mile), and the habitat requirements and environmental conditions associated with the species occur within the Project site.
Present:	Species was detected within the Project site at the time of the survey.

* PFO: Potential for Occurrence

Sensitive Plants

Current database searches (CDFW 2020; CNPS 2020) resulted in a list of seven federally and/or state listed threatened and endangered or rare sensitive plant species that may potentially occur within the Project site. After the literature review and the reconnaissance-level survey were conducted, it was determined that all seven of these species are considered Absent from the Project site due to lack of suitable habitat. These seven species are listed with their California Rare Plant Rank (CRPR).[1]

- Harwood's milk-vetch (*Astragalus insularis* var. *harwoodii*) - CRPR 2B.2
- gravel milk-vetch (*Astragalus sabulonum*) – CRPR 2B.2
- Munz's cholla (*Cylindropuntia munzii*) – CRPR 1B.3
- glandular ditaxis (*Ditaxis claryana*) – CRPR 2B.2
- Orocopia sage (*Salvia greatae*) – CRPR 1B.3
- chaparral sand-verbena (*Abronia villosa* var *aurita*) – CRPR 1B.2
- Abram's spurge (*Chamaesyce abramisiana*) --CRPR 2B.2

Sensitive Wildlife

A current database search (CDFW 2020) resulted in a list of 27 federally listed threatened (FT), federally listed endangered (FE), state listed threatened (ST), and/or state listed endangered (SE), Species of Special Concern (SSC), or otherwise sensitive wildlife species that may potentially occur within the Project site. After a literature review and the assessment of the various habitat types within the Project site, it was determined that 26 sensitive wildlife species were considered absent from the Project site, and one species was present within the Project site. Factors used to determine potential for occurrence included the quality of habitat and the location of prior CNDDB records of occurrence.

The following 26 wildlife species are considered **absent** from the Project site due to lack of suitable habitat present on the Project site:

- American badger (*Taxidea taxus*)- SSC
- black skimmer (*Rynchops niger*) – SSC
- California black rail (*Laterallus jamaicensis coturniculus*) – **ST**

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[1] Rare Plant Rank (CRPR) / CNPS: Rare Plant Rank 1B designates plants that are rare, threatened or endangered in California and elsewhere. Rare Plant Rank 2B designated plants that are rare, threatened or endangered in California but more common elsewhere. Threat extensions: 1- Seriously endangered in California; 2- Fairly endangered in California; 3- Not very endangered in California.

- Couch's spadefoot (*Scaphiopus couchii*) – SSC
- crissal thrasher (*Toxostoma crissale*) – SSC
- desert pupfish (*Cyprinodon macularius*) – **FE, SE**
- desert tortoise (*Gopherus agassizii*)- **FT, ST**
- flat-tailed horned lizard (*Phrynosoma mcallii*) -- SSC
- gull-billed tern (*Gelochelidon nilotica*) – SSC
- Le Conte's thrasher (*Toxostoma lecontei*) – SSC
- loggerhead shrike (*Lanius ludovicianus*) – SSC
- lowland leopard frog (*Lithobates yavapaiensis*) – SSC
- mountain plover (*Charadrius montanus*) – SSC
- pallid bat (*Antrozous pallidus*)- SSC
- pocketed free-tailed bat (*Nyctinomops femorosaccus*)- SSC
- short-eared owl (*Asio flammeus*) – SSC
- razorback sucker (*Xyrauchen texanus*) – **FE, SE**
- Sonoran Desert toad (*Incilius alvarius*) – SSC
- southwestern willow flycatcher (*Empidonax traillii extimus*)- **FE**, **SE**
- western snowy plover (*Charadrius alexandrinus nivosus*) – **FE**, SSC
- western mastiff bat (*Eumops perotis californicus*) - SSC
- western yellow bat (*Lasiurus xanthinus*) – SSC
- yellow warbler (*Setophaga petechia*) – SSC
- yellow-breasted chat (*Icteria virens*) – SSC
- Yuma hispid cotton rat (*Sigmodon hispidus eremicus*) – SSC
- Yuma Ridgway's rail (*Rallus obsoletus yumanensis*) – **FE, ST**

Of the 27 sensitive wildlife species identified in the literature review, it was determined that one sensitive wildlife species, the burrowing owl (*Athene cunicularia*; SSC), was **present** within the Project site.

Biological Reconnaissance-Level Survey

Chambers Group Biologists Heather Franklin and Jessica Calvillo conducted the general reconnaissance survey within the Project site to identify the potential for occurrence of sensitive species, vegetation communities, or habitats that could support sensitive wildlife species. The survey was conducted on foot throughout the Project site between 0930 and 1230 hours on October 30, 2020. Weather conditions during the survey included temperatures ranging from 64 to 79 degrees Fahrenheit, with zero percent cloud cover and no precipitation.

<u>Vegetation</u>

All plant species observed within the Project site were recorded. Vegetation communities within the Project site were identified, qualitatively described, and mapped onto a high-resolution imagery aerial photograph. Plant communities were determined in accordance with the *Manual of California Vegetation*, *Second Edition* (Sawyer et al. 2009). Plant nomenclature follows that of *The Jepson Manual* (Baldwin et al. 2012).

Two vegetation communities, Ruderal and Bare Ground, were observed within the Project site. A map showing the vegetation communities observed within the Project site is provided in Figure 2 of Appendix C, and the communities are described below.

Ruderal: Areas classified as Ruderal tend to be dominated by pioneering species that readily colonize disturbed ground and that are typically found in temporary, often frequently disturbed habitats (Barbour et al. 1999). The soils in ruderal areas are typically characterized as compacted or frequently disturbed. Often, Ruderal areas are dominated by species of the Tamarix, Brassica, Malva, Salsola, Eremocarpus, Amaranthus, and Atriplex genera.

Ruderal vegetation occurs in the disturbed southern portion of the Project site that was previously used as a duck hunting club. Vegetation found on site typical of this vegetation included scattered iodine bush (*Allenrolfea occidentalis*) with a few scattered Mediterranean tamarisk (*Tamarix ramosissima*).

Bare Ground: Bare Ground (BG) areas are generally devoid of vegetation but do not contain any form of pavement. BG has higher water permeability and higher fossorial rodent habitat potential. BG is present throughout the entire Project site, with large, uninterrupted expanses in the eastern portion of the Project site. Scattered, dead Mediterranean tamarisk seedlings were the only vegetation observed in these areas.

No sensitive plant species were observed during the survey effort. After the literature review, the assessment of the various habitat types in the Project site, and the reconnaissance survey were conducted, it was determined that no rare plant species have a potential to occur within the Project site.

Wildlife

All wildlife and wildlife signs observed and detected, including tracks, scat, carcasses, burrows, excavations, and vocalizations, were recorded. Additional survey time was spent in those habitats most likely to be utilized by wildlife (native vegetation, wildlife trails, etc.) or in habitats with the potential to support state and/or federally listed or otherwise sensitive species. Notes were made on the general habitat types, species observed, and the conditions of the Project site. A total of 12 wildlife species were observed during the survey. Wildlife species observed or detected during the site survey were characteristic of the existing Project site conditions.

Of the 27 sensitive wildlife species identified in the literature review, it was determined that one sensitive wildlife species, the burrowing owl (*Athene cunicularia*; SSC), was present within and directly adjacent to the Project site during the survey. In addition, this species has been recorded to nest within and surrounding the Project site.

Burrowing owl – SSC

The burrowing owl (BUOW) is a California Species of Special Concern. The burrowing owl breeds in open plains from western Canada and the western United States, Mexico through Central America, and into South America to Argentina (Klute et al. 2003). This species inhabits dry, open, native or non-native grasslands, deserts, and other arid environments with low-growing and low-density vegetation (Ehrlich et al. 1988). It may occupy golf courses, cemeteries, road rights-of way, airstrips, abandoned buildings, irrigation ditches, and vacant lots with holes or cracks suitable for use as burrows (TLMA 2006). Burrowing owls typically use burrows made by mammals such as California ground squirrels (*Otospermophilus beecheyi*), foxes, or badgers (Trulio 1997). When burrows are scarce, the burrowing owl may use man-made structures such as openings beneath cement or asphalt pavement, pipes, culverts, and nest boxes (TLMA 2006).

Approximately 10 artificial burrowing owl burrows are located within 130 feet west of the Project boundary. These burrows were installed as mitigation for other projects within the surrounding area. Several burrowing owls were observed utilizing the artificial burrows during the survey. In addition, one individual was observed foraging within the southwest portion of the Project site. The artificial burrows are outside the Project boundary.

Jurisdictional Waters

A general assessment of jurisdictional waters regulated by the United States Army Corps of Engineers (USACE), California Regional Water Quality Control Board (RWQCB), and CDFW was conducted for the Project area. Pursuant to Section 404 of the Clean Water Act, USACE regulates the discharge of dredged and/or fill material into waters of the United States. The State of California (State) regulates discharge of material into waters of the State pursuant to Section 401 of the Clean Water Act and the California Porter-Cologne Water Quality Control Act (California Water Code, Division 7, §13000 et seq.). Pursuant to Division 2, Chapter 6, Sections 1600-1602 of the California Fish and Game Code, CDFW regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake which supports fish or wildlife. The assessment was conducted by a desktop survey through the USGS National Hydrography Dataset for hydrological connectivity.

No jurisdictional water features or wetlands were observed within the Project site. The Project site comprises uncultivated farmland, and portions of the site were previously used for duck ponds for a hunting club (historically flooded seasonally to attract waterfowl for hunting but abandoned in 2010) and were historically mapped as freshwater ponds. However, according to historic aerials, the area has not been flooded since 2009 and has been void of water for the past 11 years. In addition, the Project site is mostly lacking any vegetation, with sparse vegetation occurring throughout the southern portion. One man-made ditch is located in the northwest section of the Project site. The ditch comes off Davis Road, flows east, and empties into a small man-made detention area. The area appears to have been created to facilitate flow from Davis Road during rain events; however, the detention area does not connect to other drainages or canals. In addition, one culvert is located near the southwest section of the site. The culvert appears to direct flow into the site from the south; however, it appears to have been altered to stop flow, as no water was observed flowing into the area during the survey. The IID "N" drain with flowing water is located approximately 40 feet south of the Project site boundary on the north side of Schrimpf Road and is not connected to any water features on the Project site.

4.2.5 Project Impact Analysis

Threshold 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 Game or U.S. Fish and Wildlife Service?

As previously mentioned, no special status plant species have potential to occur within the Project site. However, one special status wildlife species, the burrowing owl, does have the potential to occur. The burrowing owl is a California SSC. Approximately 10 artificial burrowing owl burrows are located within 130 feet west of the Project boundary and were installed as mitigation for other projects in the surrounding area. One burrowing owl was observed foraging within the southwest portion of the Project site during the biological reconnaissance-level survey. The artificial burrows are outside the Project boundary and will be avoided during construction activities; nonetheless, the potential for impacts to the burrowing owl during construction and operation of the Project may exist. Mitigation Measure BIO-1 would ensure that occupied burrows will be avoided during nesting season. Mitigation Measures BIO-2 and BIO-3 would require preconstruction surveys to look for burrowing owls prior to ground disturbance and, if any are found, would require a Burrowing Owl Mitigation Plan be prepared by a qualified biologist. Mitigation Measures BIO-4 and BIO-5 would ensure that no construction would occur near burrows; and, if burrow relocation is required, it will be done in accordance with the CDFW Staff Report on Burrowing Owl Mitigation Guidelines. With implementation of Mitigation Measures BIO-1 through BIO-5, impacts to burrowing owls would be less than significant.

Additionally, no jurisdictional water features or wetlands were observed within the Project site. As previously mentioned, the IID "N" drain with flowing water is located approximately 40 feet south of the Project site boundary on the north side of Schrimpf Road. However, the drain is not connected to any water features on the Project site, and impacts can be avoided during work activities with the use of best management practices (BMPs) including straw wattle and silt fencing. No impacts to jurisdictional waters/wetlands are anticipated; therefore, a USACE 404 permit, State 401 certification, or State Streambed Alteration Agreement will not be required for Project authorization.

Threshold d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

The Project site is directly adjacent to the HR1 facility but is generally surrounded by vacant, undeveloped lands and agricultural lands to the north, south, east, and west. The Project site is not situated within a known migratory wildlife corridor or nursery site. Following construction of the Project, ground-dwelling wildlife will continue to be able to move locally through the area using the surrounding agricultural lands, undeveloped lands, and margins of the nearby irrigation canals. Additionally, no construction activities would occur within IID canals, drains, or ditches. Implementation of the Project would not result in a significant impact resulting from interference with the movement of any native resident or migratory fish or wildlife species.

4.2.6 Cumulative Impacts

Cumulative impacts are defined in CEQA as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines Section 15355). Stated in another way, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing relating impacts" (CEQA Guidelines Section 15130 [a][1]).

Implementation of the Project in combination with other proposed, approved, and reasonably foreseeable projects in the region could have cumulative impacts on the special status species burrowing owl. However, impacts associated with the Project and burrowing owls would be reduced to less than significant with implementation of Mitigation Measures BIO-1 through BIO-5. Related projects would similarly undergo CEQA review, and determinations regarding the significance of impacts of the related projects on biological resources would be made on a case-by-case basis. If necessary, the applicants of the related projects would be required to implement appropriate mitigation measures. Therefore, implementation of related projects and other anticipated growth in Imperial County would not combine with the Proposed Project to result in cumulatively considerable impacts on biological resources.

4.2.7 Mitigation Measures

In order to minimize potential impacts to burrowing owl, the following mitigation measures outlined in the 2010 Hudson Ranch II Environmental Impact Report (EIR; County 2012) should be implemented prior to and during construction activities:

- BIO-1: The Applicant shall ensure that prior to and during construction, onsite occupied burrows shall be avoided during nesting season (February 1 through August 31).

- BIO-2: The Applicant shall conduct a preconstruction survey within 30 days of ground-breaking activities to identify any burrowing owls on site.

- BIO-3: If burrowing owls are found within the Project site, a Burrowing Owl Mitigation Plan must be prepared by a qualified biologist and approved by CDFW prior to any ground-disturbing activities.

- BIO-4: The construction or site manager shall ensure that no construction occurs within 250 feet of the artificial burrows or other active or occupied burrows unless active or occupied burrows are sheltered with hay bales and monitored by a qualified biologist; if this is done, work may occur within 20 feet of active or occupied burrows. If qualified biologists observe burrowing owls' agitation, work in the vicinity will stop. Additional shelter materials can be added until burrowing owls remain calm during construction activities.

- BIO-5: If passive relocation is required, it shall be done by a qualified biologist from September 1 to January 31 and will follow the CDFW Staff Report on Burrowing Owl Mitigation Guidelines (CDFW 2012).

4.2.8 Level of Significance After Mitigation

With the implementation of Mitigation Measures BIO-1 through BIO-5, the Project would ensure potential impacts related to special status species, including burrowing owl, would remain less than significant.

4.3 CULTURAL RESOURCES

This section describes the cultural resources at the Project site and general vicinity. Cultural resources include prehistoric and historic archaeological sites, archaeological districts, historic buildings and structures, and isolated occurrences of artifacts.

Information used in preparing this section and in evaluating potential impacts on cultural resources was derived from the Archaeological and Paleontological Assessment Report for the Energy Source Mineral, LLC Project (Cultural Resources Assessment) prepared by Chambers Group in January 2021. This document is contained in Appendix D of this EIR. Due to the confidential nature of the location of cultural resources, information regarding locations of these resources has been removed and is not included in the appendix.

4.3.1 Existing Environmental Setting

Existing Conditions

The Project is located within the mid-region of the lower Colorado Desert physiography in Calipatria, Imperial County, California. Calipatria is approximately 10 miles north of Brawley, California. The average annual temperature in Brawley is 72.3 °F (22.4 degrees Celsius [°C]). Virtually no rainfall occurs during the year; about 2.4 inches of precipitation falls annually. The difference in precipitation between the driest month and the wettest month is 0.39 inch. The average temperatures vary during the year by 69.6 °F (20.9 °C). The warmest month of the year is July, with an average temperature of 91.6 °F (33.1 °C). In January, the average temperature is 54.0 °F (12.2 °C).

Cultural Setting

Prehistory

The Project site is located in the mid-section of the lower Colorado Desert, in which Lake Cahuilla is situated. In addition to paleontological potential, the archaeological deposition found around the shoreline of Lake Cahuilla is radiocarbon-dated as old as 1440 Before Present (B.P.) or 650 Anno Domini (A.D.) and shows demonstrable evidence of cultural activity in the area. Due to Lake Cahuilla previously creating a massive freshwater oasis, seasonal occupations are evident in archaeological deposition, which includes pottery, ground and chipped stone artifacts, and archaeological features such as rock fish traps. In regard to the ethnographic landscape, the Cahuilla, Kumeyaay, and Cocopa settled in various locations, including the northern portion of the basin, southern portion of the basin, and the delta, respectively. Only the Cocopa used fishing nets as a means of subsistence method, while Kumeyaay and Cahuilla constructed the stone fish trap features, which can be difficult to identify as such during a pedestrian transect survey. Moreover, evidence from middens and human coprolites suggest subsistence on either razorback suckers or bonytail chubs, demonstrating environmental importance of this area. Cultural resources found in the area are associated with Lake Cahuilla due to temporal context and functional use of landscape, which yield high archaeological significance of how people adapted to the changing environment around the lake.

Archaeological studies have been limited in the Salton Sea desert region. This paucity of archaeological investigation has resulted in undefined and imperfect archaeological classification schemas and typologies. Therefore, the prehistoric time periods used by archaeologists to describe the southern

Imperial County desert region borrow heavily from those chronologies established for San Diego County prehistory, with some minor Colorado Desert-specific clarifications. The three general time periods accepted in the region are the San Dieguito Complex, the Archaic period, and the Late Prehistoric period. These periods are briefly described below.

The earliest recognized occupation of the region, dating to 10,000 to 8,000 years B.P., is known as the San Dieguito complex. Assemblages from this occupation generally consist of flaked stone tools. Evidence of milling activities is rare for sites dating to this period. It is generally agreed that the San Dieguito complex shows characteristics of the Western Pluvial Lakes Tradition (WPLT), which was widespread in California during the early Holocene. The WPLT assemblage generally includes scrapers, choppers, and bifacial knives. Archaeologists theorize this toolkit composition likely reflects a generalized hunting and gathering society.

The following period, the Archaic (8,500 to 1,300 B.P.), is traditionally seen as encompassing both coastal and inland adaptations, with the coastal Archaic represented by the shell middens of the La Jolla complex and the inland Archaic represented by the Pauma complex. Coastal settlement is also thought to have been significantly affected by the stabilization of sea levels around 4,000 years ago that led to a general decline in the productivity of coastal ecosystems. Artifacts associated with this period include milling stones, unshaped manos, flaked cobble tools, Pinto-like and Elko projectile points, and flexed inhumations. Colorado Desert rock art studies have led researchers to suggest Archaic Period origins for many petroglyph and pictograph styles and elements common in later times. More recently, several important late Archaic period sites have been documented in the northern Coachella Valley, consisting of deeply buried middens with clay-lined features and living surfaces, cremations, hearths, and rock shelters. Faunal assemblages show a high percentage of lagomorphs (rabbits and hares). The larger sites suggest a more sustained settlement type than previously known for the Archaic period in this area.

The Late Prehistoric period (1,300 to 200 B.P.) is marked by the appearance of small projectile points indicating the use of the bow and arrow, the common use of ceramics, and the general replacement of inhumations with cremations, all characteristic of the San Luis Rey complex as defined by Meighan (1954). The San Luis Rey complex is divided temporally into San Luis Rey I and San Luis Rey II, with the latter distinguished mainly by the addition of ceramics. Along the coast of northern San Diego County, deposits containing significant amounts of Donax shell are now often assigned to the Late Prehistoric, based on a well-documented increase in the use of this resource at this time. The inception of the San Luis Rey complex is suggested by True (1966) to mark the arrival of Takic speakers from regions farther inland. Waugh (1986) is in general agreement with True but suggests that the migration was probably sporadic and took place over a considerable period. Titus (1987) cites burials showing physical differences between pre- and post-1,300 B.P. remains to further support this contention. However, some researchers have suggested that these Shoshonean groups may have arrived considerably earlier, perhaps as early as 4,000 years ago. Vellanoweth and Altschul (2002) provide an excellent summary of the various avenues of thought on the Shoshonean Incursion.

Ethnography

The Project site was occupied by the Cahuilla, Kumeyaay, Kamia, and the Colorado River Indian Tribes (CRIT). The closest reservation is the Torres-Martinez Indian Reservation, currently home to the desert Cahuilla Indians, on the northwest side of the Salton Sea, roughly 41 miles from the Project site. Following is a brief ethnographic and archaeological summary of the Cahuilla, Kumeyaay, Kamia, and Colorado River Indian Tribes (CRIT).

Cahuilla

The Project site currently falls within the ethnographic territory of the Cahuilla, whose ancestors may have entered this region of Southern California approximately 3,000 years ago. The Cahuilla ancestral territory is located near the geographic center of Southern California and varied greatly topographically and environmentally, ranging from forested mountains to desert areas. Natural boundaries such as the lower Colorado Desert provided the Cahuilla separate territory from the neighboring Mojave, Ipai, and Tipai. In turn, mountains, hills, and plains separated the Cahuilla from the adjacent Luiseño, Gabrielino, and the Serrano.

The Cahuilla relied heavily on the exploitation and seasonal availability of faunal and floral resources through a pattern of residential mobility that emphasized hunting and gathering. Important floral species used in food, for manufacturing of products, and/or for medicinal uses primarily included acorns, mesquite and screw beans, piñon nuts, and various cacti bulbs. Coiled-ware baskets were common and used for a variety of tasks including food preparation, storage, and transportation.

Networks of trails linked villages and functioned as hunting, trading, and social conduits. Trade occurred between the Cahuilla and tribes such as the Gabrielino as far west as Santa Catalina and the Pima as far east as the Gila River. Both goods and technologies were frequently exchanged between the Cahuilla and nearby Serrano, Gabrielino, and Luiseño cultural groups.

The Cahuilla are believed to have first come into contact with Europeans prior to the Juan Bautista de Anza expedition in 1774; however, little direct contact was established between the Cahuilla and the Spanish except for those baptized at the Missions San Gabriel, San Luis Rey, and San Diego. Following the establishment of several *asistencias* near the traditional Cahuilla territories, many Spanish cultural forms — especially agriculture and language — were adopted by the Cahuilla people.

Through the Rancho and American periods, the Cahuilla continued to retain their political autonomy and lands despite more frequent interactions with European-American immigrants. In 1863, a large number of the population was killed by a sweeping smallpox epidemic that affected many of the tribal groups in Southern California. The first reservations established in Imperial County circa 1865 saw many of the Cahuilla remaining on their traditional lands. After 1891, however, all aspects of the Cahuilla economic, political, and social life were closely monitored by the federal government; a combination of missionaries and government schools drastically altered the Cahuilla culture.

Kumeyaay

In addition to the Cahuilla, Native American people occupying the region also included the Kumeyaay. The Kumeyaay or Tipai-Ipai were formerly known as the Kamia or Diegueños, the former Spanish name applied to the Mission Indians living along the San Diego River, and are referred to as the Kumiai in Mexico. Today, members of the tribe prefer to be called Kumeyaay. The territory of the Kumeyaay extended north from Todos Santos Bay near Ensenada, Mexico, to the mouth of the San Luis Rey River in north San Diego County, and east to the Sand Hills in central Imperial Valley near the current Project site. The Kumeyaay occupied the southern and eastern desert portions of the territory, while the Ipai inhabited the northern coastal region.

The primary source of subsistence for the of Kumeyaay was vegetal food. Seasonal travel followed the ripening of plants from the lowlands to higher elevations of the mountain slopes. Buds, blossoms, potherbs, wild seeds, cactus fruits, and wild plums were among the diet of Kumeyaay. The Kumeyaay practiced limited agriculture within the floodplain areas of their territory. Melons, maize, beans, and cowpeas were planted. Women sometimes transplanted wild onion and tobacco plants to convenient locations and sowed wild tobacco seeds. Deer, rodents, and birds provided meat as a secondary source of sustenance. Families also gathered acorns and piñon nuts at the higher altitudes. Village locations were selected for seasonal use and were occupied by exogamous, patrilineal clans. Three or four clans would winter together and then disperse into smaller bands during the spring and summer (Luomala 1978).

Kumeyaay structures varied with the seasons. Summer shelter consisted of a wind break, tree, or a cave fronted with rocks. Winter dwellings had slightly sunken floors topped with dome-shaped structures made of brush thatch covered with grass and earth.

Upon death, the Kumeyaay cremated the body of the deceased. Ashes were placed in a ceramic urn and buried or hidden in a cluster of rocks. The family customarily held a mourning ceremony one year after the death of a family member. During this ceremony, the clothes of the deceased individual were burned to ensure that the spirit would not return for his or her possessions.

It is estimated that the pre-contact Kumeyaay population living in this region ranged from approximately 3,000 to 9,000. Beginning in 1775, the semi-nomadic life of the Kumeyaay began to change as a result of contact with European-Americans, particularly from the influence of the Spanish missions. Through successive Spanish, Mexican, and Anglo-American control, the Kumeyaay people were forced to adopt a sedentary lifestyle and accept Christianity. As of 1968, Kumeyaay population was somewhere between approximately 1,322 and 1,522; and by 1990 an estimated 1,200 Kumeyaay lived on reservation lands while 2,000 lived elsewhere.

Trade was a very important feature of Kumeyaay subsistence, coastal groups traded salt, dried seafood, dried greens, and abalone shells to inland and desert groups for products such as acorns, agave, mesquite beans, and gourds. Travel and trade were accomplished by means of an extensive network of trails. Kumeyaay living in the mountains of eastern San Diego County frequently used these trails to travel down to the Kamia settlement of *Xatopet* on the east/west portion of the Alamo River to trade and socialize in winter.

Kamia

The Kamia lived to the east of the Project site in an area that included Mexicali and bordered the Salton Sea. The traditional territory of the Kamia included the southern Imperial Valley from the latitude of the southern half of the Salton Sea to well below what is the United States–Mexico international border. The Kamia tribe of Indigenous Peoples of the Americas live at the northern border of Baja California in Mexico and the southern border of California in the United States. Their main settlements were along the New and Alamo Rivers. Their Kumeyaay language belongs to the Yuman–Cochimí language family.

Subsistence of the Kamia consisted of hunting and gathering and floodplain horticulture. In normal years, the Colorado River would overflow its banks in the spring and early summer and fill rivers such as the New and Alamo. When the floodwaters receded, the Kamia would plant in the mud. A dam was maintained at *Xatopet* on the east/west portion of the Alamo River to control water flow and allow farming in years when water flow was insufficient. Gifford (1931) and Castetter and Bell (1951) suggested these were recent adaptations and not traditional life ways. Bean and Lawton (1973), Lawton and Bean (1968), and Shipek (1988) argue that irrigation was indigenous.

The Kamia's major food staple was mesquite and screwbean, called by the Kamia *anxi* and *iyix*, respectively, along with the seeds of the ironwood (*Olneya tesota*), also known as *palo fierro* in Spanish and palo verde (*Parkinsonia* sp.) were also used. Neither palo verde nor ironwood was considered a particularly desirable food resource. Acorns were also an important seasonal food, were gathered in the mountains to the west of Kamia territory in October, and acquired through trade from the southern Kumeyaay.

Hunting contributed to the diet in a minor way in terms of overall caloric intake but provided valuable protein and skin and bone for clothing, blankets, and tools. Small game, primarily rabbits, was most frequently taken, using bow and arrow or rabbit stick (*macana*). Sometimes fires were set along sloughs to drive rabbits out. Individuals with bow and arrow also hunted deer and mountain sheep. Fish were also taken in sloughs with bow and arrow and by hand, hooks, basketry scoops, and seine nets.

<u>Colorado River Indian Tribes</u>

The population of the CRIT reservation comprises people from the Mojave, Chemehuevi, Hopi, and Navajo. While the Hopi and Navajo were forced into the reservation from further east, both the Mojave and Chemehuevi have been in this region since the tribe split off from the Southern Paiute in the area of current-day Las Vegas. Although the origins of the Chemehuevi are of the Southern Paiute, their culture has been heavily influenced by the Mojave, testifying to the close relationship between the two tribes. Relationships between the Chemehuevi and the Mojave have not always been peaceful; however, the Mojave retained the rights to travel through the newly established Chemehuevi territory.

The subsistence pattern of the Chemehuevi was agriculturally based. Maize, squash, melons, gourds, beans, cowpeas, winter wheat, and some grasses were key crops grown in the floodplain areas along the Colorado River. Hunting and gathering were also important elements of the subsistence strategy undertaken by younger adults while the elderly stayed in the village to tend to the crops.

Spiritually, the Chemehuevi were tied to their land, with spiritual power coming from particular landmarks within their territory such as mountain peaks, caves, or springs. Puha trails link the landmarks together and are also considered to have spiritual power. The manner in which ceremonies were practiced showed the tribe's close ties with the Mojave. Hunting and gathering traditions followed the traditional Paiute pattern, as did burial practices. Other ceremonial practices testify to the Mojave influence.

Mojave were also agrarian and had a reliance on fishing in the Colorado River. It should be noted that the Chemehuevi deferred fishing rights to the Mojave. The Mojave people during the protohistoric and historic times were semisedentary. Floodplain farming was common, and the Colorado River made up the center of their territory. The extent of their territory extended on either side of the Colorado River to the east as far as the highest crest of the Black Mountains, the Buck Mountains, and the Mojave Mountains and to the west to the Sacramento, Dead, and Newberry Mountains. From north to south their territory ran from the Mohave Valley to south of what is now the City of Blythe.

The Mojave peoples were nationalistic, considering their home territory to be their own country. Frequently warring with the Halchidoma, the Mojave and Quechan joined forces to evict the Halchidoma from their territory. The Mojave then encouraged the Chemehuevi to move into the river area. Trade was of particular importance to the Mojave, who had extensive trail networks to take them to the Pacific Coast in the west and to the Cahuilla in the south and east.

In the spring and summer months the Mojave lived along the banks of the Colorado River, where they harvested crops and fished for sustenance. Crops were planted in the spring as the river, swollen from the winter rains, receded. Seeds were planted in the newly exposed and saturated mud. While the Mojave peoples relied on their crops, their major food staple was mesquite and screwbean pods, which were gathered. In the winter they moved their settlement areas to rises above the river to avoid seasonal flooding.

History

The first significant European settlement of California began during the Spanish Period (1769 to 1821) when 21 missions and four presidios were established between San Diego and Sonoma. Although located primarily along the coast, the missions dominated economic and political life over the greater California region. The purpose of the missions was primarily for political control and forced assimilation of the Native American population into Spanish society and Catholicism, along with economic support to the presidios.

In the 1700s, due to pressures from other colonizers (Russians, French, British), New Spain decided that a party should be sent north with the idea of founding both military presidios and religious missions in Alta California to secure Spain’s hold on its lands. The aim of the party was twofold. The first was the establishment of presidios, which would give Spain a military presence within its lands. The second was the establishment of a chain of missions along the coast slightly inland, with the aim of Christianizing the native population. By converting the native Californians, they could be counted as Spanish subjects, thereby bolstering the colonial population within a relatively short time.

The party was led by Gaspar de Portolá and consisted of two groups: one would take an overland route, and one would go by sea. All parties were to converge on San Diego, which would be the starting point for the chain of Spanish colonies. What became known as the Portolá Expedition set out on March 24, 1769. Portolá, who was very loyal to the crown and understood the gravity of his charge, arrived in what would become San Diego on July 1, 1769. Here, he immediately founded the presidio of San Diego. Leaving one group in the southern part of Alta California, Portolá took a smaller group and began heading north to his ultimate destination of Monterey Bay. Continuing up the coast, Portolá established Monterey Bay as a Spanish possession on June 3, 1770, although it would take two expeditions to accomplish this task. Having established the presidios at San Diego and Monterey, Portolá returned to Mexico. During the first four years of Spanish presence in Alta California, Father Junípero Serra, a member of the Portolá expedition and the Catholic leader of the new province, began establishing what would become a chain of 21 coastal missions in California. The first, founded concurrently at San Diego with the presidio, was the launching point for this group. During this time, four additional missions (San Carlos Borromeo de Carmelo, San Antonio de Padua, San Gabriel Arcángel, and San Luis Obispo de Tolosa) were established.

The Mexican Period (1821-1848) began with the success of the Mexican Revolution in 1821, but changes to the mission system were slow to follow. When secularization of the missions occurred in the 1830s, the missions’ vast land holdings in California were divided into large land grants called ranchos. The Mexican government granted ranchos throughout California to Spanish and Hispanic soldiers and settlers (Castillo 1978; Cleland 1941). Even after the decree of secularization was issued in 1833 by the Mexican Congress, missionaries continued to operate a small diocesan church. In 1834, the San Gabriel Mission, including over 16,000 head of cattle, was turned over to the civil administrator.

In 1848, the Treaty of Guadalupe Hidalgo ended the Mexican American War and marked the beginning of the American Period (1848 to present). The discovery of gold that same year sparked the 1849 California

Gold Rush, bringing thousands of miners and other new immigrants to California from various parts of the United States, most of whom settled in the northern part of the state. For those settlers who chose to come to southern California, much of their economic prosperity was fueled by cattle ranching rather than by gold. This prosperity, however, came to a halt in the 1860s because of severe floods and droughts, as well as legal disputes over land boundaries, which put many ranchos into bankruptcy.

Imperial County was formed in 1907 from a portion of San Diego County known as Imperial Valley and is the newest of California's counties. It is known for being one of California's most prosperous agricultural communities because of its vast canal systems stemming from the Colorado River. Diversion of the Colorado River began in 1905 and continued through 1942 when the All-American Canal was completed.

4.3.2 Applicable Regulations

State

Assembly Bill 4239

AB 4239 established the Native American Heritage Commission (NAHC) as the primary government agency responsible for identifying and cataloging Native American cultural resources. The bill authorized the NAHC to act in order to prevent damage to and insure Native American access to sacred sites and authorized the NAHC to prepare an inventory of Native American sacred sites located on public lands.

Public Resources Code 5097.97

No public agency and no private party using or occupying public property or operating on public property under a public license, permit, grant, lease, or contract made on or after July 1, 1977, shall in any manner whatsoever interfere with the free expression or exercise of Native American religion as provided in the United States Constitution and the California Constitution; nor shall any such agency or party cause severe or irreparable damage to any Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine located on public property, except on a clear and convincing showing that the public interest and necessity so require.

Public Resources Code 5097.98 (b) and (e)

Public Resources Code (PRC) 5097.98 (b) and (e) require a landowner on whose property Native American human remains are found to limit further development activity in the vicinity until he/she confers with the NAHC-identified Most Likely Descendants (MLDs) to consider treatment options. In the absence of MLDs or of a treatment acceptable to all parties, the landowner is required to reinter the remains elsewhere on the property in a location not subject to further disturbance.

California Health and Safety Code, Section 7050.5

California Health and Safety Code, Section 7050.5 makes it a misdemeanor to disturb or remove human remains found outside a cemetery. This code also requires a project owner to halt construction if human remains are discovered and to contact the county coroner.

Local

Imperial County General Plan

The Conservation and Open Space Element of the General Plan includes goals, objectives, and policies for the protection of cultural resources and scientific sites that emphasize identification, documentation, and protection of cultural resources. Table 4.3-1 provides a consistency analysis of the applicable Imperial County General Plan policies relevant to cultural resources as they relate to the Project. While this EIR analyzes the Project's consistency with the General Plan pursuant to State CEQA Guidelines Section 15125(d), the Imperial County Board of Supervisors ultimately determines consistency with the General Plan.

Table 4.3-1: General Plan Consistency

General Plan Policies	Consistency with General Plan	Analysis
Conservation and Open Space Element		
Conservation of Environmental Resources for Future Generations		
Goal 1 – Environmental resources shall be conserved for future generations by minimizing environmental impacts in all land use decisions and educating the public on their value.	Consistent	A Cultural Resources Assessment was prepared for the Project by Chambers Group. The analysis examined the potential for significant archaeological and paleontological deposits and/or materials within the Project site and determined that the current Project has minimal potential to adversely affect any significant cultural materials. Therefore, the Project is consistent with this objective.
Preservation of Cultural Resources		
Goal 3 – Preserve the spiritual and cultural heritage of the diverse communities of Imperial County.	Consistent	A Cultural Resources Assessment was prepared for the Project by Chambers Group. The analysis examined the potential for significant archaeological and paleontological deposits and/or materials within the Project site and determined if the current Project has the potential to adversely affect any significant cultural materials. During completion of the survey, two newly discovered historic-period sites were identified. The new historic period sites were fully documented with the appropriate DPR 523 series forms for each of the new resources and will be submitted to the South Coast Information Center for inclusion in the archaeological database. Additionally, as discussed in Section 4.11 Tribal Cultural Resources, the County also conducted AB 52 consultations with the Quechan Indian Tribe and the Torres-Martinez Indian Tribe to identify any concerns they may have regarding the Project for the Project. Recording these new historic sites and conducting AB 52 consultation would preserve the spiritual and cultural heritage of the County; therefore, the Project is consistent with this goal.
Objective 3.1 – Protect and preserve sites of archaeological, ecological, historical, and	Consistent	See above responses.

Table 4.3-1: General Plan Consistency

General Plan Policies	Consistency with General Plan	Analysis
Conservation and Open Space Element		
scientific value, and/or cultural significance.		
Objective 3.3 – Engage all local Native American Tribes in the protection of tribal cultural resources, including prehistoric trails and burial sites.	Consistent	As mentioned in this section, Chambers Group contacted the NAHC, which noted that 27 tribes may have information on cultural resources on the Project site. Letters requesting information were sent to the tribes via certified mail on October 23, 2020. Emails were also sent to the contacts in an effort to elicit a quicker response. As of January 22, 2020, the Quechan Indian Tribe has requested consultation and communications are ongoing. Additionally, as discussed in Section 4.11 Tribal Cultural Resources, the County also conducted AB 52 consultations with the Quechan Indian Tribe and the Torres-Martinez Indian Tribe to identify any concerns they may have regarding the Project. Thus, the Project is consistent with this objective.

4.3.3 Thresholds of Significance

In order to assist in determining whether a project would have a significant effect on the environment, the County utilizes the State CEQA Guidelines Appendix G Guidelines. Appendix G states that a project may be deemed to have impacts to cultural resources if it would:

Threshold a) **Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?**

Threshold b) **Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?**

Threshold c) **Disturb any human remains, including those interred outside of formal cemeteries?**

4.3.4 Methodology

Cultural Resources

A records search dated October 22, 2020, was obtained from the South Coastal Information Center (SCIC) at San Diego State University. The records search provided information on all documented cultural resources and previous archaeological investigations within the one-mile record search radius. Resources consulted during the records search conducted by the SCIC included the National Register of Historic Places (NRHP), California Historical Landmarks, California Points of Historical Interest, and the California

State Historic Resources Inventory. Results of the records search and additional research are detailed below.

Reports within the Study Area

Based upon the records search conducted by the SCIC, 22 cultural resource studies have previously been completed within the 1-mile records search radius. Of the 22 previous studies, five of these studies (IM-01096, IM-01484, IM-01505, IM-01559, and IM-01642) were within the current Project site.

Previously Recorded Cultural Resources within the Study Area

Based upon the records search conducted by the SCIC, six previously recorded cultural resources were recorded within the 1-mile record search radius (Table 4.3-2). Results show no previously recorded resources within the Project site.

Table 4.3-2: Previously Recorded Cultural Resources within the Study Area

Primary Number	Trinomial	Resource Name	Site Description
P-13-003251	CA-IMP-003251	4-IMP-3251H	Pond of good water. 7 feet across, 2 feet deep.
P-13-003257	CA-IMP-003257	4-IMP-3257H	Mud volcanoes, 119 feet wide
P-13-009110	CA-IMP-008395		Remnants of five carbon dioxide (CO_2) wells installed near the southern end of the Salton Sea.
P-13-014277	CA-IMP-012061		UPDATE Resource CA-IMP-12061/Small historic trash scatter (could not be relocated due to graded road)
P-13-014278			1-mile segment of the lateral distribution system of the East Highland canal
P-13-014279		N DRAIN	1-mile segment of the N Drain-part of the lateral distribution system of the East Highland canal

Native American Heritage Commission

Chambers Group submitted a request for a search of the Sacred Lands Files (SLF) housed at the California NAHC on October 15, 2020. The results of the search were returned on October 20, 2020, and were negative, stating that the absence of specific site information in the SLF does not indicate the absence of cultural resources in the Project site that still may be impacted by Project development. The NAHC response provided contact information for the 27 tribes that may have information on cultural resources on the Project site.

Letters requesting information were sent via certified mail on October 23, 2020. Emails were also sent to the contacts in an effort to elicit a quicker response. As of January 22, 2020, the Quechan Indian Tribe and the Torres-Martinez Indian Tribe have requested consultation and communications are ongoing.

Field Methods

Survey of the Project site took place over the course of November 4 and 5, 2020, and included Chambers Group archaeologists Kellie Kandybowicz, B.A., Sarah Roebel, B.A., and paleontologist Niranjala Kottachchi, M.A. The Project site was surveyed at 15-meter intervals, and crews were equipped with submeter accurate Global Positioning Systems (GPS) units for recording spatial data and to document the survey area and all findings through ArcGIS Collector and Survey 123. The purpose of the field survey was to visually inspect the ground surface for both paleontological and archaeologically significant materials. No geographic obstructions or impediments were present, and the crew was able to survey the Project site in its entirety. The entirety of the Project site was clear of vegetation, thus facilitating visual inspection of the ground surface; overall ground visibility was high (95 percent).

When an artifact or feature was observed during survey, the GPS data was recorded using the ArcGIS Collector application; photographs and measurements were taken; and, when applicable, for historic glass artifacts, the maker's marks and date codes were recorded for further out-of-field analysis.

4.3.5 Project Impact Analysis

Threshold a) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?

Threshold b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

The SCIC records search and archaeological pedestrian survey resulted in the identification of eight resources within 1 mile of the Project site, six previously recorded resources, and two new resources. The two new historic-period sites were identified and recorded within the Project site during the survey, temporarily referred to as 21268-001 and 21268-002. 21268-001 is a historic-period machine-made water retention basin with a small glass scatter locus. Both the feature and the artifacts date to roughly the 1950s to 1960s. 21268-002 is a multi-component, historic-period trash scatter and duck pond feature dating to two separate occupation periods. The first occupation period is between 1910 and 1940; the second occupation period likely began between the 1950s and 1970s, and its use extended through 2010 when the duck ponds were fully abandoned. The six previously recorded resources identified in the records search were not located within the Project site (Appendix D).

Based on the background research and results of the cultural pedestrian survey, Chambers Group does not recommend that any further archaeological testing or evaluation occur for any of the above listed archaeological sites prior to construction. Due to the highly disturbed nature of the Project site, archaeological monitoring is not required.

Impacts to historical and archaeological resources would be less than significant.

Threshold c) Would the project disturb any human remains, including those interred outside of formal cemeteries?

Construction of the Proposed Project would involve grading, which may have the potential to uncover unknown human remains. However, if human remains are found during Project ground-disturbing activities, the Project would be required to adhere to the State of California Health and Safety Code

Section 7050.5 which states that no further disturbance shall occur until the Imperial County Medical Examiner-Coroner has made a determination of origin and disposition pursuant to PRC Section 5097.98. In the event of an unanticipated discovery of human remains, the Imperial County Medical Examiner-Coroner would be notified immediately. If the human remains are determined to be prehistoric, the Medical Examiner-Coroner would notify the NAHC, which would notify a most likely descendant (MLD). The MLD would complete an inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials (NPS 1983). Compliance with these regulations would ensure impacts to human remains resulting from the Project would be less than significant.

4.3.6 Cumulative Impacts

Cumulative impacts are defined in CEQA as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines Section 15355). Stated in another way, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing relating impacts" (CEQA Guidelines Section 15130 [a][1]).

Similar to the Proposed Project, ground-disturbing activities associated with cumulative projects would have the potential to uncover previously unknown archaeological resources and human remains. The Proposed Project, in combination with cumulative development, could contribute to the loss of undeveloped land, which could potentially contain cultural resources. Determinations regarding the significance of impacts of the related projects on cultural resources would be made on a case-by-case basis and, if necessary, the applicants of the related projects would be required to implement appropriate mitigation measures. The Project site is highly disturbed and has low potential for significant cultural resources that have not been well documented or recorded. Therefore, this is considered a less than cumulatively considerable impact.

4.3.7 Mitigation Measures

No mitigation measures are required, as all Project impacts regarding cultural resources are less than significant.

4.3.8 Level of Significance after Mitigation

No mitigation measures are required; impacts related to cultural resources would remain less than significant.

4.4 ENERGY

This section of the Draft EIR describes the source and consumption of energy resources associated with the Project. This section provides further information on applicable regulation, policies, and potential impacts of the Project. The energy consumption modeling output is included in this EIR as Appendix H.

4.4.1 Background

According to the CEQA Guidelines, the goal of conserving energy implies the wise and efficient use of energy. The means of achieving this goal include:

- Decreasing overall per capita energy consumption
- Decreasing reliance on fossil fuels such as coal, natural gas and oil
- Increasing reliance on renewable energy sources

Energy conservation implies that a Project's cost effectiveness be reviewed not only in dollars but also in terms of energy requirements. For many Projects, cost effectiveness may be determined more by energy efficiency than by initial dollar costs. A lead agency may consider the extent to which an energy source serving the Project has already undergone environmental review that adequately analyzed and mitigated the effects of energy production.

The Project will process geothermal brine from the neighboring HR1, which is a renewable energy plant, in order to produce lithium hydroxide as well as zinc and manganese products that are raw chemicals utilized in the production of batteries as well as other commercial uses. It should be noted that, due to the sporadic nature of many renewable energy sources, lithium batteries are becoming an integral component of the electrical grid within the state. As such, implementation of the Project would help the state meet its goals for reducing reliance on fossil fuels and increasing use, production, and reliance on alternative renewable energy sources.

4.4.2 Regulatory Setting

Federal

Public Utility Regulatory Policies Act of 1978

Public Utility Regulatory Policies Act of 1978 (PURPA) was passed in response to the unstable energy climate of the late 1970s. PURPA sought to promote conservation of electric energy. Additionally, PURPA created a new class of nonutility generators, small power producers from which, along with qualified co-generators, utilities are required to buy power. PURPA was in part intended to augment electric utility generation with more efficiently produced electricity and to provide equitable rates to electric consumers. Utility companies are required to buy all electricity from qualifying facilities (QFs) at avoided cost (avoided costs are the incremental savings associated with not having to produce additional units of electricity). PURPA expanded participation of nonutility generators in the electricity market and requires utilities to buy whatever power is produced by QFs (usually cogeneration or renewable energy). Utilities want these provisions repealed; critics argue that it will decrease competition and impede development of the renewable energy industry. The Fuel Use Act (FUA) of 1978 (repealed in 1987) also helped QFs become established. Under FUA, utilities were not allowed to use natural gas to fuel new generating technologies; but QFs, which were by definition not utilities, were able to take advantage of abundant natural gas and abundant new technologies (such as combined-cycle). The technologies lowered the financial threshold for entrance into the electricity generation business as well as shortened the lead time for constructing new plants.

Energy Policy Act of 2005

On August 8, 2005, President George W. Bush signed the National Energy Policy Act of 2005 into law. This comprehensive energy legislation contains several electricity-related provisions that aim to:

- Help ensure that consumers receive electricity over a dependable, modern infrastructure
- Remove outdated obstacles to investment in electricity transmission lines
- Make electric reliability standards mandatory instead of optional
- Give federal officials the authority to site new power lines in Department of Energy-designated national corridors in certain limited circumstances

State

Energy conservation management in the State was initiated by the 1974 Warren-Alquist State Energy Resources Conservation and Development Act that created the California Energy Resource Conservation and Development Commission (currently named California Energy Commission [CEC]), which was originally tasked with certifying new electric generating plants based on the need for the plant and the suitability of the site of the plant. In 1976 the Warren-Alquist Act was expanded to include new restrictions on nuclear generating plants, which effectively resulted in a moratorium on any new nuclear generating plants in the state. The following details specific regulations adopted by the State in order to reduce the consumption of energy.

California Code of Regulations Title 20

On November 3, 1976, the CEC adopted the Regulations for Appliance Efficiency Standards Relating to Refrigerators, Refrigerator-Freezers, and Freezers and Air Conditioners, which were the first energy-efficiency standards for appliances. The appliance efficiency regulations have been updated several times by the Commission; and the most current version is the 2016 Appliance Efficiency Regulations, adopted January 2017, which now includes almost all types of appliances and lamps that use electricity and natural gas as well as plumbing fixtures. The authority for the CEC to control the energy efficiency of appliances is detailed in CCR, Title 20, Division 2, Chapter 4, Article 4, Sections 1601-1609.

California Code of Regulations Title 24, Part 6

The CEC is also responsible for implementing CCR Title 24, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24) that were first established in 1978 in response to a legislative mandate to reduce California's energy consumption. In 2008 the State set an energy-use reduction goal of zero-net-energy use of all new homes by 2020, and the CEC was mandated to meet this goal through revisions to the Title 24, Part 6 regulations.

The Title 24 standards are updated on a three-year schedule, and since 2008 the standards have been incrementally moving to the 2020 goal of the zero-net-energy use. Currently the 2016 Title 24 standards are in effect; and, on January 1, 2020, the 2019 standards will go into effect. These standards have been designed so that the average new home built in California will now use zero-net-energy and nonresidential buildings will use about 30 percent less energy than the 2016 standards due mainly to lighting upgrades. The 2019 standards also encourage the use of battery storage and heat pump water heaters and require the more widespread use of LED lighting as well as improve the building's thermal envelope through high-performance attics, walls, and windows. The 2019 standards also require improvements to ventilation systems by requiring highly efficient air filters to trap hazardous air particulates as well as requiring improvements to kitchen ventilation systems.

California Code of Regulations Title 24, Part 11

CCR Title 24, Part 11: California Green Building Standards (Title 24) was developed in response to continued efforts to reduce greenhouse gas (GHG) emissions associated with energy consumption. The California Green Building Standards Code (CALGreen) are also updated every three years, and the current version is the 2016 CALGreen Code, which became effective on January 1, 2017. The 2019 CALGreen Code will become effective on January 1, 2020.

The CALGreen Code contains requirements for construction site selection; stormwater control during construction, construction waste reduction, indoor water use reduction, material selection, natural resource conservation, site irrigation conservation, and more. The code provides for design options allowing the designer to determine how best to achieve compliance for a given site or building condition. The code also requires building commissioning, which is a process for verifying that all building systems (e.g., heating and cooling equipment and lighting systems) are functioning at their maximum efficiency.

The CALGreen Code provides standards for bicycle parking, carpool/vanpool/electric vehicle spaces, light and glare reduction, grading and paving, energy efficient appliances, renewable energy, graywater systems, water-efficient plumbing fixtures, recycling and recycled materials, pollutant controls (including moisture control and indoor air quality), acoustical controls, stormwater management, building design, insulation, flooring, and framing, among others. Implementation of the CALGreen Code measures reduces energy consumption and vehicle trips and encourages the use of alternative-fuel vehicles, which reduces pollutant emissions.

Some of the notable changes in the 2019 CALGreen Code over the current 2016 CALGreen Code include: an alignment of building code engineering requirements with the national standards that include anchorage requirements for solar panels, provides design requirements for buildings in tsunami zones, increases Minimum Efficiency Reporting Value (MERV) for air filters from 8 to 13, increases electric vehicle charging requirements in parking areas, and sets minimum requirements for use of shade trees.

Senate Bill 100

Senate Bill 100 (SB 100) was adopted September 2018 and requires that 100 percent of retail sales of electricity be generated from renewable or zero-carbon emission sources of electricity by December 1, 2045. SB 100 supersedes the renewable energy requirements set by SB 350, SB 1078, SB 107, and SB X1-2. However, the interim renewable energy thresholds from the prior Bills of 44 percent by December 31, 2024, 52 percent by December 31, 2027, and 60 percent by December 31, 2030, will remain in effect.

Executive Order B-48-18 and Assembly Bill 2127

The California Governor issued Executive Order B-48-18 on January 26, 2018, that orders all State entities to work with the private sector to put at least five million zero-emission vehicles on California roads by 2030 and to install 200 hydrogen fueling stations and 250,000 electric vehicle chargers by 2025. Currently approximately 350,000 electric vehicles are operating in California, which represents approximately 1.5 percent of the 24 million vehicles total currently operating in California. Implementation of Executive Order B-48-18 would result in approximately 20 percent of all vehicles in California be zero emission electric vehicles. Assembly Bill 2127 (AB 2127) was codified into statute on September 13, 2018, and requires that the CEC work with the CARB to prepare biannual assessments of the statewide electric vehicle charging infrastructure needed to support the levels of zero emission vehicle adoption required for the State to meet its goals of putting at least 5 million zero-emission vehicles on California roads by 2030**.**

Assembly Bill 1109

California Assembly Bill 1109 (AB 1109), also known as the Lighting Efficiency and Toxics Reduction Act, was adopted October 2007 and prohibits the manufacturing of lights after January 1, 2010, that contain levels of hazardous substances prohibited by the European Union pursuant to the RoHS Directive. AB 1109 also requires reductions in energy usage for lighting and is structured to reduce lighting electrical consumption by: (1) at least 50-percent reduction from 2007 levels for indoor residential lighting; and (2) at least 25-percent reduction from 2007 levels for indoor commercial and all outdoor lighting by 2018. AB 1109 would reduce GHG emissions through reducing the amount of electricity required to be generated by fossil fuels in California.

Assembly Bill 1493

California Assembly Bill 1493 (also known as the Pavley Bill, in reference to its author Fran Pavley) was enacted on July 22, 2002, and required CARB to develop and adopt regulations that reduce GHGs emitted by passenger vehicles and light-duty trucks. In 2004, CARB approved the “Pavley I” regulations limiting the amount of GHGs that may be released from new passenger automobiles that are being phased in between model years 2009 through 2016. These regulations will reduce GHG emissions by 30 percent from 2002 levels by 2016. In June 2009, the USEPA granted California the authority to implement GHG emission reduction standards for light-duty vehicles; in September 2009, amendments to the Pavley I regulations were adopted by CARB, and implementation of the “Pavley I” regulations started in 2009.

The second set of regulations, “Pavley II,” was developed in 2010 and is being phased in between model years 2017 through 2025 with the goal of reducing GHG emissions by 45 percent by the year 2020 as compared to the 2002 fleet. The Pavley II standards were developed by linking the GHG emissions and formerly separate toxic tailpipe emissions standards previously known as the “LEV III” (third stage of the Low Emission Vehicle standards) into a single regulatory framework. The new rules reduce emissions from gasoline-powered cars as well as promote zero-emissions auto technologies such as electricity and hydrogen and increase the infrastructure for fueling hydrogen vehicles. In 2009, the USEPA granted California the authority to implement the GHG standards for passenger cars, pickup trucks, and sport utility vehicles; and these GHG emissions standards are currently being implemented nationwide. However, USEPA has performed a midterm evaluation of the longer-term standards for model years 2022 through 2025; and, based on the findings of this midterm evaluation, the USEPA has proposed to amend the corporate average fuel economy (CAFE) and GHG emissions standards for light vehicles for model years 2021 through 2026. The USEPA's proposed amendments do not include any extension of the legal waiver granted to California by the 1970 Clean Air Act which has allowed the State to set tighter standards for vehicle pipe emissions than the USEPA standards. On September 20, 2019, California filed suit over the USEPA decision to revoke California's legal waiver; that suit has been joined by 22 other states.

Local

Relevant Imperial County General Plan policies related to energy are provided below. Table 4.4-1 discusses the Project's consistency with the County's General Plan policies. While this EIR analyzes the Project's consistency with the General Plan pursuant to CEQA Guidelines Section 151250, the Imperial County Board of Supervisors ultimately determines consistency with the General Plan.

Table 4.4-1: General Plan Consistency

General Plan Polices	Consistency with General Plan	Analysis
Renewable Energy and Transmission Element		
Goal 1 – Support the safe and orderly development of renewable energy while providing for the protection of environmental resources.	Consistent	The Proposed Project provides protection to environmental resources while helping to produce renewable energy.
Objective 1.2 – Lessen impacts of site and design production facilities on agricultural, natural, and cultural resources.	Consistent	This EIR has analyzed the potential impacts related to these subjects.
Objective 1.3 – Require the use of directional geothermal drilling and "islands" when technically advisable in irrigated agricultural soils and sensitive or unique biological areas.	Consistent	The Proposed Project is adjacent to geothermal drilling, which helps remove "islands."
Objective 1.4 – Analyze potential impacts on agricultural, natural, and cultural resources, as appropriate.	Consistent	This EIR has analyzed the potential impacts related to these subjects.
Objective 1.5 – Require appropriate mitigation and monitoring for environmental issues associated with developing renewable energy facilities.	Consistent	The Proposed Project provides a mitigation monitoring program.
Objective 1.6 – Encourage the efficient use of water resources required in the operation of renewable energy generation facilities.	Consistent	The Proposed Project will be designed to meet Title 24 Part 11 requirements that require implementation of water-efficiency measures.
Objective 1.7 – Assure that development of renewable energy facilities and transmission lines comply with Imperial County Air Pollution Control District's regulations and mitigation measures.	Consistent	The Proposed Project will be required to obtain all required air permits from the ICAPCD and to adhere to all of the ICAPCD rules and regulations.
Goal 2 – Encourage development of electrical transmission lines along routes which minimize potential environmental effects.	Consistent	Any required improvements or extensions of existing IID electrical transmission lines will occur adjacent to existing routes.
Objective 2.1 – To the extent practicable, maximize utilization of IID's transmission capacity in existing easements or rights-of-way. Encourage the location of all major transmission lines within designated corridors, easements, and rights-of-way.	Consistent	Any required improvements or extensions of IID electrical transmission lines will occur within existing easements or rights-of-way.

Table 4.4-1: General Plan Consistency

General Plan Polices	Consistency with General Plan	Analysis
Objective 2.2 – Where practicable and cost-effective, design transmission lines to minimize impacts on agricultural, natural, and cultural resources, urban areas, military operation areas, and recreational activities.	Consistent	Any required improvements or extensions of IID electrical transmission lines will occur within existing easements or rights-of-way.
Goal 3 – Support development of renewable energy resources that will contribute to and enhance the economic vitality of Imperial County.	Consistent	The Proposed Project will provide additional employment opportunities as well as contribute to the tax base of the County, which will enhance the economic vitality of the County.
Objective 3.2 – Encourage the continued development of the mineral extraction/production industry for job development using geothermal brines from the existing and future geothermal flash power plants.	Consistent	The Proposed Project implements this Objective.
Objective 3.3 – Encourage the development of services and industries associated with renewable energy facilities.	Consistent	The Proposed Project implements this Objective.
Objective 3.4 – Assure that revenues Projected from proposed renewable energy facility developments are sufficient to offset operational costs to the County from that particular development.	Consistent	The Proposed Project would generate more revenue for the County than any costs incurred by the County.
Objective 3.5 – Encourage employment of County residents by the renewable energy industries wherever and whenever possible.	Consistent	The Proposed Project will provide additional employment opportunities to residents in the County.
Objective 3.7 – Evaluate environmental justice issues associated with job creation and displacement when considering the approval of renewable energy Projects.	Consistent	The nearest home to the Proposed Project is located over a mile to the north of the Project site. No impacts to disadvantaged communities would occur from implementation of the Proposed Project.
Goal 4 – Support development of renewable energy resources that will contribute to the restoration efforts of the Salton Sea.	Consistent	The Proposed Project is being designed to minimize impacts to the Salton Sea restoration areas.
Objective 4.1 – Prioritize the Salton Sea exposed seabed (playa) for renewable energy Development.	Consistent	The Proposed Project will be located in the Salton Sea exposed seabed area.
Objective 4.4 – Encourage the development of renewable energy facilities that will contribute to the reduction or elimination of airborne pollutants created by exposure of the seabed of the Salton Sea as it recedes.	Consistent	The Proposed Project will be located in the Salton Sea exposed seabed area and will be required to provide adequate landscaping and hardscaping to minimize airborne pollutants.
Objective 4.3 – Develop mitigation measures and monitoring programs to minimize impacts to avian species and other species that may be affected by renewable energy facilities constructed near the Salton Sea.	Consistent	This EIR has analyzed the biological impacts, including impacts to avian species.

Table 4.4-1: General Plan Consistency

General Plan Polices	Consistency with General Plan	Analysis
Goal 5 – Encourage development of innovative renewable energy technologies that will diversify Imperial County's energy portfolio.	Consistent	The Proposed Project will produce lithium hydroxide as well as zinc and manganese products that are raw chemicals utilized in the production of batteries as well as other commercial uses that will diversify the County's energy portfolio.
Objective 5.1 – Support the implementation of pilot Projects intended to test or demonstrate new and innovative renewable energy production technologies.	Consistent	Although the Proposed Project is for full production and is not a pilot project, it will demonstrate new and innovative renewable energy production technologies.
Goal 6 – Support development of renewable energy while providing for the protection of military aviation and operations.	Consistent	The Proposed Project will be designed to meet all aviation requirements.
Goal 7 – Actively minimize the potential for land subsidence to occur as a result of renewable energy operations.	Consistent	The Proposed Project will be designed to minimize land subsidence.
Objective 7.1 – Require that all renewable energy facilities, where deemed appropriate, include design features that will prevent subsidence and other surface conditions from impacting existing land uses.	Consistent	The Proposed Project will be designed to minimize land subsidence.
Objective 7.2 – For geothermal energy development facilities, establish injection standards consistent with the requirements of the California Division of Oil, Gas, and Geothermal Resources (CDOGGR). Request a CDOGGR subsidence review, if necessary, for consideration prior to setting injection standards.	Consistent	The Proposed Project will process geothermal brine from the neighboring HR1, which is a renewable energy plant. The Proposed Project will meet all California Division of Oil, Gas, and Geothermal Resources (CDOGGR) requirements for handling of the geothermal brine.
Objective 7.10 – Require operators of geothermal facilities to establish a notification system to warn or notify surrounding residents of the accidental release of potentially harmful emissions as part of an emergency response plan.	Consistent	The Proposed Project will be required to establish a system to notify nearby residents of the accidental release of potentially harmful emissions.

4.4.3 Thresholds of Significance

In order to assist in determining whether a project would have a significant effect on the environment, the County utilizes the State CEQA Guidelines Appendix G Guidelines. Appendix G states that a project may be deemed to have an energy impact if it would:

Threshold a) **Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?**

Threshold b) **Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?**

4.4.4 Project Impact Analysis

Threshold a) **Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?**

The Project would impact energy resources during construction and operation. Energy resources that would potentially be impacted include electricity and petroleum-based fuel supplies and distribution systems. It should be noted that no natural gas lines are in the vicinity of the Project; as such, the Project is being designed not to use natural gas. This analysis includes a discussion of the potential energy impacts of the Project, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy. A general definition of each of these energy resources is provided below.

Electricity, a consumptive utility, is a man-made resource. The production of electricity requires the consumption or conversion of energy resources, including water, wind, oil, gas, coal, solar, geothermal, and nuclear resources, into energy. The delivery of electricity involves a number of system components, including substations and transformers that lower transmission line power (voltage) to a level appropriate for onsite distribution and use. The electricity generated is distributed through a network of transmission and distribution lines commonly called a power grid. Conveyance of electricity through transmission lines is typically responsive to market demands. In 2019, IID, which provides electricity to the Project vicinity, provided 3,322 gigawatt-hours (GWh) per year of electricity (CEC 2019).

Petroleum-based fuels currently account for a majority of the California's transportation energy sources and primarily consist of diesel and gasoline types of fuels. However, the state has been working on developing strategies to reduce petroleum use. Over the last decade California has implemented several policies, rules, and regulations to improve vehicle efficiency, increase the development and use of alternative fuels, reduce air pollutants and GHG emissions from the transportation sector, and reduce vehicle miles traveled (VMT). Accordingly, petroleum-based fuel consumption in California has declined. According to the CEC, in 2017, 83 million gallons of gasoline and 12 million gallons of diesel was sold in Imperial County (CEC 2018).

The following section calculates the potential energy consumption associated with the construction and operations of the Proposed Project and provides a determination whether any energy utilized by the Project is wasteful, inefficient, or unnecessary consumption of energy resources.

Construction Energy

The Project would consume energy resources during construction in three general forms:

1. Petroleum-based fuels used to power off-road construction vehicles and equipment on the Project site, construction worker travel to and from the Project site, as well as delivery and haul truck trips (e.g., hauling demolition material to offsite reuse and disposal facilities)
2. Electricity associated with the conveyance of water that would be used during Project construction for dust control (supply and conveyance) and electricity to power any necessary

lighting during construction, electronic equipment, or other construction activities necessitating electrical power

3. Energy used in the production of construction materials, such as asphalt, steel, concrete, pipes, and manufactured or processed materials such as lumber and glass

Construction-Related Electricity

During construction the Project would consume electricity to construct the new structures and infrastructure. Electricity would be supplied to the Project site by IID and would be obtained from the existing electrical lines in the vicinity of the Project site. The use of electricity from existing power lines rather than temporary diesel or gasoline-powered generators would minimize impacts on fuel consumption. Electricity consumed during Project construction would vary throughout the construction period based on the construction activities being performed. Various construction activities include electricity associated with the conveyance of water that would be used during Project construction for dust control (supply and conveyance) and electricity to power any necessary lighting during construction, electronic equipment, or other construction activities necessitating electrical power. Such electricity demand would be temporary and nominal and would cease upon the completion of construction. Overall, construction activities associated with the Proposed Project would require limited electricity consumption that would not be expected to have an adverse impact on available electricity supplies and infrastructure. Therefore, the use of electricity during Project construction would not be wasteful, inefficient, or unnecessary.

Since power lines currently exist in the vicinity of the Project site, it is anticipated that only nominal improvements would be required to IID distribution lines and equipment with development of the Proposed Project. Compliance with the County’s guidelines and requirements would ensure that the Project fulfills its responsibilities relative to infrastructure installation, coordinates any electrical infrastructure removals or relocations, and limits any impacts associated with construction of the Project. Construction of the Project’s electrical infrastructure is not anticipated to adversely affect the electrical infrastructure serving the surrounding uses or utility system capacity.

Construction-Related Petroleum Fuel Use

Petroleum-based fuel usage represents the highest amount of transportation energy potentially consumed during construction, which would be utilized by both off-road equipment operating on the Project site and on-road automobiles transporting workers to and from the Project site and on-road trucks transporting equipment and supplies to the Project site.

The off-road construction equipment fuel usage was calculated through use of the off-road equipment assumptions and fuel use assumptions provided in Appendix H, which found that the off-road equipment utilized during construction of the Project would consume 561,273 gallons of fuel. The on-road construction trips fuel usage was calculated through use of the construction vehicle trip assumptions and fuel use assumptions provided in Appendix H, which found that the on-road trips generated from construction of the Project would consume 123,306 gallons of fuel. As such, the combined fuel used from off-road construction equipment and on-road construction trips for the Project would result in the consumption of 684,580 gallons of petroleum fuel. This equates to 0.72 percent of the gasoline and diesel consumed annually in Imperial County. As such, the construction-related petroleum use would be nominal, when compared to current county-wide petroleum usage rates.

Construction activities associated with the Project would be required to adhere to all State and ICAPCD regulations for off-road equipment and on-road trucks, which provide minimum fuel efficiency standards. As such, construction activities for the Proposed Project would not result in the wasteful, inefficient, and unnecessary consumption of energy resources. Impacts regarding transportation energy would be less than significant. Development of the Project would not result in the need to manufacture construction materials or create new building material facilities specifically to supply the Project. It is difficult to measure the energy used in the production of construction materials such as asphalt, steel, and concrete; therefore, it is reasonable to assume that the production of building materials such as concrete, steel, etc., would employ all reasonable energy conservation practices in the interest of minimizing the cost of doing business.

Operational Energy

The ongoing operation of the Project would require the use of energy resources for multiple purposes including, but not limited to, pumps and other mechanical industrial equipment, heating/ventilating/air conditioning (HVAC), refrigeration, lighting, appliances, and electronics. Energy would also be consumed during operations related to water usage, solid waste disposal, landscape equipment, and vehicle trips.

Operations-Related Electricity

Operation of the Project would result in consumption of electricity at the Project site. According to the CalEEMod model printouts in Appendix G: Greenhouse Gas Screening Letter (Ldn Consulting, Inc. 2021), the Proposed Project would consume 51,840,000 kilowatt-hours per year of electricity. This equates to 1.56 percent of the electricity consumed annually in the County of Imperial. As such, the operations-related electricity use would be nominal when compared to current electricity usage rates in the County.

Additionally, the Project would comply with all federal, State, and City requirements related to the consumption of electricity, including CCR Title 24, Part 6, Building Energy Efficiency Standards and CCR Title 24, Part 11, the CALGreen Code. The CCR Title 24, Part 6 and Part 11 standards require numerous energy efficiency measures to be incorporated into the Project, including enhanced insulation and use of energy-efficient lighting and appliances as well as requiring a variety of other energy efficiency measures to be incorporated into all of the proposed structures. Therefore, it is anticipated the Project will be designed and built to minimize electricity use and that existing and planned electricity capacity and electricity supplies would be sufficient to support the Proposed Project's electricity demand. Thus, impacts with regard to electrical supply and infrastructure capacity would be less than significant, and no mitigation measures would be required.

Operations-Related Transportation Energy

Operation of the Proposed Project would result in increased consumption of petroleum-based fuels related to vehicular travel to and from the Project site. As calculated in Appendix H, the Project would consume 22,985 gallons of transportation fuel per year. This equates to 0.024 percent of the gasoline and diesel consumed in the County annually. As such, the operations-related petroleum use would be nominal when compared to current petroleum usage rates in the County.

Additionally, the Project would comply with all federal, State, and County requirements related to the consumption of transportation energy, including CCR Title 24, Part 11, the CALGreen Code, which requires all new parking lots to provide preferred parking for clean air vehicles. Therefore, it is anticipated the Project will be designed and built to minimize transportation energy through the promotion of the use of electric-powered vehicles and that existing and planned capacity and supplies of transportation fuels would be sufficient to support the Project's demand. Thus, impacts regarding transportation energy supply and infrastructure capacity would be less than significant, and no mitigation measures would be required.

Threshold b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

The Project would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency. The applicable Renewable Energy and Transmission Element for the Project is included in the County's General Plan. The Proposed Project's consistency with the applicable energy-related policies in the Renewable Energy and Transmission Element of the General Plan are shown in Table 4.4-1.

4.4.5 Cumulative Impacts

Cumulative impacts are defined in CEQA as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines Section 15355). Stated in another way, "a cumulative impact consists of an impact which is created as a result of the combination of the Project evaluated in the EIR together with other Projects causing relating impacts" (CEQA Guidelines Section 15130 [a][1]).

The geographic scope of cumulative energy impacts associated with the Project comprises the IID service area. Electricity is provided to end users on demand, and delivery amount is a function of use. During peak usage, more of the utility can be made available to users in order to avoid any potential outages. Average electricity consumption within the County is below the regional average of consumption and is in decline due to stricter policies for building codes and energy conservation practices. The Project, in combination with cumulative projects, would have less than significant impacts within the service area of IID.

4.4.6 Mitigation Measures

No mitigation measures are required, as all Project impacts regarding energy are less than significant.

4.4.7 Level of Significance After Mitigation

No mitigation measures are required; thus, impacts related to energy would remain less than significant.

4.5 GEOLOGY AND SOILS

This section addresses the potential for the Proposed Project to impact geologic and soil conditions on the Project site. More specifically, this section evaluates impacts associated with the Project that may potentially affect public health and safety or degrade the environment. Issues analyzed in this section include the potential paleontological sensitivity of the Project site, as well as geologic and seismic hazards such as earthquakes, expansion, landform alteration, erosion, and liquefaction that could occur with implementation of the Project. Paleontological resources include vertebrate, invertebrate, and plant fossils. Information contained in this section is summarized from the Archaeological and Paleontological Assessment Report (Cultural Resources Assessment) produced by Chambers Group in January 2021 and the Preliminary Geotechnical Report prepared for the Project by LandMark Geo-Engineers and Geologists (LandMark) in August 2020. These documents are included as Appendix D and Appendix E of this EIR, respectively.

4.5.1 Existing Environmental Setting

Regional Setting

The Project site is located within the Imperial Valley and is within a large geologic structure referred to as the Salton Trough, a graben or rift valley extending approximately 1,000 miles in length. This graben was created when the San Andreas Fault system and the East Pacific Rise split Baja California from mainland Mexico approximately 5 million years ago. The southern portion of this rift valley is now known as the Gulf of California, while the northern part is known as the Salton Trough. Plate tectonic activity has continued to open this rift, with the Salton Trough as the hinge point. The North American Plate is to the east, and the Pacific Plate to the west. The Colorado River may have begun depositing huge loads of silt in the upper trough as early as 5.5 million years ago.

By some time in the Pliocene Epoch (2 to 4 million years ago), the river had created a delta of sufficient height to form a dam isolating the Imperial Valley and Coachella Valley portions of the Salton Trough from the Gulf of California. This silt dam continues to keep seawater out of the Salton Trough, which is more than 200 feet below sea level. A series of very high freshwater lake stands that occurred during the late Pleistocene have been documented in the Salton Trough, suggesting that the Colorado River began flowing into the Salton Trough on an occasional basis from that time. Ranging in elevation up to 170 feet above sea level, these Pleistocene freshwater lake shorelines date to between 25,000 and 45,000 years ago. The height of these Pleistocene lake stands reflects the elevation of the natural silt dam which separates the Gulf from the Salton Trough. These Pleistocene lake stands have been called Lake Cahuilla to refer to both the Pleistocene and Holocene lakes.

Paleontological Significance

Lake Cahuilla was a former freshwater lake that periodically occupied a major portion of the Salton Trough during late Pleistocene to Holocene time (approximately 37,000 to 240 years ago), depositing sediments that underlie the entire Project site (mapped as Quaternary lake deposits by Jennings [1967]). Generally, Lake Cahuilla sediments consist of an interbedded sequence of both freshwater lacustrine (lake) and fluvial (river/stream) deposits. The Lake Cahuilla Beds have yielded well-preserved subfossil remains of freshwater clams and snails and sparse remains of freshwater fish. The paleontological resources of the Lake Cahuilla Beds are considered significant because of the paleoclimatic and palaeoecological information they can provide, and these deposits are therefore assigned a high paleontological potential.

Project Site

The Project site is located within the City of Calipatria, approximately 3.8 miles southwest of the community of Niland. The Project site is located on three parcels (APN 020-100-025, 020-100-044, and 020-100-046) north of West Schrimpf Road, east of Davis Road, and south of McDonald Road. Geologic hazards present within the Project site are summarized below.

Faults and Seismicity

The Project site is located in the seismically active Imperial Valley of Southern California, with numerous mapped faults of the San Andreas Fault System traversing the region. The San Andreas Fault System is composed of the San Andreas, San Jacinto, and Elsinore Fault Zones in Southern California. The Imperial fault represents a transition from the more continuous San Andreas fault to a more nearly echelon pattern characteristic of the faults under the Gulf of California. Known faults or seismic zones that lie within a 45-mile radius of the Project site are listed in Table 4.5-1.

Table 4.5-1: Known Faults or Seismic Zones within a 45-Mile Radius of the Project

Fault Name	Approximate Distance (mi)	Maximum Moment Magnitude (M_w)	Fault Length (km)	Slip Rate (mm/yr)
Elmore Ranch	5.0	6.6	29 ± 3	1 ± 0.5
Hot Springs	12.4	-	-	-
San Andreas – Coachella	13.2	7.2	96 ± 10	25 ± 5
Imperial	18.3	7.0	62 ± 6	20 ± 5
Brawley	18.6	-	-	-
Superstition Hills	18.8	6.6	23 ± 2	4 ± 2
Superstition Mountain	22.5	6.6	24 ± 2	5 ± 3
San Jacinto – Borrego	27.0	6.6	29 ± 3	4 ± 2
Rico	28.9	-	-	-
Painted Gorge Wash	29.6	-	-	-
San Jacinto – Anza	31.5	7.2	91 ± 9	12 ± 6
Yuha Well	33.9	-	-	-
Unnamed 1	34.0	-	-	-
Shell Beds	34.4	-	-	-
Vista de Anza	35.6	-	-	-
Yuha	35.8	-	-	-
Unnamed 2	36.6	-	-	-
San Jacinto – Coyote Creek	37.3	6.8	41 ± 4	4 ± 2
Ocotillo	37.8	-	-	-
Laguna Salada	38.0	7.0	67 ± 7	3.5 ± 1.5
Elsinore – Coyote Mountain	38.9	6.8	39 ± 4	4 ± 2
Borrego (Mountain)	45.0	-	-	-

Notes: mi: miles; M_w: moment magnitude; km: kilometer; mm/yr: millimeters per year

Ground Shaking

One of the seismic hazards most likely to impact the Project site is strong ground shaking during an earthquake. Ground shaking from seismic events could reach the Project site if certain seismic factors (e.g., Richter magnitude, focal depth, distance from the causative fault, source mechanism, duration of shaking, high rock accelerations, type of surficial deposits or bedrock, degree of consolidation of surficial deposits, etc.) occur nearby.

Surface Rupture

Surface rupture is an offset of the ground surface when fault rupture extends to the Earth's surface. Normal- and reverse- (collectively called dip-slip) faulting surface ruptures feature vertical offsets, while strike-slip faulting produces lateral offsets. Many earthquake surface ruptures are combinations of both. Surface rupture represents a primary or direct potential hazard to structures built on an active fault zone. However, the Project site is not located in an Alquist-Priolo Earthquake Fault Zone that is prone to surface rupture. No faults are known to align through the Project site.

Landslides

Landslides occur when slopes become unstable and collapse. Landslides are typically caused by natural factors such as fractured or weak bedrock, heavy rainfall, erosion, earthquake activity, and fire, but also by human alteration of topography and water content. A landslide at the Proposed Project site is unlikely because of the regional planar topography. No ancient landslides are shown on geologic maps of the region, and no indications of landslides were observed by Landmark during their site investigation.

Liquefaction

Liquefaction occurs when granular soil below the water table is subjected to vibratory motions, such as produced by earthquakes. With strong ground shaking, an increase in pore water pressure develops as the soil tends to reduce in volume. If the increase in pore water pressure is sufficient to reduce the vertical effective stress (suspending the soil particles in water), the soil strength decreases and the soil behaves as a liquid (similar to quicksand). Liquefaction can produce excessive settlement, ground rupture, lateral spreading, or failure of shallow bearing foundations. Four conditions are generally required for liquefaction to occur: (1) the soil must be saturated (relatively shallow groundwater), (2) the soil must be loosely packed (low to medium relative density), (3) the soil must be relatively cohesionless (not clayey), and (4) ground shaking of sufficient intensity must occur to function as a trigger mechanism. All these conditions exist to some degree at the Project site; however, the risk of liquefaction is low.

Subsidence

Land subsidence is a gradual caving or sinking of an area of land that can occur as a result of tectonic deformations (e.g., earthquakes) or anthropogenic causes such as mining or groundwater extraction. According to the Imperial County Seismic and Public Safety Element, subsidence from earthquakes and other activities, including geothermal resources development, can disrupt drainage systems and cause localized flooding. Subsidence was identified as a potential issue on the Project site by the Preliminary Geotechnical Report.

Soils

The University of California, Davis California Soil Resource Lab *SoilWeb Earth* computer application for Google Earth indicates that surficial deposits at the Project site consist predominantly of silty clay loams overlying fine sands of the Imperial soil group. These loams are formed in sediment and alluvium of mixed origin (Colorado River overflows and fresh-water lake-bed sediments).

Expansive soils are characterized by their potential "shrink-swell" behavior. Shrink-swell is the cyclic change in volume (expansion and contraction) that occurs in certain fine-grained clay sediments from the process of wetting and drying. Clay minerals such as smectite, bentonite, montmorillonite, beidellite, vermiculite, and others are known to expand with changes in moisture content. The higher the percentage of expansive minerals present in near-surface soils, the higher the potential for significant expansion. The greatest effects occur when moisture content changes significantly or repeatedly. Expansions of 10 percent or more in volume are not uncommon. This change in volume can exert enough force on a building or other structure to cause cracked foundations, floors, and basement walls. Damage to structures can also occur when movement in the foundation is significant. Structural damage typically occurs over a long period of time, usually the result of inadequate soil and foundation engineering or the placement of structures directly on expansive soils. Deposits that underly the Project site are considered to have a moderate to high potential for expansion.

4.5.2 Regulatory Setting

Federal

Federal Earthquake Hazards Reduction Act

This Act is also cited as the "National Earthquake Hazards Reduction Program Reauthorization Act of 2018." The purpose of this Act is to reduce the risks to life and property from future earthquakes in the United States through the establishment and maintenance of an effective earthquake hazards reduction program. Loss of life, injury, destruction of property, and economic and social disruption can be substantially reduced through the development and implementation of earthquake hazard reduction measures. To accomplish this, the Act established the National Earthquake Hazards Reduction Program (NEHRPA). This program was significantly amended in November 1990 by the National Earthquake Hazards Reduction Program Act, which refined the description of agency responsibilities, program goals, and objectives. The NEHRPA designates FEMA as the lead agency of the program and assigns it several planning, coordinating, and reporting responsibilities. Other NEHRPA agencies include the National Institute of Standards and Technology, National Science Foundation, and U.S. Geological Survey (USGS).

International Building Code

Published by the International Code Council, the scope of this code covers major aspects of construction and design of structures and buildings, except for detached one- and two-family dwellings and townhouses not more than three stories in height. The International Building Code (IBC) contains provisions for structural engineering design. Published every three years (most recently in 2021) by the International Code Council, the IBC addresses the design and installation of structures and building systems through requirements emphasizing performance. The IBC includes codes governing structural strength (including seismic loads and wind loads) as well as fire- and life-safety provisions covering accessibility, egress, occupancy, and roofs.

State

Alquist-Priolo Earthquake Fault Zoning Act of 1972

The Alquist-Priolo Earthquake Fault Zoning Act was passed in 1972 to mitigate the hazard of surface faulting to structures for human occupancy. The Alquist-Priolo Earthquake Fault Zoning Act's main purpose is to prevent the construction of buildings used for human occupancy on the surface trace of active faults. The Act addresses only the hazard of surface fault rupture and is not directed toward other earthquake hazards.

The law requires the State Geologist to establish regulatory zones (known as Earthquake Fault Zones or, prior to January 1, 1994, Special Studies Zones) around the surface traces of active faults and to issue appropriate maps. The maps are distributed to all affected cities, counties, and State agencies for their use in planning and controlling new or renewed construction. Local agencies must regulate most development projects within the zones. Projects include all land divisions and most structures for human occupancy.

Before a project can be permitted for construction, cities and counties must require a geologic investigation to demonstrate that proposed buildings will not be constructed across active faults. An evaluation and written report of a specific site must be prepared by a licensed geologist. If an active fault is found, a structure for human occupancy cannot be placed over the trace of the fault and must be set back from the fault.

Seismic Hazards Mapping Act of 1990

The Seismic Hazards Mapping Act of 1990 (7.8 PRC 2690-2699.6) directs the Department of Conservation, California Geological Survey to identify and map areas prone to earthquake hazards of liquefaction, earthquake-induced landslides, and amplified ground shaking. The purpose of this Act is to reduce the threat to public safety and minimize the loss of life and property by identifying and mitigating these seismic hazards. The Seismic Hazard Zone maps identify where a site investigation is required, and the site investigation determines whether structural design or modification of the Project site is necessary for safer development. The Seismic Hazards Mapping Act requires site-specific geotechnical investigations identifying the seismic hazard and formulating mitigation measures, when needed, prior to permitting most developments designed for human occupancy within the Zones of Required Investigation.

California Building Code (2019)

Development within California is required at a minimum to adhere to the provisions of the Uniform Building Code (UBC). The UBC establishes minimum standards related to development, seismic design, building siting, and grading. The purpose of the UBC is to provide minimum standards to preserve public peace, health, and safety by regulating the design, construction, quality of materials, certain equipment, location, grading, use, occupancy, and maintenance of all buildings and structures. UBC standards address foundation design, shear wall strength, and other structural related conditions. Upon incorporation, the City adopted the 1997 edition of the UBC. The most recently adopted building code is the 2019 California Building Code (CBC), which applies to projects filing for building permits on or after January 1, 2020.

Public Resources Code, Chapter 1.7, Sections 5097.5

Several sections of the California PRC protect paleontological resources. Section 5097.5 prohibits "knowing and willful" excavation, removal, destruction, injury, and defacement of any paleontological feature on state lands (lands under state, county, city, district, or public authority jurisdiction, or the jurisdiction of a public corporation), except where the agency with jurisdiction has granted express permission.

Local

County of Imperial Grading Ordinance

The Purpose of Title 9, the Land Use Ordinance for the County of Imperial, is to provide comprehensive land use regulations for all unincorporated areas of the County. These regulations are adopted to promote and protect the public health, safety, and general welfare through the orderly regulation of land uses throughout the unincorporated areas of the County. Title 9 Division 15 (Geological Hazards) of the County Land Use Ordinance has established procedures and standards for development within earthquake fault zones. Per County regulations, the construction of buildings intended for human occupancy which are located across the trace of an active fault are prohibited. An exception exists when such buildings located near the fault or within a designated Special Studies Zone are demonstrated through a geotechnical analysis and report not to expose a person to undue hazard created by the construction.

County of Imperial General Plan

Relevant Imperial County General Plan policies related to geology, soils, and seismicity are provided below. Table 4.5-2 discusses the Project's consistency with the County's General Plan policies. While this EIR analyzes the Project's consistency with the General Plan pursuant to CEQA Guidelines Section 151250, the Imperial County Board of Supervisors ultimately determines consistency with the General Plan. The Imperial County General Plan does not specify any goals or objectives for paleontological resources. However, paleontological resources are a sub-category of cultural resources, which are analyzed in Section 4.3 of this EIR.

Table 4.5-2: General Plan Consistency

General Plan Policies	Consistency with General Plan	Analysis
Seismic and Public Safety Element		
Land Use Planning and Public Safety		
Objective 1.1 – Ensure that data on geological hazards is incorporated into the land use review process, and future development process.	Consistent	A Preliminary Geotechnical Report was prepared for the Project by LandMark (2020), which details a soil engineering site evaluation and presents the geotechnical conditions at the Project site to be considered in the design and construction of the Project (Appendix E). The Project site is not located within published geohazard areas other than high seismic ground motions and liquefaction risks. The Project would be designed in accordance with the

Table 4.5-2: General Plan Consistency

General Plan Policies	Consistency with General Plan	Analysis
		California Building Code; and appropriate mitigation measures, GEO-1 and PALEO-1 through PALEO-5, have been incorporated into this EIR to address potential geologic or seismic hazards. The Project is consistent with this objective.
Objective 1.4 – Require, where possessing the authority, that avoidable seismic risks be avoided; and that measures, commensurate with risks, be taken to reduce injury, loss of life, destruction of property, and disruption of service.	Consistent	See response for Objective 1.1.
Objective 1.7 – Require developers to provide information related to geologic and seismic hazards when siting a proposed project.	Consistent	See response for Objective 1.1.
Emergency Preparedness		
Objective 2.8 – Prevent and reduce death, injuries, property damage, and economic and social dislocation resulting from natural hazards including flooding, land subsidence, earthquakes, other geologic phenomena, levee or dam failure, urban and wildland fires and building collapse by appropriate planning and emergency measures.	Consistent	See response for Objective 1.1.
Seismic/Geologic Hazards		
Policy 4 – Ensure that no structure for human occupancy, other than one-story wood frame structures, shall be permitted within fifty feet of an active fault trace as designated on maps compiled by the State Geologist under the Alquist-Priolo Geologist Hazards Zone Act.	Consistent	The Project site is not located within fifty feet of an active fault and would not be used for human occupancy. Therefore, the Project is consistent with this policy.

4.5.3 Thresholds of Significance

In order to assist in determining whether a project would have a significant effect on the environment, the County utilizes the State CEQA Guidelines Appendix G Guidelines. Appendix G states that a project may be deemed to have impacts to geology and soils if it would:

Threshold a) **i) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving 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) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?
	iii) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?
	iv) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving landslides?
Threshold b)	**Result in substantial soil erosion or the loss of topsoil?**
Threshold 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?**
Threshold d)	**Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?**
Threshold e)	**Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?**
Threshold f)	**Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?**

Please refer to **Section 6.1: Effects Found Not to Be Significant** for an evaluation of those topics that were determined to be less than significant or have no impact and do not require further analysis in the EIR**.**

4.5.4 Methodology

Geologic Investigation

Field Exploration

Subsurface exploration was performed on July 20, 2020, using Kehoe Testing and Engineering, Inc. to advance three electric cone penetrometer (CPT) soundings to approximate depths of 50 feet below existing ground surface. The soundings were made at the locations shown on the Site and Exploration Plan. The approximate sounding locations were established in the field and plotted on the site map by sighting to discernible site features. Shallow (5-foot-deep) mechanical auger borings (6-inch-diameter) were made in the future laydown yard to the west in order to obtain near-surface soil samples for laboratory analysis.

Laboratory Testing

Laboratory tests were conducted on selected bulk (auger cuttings) obtained from the soil borings to aid in classification and evaluation of selected engineering properties of the site soils. The tests were conducted in general conformance to the procedures of the American Society for Testing and Materials

(ASTM) or other standardized methods as referenced below. The laboratory testing program consisted of the following tests:

- Plasticity Index (ASTM D4318)
- Moisture-Density Relationship (ASTM D1557)
- Chemical Analyses (soluble sulfates and chlorides, pH, and resistivity) (Caltrans Methods)

The laboratory test results are presented on the subsurface logs in Appendix E. Engineering parameters of soil strength, compressibility, and relative density utilized for developing design criteria provided within the Preliminary Geotechnical Report were either extrapolated from correlations with the subsurface CPT data or from data obtained from the field and laboratory testing program.

Liquefaction Assessment

The computer program CLiq (Version 2.2.0.32) was utilized for liquefaction assessment at the Project site. The estimated settlements have been adjusted for transition zones between layers, and the post liquefaction volumetric strain has been weighed with depth. Computer printouts of the liquefaction analyses are provided in Appendix E.

Ground Shaking Assessment

The Structural Engineers Association of California (SEAOC) and Office of Statewide Health Planning and Development (OSHPD) Seismic Design Maps Web Application was used to obtain the site coefficients and adjusted maximum considered earthquake spectral response acceleration parameters, which directly indicated the sites ground shaking potential. Design earthquake ground motion parameters are provided in Appendix E.

Paleontological Resources

Chambers Group conducted a desktop review that included a review of published and unpublished paleontological literature and a search of museum records obtained by the San Diego Natural History Museum (SDNHM). Using the results of the literature review and records search, Chambers Group evaluated the paleontological resource potential of the geologic units underlying the Project site. A field survey was conducted for the geologic units identified as highly sensitive to assist in determining where paleontological monitoring may be necessary during Project implementation.

Determining the probability that a given project site might yield paleontological resources requires a knowledge of the geology and stratigraphy of the site, as well as researching any nearby fossil finds by: (1) reviewing published and unpublished maps and reports; (2) consulting online databases; (3) seeking any information regarding pertinent paleontological localities from local and regional museum repositories, and (4) if needed, conducting a reconnaissance site visit or paleontological resources field survey.

The University of California Museum of Paleontology (UCMP) online paleontological database was used to search for previously recorded paleontological localities in the Project vicinity. Only a single right dentary fragment from a Camelidae species was found near Coachella in 1953 (V5303). In addition, Chambers Group obtained paleontological record search data from the SDNHM on October 27, 2020. The SDNHM determined that the Proposed Project has the potential to impact late Pleistocene to Holocene-age Lake Cahuilla Beds. Although no recorded fossil localities have been identified within a 1-mile radius of the Project site, it is recommended that, due to the high sensitivity of the Lake Cahuilla Beds, a paleontological resource mitigation program and monitoring should be conducted on excavation activities extending down into undisturbed sediment.

4.5.5 Project Impact Analysis

Threshold a) **ii) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking?**

The Project site is considered likely to be subjected to moderate to strong ground motion from earthquakes in the region. Ground motions are dependent primarily on the earthquake magnitude and distance to the rupture zone. Acceleration magnitudes also are dependent upon attenuation by rock and soil deposits, direction of rupture and type of fault; therefore, ground motions may vary considerably in the same general area.

The CBC requires that a site-specific ground motion hazard analysis be performed in accordance with American Society of Civil Engineers (ASCE) 7-16 Section 11.4.8 for structures on Site Class D and E sites with S_1 greater than or equal to 0.2 and Site Class E sites with S_s greater than or equal to 1.0. The Project site has been classified as Site Class D and has a S_1 value of 0.6, which would require a site-specific ground motion hazard analysis. However, ASCE 7-16 Section 11.4.8 provides three exceptions which permit the use of conservative values of design parameters for certain conditions for Site Class D and E sites in lieu of a site-specific hazard analysis. The exceptions are further described in Section 3.6 of Appendix E.

In accordance with mitigation measure GEO-1, outlined below, the Project structural engineer shall confirm whether an exception applies to the Project. If none of the above exceptions apply, a qualified geo-engineer shall be consulted to perform a site-specific ground motion hazard analysis. Additionally, the Project shall adhere to all of the recommendations for construction and building as noted in the Preliminary Geotechnical Investigation and as summarized in GEO-1. With implementation of GEO-1, impacts resulting from seismic ground shaking would be less than significant.

iii) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure, including liquefaction?

The soils encountered at the Project site during the geotechnical exploration included saturated silts and silty sands that could liquefy during a maximum considered earthquake. Liquefaction can occur within several thin isolated sandy silty layers between depths of 8 to 49 feet. The likely triggering mechanism for liquefaction at the Project site appears to be strong ground shaking associated with the rupture of the San Andreas Fault, Elmore Fault, and Brawley Seismic Zone. According to the Preliminary Geotechnical Report, total induced settlements at the Project site are estimated to be less than ¼ inch should liquefaction occur. Additionally, ground failure in the form of small ground fissures, sand boil formation, and lateral spreading is unlikely because of the thickness of the overlying unliquefiable soil and the planar topography of the area. Based on the estimate of less than ¼ inch of liquefaction-induced settlements, no ground improvement or deep foundations are required to mitigate liquefaction settlement at the Project site. Impacts related to seismic-related ground failure would be less than significant.

Threshold 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?**

According to the Preliminary Geotechnical Report, the hazard of a landslide occurring is unlikely at the Project site due to the regional planar topography. No ancient landslides were identified on geologic maps, aerial photographs, and topographic maps of the region; and no indications of landslides were observed during the geotechnical site investigation.

As discussed above, liquefaction may occur in isolated silt and sand layers encountered at various depths between 8 and 49 feet below ground surface. Potential liquefaction induced settlements of less than ¼ inch have been estimated for the Project site. Additionally, there is a very low risk of ground rupture and/or sand boil formation should liquefaction occur due to the thickness of the overlying unliquefiable soil.

Collapsible soil generally consists of dry, loose, low-density material that has the potential to collapse and compact (decrease in volume) when subjected to the addition of water or excessive loading. Soils found to be most susceptible to collapse include loess (fine-grained wind-blown soils), young alluvium fan deposits in semi-arid to arid climates, debris flow deposits, and residual soil deposits. Due to the cohesive nature of the subsurface soils and shallow groundwater, the potential for hydro-collapse of the subsurface soils at the Project site is considered very low.

The Project is not located on a geologic unit or soil that is unstable or that would become unstable as a result of the Project. Impacts would be less than significant.

Threshold d) **Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?**

Subsurface soils encountered during the field exploration conducted on July 20, 2020, consist of approximately 18 to 23 feet of near-surface clays. A 1- to 2-foot thick layer of loose to medium dense sandy silt layer was encountered from 18 to 24 feet below ground surface. Stiff clays to clayey silt soils were encountered at a depth of 20 to 48 feet below ground surface. Very loose to loose sandy/clayey silts were encountered at 48 to 50 feet below ground surface, the maximum depth of exploration.

The native surface clays likely exhibit moderate to high swell potential (Expansion Index, EI = 70 to 110) when correlated to Plasticity Index tests (ASTM D4318) performed on the native soils. The clay is expansive when wetted and can shrink with moisture loss (drying). Thus, mitigation measure GEO-1 would be implemented to reduce potential impacts related to expansive soils at the Project site to a less than significant level.

Threshold f) **Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?**

The Cultural Resources Assessment (Appendix D) determined that the Project has the potential to impact late Pleistocene to Holocene-age Lake Cahuilla Beds due to the high sensitivity of the Lake Cahuilla Beds and the potential for excavation activities extending down into undisturbed sediment. Although no recorded fossil localities have been identified within a 1-mile radius of the Project site, mitigation measures PALEO-1 through PALEO-5 would be implemented to ensure potential impacts to paleontological resources would be less than significant.

4.5.6 Cumulative Impacts

Cumulative impacts are defined in CEQA as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts” (CEQA Guidelines Section 15355). Stated in another way, “a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing relating impacts” (CEQA Guidelines Section 15130 [a][1]).

Geology and Soils

The geographic scope for the cumulative geology and soils setting is the Imperial Valley portion of the Salton Trough physiographic province of Southern California. A list of large-scale proposed, approved, and reasonably foreseeable renewable energy projects is identified in Table 3.0-1: Related Projects of Section 3.0, Environmental Setting. None of these projects are adjacent to or in close proximity to the Project. In general, geology and soils impacts are site-specific and limited to the boundaries of each individual project rather than cumulative in nature.

As discussed above, the Project is susceptible to geologic hazards such as ground shaking and expansive soils. Implementation of mitigation measure GEO-1 would reduce the Project’s exposure to damage resulting from these hazards to less than significant levels. Furthermore, ground shaking and expansive soil impacts are site-specific and would not combine with similar impacts of large scale proposed, approved, and reasonably foreseeable renewable energy projects identified in Table 3.0-1 in Section 3.0. The Project would have a less than cumulatively considerable contribution to ground shaking and expansive soil impacts and would result in a less than cumulatively considerable impact.

Paleontological Resources

The geographic scope of the cumulative setting for paleontological resources includes Lake Cahuilla, which encompasses the entire Imperial Valley. Due to the abundance of invertebrate and vertebrate fossils discovered in the Lake Cahuilla Beds, this formation has a high paleontological potential. Cumulative development occurring within the boundaries of Lake Cahuilla has the potential to destroy or otherwise impact paleontological resources. Excavation activities associated with the Project, in conjunction with other large-scale proposed, approved, and reasonably foreseeable renewable energy projects in the region, could contribute to the progressive loss of fossil remains. While the potential for paleontological resources beneath the Project area is unknown, this does not negate the presence of such resources given the underlying Lake Cahuilla Beds. If present, paleontological resources beneath the Project area, as well as within the boundaries of the cumulative projects listed in Table 3.0-1, could be impacted during construction.

A cumulative impact would occur if the Project, in combination with other cumulative projects, would damage or destroy paleontological resources. However, with the implementation of mitigation measures PALEO-1 through PALEO-5, the Project would have a less than cumulatively considerable contribution to impacts to paleontological resources during construction. Likewise, other projects in the cumulative setting would be required to comply with existing regulations and undergo CEQA review to assure that any paleontological impacts are appropriately evaluated and, if necessary, mitigated on a project-by-project basis. Therefore, through compliance with regulatory requirements and standard conditions of approval, cumulative impacts to paleontological resources during construction are considered less than cumulatively considerable.

4.5.7 Mitigation Measures

In order to minimize potential impacts to geology and soils, the following mitigation measures should be implemented:

GEO-1: All grading operations and construction shall be conducted in conformance with the recommendations included in the Preliminary Geotechnical Report on the Project site that has been prepared by LandMark Geo-Engineers and Geologists (LandMark) in August 2020. Design, grading, and construction shall be performed in accordance with the recommendations of the project geotechnical consultant as summarized in a final written report, subject to review by the County, prior to commencement of grading activities.

A full description of recommendations in the Preliminary Geotechnical Investigation is provided in Section 4: Design Criteria of Appendix E. Recommendations are summarized below:

- **Site Preparation:** The site shall be properly cleared and grubbed. Any excavations resulting from site clearing shall be sloped to a bowl shape to the lowest depth of disturbance and backfilled under the observation of the geotechnical engineer’s representative. Prior to placing any fills, the surface 12 inches of soil should be uniformly moisture conditioned by disking and wetting to a minimum of optimum plus 2 to 8 percent and compacted to a minimum of 90 percent of ASTM D1557 maximum density. Onsite native clays placed as engineered fill should be uniformly moisture conditioned by disking and wetting or drying to optimum plus 2 to 8 percent and compacted in 6-inch maximum lifts to a minimum of 90-percent relative compaction. Clods shall be reduced by disking to a maximum dimension of 1.0 inch prior to being placed as fill. The existing surface soil within the Project shall be removed to the appropriate recommended depths. An engineered building support pad shall be placed below mat foundations. Aggregate shall be compacted to a minimum of 95 percent of ASTM D1557 maximum density at 2 percent below to 4 percent above optimum moisture. Imported fill soil shall be nonexpansive and should meet the Unified Soil Classification System (USCS) classifications of ML (nonplastic), SM, SP-SM, or SW-SM with a maximum rock size of 3 inches and no less than 5 percent passing the No. 200 sieve. The geotechnical engineer should approve imported fill soil sources before hauling material to the site. Imported fill should be placed in lifts no greater than 8 inches in loose thickness and compacted to a minimum of 95 percent of ASTM D1557 maximum dry density at optimum moisture ±2 percent. An engineered support pad consisting of 12 inches of Class 2 aggregate base shall be placed below mat foundations. The aggregate base shall be compacted to a minimum of 95 percent of ASTM D1557 maximum density at 2 percent below to 4 percent above optimum moisture. Structures that are not sensitive to settlements, not heavy loaded, or that can be economically replaced or repaired such as small tanks, pumps, and vessels, can be supported on shallow foundations on reinforced structural fill. The performance of structural fill with respect to resisting liquefaction failure mechanisms, and reducing some of the static differential settlements can be enhanced by reinforced the structural fill with geogrid fabrics. The native soils should be excavated from the designated foundation areas extending 5.0 feet beyond all exterior foundation lines to 3.0 feet below the planned bottom of foundation level. Exposed subgrade should be inspected by the geotechnical engineer and if found to be loose, shall be scarified to a depth of 8 inches, uniformly moisture conditioned to 2 to 8 percent above optimum and recompacted to a minimum of 90 percent of the maximum density determined in accordance with ASTM D1557 methods. A 6-ounce non-woven separation fabric equivalent to Mirafi 160N or equivalent should be placed over the subgrade prior to placing the reinforced structural fill. In areas other than the basin backfill which are to receive housekeeping slabs or area concrete slabs, the ground surface should be presaturated (20 percent minimum moisture content) to a minimum depth of 24 inches and then scarified to 8 inches, moisture conditioned to a minimum of 5 percent over optimum, and recompacted to a minimum of 90 percent of ASTM D1557 maximum density just prior to concrete placement. All site preparation and fill placement should be continuously observed and tested by a representative of a qualified geotechnical engineering firm. Full-time observation services during the excavation and scarification process is necessary to detect undesirable materials or conditions and soft areas that may be encountered in the construction area. Auxiliary structures such as free-standing or retaining walls should have footings extended to a minimum of 30 inches below grade. The existing soil beneath the structure foundation should be prepared in the manner described for the building pad except the preparation need only to extend 24 inches below and beyond the footing.

- **Shallow Foundations, Structural Mats and Settlements:** The Project shall implement shallow spread footings and continuous wall footings to support the structures planned for offices, control rooms, and warehouses. Footings shall be founded on 3 feet of engineered granular fill as described in Appendix E. The foundations shall be designed using an allowable soil-bearing pressure of 2,000 pounds per square foot (psf). The allowable soil pressure shall be increased by one-third for short term loads induced by winds or seismic events. Resistance to horizontal loads shall be developed by passive earth pressure on the sides of footings and frictional resistance developed along the bases of footings and concrete slabs. Passive resistance to lateral earth pressure shall be calculated using an equivalent fluid pressure of 300 equivalent fluid pressure (pcf) (for imported sands) to resist lateral loadings. The top 1 foot of embedment shall not be considered in computing passive resistance unless the adjacent area is confined by a slab or pavement. An allowable friction coefficient of 0.35 (for imported sands) shall also be used at the base of the footings to resist lateral loading. Foundation movement under the estimated static (non-seismic) loadings and static site conditions shall not exceed 0.75 inch with differential movement of about two-thirds of total movement for the loading assumptions stated above when the subgrade preparation guidelines given above are followed. Seismically induced liquefaction settlement shall be on the order of less than 0.75 inch. Mat foundations for lightly loaded structures like pumps, small tanks, generators, etc., shall be designed using an allowable soil bearing pressure of 1,500 psf when the foundation is supported on 12 inches of compacted Class 2 aggregate base (95 percent of ASTM D1557 maximum density to ±2 percent of optimum moisture). The native soils supporting the concrete structural mat and compacted aggregate base shall be moisture conditioned and recompacted as specified in Appendix E. The allowable soil pressure shall be increased by one-third for short-term loads induced by winds or seismic events. Design criteria for these mat foundations are provided in Appendix E.

- **Flexible Tank Foundations and Settlements**: The existing soils underlying the proposed tank area shall be removed to a depth of 36 inches below ground surface or a minimum of 24 inches below the bottom of the ring wall foundation (whichever is lower), extending to a minimum of 5 feet beyond the perimeter of the tank. Exposed subgrade shall be scarified to a depth of 8 inches, uniformly moisture conditioned to 2 to 8 percent above optimum moisture content, and recompacted to a minimum of 90 percent of the maximum density determined in accordance with ASTM D1557 methods. If soft conditions are encountered at the bottom of the excavation and subgrade compaction is not achievable, the native soil at the sub-excavation and footing excavation level shall be overlain by a woven geotextile stabilizing fabric (Mirafi HP 370 or equivalent). The area shall then be brought to finish grade with engineered fill consisting of the following components:

  - 36 inches of reinforced crushed aggregate base
  - 8 inches of crushed rock (1” x No. 4)
  - 4 inches of oiled sand

The fill shall be crowned about 40 percent of the total center settlement to allow for differential settlement between the tank perimeter and center. If compaction of sub-excavation level is achievable, the 36 inches of aggregate base shall be placed in 8-inch maximum loose lifts and compacted to a minimum 95 percent of ASTM D1557 maximum density within 2 percent of optimum moisture. If bottom of excavation subgrade compaction is not achievable and the geotextile stabilizing fabric is utilized, the first 12-inch layer of aggregate base placed over the geotextile fabric shall be compacted to a minimum of 90 percent. The remaining engineered aggregate base fill shall be placed in 8-inch maximum loose lifts and compacted to a minimum 95 percent of ASTM D1557 maximum density within 2 percent of optimum moisture. The crushed rock tank underlayment shall meet the gradation requirements of ASTM C33, Size 57 (1” x No. 4 rock). The tank shall have a perimeter ring wall foundation which supports the tank wall and roof. The interior footings and the ring wall may be proportioned for a net load (in addition to the uniform tank liquid load) for dead load of roof weight (plus sustained live load). The minimum depth of the ring wall footing shall be 24 inches below the finished ground surface. The minimum footing width shall be 12 inches. Flexible connections such “Flex-Tend” expansion joints shall be used to connect exterior piping with the tank. The tank shall be preloaded and monitored for settlement prior to making piping connections. It may be necessary to readjust piping connections after the loading sequence. The estimated settlement for the different proposed diameter tanks with an imposed pressure load of 1,500 and 2,000 psf are included in Appendix E. If estimated settlements are excessive even for the flexible steel tanks and connections supported by the engineered fill, the existing soils underlying the clarifier tank shall be improved by soil mixing or soil replacement (sand/cement) with 48-inch diameter shafts. The minimum surface area replacement ratio shall be 20 percent. Following soil mixing, the area shall be brought to finish grade with engineered fill consisting of the following components:

  - 36 inches of reinforced crushed aggregate base
  - 8 inches of crushed rock (1” x No. 4)
  - 4 inches of oiled sand

The fill may be crowned about 40 percent of the total center settlement to allow for differential settlement between the tank perimeter and center. Tank settlements with soil mixing improvement below the tank are shown in Appendix E.

- **Soil Mixing (Rigid Mats):** The use of soil improvement like soil mixing with cement or soil replacement (sand/cement) shall be used to reduce settlement to tolerable limits. The highly plastic native clays were found not to mix well with conventional soil mixing augers (Hudson Ranch 1 Plant site), and imported sands may be required for soil-cement mixing. Structural mat foundations placed over the improved soil shall be used to support the various structural elements of the plant. Mats overlaying soil mixed columns shall be underlain by 3 feet of crushed aggregate base (Caltrans Class 2, 1-½-inch or ¾-inch grading). The existing soils shall be improved by soil mixing or soil replacement (sand/cement) with 48-inch diameter shafts. The minimum surface area replacement ratio shall be 20 percent. Soil-cement design shall be provided by a licensed specialty contractor.

- **Auger Cast Piles:** Auger cast piles (cast-in-place grout with steel cage reinforcement) has been used successfully to provide deep foundations for heavily loaded and critical elements of industrial plants. Estimated capacities of 24- and 30-inch-diameter auger cast pile are provided in Appendix E. The structural capacity of the piles shall be verified by the structural engineer. The geotechnical engineer shall observe the auger cast pile drilling and electronic logs to evaluate each pile on a case-by-case basis.

- **Driven Piles:** The use of driven steel pipes had been used successfully for elevated pipe rack supports. Special provisions for corrosion protection due to the corrosive nature of the subsurface soils shall be implemented. Steel-driven pipe for the elevated pipe rack supports have been preliminarily sized as 10-inch-diameter with a 0.5-inch-thick wall. Axial and lateral loads were applied at 2 feet above ground surface. Estimated axial and lateral capacities of a 10-inch-diameter driven steel pipe are provided in Appendix E. Complete documentation of the proposed pile driving hammer shall be submitted to the geotechnical engineer for approval prior to mobilization. Driving records shall be maintained on each pile. The numbers of blows required to drive a pile each foot shall be recorded. Driving energy necessary to insure development of full design capacity shall be established after each selection of the pile driver. The geotechnical engineer shall observe pile driving and evaluate each pile on a case-by-case basis. Pre-drilling of pilot holes for piles to a depth of half the pile depth shall be allowed without reduction in pile capacity.

- **Concrete Mixes and Corrosivity:** A minimum of 6.5 sacks per cubic yard of concrete (4,500 pounds per square inch [psi]) of Type V Portland Cement with a maximum water/cement ratio of 0.45 (by weight) shall be used for concrete placed in contact with native soil on this Project (sitework including sidewalks, housekeeping slabs, and foundations). Admixtures may be required to allow placement of this low water/cement ratio concrete. Thorough concrete consolidation and hard trowel finishes shall be used due to the aggressive soil exposure. No metallic water pipes or conduits shall be placed below foundations. Foundation designs shall provide a minimum concrete cover of 5 inches around steel reinforcing or embedded components (anchor bolts, etc.) exposed to native soil. If the 5-inch concrete edge distance cannot be achieved, all embedded steel components (anchor bolts, etc.) shall be epoxy coated for corrosion protection (in accordance with ASTM D3963/A934) or a corrosion inhibitor, and a permanent waterproofing membrane shall be placed along the exterior face of the exterior footings. Additionally, the concrete shall be thoroughly vibrated at footings during placement to decrease the permeability of the concrete. A qualified corrosion engineer shall evaluate the corrosion potential on metal construction materials and concrete at the site to obtain final design recommendations.

- **Embankment Construction and General Site Fill:** All areas to receive new fill for the embankments shall be stripped of all vegetation. The surface 12 inches of native soil shall be uniformly moisture conditioned to 2 to 8 percent above optimum moisture by disking and compacted in 6-inch maximum lifts to a minimum of 90 percent of ASTM D1557 maximum density. The embankment slopes shall be constructed no steeper than 3:1 (unless lined with concrete or high-density polyethylene/polyvinyl chloride [HDPE/PVC] sheeting) with a minimum crown width of 15 feet. Embankments shall be overbuilt by 6 inches and subsequently cut to the plan line and grade to remove loose material along the slope faces. Native cohesive soil from the site or adjacent land areas shall be used as general and embankment fill and as pond liner material. The fill soils shall consist of cohesive silty clay (CL) or clay (CH). The general and embankment fill shall be pulverized/disked to less than 1 inch maximum clod size, uniformly moisture conditioned to 2 to 8 percent over optimum, placed in 6-inch maximum lifts, and compacted to a minimum of 90 percent of ASTM D1557 maximum density.

- **Excavations:** All site excavations shall conform to California Division of Occupational Safety and Health (Cal/OSHA) requirements for Type B soil. The contractor is solely responsible for the safety of workers entering trenches. Temporary excavations with depths of 4 feet or less shall be cut nearly vertical for short duration. Excavations deeper than 4 feet shall require shoring or slope inclinations in conformance to Cal/OSHA regulations for Type B soil. Surcharge loads of stockpiled soil or construction materials shall be set back from the top of the slope a minimum distance equal to the height of the slope. All permanent slopes shall not be steeper than 3:1 to reduce wind and rain erosion. Slopes protected with ground cover may be as steep as 2:1; however, maintenance with motorized equipment shall not be implemented at this inclination.

- **Utility Trench Backfill:** Prior to placement of utility bedding, the exposed subgrade at the bottom of trench excavations shall be examined for soft, loose, or unstable soil. Loose materials at trench bottoms resulting from excavation disturbance shall be removed to firm material. If extensive soft or unstable areas are encountered, these areas shall be over-excavated to a depth of at least 2 feet or to a firm base and replaced with additional bedding material. Pipe zone backfill (i.e., material beneath and in the immediate vicinity of the pipe) shall consist of a 4- to 8-inch bed of ⅜-inch crushed rock, sand/cement slurry, and/or crusher fines (sand) extending to a minimum of 12 inches above the top of the pipe. If crushed rock is used for pipe zone backfill for utilities, the crushed rock material shall be completed surrounded by a 6-ounce non-woven filter fabric such as Mirafi 160N or equivalent. The filter fabric shall cover the trench bottom, sidewalls, and over the top of the crushed rock to inhibit the migration of fine material into void spaces in the crushed rock, which may create the potential for sinkholes or depressions to develop at the ground surface. Pipe bedding shall be in accordance with the pipe manufacturer's recommendations and local codes and/or bedding requirements for specific types of pipes. Native backfill shall be placed and compacted only after buried pipes are encapsulated with suitable bedding and pipe envelope material. Mechanical compaction is recommended; ponding or jetting shall not be allowed, especially in areas supporting structural loads or beneath concrete slabs supported on grade, pavements, or other improvements. All trench backfill shall be placed and compacted in accordance with recommendations provided above for engineered fill. The pipe zone material (crusher fines, sand) shall be compacted to a minimum of 95 percent of ASTM D1557 maximum density. Pipe deflection shall be checked not to exceed 2 percent of pipe diameter. Soils used for trench backfill shall be placed in maximum 6-inch lifts (loose) and compacted to a minimum of 90 percent of ASTM D1557 maximum density at a minimum of 4 percent above optimum moisture. Granular trench backfill used in building pad areas shall be plugged with a solid (no clods or voids) 2-foot width of native clay soils at each end of the building foundation to prevent landscape water migration into the trench below the building. Backfill soil of utility trenches within paved areas shall be uniformly moisture conditioned to a minimum of 4 percent above optimum moisture, placed in layers not more than 6 inches in thickness, and mechanically compacted to a minimum of 90 percent of the ASTM D1557 maximum dry density, except that the top 12 inches shall be compacted to 95 percent (if granular trench backfill).

- **Seismic Design:** Designs shall comply with the latest edition of the CBC for Site Class D using the seismic coefficients given in Appendix E.
- **Laydown Yard:** The new laydown yard shall consist of a minimum of 8.0 inches of Caltrans Class 2 aggregate base placed over 12 inches of moisture-conditioned native clay soil (minimum of 2 percent above optimum moisture) compacted to a minimum of 90 percent of the maximum dry density determined by ASTM D1557. Alternately, the access roads shall consist of 6 inches of aggregate base placed over 9 inches of lime-treated soil compacted to a minimum of 90 percent. Preliminary estimates of lime content required to stabilize the clay soils is 6 percent hydrated lime by weight of soil.
- **Pavements:** Pavements shall be designed according to the 2020 Caltrans Highway Design Manual or other acceptable methods. The public agency or design engineer shall decide the appropriate traffic index for the site.
- The Project structural engineer shall confirm whether an ASCE 7-16 Section 11.4.8 exception applies to the Project. If none of the exceptions apply, a qualified geo-engineer shall be consulted to perform a site-specific ground motion hazard analysis.
- Development of building foundations and concrete flatwork shall include provisions for mitigating potential swelling forces and reduction in soil strength, which can occur from saturation of the soil. Typical measures considered to remediate expansive soil include:
    - Capping silt/clay soil with a non-expansive sand layer of sufficient thickness (3 feet minimum) to reduce the effects of soil shrink/swell
    - Moisture conditioning subgrade soils to a minimum of 5 percent above optimum moisture (ASTM D1557) within the drying zone of surface soils
    - Designing foundations to be resistant to shrink/swell forces of silt/clay soil
    - A combination of the methods described above

In order to minimize potential impacts to paleontological resources, the following mitigation measures shall be implemented:

PALEO-1: Developer shall retain the services of a qualified paleontologist and require that all initial ground-disturbing work be monitored by someone trained in fossil identification in monitoring contexts. The consultant shall provide a supervising paleontological specialist and a paleontological monitor to be present at the Project construction phase kickoff meeting.

PALEO-2: On the first day of construction and thus prior to any ground disturbance in the Project site, the supervising cultural resources specialist and cultural resources monitor shall conduct initial Worker Environmental Awareness Program (WEAP) training to all construction personnel, including supervisors, present at the outset of the Project construction work phase, for which the lead contractor and all subcontractors shall make their personnel available. This WEAP training will educate construction personnel on how to work with the monitor(s) to identify and minimize impacts to paleontological resources and maintain environmental compliance and will be performed periodically for new personnel coming onto the project as needed.

PALEO-3: The contractor shall provide the supervising paleontological resources specialist with a schedule of initial potential ground-disturbing activities. A minimum of 48 hours shall be provided to the consultant of commencement of any initial ground-disturbing activities such as vegetation grubbing or clearing, grading, trenching, or mass excavation.

A paleontological monitor shall be present on site at the commencement of ground-disturbing activities related to the Project. The monitor, in consultation with the supervising paleontologist, shall observe initial ground-disturbing activities and, as they proceed, make adjustments to the number of monitors as needed to provide adequate observation and oversight. All monitors shall have stop-work authority to allow for recordation and evaluation of finds during construction. The monitor shall maintain a daily record of observations as an ongoing reference resource and to provide a resource for final reporting upon completion of the Project.

The supervising paleontologist, paleontological monitor, and the lead contractor and subcontractors shall maintain a line of communication regarding schedule and activity such that the monitor is aware of all ground-disturbing activities in advance in order to provide appropriate oversight.

PALEO-4: If paleontological resources are discovered, construction shall be halted within 50 feet of any paleontological finds and shall not resume until a qualified paleontologist can determine the significance of the find and/or the find has been fully investigated, documented, and cleared.

PALEO-5: At the completion of all ground-disturbing activities, the consultant shall prepare a Paleontological Resources Monitoring Report summarizing all monitoring efforts and observations, as performed, and any and all prehistoric or historic archaeological finds, as well as providing follow-up reports of any finds to the SCIC, as required.

4.5.8 Level of Significance After Mitigation

With the implementation of mitigation measures GEO-1 and PALEO-1 through PALEO-5, the Project would ensure potential impacts related to geology and soils would remain less than significant.

4.6 GREENHOUSE GAS EMISSIONS

This section provides information on potential impacts from the GHG emissions generated either directly or indirectly by the Project. This section also addresses the potential of the Project to conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. Information contained in this section is from the GHG modeling parameter and output prepared for the Project in the *Hudson Ranch Greenhouse Gas Screening Letter – County of Imperial,* dated June 6, 2021, prepared by Ldn Consulting, Inc. (Appendix G). This analysis follows the ICAPCD recommendations for preparing a GHG emissions analysis under CEQA.

4.6.1 Background Information

Climate change is a recorded change in the Earth's average weather measured by variables such as wind patterns, storms, precipitation, and temperature. Global temperatures are moderated by naturally occurring atmospheric gases, including water vapor, carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O), which are known as greenhouse gases (GHGs). Historical records show that global temperature changes have occurred naturally in the past, such as during previous ice ages. However, it has been shown that emissions from human activities, such as electricity production and vehicle use, have elevated the concentration of these gases in the atmosphere. The years 2016 and 2020 are tied for the Earth's warmest year since recordkeeping began in 1880, and 16 of the 17 warmest years in the instrumental record occurred since 2001. The average global temperature has risen more than 2.0 °F (1.2 °C) since 1880 (NASA 2021).

The global atmospheric concentration of CO_2 has increased from a pre-industrial (roughly 1750) value of about 280 ppm to a monthly mean value of 414 ppm in December 2020 (NOAA 2021). According to the Global Greenhouse Emissions Data website (USEPA 2014), the breakdown of global GHG emissions by sector consists of: 25 percent from electricity and heat production; 21 percent from industry; 24 percent from agriculture, forestry and other land use activities; 14 percent from transportation; 6 percent from building energy use; and 10 percent from all other sources of energy use.

According to Inventory of U.S. Greenhouse Gas Emissions and Sinks 1990-2018, prepared by USEPA, April 13, 2020, in 2018 total U.S. GHG emissions were 6,676.6 million metric tons (MMT) of CO_2 equivalent (CO_2e) emissions. Total U.S. emissions have increased by 3.7 percent between 1990 and 2018, which is down from a high of 15.2 percent above 1990 levels in 2007. Emissions increased by 2.9 percent or 188.4 $MMTCO_2e$ between 2017 and 2018. The recent increase in GHG emissions was largely driven by an increase in CO_2 emissions from fossil fuel combustion, a result of multiple factors including greater heating and cooling needs due to a colder winter and hotter summer in 2018 compared to 2017.

According to CARB (2020), the State of California created 425 $MMTCO_2e$ in 2018. The breakdown of California GHG emissions by sector consists of: 39.9 percent from transportation, 21.0 percent from industrial, 14.8 percent from electricity generation, 7.7 percent from agriculture, 6.1 percent from residential buildings, and 3.7 percent from commercial buildings. In 2018, GHG emissions were 0.8 $MMTCO_2e$ higher than 2017 levels and are 6 $MMTCO_2e$ below the 2020 GHG limit of 431 $MMTCO_2e$ established by AB 32.

4.6.2 Greenhouse Gases

GHGs are global pollutants and are therefore unlike criteria air pollutants such as ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), and toxic air contaminants (TACs), which are pollutants of regional and local concern (see Section 4.1, Air Quality, of this SEIR). While pollutants with localized air quality effects have relatively short atmospheric lifetimes (generally on the order of a few days), GHGs have relatively long atmospheric lifetimes, ranging from one year to several thousand years. Long atmospheric lifetimes allow GHGs to disperse around the globe. Therefore, GHG effects are global, as opposed to the local and/or regional air quality effects of criteria air pollutant and TAC emissions.

California AB 32 defines greenhouse gases as any of the following compounds: carbon dioxide (CO_2) methane (CH_4), nitrous oxide (N_2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulfur hexafluoride (SF_6) (California Health and Safety Code Section 38505[g]). CO_2, followed by CH_4 and N_2O, are the most common GHGs that result from human activity.

GHGs have varying global warming potential (GWP). The GWP is the potential of a gas or aerosol to trap heat in the atmosphere; it is the "cumulative radiative forcing effect of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas" (USEPA 2018). The reference gas for GWP is CO_2; therefore, CO_2 has a GWP of 1. The other main greenhouse gases that have been attributed to human activity include CH_4, which has a GWP of 21, and N_2O, which has a GWP of 310. Table 4.6-1 presents the GWP and atmospheric lifetimes of common GHGs.

Table 4.6-1: Global Warming Potentials, Atmospheric Lifetimes, and Abundances of GHGs

Gas	Atmospheric Lifetime (year)[1]	Global Warming Potential (100 Year Horizon)[2]	Atmospheric Abundance
Carbon Dioxide (CO_2)	50-200	1	379 ppm
Methane (CH_4)	9-15	25	1,774 ppb
Nitrous Oxide (N_2O)	114	298	319 ppb
HFC-23	270	14,800	18 ppt
HFC-134a	14	1,430	35 ppt
HFC-152a	1.4	124	3.9 ppt
PFC: Tetrafluoromethane (CF_4)	50,000	7,390	74 ppt
PFC: Hexafluoroethane (C_2F_6)	10,000	12,200	2.9 ppt
Sulfur Hexafluoride (SF_6)	3,200	22,800	5.6 ppt

Notes:
[1] Defined as the half-life of the gas.
[2] Compared to the same quantity of CO_2 emissions and is based on the Intergovernmental Panel On Climate Change (IPCC) 2007 standard, which is utilized in CalEEMod (Version 2016.3.2),that is used in this report (CalEEMod user guide: Appendix A).
Definitions: ppm = parts per million; ppb = parts per billion; ppt = parts per trillion
Source: CAPCOA, 2017

Human-caused sources of CO_2 include combustion of fossil fuels (coal, oil, natural gas, gasoline and wood). Data from ice cores indicate that CO_2 concentrations remained steady prior to the current period for approximately 10,000 years. Concentrations of CO_2 have increased in the atmosphere since the industrial revolution. CH_4 is the main component of natural gas and also arises naturally from anaerobic decay of organic matter. Human-caused sources of natural gas include landfills, fermentation of manure, and cattle farming. Human-caused sources of N_2O include combustion of fossil fuels and industrial processes such as nylon production and production of nitric acid.

Other GHGs are present in trace amounts in the atmosphere and are generated from various industrial or other uses. The sources of GHG emissions, GWP, and atmospheric lifetime of GHGs are all important variables to be considered in the process of calculating CO_2e for discretionary land use projects that require a climate change analysis.

4.6.3 Regulatory Setting

The regulatory setting related to global climate change is addressed through the efforts of various international, federal, State, regional, and local government agencies. These agencies work jointly, as well as individually, to reduce GHG emissions through legislation, regulations, planning, policy-making, education, and a variety of programs. The agencies responsible for global climate change regulations are discussed below.

International

International and federal legislation have been enacted to deal with GCC issues. In 1988, the United Nations and the World Meteorological Organization established the Intergovernmental Panel on Climate Change (IPCC) to assess the scientific, technical, and socioeconomic information relevant to understanding the scientific basis for human-induced climate change, its potential impacts, and options for adaptation and mitigation. In 1992, the United States joined other countries around the world in signing the United Nations' Framework Convention on Climate Change (UNFCCC) agreement with the goal of controlling GHG emissions. The parties of the UNFCCC adopted the Kyoto Protocol, which set binding GHG reduction targets for 37 industrialized countries, the objective of reducing their collective GHG emissions by 5 percent below 1990 levels by 2012. The Kyoto Protocol has been ratified by 182 countries but has not been ratified by the United States. It should be noted that Japan and Canada opted out of the Kyoto Protocol, and the remaining developed countries that ratified the Kyoto Protocol have not met their Kyoto targets. The Kyoto Protocol expired in 2012, and the amendment for the second commitment period from 2013 to 2020 has not yet entered into legal force. The Parties to the Kyoto Protocol negotiated the Paris Agreement in December 2015, agreeing to set a goal of limiting global warming to less than 2 degrees Celsius compared with pre-industrial levels. The Paris Agreement has been adopted by 195 nations with 147 ratifying it, including the United States by President Obama, who ratified it by Executive Order on September 3, 2016. On June 1, 2017, President Trump announced that the United States is withdrawing from the Paris Agreement; and on January 21, 2021, President Biden signed an executive order rejoining the Paris Agreement.

Additionally, the Montreal Protocol was originally signed in 1987 and substantially amended in 1990 and 1992. The Montreal Protocol stipulates that the production and consumption of compounds that deplete ozone in the stratosphere—CFCs, halons, carbon tetrachloride, and methyl chloroform—were to be phased out, with the first three by the year 2000 and methyl chloroform by 2005.

Federal

The USEPA is responsible for implementing federal policy to address global climate change. The federal government administers a wide array of public-private partnerships to reduce U.S. GHG intensity. These programs focus on energy efficiency, renewable energy, methane and other non-CO_2 gases, agricultural practices, and implementation of technologies to achieve GHG reductions. USEPA implements several voluntary programs that substantially contribute to the reduction of GHG emissions. On December 7, 2009, the USEPA Administrator signed two distinct findings regarding GHGs under section 202(a) of the Clean Air Act. The findings state:

- **Endangerment Finding:** The Administrator finds that the current and projected concentrations of the six key well-mixed greenhouse gases: carbon dioxide (CO_2); methane (CH_4); nitrous oxide (N_2O); hydrofluorocarbons (HFCs); perfluorocarbons (PFCs); and sulfur hexafluoride (SF_6), into the atmosphere, threaten the public health and welfare of current and future generations.

- **Cause or Contribute Finding**: The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare.

These findings did not impose any requirements on industry or other entities; however, since 2009 the USEPA has been providing GHG emission standards for vehicles and other stationary sources of GHG emissions that are regulated by the USEPA. On September 13, 2013, the USEPA Administrator signed 40 CFR Part 60, that limits emissions from new sources to 1,100 pounds of CO_2 per MWh for fossil fuel-fired utility boilers and 1,000 pounds of CO_2 per MWh for large natural gas-fired combustion units.

On August 3, 2015, the USEPA announced the Clean Power Plan, emissions guidelines for U.S. states to follow in developing plans to reduce GHG emissions from existing fossil fuel-fired power plants (Federal Register Vol. 80, No. 205, October 23, 2015). On February 9, 2016, the Supreme Court stayed implementation of the Clean Power Plan due to a legal challenge from 29 states; and, in April 2017, the Supreme Court put the case on a 60-day hold and directed both sides to make arguments for whether it should keep the case on hold indefinitely or close it and remand the issue to the USEPA. On October 11, 2017, the USEPA issued a formal proposal to repeal the Clean Power Plan; however, the repeal of the Plan will require following the same rule-making system used to create regulations and will likely result in court challenges.

State

CARB has the primary responsibility for implementing state policy to address global climate change; however, State regulations related to global climate change affect a variety of State agencies. CARB, which is a part of the California Environmental Protection Agency, is responsible for the coordination and administration of both the federal and State air pollution control programs within California. In this capacity, the CARB conducts research, sets CAAQS, compiles emission inventories, develops suggested control measures, provides oversight of local programs, and prepares the SIP. In addition, the CARB establishes emission standards for motor vehicles sold in California, consumer products (e.g., hairspray, aerosol paints, and barbeque lighter fluid), and various types of commercial equipment. It also sets fuel specifications to further reduce vehicular emissions.

In 2008, CARB approved a Climate Change Scoping Plan that proposes a “comprehensive set of actions designed to reduce overall carbon GHG emissions in California, improve our environment, reduce our dependence on oil, diversify our energy sources, save energy, create new jobs, and enhance public health” (CARB 2008). The Climate Change Scoping Plan has a range of GHG reduction actions which include direct regulations; alternative compliance mechanisms; monetary and nonmonetary incentives; voluntary actions; and market-based mechanisms such as a cap-and-trade system. In 2014, CARB approved the First Update to the Climate Change Scoping Plan that identifies additional strategies moving beyond the 2020 targets to the year 2050. On December 14, 2017, CARB adopted California’s 2017 Climate Change Scoping Plan (CARB 2017) that provides specific statewide policies and measures to achieve the 2030 GHG reduction target of 40 percent below 1990 levels by 2030 and the aspirational 2050 GHG reduction target of 80 percent below 1990 levels by 2050. In addition, the State has passed the following laws directing

CARB to develop actions to reduce GHG emissions, which are listed below in chronological order, with the most current first.

Executive Order N-79-20

The California Governor issued Executive Order (EO) N-79-20 on September 23, 2020, that requires all new passenger cars and trucks and commercial drayage trucks sold in California to be zero-emissions by the year 2035 and all medium-heavy-duty vehicles (commercial trucks) sold in the state to be zero-emissions by 2045 for all operations where feasible. EO N-79-20 also requires all off-road vehicles and equipment to transition to 100 percent zero-emission equipment, where feasible, by 2035.

Title 24, Part 6, Energy Efficiency Standards

California Code of Regulations (CCR) Title 24, Part 6: California's Energy Efficiency Standards for Residential and Nonresidential Buildings (Title 24) was first established in 1978 in response to a legislative mandate to reduce California's energy consumption. The standards are updated periodically to allow consideration and possible incorporation of new energy efficiency technologies and methods. Although it was not originally intended to reduce GHG emissions, electricity production by fossil fuels results in GHG emissions; and energy efficient buildings require less electricity. Therefore, increased energy efficiency results in decreased GHG emissions.

Title 24 standards are updated on a three-year schedule, and the most current 2019 standards went into effect on January 1, 2020. The Title 24 standards now require that the average new home built in California will now use zero-net-energy and that nonresidential buildings will use about 30 percent less energy than the 2016 standards due mainly to lighting upgrades. The 2019 standards also encourage the use of battery storage and heat pump water heaters and require the more widespread use of LED lighting as well as improve a building's thermal envelope through high performance attics, walls, and windows. The 2019 standards also require improvements to ventilation systems by requiring highly efficient air filters to trap hazardous air particulates as well as improvements to kitchen ventilation systems.

Title 24, Part 11, California Green Building Standards

CCR Title 24, Part 11: California Green Building Standards (Title 24) was developed in response to continued efforts to reduce GHG emissions associated with energy consumption. The most current version is the 2019 CALGreen Code, which became effective on January 1, 2020, and replaced the 2016 CALGreen Code.

The CALGreen Code contains requirements for construction site selection, storm water control during construction, construction waste reduction, indoor water use reduction, material selection, natural resource conservation, site irrigation conservation, and more. The code provides for design options that allow the designer to determine how best to achieve compliance for a given site or building condition. The code also requires building commissioning, which is a process for verifying that all building systems (e.g., heating and cooling equipment and lighting systems) are functioning at their maximum efficiency.

The CALGreen Code provides standards for bicycle parking, carpool/vanpool/electric vehicle spaces, light and glare reduction, grading and paving, energy-efficient appliances, renewable energy, graywater systems, water-efficient plumbing fixtures, recycling and recycled materials, pollutant controls (including moisture control and indoor air quality), acoustical controls, storm water management, building design, insulation, flooring, and framing, among others. Implementation of the CALGreen Code measures reduced energy consumption and vehicle trips and encourages the use of alternative-fuel vehicles, which reduces pollutant emissions.

Some of the notable changes in the 2019 CALGreen Code over the prior 2016 CALGreen Code include: an alignment of building code engineering requirements with the national standards that include anchorage requirements for solar panels, provide design requirements for buildings in tsunami zones, increase MERV for air filters from 8 to 13, increase electric vehicle charging requirements in parking areas, and set minimum requirements for use of shade trees.

Renewable Portfolio Standards

The State of California requires that utility providers provide renewable energy to their customers. Senate Bill (SB) 100 was adopted September 2018 and requires that by December 1, 2045, 100 percent of retail sales of electricity be generated from renewable or zero-carbon emission sources of electricity. SB 100 supersedes the renewable energy requirements set by SB 350, SB 1078, SB 107, and SB X1-2. SB 100 codified the interim renewable energy thresholds from the prior Bills of: 33 percent by 2020; 40 percent by December 31, 2024; 45 percent by December 31, 2027; and 50 percent by December 31, 2030.

Executive Order B-30-15, Senate Bill 32 & Assembly Bill 197 (Statewide Year 2030 GHG Targets)

California EO B-30-15 (April 29, 2015) set an “interim” statewide emission target to reduce greenhouse emissions to 40 percent below 1990 levels by 2030 and directed State agencies with jurisdiction over greenhouse gas emissions to implement measures pursuant to statutory authority to achieve this 2030 target and the 2050 target of 80 percent below 1990 levels. Specifically, the EO directed CARB to update the Scoping Plan to express this 2030 target in metric tons. Assembly Bill 197 (AB 197) (September 8, 2016) and SB 32 (September 8, 2016) codified into statute the GHG emissions reduction targets of at least 40 percent below 1990 levels by 2030 as detailed in EO B-30-15. AB 197 also requires additional GHG emissions reporting to CARB from stationary sources and requires CARB to provide sources of GHG emissions on its website that is broken down to sub-county levels. AB 197 requires CARB to consider the social costs of emissions impacting disadvantaged communities.

Executive Order B-29-15 and Senate Bill X7-7, Water Conservation Measures

The Water Conservation Act of 2009 sets an overall goal of reducing per-capita urban water use by 20 percent by December 31, 2020. The state is required to make incremental progress toward this goal by reducing per-capita water use by at least 10 percent by December 31, 2015. This is an implementing measure of the Water Sector of the AB 32 Scoping Plan. Reduction in water consumption directly reduces the energy necessary and the associated emissions to convene, treat, and distribute the water; it also reduces emissions from wastewater treatment.

The Department of Water Resources adopted a regulation on February 16, 2011, that sets forth criteria and methods for exclusion of industrial process water from the calculation of gross water use for purposes of urban water management planning. The regulation would apply to all urban retail water suppliers required to submit an Urban Water Management Plan, as set forth in the Water Code, Division 6, Part 2.6, Sections 10617 and 10620.

On April 1, 2015, the California Governor issued Executive Order B-29-15 that directed the State Water Resources Control Board (SWRCB) to impose restrictions to achieve a statewide 25-percent reduction in urban water usage and directed the Department of Water Resources to replace 50 million square feet of lawn with drought-tolerant landscaping through an update to the State's Model Water Efficient Landscape Ordinance. The Ordinance also requires installation of more efficient irrigation systems, promotes usage of greywater and onsite stormwater capture, and limits the turf planted in new residential landscapes to 25 percent of the total area and restricts turf from being planted in median strips or in parkways unless the parkway is next to a parking strip where a flat surface is required to enter and exit vehicles. EO B-29-15 and SB X7-7 would reduce GHG emissions associated with the energy used to transport and filter water.

Senate Bill 97 and Amendments to the California Environmental Quality Act Guidelines

SB 97 directed the California Natural Resources Agency (CNRA) to adopt amendments to the CEQA Guidelines that require evaluation of GHG emissions or the effects of GHG emissions by January 1, 2010. The CNRA has done so, and the amendments to the CEQA Guidelines, in a new Section 15064.4, entitled Determining the Significance of Impacts from Greenhouse Gas Emissions, provide that:

a) The determination of the significance of greenhouse gas emissions calls for a careful judgment by the lead agency consistent with the provisions in Section 15064. A lead agency should make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate, or estimate the amount of greenhouse gas emissions resulting from a project.

b) A lead agency should consider the following factors, among others, when assessing the significance of impacts from greenhouse gas emissions on the environment.

    1) The extent to which the project may increase or reduce greenhouse gas emissions as compared to the existing environmental setting;

    2) Whether the project emissions exceed a threshold of significance that the lead agency determines applies to the project; and

    3) The extent to which the project complies with regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of greenhouse gas emissions. Such requirements must be adopted by the relevant public agency through a public review process and must reduce or mitigate the project's incremental contribution of greenhouse gas emissions.

The amendments also add a new Section 15126.4(c), Mitigation Measures Related to Greenhouse Gas Emissions. Generally, this State CEQA Guidelines section requires lead agencies to consider feasible means—supported by substantial evidence and subject to monitoring or reporting—of mitigating the significant effects of GHG emissions. Potential measures to mitigate the significant effects of GHG emissions are identified, including those outlined in Appendix F, Energy Conservation, of the State CEQA Guidelines.

Senate Bill 375

SB 375 was adopted September 2008 in order to support the State's climate action goals to reduce GHG emissions through coordinated regional transportation planning efforts, regional GHG emission reduction targets, and land use and housing allocation. SB 375 requires CARB to set regional targets for GHG emissions reductions from passenger vehicle use. In 2010, CARB established targets for 2020 and 2035 for each Metropolitan Planning Organization (MPO) within the state. It was up to each MPO to adopt a sustainable communities strategy (SCS) that will prescribe land use allocation in that MPO's Regional

Transportation Plan (RTP) to meet CARB's 2020 and 2035 GHG emission reduction targets. These reduction targets are required to be updated every eight years; and in June 2017 CARB released Staff Report Proposed Update to the SB 375 Greenhouse Gas Emission Reduction Target, which provided recommended GHG emissions reduction targets for Southern California Association of Governments (SCAG) of 8 percent by 2020 and 21 percent by 2035.

The 2016-2040 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS), adopted by SCAG April 7, 2016, provides a 2020 GHG emission reduction target of 8 percent and a 2035 GHG emission reduction target of 18 percent. SCAG will need to develop additional strategies in its next revision of the RTP/SCS in order to meet CARB's new 21-percent GHG emission reduction target for 2035. CARB is also charged with reviewing SCAG's RTP/SCS for consistency with its assigned targets.

City and County land use policies, including General Plans, are not required to be consistent with the RTP and associated SCS. However, new provisions of CEQA incentivize, through streamlining and other provisions, qualified projects that are consistent with an approved SCS and categorized as "transit priority projects."

Assembly Bill 32, The California Global Warming Solutions Act of 2006

The California Legislature adopted the public policy position that global warming is "a serious threat to the economic well-being, public health, natural resources, and the environment of California" (California Health and Safety Code, Section 38501). Further, the State Legislature has determined that:

> "…the potential adverse impacts of global warming include the exacerbation of air quality problems, a reduction in the quality and supply of water to the state from the Sierra Nevada snowpack, a rise in sea levels resulting in the displacement of thousands of coastal businesses and residences, damage to marine ecosystems and the natural environment, and an increase in the incidences of infectious disease, asthma, and other human health-related problems."

The State Legislature also states that:

> "Global warming will have detrimental effects on some of California's largest industries, including agriculture, wine, tourism, skiing, recreational and commercial fishing, and forestry. It will also increase the strain on electricity supplies necessary to meet the demand for summer air-conditioning in the hottest parts of the State (California Health and Safety Code, Section 38501)."

These public policy statements became law with the enactment of AB 32, the California Global Warming Solutions Act of 2006, signed by Governor Arnold Schwarzenegger in September 2006. AB 32 is now codified as Sections 38500 through 38599 of the California Health and Safety Code.

AB 32 requires that statewide GHG emissions be reduced to 1990 levels by 2020. This reduction is to be accomplished through an enforceable statewide cap on GHG emissions to be phased in starting in 2012. AB 32 directs CARB to establish this statewide cap based on 1990 GHG emissions levels; to disclose how it arrived at the cap; to institute a schedule to meet the emissions cap; and to develop tracking, reporting, and enforcement mechanisms. Emissions reductions under AB 32 are to include carbon sequestration projects and best management practices that are technologically feasible and cost effective. As of the date of this Draft SEIR, CARB has not promulgated GHG emissions or reporting standards that are directly applicable to the Project.

Executive Order S-3-05

On June 1, 2005, Governor Arnold Schwarzenegger signed EO S-3-05, which proclaims that California is vulnerable to the impacts of climate change. It declares that increased temperatures could reduce snowpack in the Sierra Nevada Mountains, could further exacerbate California's air quality problems, and could potentially cause a rise in sea levels. In an effort to avoid or reduce the impacts of climate change, EO S-3-05 calls for a reduction in GHG emissions to the year 2000 level by 2010, to year 1990 levels by 2020, and to 80 percent below 1990 levels by 2050. It should be noted that the 80 percent below 1990 levels by 2050 is currently an aspirational goal by EO S-3-05 but has not yet been codified into law.

Assembly Bill 1493, Clean Car Standards

AB 1493, adopted September 2002, also known as Pavley I, requires the development and adoption of regulations to achieve the maximum feasible reduction of GHGs emitted by noncommercial passenger vehicles, light-duty trucks, and other vehicles used primarily for personal transportation in the state. Although setting emissions standards on automobiles is solely the responsibility of the USEPA, the federal Clean Air Act allows California to set state-specific emission standards on automobiles if the State first obtains a waiver from the USEPA. The USEPA granted California that waiver on July 1, 2009. The emission standards become increasingly more stringent through the 2016 model year. California is also committed to further strengthening these standards beginning in 2017 to obtain a 45-percent GHG reduction from 2020 model year vehicles (CARB 2009).

The second set of regulations, "Pavley II," was developed in 2010 and is being phased in between model years 2017 through 2025 with the goal of reducing GHG emissions by 45 percent by the year 2020 as compared to the 2002 fleet. The Pavley II standards were developed by linking the GHG emissions and formerly separate toxic tailpipe emissions standards previously known as the "LEV III" (third stage of the Low Emission Vehicle standards) into a single regulatory framework. The new rules reduce emissions from gasoline-powered cars as well as promote zero-emissions auto technologies such as electricity and hydrogen through increasing the infrastructure for fueling hydrogen vehicles. In 2009, the USEPA granted California the authority to implement the GHG standards for passenger cars, pickup trucks, and sport utility vehicles; and these GHG emissions standards are currently being implemented nationwide. However, USEPA has performed a midterm evaluation of the longer-term standards for model years 2022-2025; and, based on the findings of this midterm evaluation, the USEPA has proposed to amend the CAFE and GHG emissions standards for light vehicles for model years 2021 through 2026. The USEPA's proposed amendments do not include any extension of the legal waiver granted to California by the 1970 Clean Air Act which has allowed the State to set tighter standards for vehicle pipe emissions than the USEPA standards. On September 20, 2019, California filed suit over the USEPA decision to revoke California's legal waiver that has been joined by 22 other states.

Local – Imperial County Air Pollution Control District

The ICAPCD develops rules and regulations, establishes permitting requirements for stationary sources, inspects emission sources, and enforces such measures through educational programs or fines, when necessary. ICAPCD is directly responsible for reducing emissions from stationary, mobile, and indirect sources. The ICAPCD has not established formal quantitative or qualitative GHG emissions thresholds through a public rulemaking process. However, the ICAPCD has adopted the federal Prevention of

Significant Deterioration (PSD) and Title V GHG air permitting requirements by reference for stationary sources in Regulation IX in Rules 900 and 903, which are described below.

ICAPCD Rule 900

ICAPCD Rule 900 provides procedures for issuing permits to operate for industrial projects that are subject to Title V of the federal Clean Air Act Amendments of 1990 (Major Sources) of emissions, which is defined as a source that exceeds 100 tons per year of any regulated pollutant, including GHG emissions.

ICAPCD Rule 903

ICAPCD Rule 903 applies to any stationary source that would have the potential to emit hazardous air pollutants (HAPs). Rule 903 provides a *de minimis* emissions level of 20,000 tons of CO_2e per year, where if a stationary source produces less emissions than the *de minimis* emissions levels, the source is exempt from the Rule 903 recordkeeping and reporting requirements.

Thresholds of Significance

In order to assist in determining whether a project would have a significant effect on the environment, the County utilizes the State CEQA Guidelines Appendix G Guidelines. Appendix G states that a project may be deemed to have greenhouse gas impacts if it would:

Threshold a) **Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?**

Threshold b) **Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?**

4.6.4 Methodology

The GHG emissions related to construction and annual operations for both the Proposed Project and business-as-usual (BAU) scenario were calculated through use of the CalEEMod Version 2016.3.2. The BAU scenario is based on the CalEEMod default electricity intensity factors for IID, and the Proposed Project scenario adjusted the IID electricity intensity factors per the requirements of SB 100 that requires 53.3 percent renewable sources by opening year 2024. The GHG emissions modeling and CalEEMod printouts are provided in the GHG Analysis (Appendix G).

4.6.5 Project Impact Analysis

Threshold a) **Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?**

The Proposed Project may generate GHG emissions, either directly or indirectly, that may have a significant impact on the environment. Implementation of the Proposed Project is anticipated to generate GHG emissions from construction and operational activities, which have been analyzed separately below.

Project-Related Construction Emissions

Construction activities for the Proposed Project would occur over a two-year time frame that would occur over portions of the years 2021, 2022, and 2023. The CalEEMod model calculated that grading and construction of the Project will produce approximately 8,043.37 metric tons of carbon dioxide equivalent (MtCO$_2$e). It should also be noted that a direct comparison of construction GHG emissions with long-term thresholds would not be appropriate since construction emissions are short term in nature and would cease upon completion of construction. Other air districts, including the SCAQMD, recommend that GHG emissions from construction activities be amortized over 30 years, when construction emissions are compared to operational-related GHG emissions thresholds. Given this, the annual construction emission for the Proposed Project is 268.11 MtCO$_2$e per year and is shown in Table 4.6-2. It should be noted that no thresholds of significance are provided for construction-related GHG emissions; however, the 30-year amortized construction-related GHG emissions have been accounted for in the operational emissions analysis that is discussed below.

Table 4.6-2: Proposed Project Construction-Related GHG Emissions

Construction Year	GHG Emissions (Metric Tons/Year)					
	Bio-CO$_2$	NBio-CO$_2$	Total CO$_2$	CH$_4$	N$_2$O	CO$_2$e
2021	0.00	3,329.28	3,329,28	0.71	0.00	3,346.92
2022	0.00	3,613.71	3,613.71	0.67	0.00	3,630.35
2023	0.00	1,061.10	1,061.10	0.20	0.00	1,066.10
Total						8,043.37
Yearly Average Construction Emissions (Averaged over 30 years)						268.11

Source: LDN Consulting, 2021 (see Appendix G)

Project-Related Operational Emissions

GHG emissions created from the operation of the Proposed Project are shown in Table 4.6-3.

Table 4.6-3: Proposed Project Operations-Related GHG Emissions

Source	GHG Emissions (Metric Tons/Year)					
	Bio-CO$_2$	NBio-CO$_2$	Total CO$_2$	CH$_4$	N$_2$O	CO$_2$e
Area	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	13,961.81	13,961.81	0.33	0.07	13,991.06
Mobile	0.00	415.54	415.54	0.02	0.00	416.03
Onsite Forklifts	0.00	30.69	30.69	0.01	0.00	30.94
Stationary Emission	0.00	20.17	20.17	0.00	0.00	20.24
Waste	14.60	0.00	14.60	0.86	0.00	36.17
Water	351.48	379.54	731.03	36.11	0.85	1,888.36
Construction Emissions (Averaged over 30 years)						268.11
Project Total GHG Emissions						16,650.91

Source: LDN Consulting, 2021 (see Appendix G)

The GHG emissions shown in Table 4.6-3 are based on the proposed design detailed in the Project Description as well as IID's adherence to the State's Renewable Portfolio Standards (RPS) that require 60 percent of electricity provided by IID to be from zero-carbon emissions sources by the year 2030. Table 4.6-3 shows that the operational GHG emissions do not exceed either the USEPA's 25,000 $MtCO_2e$ emissions threshold or ICAPCD Rule 903 20,000-$MtCO_2e$ emissions threshold, where exceedance of either threshold would require the project to perform additional GHG emissions recordkeeping and reporting. However, operation of the Proposed Project would exceed the 900-$MtCO_2e$ screening threshold and is therefore required to show at least a 28.3-percent reduction over BAU conditions.

The BAU emissions were calculated for the opening year 2024. As can be seen in Table 4.6-3 above, the GHG emissions created from operation of the Proposed Project are primarily created from electricity usage, in the forms of onsite electricity usage and water conveyance. The BAU emissions calculations were based on utilization of the default IID electrical intensity factors. Table 4.6-4 shows the Proposed Project's operational GHG emissions without implementation of the State's RPS.

Table 4.6-4: Business-As-Usual Operations-Related GHG Emissions

Source	GHG Emissions (Metric Tons/Year)					
	Bio-CO_2	NBio-CO_2	Total CO_2	CH_4	N_2O	CO_2e
Area	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	29,884.23	29,884.23	0.68	0.14	29,943.32
Mobile	0.00	415.54	415.54	0.02	0.00	416.03
Onsite Forklifts	0.00	30.69	30.69	0.01	0.00	30.94
Stationary Emission	0.00	20.17	20.17	0.00	0.00	20.24
Waste	14.60	0.00	14.60	0.86	0.00	36.17
Water	351.48	812.39	1,163.87	36.12	0.86	2,322.02
Construction Emissions (Averaged over 30 years)						268.11
Project (BAU) Total GHG Emissions						33,037
Proposed Project Emissions (from Table 4.6-3)						16,651
Difference						16,386
Percent Reduction over BAU						49.5%

Source: LDN Consulting, 2021 (see Appendix G)

Table 4.6-4 shows the Proposed Project would have a 49.5-percent reduction in GHG emissions when compared to the BAU scenario without IID's implementation of the RPS. Since a 28.3-percent reduction is required, the Proposed Project would result in a less than significant impact. Furthermore, as detailed above, the Proposed Project would not exceed either the USEPA's 25,000-$MtCO_2e$ emissions threshold or ICAPCD Rule 903 20,000-$MtCO_2e$ emissions threshold, where exceedance of either threshold would require the Project to perform additional GHG emissions recordkeeping and reporting. Impacts would be less than significant.

Threshold b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

The Proposed Project would not conflict with any applicable plan, policy, or regulation of an agency adopted for the purpose of reducing GHG emissions. As detailed above, neither the ICAPCD nor the County of Imperial has adopted a climate action plan; as such, the only applicable plan for reducing GHGs is the CARB's 2017 Climate Change Scoping Plan, which is discussed below.

Consistency with CARB's 2017 Scoping Plan

The Project's consistency with the list of feasible mitigation measures for individual projects provided in the CARB's 2017 Scoping Plan is shown in Table 4.6-5.

Table 4.6-5: Consistency with CARB's 2017 Scoping Plan Measures for Individual Projects

Measures from Scoping Plan	Project Consistency
Construction	
Enforce idling time restrictions for construction vehicles	Consistent. The Project Applicant will require that all off-road equipment utilized on the project site be registered with CARB and adhere to CARB's idling limitation rules.
Require construction vehicles to operate with the highest tier engines commercially available	Consistent. The Project Applicant has committed to Project Design Features that require all off-road equipment greater than 50 horsepower to utilize Tier 4 equipment, when commercially available.
Divert and recycle construction and demolition waste, and use locally-sourced building materials with a high recycled material content to the greatest extent feasible.	Consistent. The Project Applicant will require all contractors to adhere to the Title 24 Part 11 requirements that require diversion of a minimum of 65 percent of construction waste from landfills.
Minimize tree removal, and mitigate indirect GHG emissions increases that occur due to vegetation removal, loss of sequestration, and soil disturbance.	Consistent. Minimal vegetation currently is present on the project site; however, implementation of the Project would result in landscaping that would add more vegetation to the project site.
Utilize existing grid power for electric energy rather than operating temporary gasoline/diesel powered generators.	Consistent. The project site currently has electrical service that would be utilized to the fullest extent practical during construction of the Project.
Increase use of electric and renewable fuel powered construction equipment and require renewable diesel fuel where commercially available.	Consistent. The Project Applicant has committed to Project Design Features that encourage the use of alternative-fueled construction equipment.
Require diesel equipment fleets to be lower emitting than any current emission standard.	Consistent. The Project Applicant has committed to Project Design Features that encourage the use of alternative-fueled, lower emitting construction equipment.
Operation	
Comply with lead agency's standards for mitigating transportation impacts under SB 743	Consistent. The Project Applicant has committed to Project Design Features that require charging stations for electric vehicles and providing onsite eating opportunities, which conform with the goals of SB 743.
Require on-site EV charging capabilities for parking spaces serving the project to meet jurisdiction-wide EV proliferation goals.	Consistent. The Proposed Project will be required to meet the Title 24 Part 11 requirements with regard to onsite electric vehicle parking and charging stations.
Allow for new construction to install fewer on-site parking spaces than required by local municipal building code, if appropriate.	Consistent. The Project Applicant will review the parking provided to determine if reducing the number of parking spaces provided is possible.
Dedicate on-site parking for shared vehicles.	Consistent. The Proposed Project will be required to meet the Title 24 Part 11 requirements with regard to dedicated spaces for carpools and clean air vehicles.

Table 4.6-5: Consistency with CARB's 2017 Scoping Plan Measures for Individual Projects

Measures from Scoping Plan	Project Consistency
Provide adequate, safe, convenient, and secure on-site bicycle parking storage in multi-family residential projects and in non-residential projects.	Consistent. Since there is very limited housing and no commercial uses located within bike riding distance of the project site, the Project Applicant has committed to Project Design Features that require providing of onsite food vending facilities as well as providing charging stations for electric vehicles.
Provide on- and off-site safety improvements for bike, pedestrian, and transit connections, and/or implement relevant improvements identified in an applicable bicycle and/or pedestrian master plan.	Consistent. The Proposed Project will include pedestrian and bicycle pathways on site that connect to the offsite roads.
Require on-site renewable energy generation.	Consistent. The Proposed Project will be designed to meet Title 24 part 6 requirements that any industrial structure constructed be designed to be solar ready, which requires that all roofs be designed to structurally support solar PV panels as well as the installation of conduit from the main panel to the roof for future PV connections.
Prohibit wood-burning fireplaces in new development, and require replacement of wood-burning fireplaces for renovations over a certain size developments.	Not applicable. The Proposed Project would not include any wood-burning fireplaces.
Require cool roofs and "cool parking" that promotes cool surface treatment for new parking facilities as well as existing surface lots undergoing resurfacing.	Consistent. The Proposed Project will be designed to meet the CALGreen Building requirements that require installation of cool roofs and cool asphalt for parking.
Require solar-ready roofs	Consistent. The Proposed Project will be designed to meet the CALGreen Building requirements that require all new nonresidential structures to be designed with solar-ready roofs.
Require organic collection in new developments	Consistent. The Project Applicant will require the landscape contractor for the Proposed Project to collect and recycle green waste.
Require low-water landscaping in new developments. Require water efficient landscape maintenance to conserve water and reduce landscape waste.	Consistent. All new landscaping will be designed to meet the Title 24 part 11 requirements that require the use of drought-tolerant plants and water-efficient irrigation systems.
Achieve Zero Net Energy performance building standards prior to dates required by the Energy Code.	Consistent. All structures would be designed to exceed Title 24 part 6 building energy efficiency standards.
Encourage new construction including municipal building construction, to achieve third-party green building certifications, such as the GreenPoint Rated program, LEED rating system, or Living Building Challenge.	Not applicable. The Project would not include any municipal buildings.
Require the design of bike lanes to connect to the regional bicycle network.	Consistent. The Proposed Project would include onsite bikeways that connect to the offsite roads.

Table 4.6-5: Consistency with CARB's 2017 Scoping Plan Measures for Individual Projects

Measures from Scoping Plan	Project Consistency
Expand urban forestry and green infrastructure in new land development.	Consistent. The Proposed Project includes a Landscape Plan that would increase the number of trees on the project site.
Require preferential parking spaces for park and ride to incentive carpooling.	Consistent. The Proposed Project would be designed to meet the Title 24 Part 11 requirements that require dedicated spaces for carpools and clean air vehicles.
Require a transportation management plan for specific plans which establishes a numeric target for non-SOV travel and overall VMT	Consistent. Although the Traffic Impact Analysis prepared for the Proposed Project analyzed the overall VMT generated by the Proposed Project, which found that the project VMT impacts were less than significant.
Develop a rideshare program targeting commuters to major employment centers.	Not Applicable. The Proposed Project would not be considered a major employment center.
Require the design of bus stops/shelters/express lanes in new development to promote the usage of mass-transit.	Not Applicable. Currently no bus service is provided in the project vicinity, nor is any bus service planned for the project vicinity.
Require gas outlets in residential backyards for use with outdoor cooking appliances such as gas barbeques if natural gas service is available.	Not Applicable. No residential backyards would be a part of the Proposed Project.
Require the installation of electrical outlets on the exterior walls of both the front and back of residences to promote the use of electric landscape maintenance equipment	Not Applicable. No residential homes would be a part of the Proposed Project.
Require the design of the electric outlets and/or wiring in new residential unit garages to promote electric vehicle usage.	Not Applicable. No residential homes would be a part of the Proposed Project.
Require electric vehicle charging station and signage for non-residential developments.	Consistent. The Proposed Project will be designed to meet the Title 24 Part 11 requirements that require the installation electric vehicle charging stations.
Provide electric outlets to promote the use of electric landscape equipment to the extent feasible on parks and public/quasi-public lands.	Consistent. The Proposed Project will be designed to meet the CALGreen Building requirements that require installation of outdoor outlets on nonresidential structures.
Require each residential unit to be "solar ready," including installing the appropriate hardware and proper structural engineering.	Not Applicable. No residential homes would be a part of the Proposed Project.
Require the installation of energy conservation appliances such as on-demand tank-less water heaters and whole-house fans.	Not Applicable. These energy conservation appliances are for residential uses and would not operate efficiently in industrial buildings.
Require each residential and commercial building equip buildings with energy efficient AC units and heating systems with programmable thermostats/timers.	Consistent. The Proposed Project will be designed to meet the CALGreen Building requirements that require installation of programmable thermostats.
Require large-scale residential developments and commercial buildings to report energy use, and set specific targets for per-capita energy use.	Not Applicable. The Proposed Project consists of an industrial project, which is neither a residential nor a commercial use.

Table 4.6-5: Consistency with CARB's 2017 Scoping Plan Measures for Individual Projects

Measures from Scoping Plan	Project Consistency
Require each residential and commercial building to utilize low flow water fixtures such as low flow toilets and faucets.	Consistent. The Proposed Project will be designed to meet the CALGreen Building requirements that require installation of low-flow water fixtures.
Require the use of energy-efficient lighting for all street, parking, and area lighting	Consistent. The Proposed Project will be designed to meet the CALGreen Building requirements that require installation of energy-efficient lighting.
Require the landscaping design for parking lots to utilize tree cover and compost/mulch.	Consistent. All parking lots will be designed to meet County standards for tree coverage of parking lots.
Incorporate water retention in the design of parking lots and landscaping, including using compost/mulch.	Consistent. All parking lots and other improvements included in the Proposed Project will be required to meet the water-retention requirements detailed in the WQMP.
Require the development project to propose an off-site mitigation project which should generate carbon credits equivalent to the anticipated GHG emission reductions.	Not Applicable. The GHG emissions calculations for the Proposed Project that are provided above did not find an exceedance of the applicable GHG emissions thresholds; and, therefore, no offsite mitigation is needed or required.
Require the project to purchase carbon credits from the CAPCOA GHG Reduction Exchange Program, American Carbon Registry (ACR), Climate Action Reserve (CAR) or other similar carbon credit registry determined to be acceptable by the local air district.	Not Applicable. The GHG emissions calculations for the Proposed Project that are provided above did not find an exceedance of the applicable GHG emissions thresholds; and, therefore, no offsite mitigation is needed or required.
Encourage the applicant to consider generating or purchasing local and California-only carbon credits as the preferred mechanism to implement its off-site mitigation measure for GHG emissions and that will facilitate the State's efforts in achieving the GHG emission reduction goal.	Not Applicable. The GHG emissions calculations for the Proposed Project that are provided above did not find an exceedance of the applicable GHG emissions thresholds; and, therefore, no offsite mitigation is needed or required.

Source: CARB 2017
Notes: CAPCOA: California Air Pollution Control Officers Association; GHG: greenhouse gas; LEED: Leadership in Energy and Environmental Design; PV: photovoltaic; VMT: Vehicle Miles Traveled; WQMP: Water Quality Management Plan

As shown in Table 4.6-5, with implementation of the Project Design Features committed to by the project applicant and Statewide regulatory requirements including the CALGreen building standards, the Proposed Project would be consistent with all feasible mitigation measure for individual projects provided in the CARB's 2017 Scoping Plan. Therefore, implementation of the Proposed Project would not conflict with any applicable plan that reduces GHG emissions. Impacts would be less than significant.

4.6.6 Cumulative Impacts

Cumulative impacts are defined in CEQA as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines Section 15355). Stated in another way, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing relating impacts" (CEQA Guidelines Section 15130 [a][1]).

California Air Pollution Control Officers Association's (CAPCOA's) CEQA and Climate Change Report states, "GHG impacts are exclusively cumulative impacts; there are no non-cumulative GHG emission impacts from a climate change perspective" (CAPCOA 2008). Because the magnitude of global GHG emissions is extremely large when compared with the emissions of typical development projects, it is accepted as very unlikely that any individual development project would have GHG emissions of a magnitude to directly impact global climate change. As detailed above, the GHG emissions created from the Proposed Project would not exceed either the USEPA's 25,000-$MtCO_2e$ emissions threshold or ICAPCD Rule 903 20,000-$MtCO_2e$ emissions threshold and would be consistent with all applicable plans for reducing GHG emissions. Cumulative impacts would be less than significant.

4.6.7 Mitigation Measures

No mitigation measures are required, as all Project impacts regarding GHG emissions are less than significant.

4.6.8 Level of Significance After Mitigation

No mitigation measures are required; impacts related to GHG emissions would remain less than significant.

4.7 HAZARDS AND HAZARDOUS MATERIALS

This section discusses the potential hazards and hazardous materials impacts that would occur in association with implementation of the proposed Energy Source Mineral ATLiS Project. The discussion focuses on hazardous materials and hazards requiring remediation or mechanisms to prevent accidental release. Measures are identified to reduce or avoid adverse impacts anticipated from construction, operation, and decommissioning of the Project. Information contained in this section is summarized from the *Phase I ESA Report for Hudson Ranch Geothermal Plant* prepared by GS Lyon Consultants, Inc. (GS Lyon) in December 2019, included as Appendix F of this EIR. Phase I ESAs are location-dependent and describe the existing potential hazards on the site. Therefore, the contents of the Phase I ESA for HR1, are applicable to the Proposed Project.

4.7.1 Existing Environmental Setting

Regional Setting

The Project would be located in the unincorporated portion of Imperial County, which is situated in the southeasternmost portion of the State of California. The County encompasses an approximately 4,597-square-mile area and is bordered by Riverside County to the north, the State of Arizona on the east, Mexico to the south, and San Diego County to the west.

According to the County's General Plan, contributors to the potential for a hazardous material accident to occur in Imperial County include the agricultural economy, proliferation of fuel tanks and transmission facilities, the intricate canal system, and the confluence of major surface arteries and rail systems. The potential for an accident is increased in regions near roadways that are frequently used for transporting hazardous material and in regions with agricultural or industrial facilities that use, store, handle, or dispose of hazardous material (County 1997b).

Project Site

The Project site is located approximately 3.8 miles southwest of the community of Niland, a census-designated place, in the unincorporated area of Imperial County. The Project site is located on three parcels (APN 020-100-025, 020-100-044, and 020-100-046) north of West Schrimpf Road, east of Davis Road, and south of McDonald Road.

Based on a review of the historical information in the HR1 Phase I ESA (Appendix F), the southern portion of the HR1 property was first developed in 2011 for industrial use as a geothermal power plant. Prior to development of the power plant, ponds on the subject property were used for duck hunting; and, prior to that, the property was used for agricultural fields. Carbon dioxide wells were drilled southwest of the Project site (at the southeast corner of Davis Road and West Schrimpf Road) in the 1930s and 1940s. The wells have since been abandoned and are currently present as mud pots, pools, and dried craters.

The Phase I ESA reports much of the Project site was in agricultural use prior to the mid 1970s. Residues of currently available pesticides and currently banned pesticides such as DDT/DDE may be present in near-surface soils in limited concentrations. The concentrations of these pesticides found on other Imperial Valley agricultural sites are typically less than 25 percent of the current regulatory threshold limits and, at those levels, are not considered a significant environmental hazard.

Federal and State Database Review

Various hazardous materials sites were reviewed as part of the Phase I ESA to determine whether any government-regulated properties with known environmental conditions and potential environmental concerns are located near the Project site.

The primary reason for defining potentially hazardous sites is to protect health and safety and to minimize the public's exposure to hazardous materials during Project construction and waste handling. Exposure can occur during normal use, handling, storage, transportation, and disposal of hazardous materials. Exposure may also occur due to hazardous compounds existing in the environment, such as fuels in underground storage tanks, pipelines, or areas where chemicals have leaked into the soil or groundwater. If encountered, contaminated soil may qualify as hazardous waste, thus requiring handling and disposal according to local, State, and federal regulations. EnviroStor, which is administered by the Department of Toxic Substances Control (DTSC), provides existing information on permits and corrective action at hazardous waste facilities, as well as site cleanup projects. Review of EnviroStor indicates that no land use restrictions or contaminated sites are within the Project site. EnviroStor indicates that seven contaminated sites are within 10 miles of the Project site, as shown in Table 4.7-1.

Table 4.7-1: Contaminated Sites within 10 Miles of the Project Site

Site Name	Address	City	Site/Facility Type	Cleanup Status	Distance from Project Site
CalEnergy – Leathers Facility	342 W Sinclair Rd	Calipatria	Tiered Permit Site	Certified as of 4/10/2013	1.51 miles
CalEnergy – Elmore Facility	786 W Sinclair	Calipatria	Tiered Permit Site	Certified as of 4/10/2013	1.58 miles
CalEnergy – Central Services	480 W Sinclair Rd	Calipatria	Tiered Permit Site	Certified as of 4/10/2013	1.68 miles
CalEnergy - Vulcan/Del Ranch (Hoch) Facilities	7001 Gentry Rd	Calipatria	Tiered Permit Site	Certified as of 4/10/2013	3.61 miles
CalEnergy – Units 1&2/Units 3&4/5 Facilities	6920 Lack Rd	Calipatria	Tiered Permit Site	Certified as of 4/10/2013	5.52 miles
Camp Dunlap	10 Miles N/E of Niland	Niland	State Response	Inactive - Needs Evaluation as of 7/12/2018	7.25 miles
Chocolate Mountain Naval Aerial Gunnery Range	Naval Weapons Range, East of Salton Sea	Niland	State Response	Active as of 6/12/2018	7.67 miles

Source: https://www.envirostor.dtsc.ca.gov/public/
Notes: N/E = Northeast; Rd = Road; W = West

GeoTracker, which is administered by the SWRCB, is used to track and archive compliance data from authorized or unauthorized discharges of waste to land, or unauthorized releases of hazardous substances from underground storage tanks (UST). GeoTracker identifies no hazardous materials sites within 1 mile of the Project site (SWRCB 2021).

EnviroMapper, which is administered by the USEPA, includes geographic information, such as locations of federal Superfund sites and other hazardous materials sites. Review of EnviroMapper indicates that no designated Superfund or hazardous material sites are within 1 mile of the Project site (USEPA 2021).

According to the California Department of Conservation Geologic Energy Management Division's (CalGEM) Well Finder database, no oil or gas wells are located on the Project site. Well Finder did identify a geothermal well on the northwest side of the Project site; however, the well has been abandoned (DOC 2021).

Sensitive Receptors

Sensitive receptors that may be susceptible to health and safety impacts resulting from the construction and operation of renewable energy facilities generally include onsite workers and the young and elderly sectors of the population.

The Town of Niland is approximately 3.8 miles south southwest of the Project site. The nearest residence is approximately 1 mile north of the Project site, along Pound Road. The closest school is the Grace Smith Elementary School, which is located approximately 4 miles to the northeast. A commercial algae production facility is located approximately 0.3 mile south of the Project site. The commercial algae facility is no longer in operation and is not part of the Proposed Project.

Phase I ESA Report

As previously mentioned, a Phase I ESA for the HR1 Facility was prepared (Appendix F); and the footprint of the existing HR1 facility, located at 409 West McDonald Road, encompasses some of the Project site and the land directly adjacent to the Project site.

The purpose of the Phase I ESA is to identify, to the extent feasible, recognized environmental conditions (RECs) associated with past and present activities on the subject property or in the immediate subject property vicinity in general conformance to ASTM Standard E1527-13 “Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process” that may affect future uses of the subject property.” The term REC includes hazardous substances and petroleum products even under conditions that might be in compliance with laws. The term is not intended to include “de minimis” conditions, which refers to a condition that generally does not present a threat to human health and/or the environment and that generally would not be subject to an enforcement action if brought to the attention of appropriate governmental agencies (Appendix F).

The Phase I ESA included results of a site reconnaissance to identify current conditions of the HR1 site parcels and adjoining properties; a review of various readily available federal, State, and local government agency records; and review of available historical site and site vicinity information.

HR1 Site Observations (2019)

Hazardous Substances and Petroleum Products

The HR1 facility uses and generates hazardous materials as part of the geothermal operation. Chemicals are stored on site for laboratory analysis. The extraction of the brine fluid produces filter cake (solids extracted from the brine fluid) which may contain potentially hazardous materials. Petroleum products are stored on the HR1 property.

Storage Tanks

Underground Storage Tanks (USTs) – No obvious visual evidence indicating the current presence of USTs (i.e., vent pipes, fill ports, etc.) was noted.

Aboveground Storage Tanks (ASTs) – No obvious visual evidence indicating the historical presence of ASTs (i.e., secondary containments, concrete saddles, etc.) was observed. Two fuel tanks, one diesel and one gasoline, are located within a secondary containment area and are used for fueling vehicles and equipment.

Odors

GS Lyon noted no obvious strong, pungent, or noxious odors during the site reconnaissance. Odors from the brine pond and brine material from the belt filter area were noted.

Pools of Liquid

The only pool of liquid observed during the site reconnaissance was at the concrete-lined brine pond.

Drums and Containers

GS Lyon observed multiple drums and storage containers on the HR1 property. These drums and containers stored petroleum-based products, chemicals, metals, acids, brine products, and process water.

Unidentified Substance Containers

GS Lyon did not observe open or damaged containers containing unidentified substances at the HR1 property.

Suspect Polychlorinated Biphenyl (PCB) Containing Equipment

Slab-mounted, sealed electrical transformers owned and maintained by IID are located within the HR1 property. The IID has documented that none of the transformers contain polychlorinated biphenyls (PCBs). No leaks were noted during the site visit. Potential PCB equipment such as hydraulic equipment and motor oils were observed during GS Lyon's site reconnaissance on the HR1 property.

Pits, Ponds, and Lagoons

A fresh makeup water pond is located at the northeast corner of the HR1 property. A concrete-lined brine pond with secondary containment liner and groundwater monitoring wells is located in the south-center of the property. Numerous shallow, water-filled and dry duck hunting ponds are located on the HR1 site.

Stained Soils or Pavement

No evidence of significantly stained soil or pavement was noted on the HR1 property. Small oil stains were observed on the asphalt near the warehouse building. An area was observed on the north side of the brine pond where some brine material had spilled during transfer from the brine pond into bins for transport to an approved landfill. The spill occurred on an asphaltic concrete paved area with a sump that drains back into the brine pond.

Stressed Vegetation

No evidence of stressed vegetation attributed to potential contamination was noted on the HR1 property.

Solid Waste

Dumpsters and solid waste containers exist at the HR1 site. Nonhazardous trash is collected by Republic Services of Imperial, California.

Concrete and asphalt debris piles were observed at the south end of the power plant site west of the stormwater basin. Multiple metal hazardous waste containers filled with drilling mud and metal shavings were being stored on site. Geothermal brine is being stored within the brine pond, a temporary containment area, and within hazardous waste containers. The brine fluid is re-injected into wells to maintain the operation of the closed-circuit geothermal fluids process.

Hazardous material separated from the brine at the belt filter area is transferred to hazardous waste trailers that haul the solid filter cake material off site to a hazardous waste landfill.

Wastewater

Wastewater generated at the HR1 property is limited to sinks, toilets, etc. is processed with tertiary treatment with a small onsite wastewater treatment plant; and the processed water is injected deep underground through a brine fluid injection well.

Wells

Groundwater monitoring wells are located around the concrete-lined brine pond at the HR1 site for semi-annual monitoring of groundwater by Landmark Geo-Engineers and Geologists of El Centro, California, at the brine pond. A background groundwater monitoring well is located at the southwest corner of the storm water retention basin on the south margin of the HR1 site.

Septic Systems

An onsite wastewater treatment system, consisting of septic tanks, aboveground aerobic treatment pods, filtration and ultraviolet (UV) light disinfection, is present on the HR1 property. The effluent from the system is discharged into the brine pond and then re-injected into the geothermal brine fluid injection wells.

Asbestos-Containing Building Materials

The potential for asbestos-containing materials (ACM) existing at the HR1 property was determined to be very low due to the recent age (constructed in 2011) of the subject property structures.

Lead-Based Paint

The potential for lead-based paint residues existing at the HR1 property was determined to be very low due recent age (constructed in 2011) of the HR1 property structures.

Radon

The HR1 property is located in Zone 3, as shown on the USEPA Map of Radon Zones indicating a predicted average indoor radon screening level of less than 2 picocuries per liter (pCi/L); therefore, no further action is required (USEPA 2018). Radon gas is not believed to be a potential hazard at the HR1 property.

4.7.2 Regulatory Setting

Federal

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) grants authority to the USEPA to control hazardous waste from start to finish. This covers the production, transportation, treatment, storage, and disposal of hazardous waste. The RCRA also sets forth a framework for the management of nonhazardous solid waste. The 1986 amendments to the RCRA enabled the USEPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances.

Hazardous Materials Transport Regulations

The U.S. Department of Transportation (USDOT) regulates transportation of hazardous materials between states. The USDOT Federal Railroad Administration enforces the hazardous materials regulations, which are promulgated by the Pipeline and Hazardous Materials Safety Administration for rail transportation. These regulations include requirements that railroads and other transporters of hazardous materials, as well as shippers, have and adhere to security plans and also train employees involved in offering, accepting, or transporting hazardous materials on both safety and security matters. Additionally, the Federal Hazardous Materials Transportation Law is enforced by the USDOT's Federal Highway Administration with the purpose of protecting risks to life, property, and the environment resulting from the transportation of hazardous materials.

National Pollutant Discharge Elimination System

The National Pollutant Discharge Elimination System (NPDES) is a program created to implement the Clean Water Act. The SWRCB and the nine regional water boards administer NPDES to regulate and monitor discharged waters and to ensure they meet water quality standards.

Occupational Safety and Health Act (OSHA)

Congress passed the Occupational Safety and Health Act (OSHA) to assure safe and healthful working conditions for working men and women. OSHA assists states with ensuring safe and healthful working conditions and provides for research, information, education, and training in the field of occupational safety and health. The Project would be subject to OSHA requirements during construction, operation, and maintenance.

State

Title 22 of the California Code of Regulations

Hazardous Materials Defined

A material is considered hazardous if it appears on a list of hazardous materials prepared by a federal, state, or local agency or if it has characteristics defined as hazardous by such an agency. According to Title 22, Section 66260.10, of the CCR, a hazardous material is defined as:

> …A substance or combination of substances which, because of its quantity, concentration, or physical, chemical or infectious characteristics, may either (1) cause, or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness; or, (2) pose a substantial present or potential hazard to human health or environment when improperly treated, stored, transported or disposed of or otherwise managed.

Chemical and physical properties that cause a substance to be considered hazardous include the properties of toxicity, ignitability, corrosivity, and reactivity (Title 22, Sections 66261.20 through 66261.24). Factors that influence the health effects of exposure to hazardous materials include dosage, frequency, the exposure pathway, and individual susceptibility. The Proposed Project would require use of small amounts of hazardous materials (such as diesel fuel, oil, and grease for heavy equipment) during construction, operation, and reclamation.

California Environmental Protection Agency

The CalEPA and the SWRCB establish rules governing the use of hazardous materials and the management of hazardous waste. Applicable State and local laws include the following:

- Public Safety/Fire Regulations/Building Codes
- Hazardous Waste Control Law
- Hazardous Substances Information and Training Act
- Air Toxics Hot Spots and Emissions Inventory Law
- Underground Storage of Hazardous Substances Act
- Porter-Cologne Water Quality Control Act

Small quantities of hazardous materials will be used and stored on site for miscellaneous, general maintenance activities that would be subject to State and local laws.

California/Occupational Safety and Health Act (OSHA)

The Division of Occupational Safety and Health (DOSH), better known as Cal/OSHA, protects workers from health and safety hazards on the job in almost every workplace in California through its research and standards, enforcement, and consultation programs.

Hazardous Materials Management Plans

In January 1996, CalEPA adopted regulations implementing a Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (Unified Program). The six program elements of the Unified Program are hazardous waste generators and hazardous waste onsite treatment, underground storage tanks, aboveground storage tanks, hazardous material release response plans and inventories, risk management and prevention program, and Uniform Fire Code hazardous materials management plans and inventories. The program is implemented at the local level by a local agency—the Certified Unified Program Agency (CUPA). The CUPA is responsible for consolidating the administration of the six program elements within its jurisdiction.

State and federal laws require detailed planning to ensure that hazardous materials are properly handled, used, stored, and disposed of, and, in the event that such materials are accidentally released, to prevent or to mitigate injury to health or the environment.

Hazardous Materials Disclosure Program

The Hazardous Materials Disclosure Program is found within the provisions of the California Health and Safety Code, Division 20, Chapter 6.95, Article 1. CUPAs are required to implement this Hazardous Materials Disclosure Program by reporting and disclosing the storage, use, or handling of hazardous materials on a site as a strategic measure to minimize loss of life and property. In addition, Hazardous Materials Business Plans must be submitted by all businesses that handle more than a threshold quantity of hazardous materials.

California Accidental Release Prevention Program

The California Accidental Release Prevention Program (CalARP) is found within the provisions of the California Health and Safety Code, Division 2, Chapter 4.5. CalARP is implemented at the local level by CUPAs as a strategy to minimize the accidental releases of stationary substances that can cause harm to the general public and the environment. Businesses are required to develop risk management plans if more than a threshold quantity of regulated substances is handled.

California Hazardous Materials Release Response Plans and Inventory Law

The California Hazardous Materials Release Response Plans and Inventory Law of 1985 (Business Plan Act) requires hazardous materials business plans to be prepared and inventories of hazardous materials to be disclosed. A business plan includes an inventory of the hazardous materials handled, facility floor plans showing where hazardous materials are stored, an emergency response plan, and provisions for employee safety and emergency response training (Health and Safety Code, Division 20, Chapter 6.95, Article 1.).

Department of Toxic Substances Control

The DTSC has primary regulatory responsibility for the management of hazardous materials and the generation, transport, and disposal of hazardous waste under the authority of the Hazardous Waste Control Law (HWCL). Enforcement is delegated to local jurisdictions that enter into agreements with DTSC.

California's Secretary of Environmental Protection established a unified hazardous waste and hazardous materials management regulatory program as required by Health and Safety Code Chapter 6.11. The unified program consolidates, coordinates, and makes consistent portions of the following six existing programs:

- Hazardous Waste Generations and Hazardous Waste Onsite Treatment
- Underground Storage Tanks
- Hazardous Material Release Response Plans and Inventories
- California Accidental Release Prevention Program
- Aboveground Storage Tanks (spill control and countermeasure plan only)
- Uniform Fire Code Hazardous Material Management Plans and Inventories

The statute requires all counties to apply to the CalEPA Secretary for the certification of a local unified program agency. Qualified cities are also permitted to apply for certification. The local CUPA is required to consolidate, coordinate, and make consistent the administrative requirements, permits, fee structures, and inspection and enforcement activities for these six program elements within the county. Most CUPAs have been established as a function of a local environmental health or fire department.

The Office of the State Fire Marshal participates in all levels of the CUPA program including regulatory oversight, CUPA certifications, evaluations of the approved CUPAs, training, and education. The DTSC serves as the CUPA in Imperial County.

Small quantities of hazardous materials will be transported to and from the Project area and used and stored on site for miscellaneous general operations and maintenance activities.

Government Code Section 65962.5 (Cortese List)

The provisions of Government Code Section 65962.5 are commonly referred to as the Cortese List. The Cortese List is a planning document used by State and local agencies to provide information about hazardous materials release sites. Government Code Section 65962.5 requires CalEPA to develop an updated Cortese List annually, at minimum. DTSC is responsible for a portion of the information contained in the Cortese List. Other State and local government agencies are required to provide additional hazardous material release information for the Cortese List.

California Emergency Response Plan

California has developed an emergency response plan to coordinate emergency services provided by federal, State, and local governments and private agencies. Response to hazardous material incidents is one part of this plan. The plan is managed by the Governor's Office of Emergency Services, which coordinates the responses of other agencies, including CalEPA, the California Highway Patrol (CHP) and the RWQCB.

Local

County of Imperial General Plan

Both natural and man-made hazards are addressed in the County of Imperial General Plan. The Seismic and Public Safety Element also contains a set of goals and objectives for land use planning and safety, emergency preparedness, and the control of hazardous materials. The goals and objectives, together with the implementation programs and policies, provide direction for development. Table 4.7-2 analyzes the consistency of the Project with specific policies contained in the Imperial County General Plan associated with biological resources.

Table 4.7-2: General Plan Consistency

General Plan Policies	Consistency with General Plan	Analysis
Conservation and Open Space Element		
Seismic and Public Safety Element		
Goal 1 – Include public health and safety considerations in land use planning.	Consistent	The Project includes health and safety measures such as lighting of the facility, fire suppression, and secondary containment that would be utilized in the event of accidental releases of hazardous and acutely hazardous materials.
Goal 2 – Minimize potential hazards to public health, safety, and welfare, and prevent the loss of life and damage to health and property resulting from both natural and human-related causes.	Consistent	See above response.
Objective 2.5 – Minimize injury, loss of life, and damage to property by implementing all state codes where applicable.	Consistent	The Project would comply with California Occupational Safety and Health Administration (Cal/OSHA) regulations and standards. These requirements address numerous worker safety issues including emergency action/evacuation, personal protective equipment, first aid, bloodborne pathogens, cranes and hoists, vehicle/traffic, and chemical exposures.
Goal 3 – Protect the public from exposure to hazardous materials and wastes.	Consistent	During construction of the Project, environmental monitoring and regular routine visual inspections of the development site would be performed in conjunction with County of Imperial Building Inspection. During operations, Job Hazard Analyses (JHAs) for would be prepared to identify any additional hazards associated with a job or task prior to performance. This would provide an opportunity to evaluate whether additional measures must be taken to minimize impacts from potential hazards. In addition, the Project would comply with Cal/OSHA regulations and standards. These requirements address numerous worker safety issues including emergency action/evacuation, personal protective equipment, first aid, bloodborne pathogens,

Table 4.7-2: General Plan Consistency

General Plan Policies	Consistency with General Plan	Analysis
Conservation and Open Space Element		
Seismic and Public Safety Element		
		cranes and hoists, vehicle/traffic, and chemical exposures.
Objective 3.1 – Discourage the transporting of hazardous materials/waste near or through residential areas and critical facilities.	Consistent	The Project is located within an area of the County which is not in close proximity to any residences or critical facilities such as a hospital or fire station. An Emergency Response Plan (ERP) would be prepared and implemented, which will identify proper hazardous materials handling, use, and storage; emergency response; spill control and prevention; employee training; and reporting and recordkeeping. The ERP would help limit risks associated with exposure to hazardous materials, with special consideration of the residential and critical facilities in the area.
Objective 3.2 – Minimize the possibility of hazardous materials/waste spills.	Consistent	See above response for Goal 3 and Objective 3.1.
Objective 3.4 – Adopt and implement ordinances, policies, and guidelines that assure the safety of County ground and surface waters from toxic or hazardous materials and wastes.	Consistent	The Project would preserve ground and surface water quality from hazardous materials and wastes during construction, operation and decommissioning activities. The Project would protect water quality during construction through compliance with NPDES General Construction Permit, Stormwater Pollution Prevention Plan (SWPPP), which will incorporate the requirements referenced in the State Regulatory Framework and BMPs. The Project will be designed to include site design, source control, and treatment-control BMPs. The use of source control, site design, and treatment BMPs would result in a decreased potential for stormwater pollution. It is anticipated that Project decommissioning activities would be subject to similar, or more stringent ground and surface water regulations than those currently required.

4.7.3 Thresholds of Significance

In order to assist in determining whether a project would have a significant effect on the environment, the County utilizes the State CEQA Guidelines Appendix G Guidelines. Appendix G states that a project may be deemed to have an impact on hazards and hazardous materials if it would:

Threshold a) **Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**

Threshold 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?**
Threshold c)	**Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?**
Threshold 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, create a significant hazard to the public or the environment?**
Threshold e)	**Located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard or excessive noise for people residing or working in the project area?**
Threshold f)	**Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?**
Threshold g)	**Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?**

Please refer to **Section 6.1: Effects Found Not to Be Significant** for an evaluation of those topics that were determined to be less than significant or have no impact and do not require further analysis in the EIR**.**

4.7.4 Methodology

The analysis of hazardous materials evaluates materials potentially existing on the Project site and those that would be used as part of Project construction, operations and maintenance, and reclamation. Potential existing hazards were assessed based on information contained in the Phase I ESA Report for the HR1 Facility (Appendix F).

Some hazardous materials would be used on a short-term basis during construction. Others would be stored on site for use during operations or transported off site as hazardous waste. Therefore, this analysis was conducted by examining the choice and amount of chemicals to be used, the manner in which the chemicals would be used, the manner by which any hazardous materials would be transported to and from the Project area, and the way in which the materials would be stored on the Project site.

4.7.5 Project Impact Analysis

Threshold a)	**Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?**

Construction of the Project would require the limited transport of materials deemed to be hazardous, including unleaded gasoline, diesel fuel, oil, lubricants (i.e., motor oil, transmission fluid, and hydraulic fluid), solvents, adhesives, and paint materials.

Project operations would process geothermal brine from the neighboring HR1 Facility to produce lithium hydroxide, zinc, and magnesium products which would be sold commercially. The final products would be in a solid, powder form. In order to transport these products, they would be sealed in indestructible containers prior to being loaded on trucks.

As further described in Section 4.12 Utilities and Service Systems, Project operations would also generate solid waste through geothermal brine processing, including iron-silica filter cakes, lead sulfide, and various laboratory wastes. Any hazardous wastes generated during Project construction and operations would be collected in hazardous waste accumulation containers near the point of generation and moved daily to the contractor's 90-day hazardous waste storage area or operational hazardous material storage area located on the Project site. It is estimated that 90 percent of the filter cakes, approximately 37,602 cubic yards of iron silica, would fall below California's thresholds for soluble threshold limit concentration (STLC) and total threshold limit concentration (TTLC) and could be disposed of within the state of California. The accumulated waste would be subsequently delivered to an authorized Class I or Class II landfill authorized to accept the waste for proper disposal.

The remaining 10 percent, or approximately 4,178 cubic yards, would exceed these standards and would be trucked to the Copper Mountain Landfill located at 34853 East County 12th Street in Wellton, Arizona, approximately 96 miles southeast of the Project site. Additionally, approximately every three years the Project facility would be shut down for about three weeks to complete a facility cleaning in alignment with the HR1 plant cleaning. This process would remove mineral scale from Project plant piping. The scale removed during this process has the potential to exceed STLC and TTLC standards for Arizona, in which case solid waste would be required to be trucked to Nevada. However, this is an extremely rare occurrence and in the past 10 years only two truck loads have needed to go to Nevada. The implementation of the Proposed Project would not increase the amount of solid waste needing to go out of state.

Thus, during construction and operations of the Project, hazardous materials would be transported to and from the Project site. Traffic barriers would protect piping and tanks on the adjacent HR1 site from potential traffic hazards. The Applicant would be required to follow all applicable federal, State, and local laws and regulations. Further, transportation would be subject to licensing and inspection by the California Highway Patrol. With adherence to the regulatory measures and requirements for hazardous materials, impacts would be less than significant.

Threshold 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?

During construction and operation of the Project, hazardous materials would be stored in chemical storage containers. Secondary containment would be provided in all petroleum hydrocarbon and hazardous material storage areas. In general, all areas where hazardous materials are stored would have concrete ponds, be bermed, or have curbs in order to prevent accidental releases. The Applicant would develop and implement a SWPPP and a Hazardous Materials Business Plan (HMBP) that would include procedures for the following: hazardous materials handling, use, and storage; emergency response; a spill prevention control and countermeasure (SPCC) plan; employee training; and reporting and recordkeeping.

All personnel working with chemicals would be trained in proper handling and emergency response to chemical spills or accidental releases. Adherence to applicable Cal/OSHA regulations and standards, JHAs for each job or task, safety showers and eyewash stations, and protective pipeline design and detailed inspection routine would ensure the proper storage and handling of hazardous materials and would protect the workforce during construction and operation of the Project. Therefore, impacts would be less than significant.

Threshold 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, create a significant hazard to the public or the environment?**

According to the EnviroStor, GeoTracker, EnviroMapper, and Well Finder databases, the Project would not be located on a site that is included on the Cortese List, a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. The Project components would not be located near known hazardous waste sites or noncontaminated permitted facilities, including gas stations, underground storage tanks, and land disposal sites (DTSC 2021; SWRCB 2021; USEPA 2021; DOC 2021). RECs were identified within 1 mile of the HR1 site, thus RECs are located within 1 mile of the Project site. The Phase I ESA determined that evaporite deposits containing potential hazardous substances have potential to be located around the abandoned carbon dioxide wells (mud pots) southwest of the Project site. The chemical characteristics of the deposits are unknown. However, no RECs are located within the Project site. Additionally, the Phase I ESA revealed de minimis conditions or environmental concerns in connection with the HR1 property. Impacts associated with hazardous materials on the Project site would be less than significant.

4.7.6 Cumulative Impacts

Cumulative impacts are defined in CEQA as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts” (CEQA Guidelines Section 15355). Stated in another way, “a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing relating impacts” (CEQA Guidelines Section 15130 [a][1]).

The geographic scope of the cumulative setting for hazards and hazardous materials is a 1-mile radius from the geographical center point of the Project site. One mile is the standard ASTM standard search distance for hazardous materials. This geographic scope encompasses an area larger than the Project area and provides a reasonable context wherein cumulative projects in the vicinity of the Proposed Project could affect hazards and hazardous materials. Based on Table 3.0-1: Related Projects in Chapter 3.0, Environmental Setting, no other projects from the cumulative projects list are within the geographic scope.

The Project would involve the storage, use, disposal, and transport of hazardous materials to varying degrees during construction and operations. Accidental release of hazardous materials can be mitigated to less than significant levels through compliance with various federal, State, and local laws, regulations, and policies regarding transport, storage, and use of hazardous materials. Therefore, the Project’s contribution to cumulative hazardous materials impacts is considered less than cumulatively considerable.

4.7.7 Mitigation Measures

No mitigation measures are required, as all Project impacts regarding hazards and hazardous materials are less than significant.

4.7.8 Level of Significance After Mitigation

No mitigation measures are required; impacts related to hazards and hazardous materials would remain less than significant.

HYDROLOGY AND WATER QUALITY

This section discusses the potential hydrological and water quality impacts that would occur in association with implementation of the proposed Energy Source Mineral ATLiS Project. This analysis describes the regional hydrologic setting, existing hydrology/drainage (onsite and offsite), and existing flood hazards in the Project area. Water quality is also described in terms of groundwater beneath the Project area and surface waters in the region and the Imperial Valley. Information contained in this section is summarized from the Water Supply Assessment (WSA) prepared by Dubose Design Group (April 2021) and the Preliminary Geotechnical Report prepared by LandMark Geo-Engineers and Geologists (Landmark; August 2020), included in Appendix J and Appendix E of this Draft EIR, respectively.

4.8.1 Existing Environmental Setting

Regional Setting

Imperial Valley, located in the Northern Sonoran Desert, has a subtropical desert climate characterized by hot, dry summers and mild winters. Clear and sunny conditions typically prevail, and frost is rare. The region receives 85 to 90 percent of possible sunshine each year, the highest in the United States. Winter temperatures are mild, rarely dropping below 32 °F, but summer temperatures are very hot, with more than 100 days over 100 °F each year. The remainder of the year has a relatively mild climate with temperatures averaging in the mid-70s.

Rainfall contributes around 50,000 acre-feet (AF) of effective agricultural water per inch of rain. Most rainfall occurs from November through March; however, summer storms can be significant in some years. The 30-year, 1990 to 2019, average annual air temperature was 73.6 °F; and average rainfall was 2.59 inches. This record shows that while average annual rainfall has fluctuated, the 10-year average temperatures have slightly increased over the 30-year average.

The Imperial Valley is bounded on the north by the south shore of the Salton Sea, on the south by the All-American Canal (AAC), on the east by the East Highline Canal, and on the west by the Westside Main Canal. The existence of most surface waters in the area is dependent primarily upon the inflow of irrigation water from the Colorado River via the AAC.

The Imperial Valley lies entirely within the State's Colorado River Hydrologic Region (IWF 2012). The shallow aquifers beneath the Imperial Valley are affected by the inflow of Colorado River waters, the rate of evaporation, the depth of the agricultural tile drains beneath farm lands, and seepage from drains and rivers. The Colorado River is probably the most important source of recharge into shallow groundwater aquifers; approximately 10 percent is percolated to underlying aquifers. Canals, such as the AAC and the East Highline, contribute to recharge because they are unlined; they are sometimes up to 200 feet wide; the AAC flows across many miles of sandy terrain; and the water surface of the canals is higher than the general groundwater levels (County 1997b).

Groundwater basins within the Imperial Region include portions of the Coyote Wells Valley Basin, Borrego Valley Basin, Ocotillo-Clark Valley Basin, West Salton Sea Basin, Ogilby Valley Basin, and all of the Imperial Valley Basin, East Salton Basin, and East Amos Valley Basin, for a total of approximately 2,800 square miles (IWF 2012). The major surface water body within the region is the Salton Sea, and drainage is to the Salton Sea via the New River and Alamo River, a few direct-to-sea drains, and various washes.

Project Site

The Project site is located approximately 3.8 miles southwest of the community of Niland, within the Imperial watershed and Imperial Valley groundwater basin (IWF 2012). The Project site is located on three parcels (APN 020-100-025, 020-100-044, and 020-100-046) north of West Schrimpf Road, east of Davis Road, and south of McDonald Road. No rivers or streams travel through the Project site or are directly adjacent to the Project site. The IID "O" lateral canal is approximately 50 feet north of the Project site (along McDonald Road), the IID "N" lateral canal is approximately 0.25 mile south (along Schrimpf Road), and the Alamo River is approximately 0.7 mile southwest. The "O" and "N" laterals lead toward the Alamo River and surrounding wetlands, which then feed into the Salton Sea.

The Project will share the fire suppression system and the freshwater storage containment pond with HR1. The raw water storage pond currently located on the east side of the HR1 plant will continue to receive canal water from the IID "O" lateral. The Project will also share the existing HR1 stormwater retention basin. The retention basin will be engineered and constructed to contain the combined stormwater storage requirements of both the HR1 and Project plant sites. The stormwater runoff will be contained on the HR1 site and will be managed using any single, or any combination, of the following methods: (1) allowed to evaporate or percolate into the soil, (2) released for non-Project beneficial use onto the undeveloped portion of the Project parcel, and/or (3) pumped from the stormwater basin into the freshwater pond for onsite uses.

4.8.2 Regulatory Setting

Federal

Clean Water Act

The USEPA is the lead federal agency responsible for managing water quality. The Clean Water Act (CWA) of 1972 is the primary federal law that governs and authorizes the USEPA and the states to implement activities to control water quality. The various elements of the CWA that address water quality and that are applicable to the Project are discussed below.

Under federal law, the USEPA has published water quality regulations under Volume 40 of the Code of Federal Regulations (CFR). Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. As defined by the CWA, water quality standards consist of two elements: (1) designated beneficial uses of the water body in question, and (2) criteria that protect the designated uses. Section 304(a) requires the USEPA to publish advisory water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. The USEPA is the federal agency with primary authority for implementing regulations adopted under the CWA. The USEPA has delegated to the State of California the authority to implement and oversee most of the programs authorized or adopted for CWA compliance through the Porter-Cologne Water Quality Control Act of 1969 (Porter-Cologne Act), described below.

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain a water quality certification from the SWRCB in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over affected waters at the point where the discharge would originate.

CWA Section 402 establishes the NPDES permit program to control point source discharges from industrial, municipal, and other facilities if their discharges go directly to surface waters. The 1987 amendments to the CWA created a new section of the CWA devoted to regulating stormwater or nonpoint source discharges (Section 402[p]). The USEPA has granted California primacy in administering and enforcing the provisions of the CWA and the NPDES program through the SWRCB. The SWRCB is responsible for issuing both general and individual permits for discharges from certain activities. At the local and regional levels, general and individual permits are administered by RWQCBs.

National Pollution Discharge Elimination System General Industrial and Construction Permits

The NPDES General Industrial Permit requirements apply to the discharge of stormwater associated with industrial sites. The permit requires implementation of management measures that will achieve the performance standard of the best available technology economically achievable and best conventional pollutant control technology. Under the statute, operators of new facilities must implement industrial BMPs in the projects' SWPPP and perform monitoring of stormwater discharges and unauthorized nonstormwater discharges.

Construction activities are regulated under the NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (General Construction Permit) which covers stormwater runoff requirements for projects where the total amount of ground disturbance during construction exceeds 1 acre. Coverage under a General Construction Permit requires the preparation of a SWPPP and submittal of a Notice of Intent (NOI) to comply with the General Construction Permit. The SWPPP includes a description of BMPs to minimize the discharge of pollutants from the sites during construction. Typical BMPs include temporary soil stabilization measures (e.g., mulching and seeding), storing materials and equipment to ensure that spills or leaks cannot enter the storm drain system or stormwater, and using filtering mechanisms at drop inlets to prevent contaminants from entering storm drains. Typical post-construction management practices include street sweeping and cleaning stormwater drain inlet structures. The NOI includes site-specific information and the certification of compliance with the terms of the General Construction Permit.

State

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act, also known as the California Water Code, is California's statutory authority for the protection of water quality. Under this Act, the State must adopt water quality policies, plans, and objectives that protect the waters of the State. The Act sets forth the obligations of the SWRCB and RWQCBs pertaining to the adoption of Water Quality Control Plans and establishment of water quality objectives. Unlike the CWA, which regulates only surface water, the Porter-Cologne Act regulates both surface water and groundwater.

California Department of Water Resources

The Department of Water Resources (DWR) is responsible for managing and protecting California's water resources, systems, and infrastructure, including the State Water Project (SWP). Some responsibilities of the DWR include preventing and responding to floods, droughts and catastrophic events, informing and educating the public on water issues, developing scientific solutions, restoring habitats, planning for future water needs and climate change impacts, constructing and maintaining facilities, generating power, ensuring public safety, and providing recreational opportunities. The DWR works with other agencies to benefit the State's people and to protect, restore, and enhance the natural and human environments.

Regional Water Quality Control Board

The RWQCBs serve as the frontline for State and federal water pollution control efforts. It is composed of nine control boards, each including seven members. Regional boundaries are based on watersheds; and water quality requirements are based on the unique differences in climate, topography, geology, and hydrology for each watershed. Each Regional Board makes critical water quality decisions for its region, including setting standards, issuing waste discharge requirements, determining compliance with those requirements, and taking appropriate enforcement actions. The Project site is located in Region 7, the Colorado River Region.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act (SGMA), passed in September 2014, is a comprehensive three-bill package that provides a framework for the sustainable management of groundwater supplies by local authorities. The SGMA requires the formation of local groundwater sustainability agencies (GSAs) to assess local water basin conditions and adopt locally based management plans. Local GSAs must be formed by June 30, 2017. The SGMA provides 20 years for GSAs to implement plans and achieve long-term groundwater sustainability and protect existing surface water and groundwater rights. The SGMA provides local GSAs the authority to: (1) require registration of groundwater wells; (2) measure and manage extractions; (3) require reports and assess fees; and (4) request revisions of basin boundaries, including establishing new subbasins. Furthermore, under the SGMA, GSAs responsible for high- and medium-priority basins must adopt groundwater sustainability plans within five to seven years of 2015, depending on whether the basin is in critical overdraft. The DWR has designated the Imperial Valley Basin, which the County overlies, as very low-priority and not in critical overdraft (DWR 2021)

Regional and Local

Colorado River Regional Water Quality Control Board

The Colorado River Basin RWQCB has adopted the Water Quality Control Plan for the Colorado River Basin in accordance with criteria contained in the CWA, Porter-Cologne Act, and other pertinent State and federal rules and regulations. The intent of the Basin Plan is to provide definitive guidelines and give direction to the scope of Colorado River Basin RWQCB activities that will optimize the beneficial uses of the waters of the State within the Colorado River Basin by preserving and protecting the quality of these waters. The intended beneficial use of water determines the water quality objectives. For example, the quality requirements for irrigation water are different from those of drinking water. The Colorado River Basin RWQCB implements the Basin Plan by issuing and enforcing waste discharge requirements for appropriate persons and groups; these can include individuals, communities, or businesses whose waste discharges may affect water quality. These requirements can be either State Waste Discharge Requirements for discharge to land, or federally delegated NPDES permits for discharges to surface water. Discharges are required to meet water quality objectives and protect beneficial uses.

Water Quality Control Plan for the Colorado River Basin

The Water Quality Control Plan for the Colorado River Basin (or Basin Plan) prepared by the Colorado River RWQCB (Region 7) identifies beneficial uses of surface waters within the Colorado River Basin region, establishes quantitative and qualitative water quality objectives for protection of beneficial uses, and establishes policies to guide the implementation of these water quality objectives. Water bodies that have beneficial uses that may be affected by construction activity and post-construction activity include the Imperial Valley Drains (includes the Wistaria Drain and Greeson Wash), New River, and the Salton Sea.

Imperial Integrated Water Resources Management Plan

The Imperial Integrated Regional Water Management Plan (IRWMP) serves as the governing document for regional water planning to meet present and future water resource needs and demands by addressing such issues as additional water supply options, demand management and determination, and prioritization of uses and classes of service provided. In November 2012, the Imperial County Board of Supervisors approved the Imperial IRWMP, and the City of Imperial City Council and the IID Board of Directors approved it in December 2012. Approval by these three stakeholders meets the basic requirement of California DWR for an IRWMP. Through the IRWMP process, IID presented the regional stakeholders' with options in the event long-term water supply augmentation is needed, such as water storage and banking, recycling of municipal wastewater, and desalination of brackish water.

County of Imperial Land Use Ordinance, Title 9

The County's Ordinance Code provides specific direction for the protection of water resources. Applicable ordinance requirements are contained in Division 10, Building, Sewer and Grading Regulations, and summarized below.

Chapter 10 – Grading Regulations. Section 91010.02 of the Ordinance Code outlines conditions required for issuance of a Grading Permit. These specific conditions include:

1. If the proposed grading, excavation, or earthwork construction is of irrigatable land, said grading will not cause said land to be unfit for agricultural use.
2. The depth of the grading, excavation, or earthwork construction will not preclude the use of drain tiles in irrigated lands.
3. The grading, excavation, or earthwork construction will not extend below the water table of the immediate area.
4. Where the transition between the grading plane and adjacent ground has a slope less than the ratio of 1.5 feet on the horizontal plane to 1 foot on the vertical plane, the plans and specifications will provide for adequate safety precautions.

Imperial Irrigation District

The IID is an irrigation district organized under the California Irrigation District Law, codified in Section 20500 et seq. of the California Water Code. Critical functions of IID include diversion and delivery of Colorado River water to the Imperial Valley; operation and maintenance of the drainage canals and facilities, including those in the Project area; and generation and distribution of electricity. Several policy documents govern IID operations and are summarized below:

- The Law of the River and historical Colorado River decisions, agreements, and contracts
- The Quantification Settlement Agreement and Transfer Agreements
- The Definite Plan, now referred to as the Systems Conservation Plan, which defines the rigorous agricultural water conservation practices being implemented by growers and IID to meet the Quantification Settlement Agreement commitments
- The Equitable Distribution Plan, which defines how IID will prevent overruns and stay within the cap on the Colorado River water rights
- Existing IID standards and guidelines for evaluation of new development and define IID's role as a responsible agency and wholesaler of water

IID has adopted an Interim Water Supply Policy (IWSP) for Non-Agricultural Projects during the development of the Imperial IWRMP, from which water supplies can be contracted to serve new developments within IID's water service area. For applications processed under the IWSP, applicants shall be required to pay a processing fee and, after IID board approval of the corresponding agreement, will be required to pay a reservation fee(s) and annual water supply development fees.

Imperial County General Plan

The Water Element and the Conservation and Open Space Element of the General Plan contain goals, objectives, policies, and programs to ensure water resources are preserved and protected. Table 4.8-1 identifies the General Plan goals, objectives, policies, and programs for water quality and flood hazards that are relevant to the Project and summarizes the Project's consistency with the General Plan. While this EIR analyzes the Project's consistency with the General Plan pursuant to CEQA Guidelines Section 15125(d), the Imperial County Board of Supervisors ultimately determines consistency with the General Plan.

Table 4.8-1 analyzes the consistency of the Project with specific policies contained in the Imperial County General Plan associated with hydrology and water quality.

Table Error! No text of specified style in document.**-1: General Plan Consistency**

General Plan Policies	Consistency with General Plan	Analysis
Conservation and Open Space Element		
Goal 1 – Environmental resources shall be conserved for future generations by minimizing environmental impacts in all land use decisions and educating the public on their value.	Consistent	A Water Supply Assessment (WSA) has been conducted for the Project site to evaluate the Project's potential impacts on water resources in the County. The County's water supply and stability was determined to be adequate for the Project for the next 20 years.

Table Error! No text of specified style in document.**-1: General Plan Consistency**

General Plan Policies	Consistency with General Plan	Analysis
Goal 6 – The County will conserve, protect, and enhance water resources in the County.	Consistent	The Project would protect water quality during construction through compliance with Imperial County design and detention requirements and the NPDES General Construction Permit, as well as preparation and implementation of a Project-specific SWPPP, which will incorporate the requirements referenced in the State Regulatory Framework, design features, and BMPs.
Objective 6.3 – Protect and improve water quality and quantity for all water bodies in Imperial County.	Consistent	The Project would protect water quality during construction through compliance with the NPDES General Construction Permit, SWPPP, and BMPs. The Project will be designed to include site design, source control, and treatment control BMPs. The use of source control, site design, and treatment BMPs would ensure stormwater pollution impacts would not be significant.
Program – Structural development normally shall be prohibited in the designated floodways. Only structures which comply with specific development standards should be permitted in the floodplain	Consistent	The Project does not contain a residential component nor would it place housing or other structures within a 100-year flood hazard area.
Water Element		
Policy – Adoption and implementation of ordinances, policies, and guidelines which assure the safety of County ground and surface waters from toxic or hazardous materials and/or wastes.	Consistent	The Project would preserve ground and surface water quality from hazardous materials and wastes during construction and operation activities. The Project would protect water quality during construction through compliance with NPDES General Construction Permit, SWPPP, which will incorporate the requirements referenced in the State Regulatory Framework and BMPs. The Project will be designed to include site design, source control, and treatment control BMPs. The use of source control, site design, and treatment BMPs would result in a decreased potential for stormwater pollution. It is anticipated that Project decommissioning activities would be subject to similar or more stringent ground and surface water regulations than those currently required.
Program – The County of Imperial shall make every reasonable effort to limit or preclude the contamination or degradation of all groundwater and surface water resources in the County.	Consistent	The Project would preserve ground and surface water quality from hazardous materials and wastes during construction, operation, and decommissioning activities. The Proposed Project would protect water quality during construction through compliance with NPDES General Construction Permit; SWPPP, which will incorporate the requirements referenced in the State Regulatory Framework; and BMPs. The Project

Table Error! No text of specified style in document.**-1: General Plan Consistency**

General Plan Policies	Consistency with General Plan	Analysis
		will be designed to include site design, source control, and treatment control BMPs. The use of source control, site design, and treatment BMPs would ensure stormwater pollution impacts would not be significant. It is anticipated that project decommissioning activities would be subject to similar or more stringent ground and surface water regulations than those currently required.
Program – All development proposals brought before the County of Imperial shall be reviewed for potential adverse effects on water quality and quantity and shall be required to implement appropriate mitigation measures for any significant impacts.	Consistent	See response above.

4.8.3 Thresholds of Significance

In order to assist in determining whether a project would have a significant effect on the environment, the County utilizes the State CEQA Guidelines Appendix G Guidelines. Appendix G states that a project may be deemed to have hydrology and water quality impacts if it would:

Threshold a) **Violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or ground water quality?**

Threshold b) **Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?**

Threshold 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 which would:**

i) result in 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 sources or polluted runoff; or

iv) impede or redirect flood flows?

Threshold d) **In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?**

Threshold e) **Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?**

Please refer to **Section 6.1: Effects Found Not to Be Significant** for an evaluation of those topics that were determined to be less than significant or have no impact and do not require further analysis in the EIR**.**

4.8.4 Methodology

Dubose Design Group was retained by the County to prepare a WSA for the Project in April 2021. The WSA evaluates water availability during a normal year; water availability during a single-dry and multiple-dry water years; water availability during a 30-year projection to meet existing demands; expected 30-year water demands of the Project; and reasonably foreseeable planned future water demands to be served by the IID. LandMark prepared a Preliminary Geotechnical Report for the Project in August 2020. This report addresses groundwater conditions on the Project site.

Subsurface exploration was performed on July 20, 2020, using Kehoe Testing and Engineering, Inc. to advance three electric CPT soundings to approximate depths of 50 feet below existing ground surface. The soundings were made at the locations shown on the Site and Exploration Plan in Appendix E. The approximate sounding locations were established in the field and plotted on the site map by sighting to discernible site features. Shallow (5-foot-deep) mechanical auger borings (6 inches in diameter) were made in the future laydown yard to the west in order to obtain near-surface soil samples for laboratory analysis.

Groundwater was not noted in the CPT soundings, but LandMark notes groundwater is typically encountered at approximately 8 to 9 feet below ground surface in the vicinity of the Project site. The silts encountered at 18 to 24 feet below ground surface are the water-bearing strata. Groundwater levels may fluctuate with precipitation, irrigation of adjacent properties, site landscape watering, drainage, and site grading.

4.8.5 Project Impact Analysis

Threshold b) **Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?**

The Project will share the fire suppression system and the freshwater storage containment pond with HR1. A 500,000-gallon aboveground water tank will be constructed to serve as the primary water supply for the joint fire suppression system for the HR1 and ATLiS sites. Approximately 90,000 g/h of water will be required during Project operations for cooling and additional process needs. Approximately 112 g/h will be required for potable water purposes, including potable washbasin water, eyewash equipment water, water for showers and toilets in crew change quarters, and sink water in the sample laboratory. For these operational water needs, the Applicant is proposing to draw water from the IID "O" lateral. However, a backup delivery line will also be installed from the "N" lateral located about 0.25 mile south of the Project site.

Approximately 56 AFY of water would be needed for fugitive dust control during Project site grading and construction activities, which are anticipated to last up to 2 years. Approximately 3,400 AFY would be required for Project operations, lasting up to 30 years. The Project's total water demand is approximately 3,456 AFY, resulting in 102,112 AF total over the 30-year lifespan of the Project. Construction water requirements represent 0.025 percent of the unallocated supply set aside in the IWSP for non-agricultural projects, while operational water needs represent 14 percent of the unallocated supply set aside in the IWSP for nonagricultural projects (Appendix J).

IID, as a water wholesaler, does not derive any of its supplies from groundwater (IWF 2012). Groundwater underlying the Imperial Valley is generally of poor quality and unsuitable for domestic or irrigation purposes; thus, the IID's only source of water is the Colorado River. Untreated Colorado River water will be supplied to the Project via the "O" Lateral, gate 32 and a new gate and connection via the "N" Lateral. The water supply will be under an IWSP Water Supply Agreement with IID and Schedule 7 General Industrial Use, which sets water rates. The Project will not decrease groundwater supplies or interfere with groundwater recharge; thus, impacts would be less than significant.

Threshold e) **Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?**

Water Quality

The Project site is located within the Colorado River Basin Region of the California Regional Water Quality Control Board (CRB RWQCB; RWQCB 2021a). The Project is therefore subject to standards set forth in the CRB RWQCB's Water Quality Control Plan. Through implementation of a SWPPP and a Drainage and Grading Plan, the Project would implement standard industry BMPs and relevant Basin BMPs to control offsite discharges. Additionally, the Project would develop a shared stormwater retention basin with HR1, which would be engineered and constructed to contain any stormwater runoff. Stormwater flows will be directed to the retention basin via ditches, culverts, and/or swales. Stormwater may be allowed to evaporate or percolate into the soil or released for non-Project beneficial use onto the undeveloped portion of the Project parcel; however, the collected stormwater runoff in the basin will be sampled and analyzed for quality and compatibility prior to releasing or removing the runoff from the retention basin.

No process wastewater discharges to land or waters will be associated with the Project; therefore, the Project will meet RWQCB surface discharge requirements consistent with the Waste Discharge Order issued by the CRB RWQCB. Additionally, spill containment areas and sumps subject to spills of immiscible chemicals would be drained to a dilution water tank. Any oil contamination spills would be collected with absorbent pads and disposed as required by law. The Project site would be graded and constructed so that all process spills would drain into area drains that would be reprocessed into the system. Excess process spills would drain into the brine pond.

The Project would not allow any offsite discharges that could violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. The Project would not conflict with or obstruct implementation of the CRB RWQCB's Water Quality Control Plan; therefore, impacts would be less than significant.

Groundwater Management

As mentioned above, the Applicant is proposing to draw water from two IID laterals for the Project's operational water needs. IID, as a water wholesaler, does not derive any of its supplies from groundwater (IWF 2012). Groundwater underlying the Imperial Valley is generally of poor quality and unsuitable for domestic or irrigation purposes; thus, the IID's only source of water is the Colorado River. Untreated Colorado River water will be supplied to the Project via the "O" Lateral, gate 32 and a new gate and connection via the "N" Lateral. Therefore, the Project would not conflict with or obstruct implementation of a groundwater management plan.

4.8.6 Cumulative Impacts

Cumulative impacts are defined in CEQA as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines Section 15355). Stated in another way, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing relating impacts" (CEQA Guidelines Section 15130 [a][1]).

As mentioned above, the Proposed Project would not deplete groundwater supplies or interfere substantially with groundwater recharge and therefore would not cumulatively contribute to groundwater deficits. With the implementation of legally required SWRCB, RWQCB, and County policies, plans and ordinances governing land use activities that may degrade or contribute to the violation of water quality standards, the Proposed Project, in combination with approved, proposed, and other reasonably foreseeable projects (Table 3.0-1, Chapter 3.0) in the Imperial watershed and Imperial Valley groundwater basin would not contribute to the cumulative effects of degradation of water quality or result in changes in water runoff patterns. Impacts would be less than cumulatively considerable.

4.8.7 Mitigation Measures

No mitigation measures are required, as all Project impacts regarding hydrology and water quality are less than significant.

4.8.8 Level of Significance After Mitigation

No mitigation measures are required; impacts related to hydrology and water quality would remain less than significant.

4.9 NOISE

This section provides information on ambient noise conditions in the vicinity of the Project and identifies potential impacts with noise as a result of the construction and operation of the Project. The noise modeling output is included in this Draft EIR as Appendix I.

4.9.1 Noise Terminology

Noise Fundamentals

Noise is defined as unwanted or objectionable sound. The effect of noise on people can include general annoyance, interference with speech communication, sleep disturbance and, in the extreme, hearing impairment. The unit of measurement used to describe a noise level is the decibel (dB). The human ear is not equally sensitive to all frequencies within the sound spectrum. Therefore, the "A-weighted" noise scale, which weights the frequencies to which humans are sensitive, is used for measurements. Noise levels using A-weighted measurements are written as dB(A) or dBA. Decibels are measured on a logarithmic scale, which quantifies sound intensity in a manner similar to the Richter scale used for earthquake magnitudes. Thus, a doubling of the energy of a noise source, such as doubling a traffic volume, would increase the noise level by 3 dBA; a halving of the energy would result in a 3-dBA decrease.

A given level of noise may be more or less tolerable depending on the duration of exposure experienced by an individual. A number of measures of noise exposure consider not only the A-level variation of noise but also the duration of the disturbance. The Day-Night Average Level (Ldn) is the weighted average of the intensity of a sound, with corrections for time of day, and averaged over 24 hours. The time of day corrections require the addition of 10 decibels to sound levels at night between 10 p.m. and 7 a.m. The Community Noise Equivalent Level (CNEL) is similar to the Ldn except that another 4.77 decibels is added to sound levels during the evening hours between 7 p.m. and 10 p.m. These additions are made to the sound levels at these time periods because during the evening and nighttime hours, when compared to daytime hours, ambient noise levels are decreased, which creates an increased sensitivity of the receptors to sounds. For this reason sound appears louder in the evening and nighttime hours and is weighted accordingly. The County of Imperial Noise Element uses the Day-Night Sound Level (Ldn).

It is widely accepted that the average healthy ear can barely perceive either an increase or decrease of 3 dBA, that a change of 5 dBA is readily perceptible, and that an increase (or decrease) of 10 dBA sounds twice (half) as loud (Caltrans 2013).

4.9.2 Existing Environmental Setting

Regional Setting

The Proposed Project would be located in County of Imperial, which is situated in the southeasternmost portion of the state of California. The County encompasses an approximately 4,597-square-mile area and is bordered by Riverside County to the north, the state of Arizona on the east, Mexico to the south, and San Diego County to the west. Principal noise sources in County of Imperial are transportation (aircraft, railway lines, and motor vehicles), industrial (rail switching yards, utilities, and manufacturing facilities), and agricultural operations. Existing industrial sources, including geothermal and manufacturing plants, are generally located away from concentrations of sensitive receptors in the County.

Land uses in the Imperial Valley around the Salton Sea and the Salton Sea Known Geothermal Resource Area (KGRA) reflect the development trends of the County with respect to existing agricultural uses and development of renewable energy projects. In recent years, a number of solar and geothermal energy projects have been proposed for development in the County. Approximately 12 percent (347,941 acres) of the land area in County of Imperial has been designated by the USGS as a KGRA. The County of Imperial has several KGRAs.

Project Site

The Project site is located on private land within the Salton Sea KGRA in the unincorporated area of Imperial County, about 2.3 miles west-southwest of the Town of Niland and 1.1 mile directly east of the existing HRI Geothermal Power Plant. The nearest sensitive receptor to the Project site is located on the north side of Pound Road, just over a mile north of the Project site.

Ambient Noise Levels

The primary sources of noise within the study area consist of noise generated from the existing HR1 as well as from vehicle noise on McDonald Road. The *Background Noise Measurements for the Hudson Ranch II EIR* prepared by Ecology and Environment, Inc. for the *Hudson Ranch II and Simbol Calipatria II Final EIR,* took noise measurements in the vicinity of the Project site when HR1 was operational and found that the noise level along McDonald Road east of the Project site measured at 58.2 Leq (the sound level in decibels equivalent to the total sound energy measured over a stated period of time). This noise level was produced primarily by vehicles on McDonald Road as well as from nearby agricultural activity and natural sources of noise (HDR 2012). Since HR1 was over 2 miles away from this noise measurement, it is unlikely to have contributed quantitatively to this noise measurement. Another noise measurement was taken at the Sonny Bono National Wildlife Refuge, which recorded a noise level of 48.5 dBA Leq, which due to its location, was primarily due to natural sources (HDR 2012). Since HR1 was over a mile away from this noise measurement, it is unlikely to have contributed quantitatively to this noise measurement. Although these noise measurements are almost 10 years old, only limited development has occurred in the Project area over the last 10 years; as such, these noise measurements still provide an accurate representation of the existing noise environment.

4.9.3 Regulatory Setting

The Project would be constructed in the County of Imperial, within the state of California. The following subsections present a summary of noise-related regulatory requirements for the Project.

Federal

The adverse impact of noise was officially recognized by the federal government in the Noise Control Act of 1972, which serves three purposes:

- Promulgating noise emission standards for interstate commerce
- Assisting state and local abatement efforts
- Promoting noise education and research

The federal Office of Noise Abatement and Control (ONAC) was initially tasked with implementing the Noise Control Act. However, the ONAC has since been eliminated, leaving the development of federal noise policies and programs to other federal agencies and interagency committees. For example, the

Occupational Safety and Health Administration (OSHA) agency prohibits exposure of workers to excessive sound levels. The USDOT assumed a significant role in noise control through its various operating agencies. The Federal Aviation Administration (FAA) regulates noise of aircraft and airports. Surface transportation system noise is regulated by a host of agencies, including the Federal Transit Administration (FTA). Transit noise is regulated by the federal Urban Mass Transit Administration (UMTA), while freeways that are part of the interstate highway system are regulated by the Federal Highway Administration (FHWA). Finally, the federal government actively advocates that local jurisdictions use their land use regulatory authority to arrange new development in such a way that "noise sensitive" uses are either prohibited from being sited adjacent to a highway or, alternately, that the developments are planned and constructed in such a manner that potential noise impacts are minimized.

Although the Proposed Project is not under the jurisdiction of the FTA, the FTA is the only agency that has defined what constitutes a significant noise impact from implementing a project. **Error! Reference source not found.** provides the thresholds utilized by the FTA for permanent noise level increase at the project level. As shown in **Error! Reference source not found.**, the allowable cumulative noise level increase created from a project would range from 0 to 7 dBA based on the existing (ambient) noise levels in the project vicinity. The justification for the sliding scale is that people already exposed to high levels of noise should be expected to tolerate only a small increase in the amount of noise in their community. In contrast, if the existing noise levels are quite low, it is reasonable to allow a greater change in the community noise for the equivalent difference in annoyance.

Table 4.9-1: FTA Project Effects on Cumulative Noise Exposure

Existing Noise Exposure (dBA Leq or Ldn)	Allowable Noise Impact Exposure dBA Leq or Ldn		
	Project Only	Combined	Noise Exposure Increase
45	51	52	+7
50	53	55	+5
55	55	58	+3
60	57	62	+2
65	60	66	+1
70	64	71	+1
75	65	75	0

Source: Federal Transit Administration, 2006.

State

California Department of Health Services Office of Noise Control

Established in 1973, the California Department of Health Services Office of Noise Control (ONC) was instrumental in developing regularity tools to control and abate noise for use by local agencies. One significant model is the "Land Use Compatibility for Community Noise Environments Matrix," which allows the local jurisdiction to clearly delineate compatibility of sensitive uses with various incremental levels of noise.

California Noise Insulation Standards

Title 24, Chapter 1, Article 4 of the California Administrative Code (California Noise Insulation Standards) requires noise insulation in new hotels, motels, apartment houses, and dwellings (other than single-family detached housing) that provides an annual average noise level of no more than 45 dBA CNEL. When such structures are located within a 60-dBA CNEL (or greater) noise contour, an acoustical analysis is required to ensure that interior levels do not exceed the 45-dBA CNEL annual threshold. In addition, Title 21, Chapter 6, Article 1 of the California Administrative Code requires that all habitable rooms, hospitals, convalescent homes, and places of worship shall have an interior CNEL of 45 dB or less due to aircraft noise.

Government Code Section 65302

Government Code Section 65302 mandates that the legislative body of each county and city in California adopt a noise element as part of its comprehensive general plan. The local noise element must recognize the land use compatibility guidelines published by the State Department of Health Services. The guidelines rank noise land use compatibility in terms of normally acceptable, conditionally acceptable, normally unacceptable, and clearly unacceptable.

California Vehicle Code Section 27200-27207 – On-Road Vehicle Noise

California Vehicle Code Section 27200-27207 provides noise limits for vehicles operated in California. For vehicles over 10,000 pounds, noise is limited to 88 dB for vehicles manufactured before 1973, 86 dB for vehicles manufactured before 1975, 83 dB for vehicles manufactured before 1988, and 80 dB for vehicles manufactured after 1987. All measurements are based at 50 feet from the vehicle.

California Vehicle Code Section 38365-38380 – Off-Road Vehicle Noise

California Vehicle Code Section 38365-38380 provides noise limits for off-highway motor vehicles operated in California as follows: 92 dBA for vehicles manufactured before 1973, 88 dBA for vehicles manufactured before 1975, 86 dBA for vehicles manufactured before 1986, and 82 dBA for vehicles manufactured after December 31, 1985. All measurements are based at 50 feet from the vehicle.

Local

The Noise Element of the Imperial County General Plan provides the applicable noise standards for the Proposed Project. The Noise Element also contains plans and policies to protect the public from noise intrusion. Table 4.9-2 identifies applicable General Plan policies, goals, and objectives applicable to the Projects' consistency with the General Plan Noise Element.

Table 4.9-2: Consistency with County General Plan

Goals, Objectives, and Polices	Consistency with General Plan	Analysis
Noise Element		
Goal 1 – Provide an acceptable noise environment for existing and future residents in County of Imperial.	Consistent	The Project would provide an acceptable noise environment for future residents in the County. Currently, no residences exist in the Project's vicinity. Thus, the Project is consistent with this goal.
Objective 1.3 – Control noise at the source where feasible.	Consistent	The noise analysis performed for the Project determined that the Project would not result in excessive noise levels. Therefore, the Project is consistent with this objective.
Objective 1.4 – Coordinate with airport operators to ensure operations are in conformance with approved Airport Land Use Compatibility Plans.	Consistent	The Project is not located within the planning area of any Airport Land Use Compatibility Plans and is, thus, consistent with this objective.
Objective 2.2 – Provide acoustical analysis guidelines which minimize the burden on project proponents and project reviewers.	Consistent	The noise analysis performed for the Project follows all County guidelines and is therefore consistent with this objective.
Objective 2.3 – Work with project proponents to utilize site planning, architectural design, construction, and noise barriers to reduce noise impacts as projects as proposed.	Consistent	The noise analysis performed for the Project determined that the Project would not result in excessive noise levels. Therefore, no noise barriers are required, and the Project is consistent with this objective.
Policy 1 – Acoustical Analysis of Proposed Projects. The County shall require the analysis of proposed discretionary projects which may be impacted by excessive noise levels.	Consistent	A noise analysis was performed for the Project which determined that the Project would not result in excessive noise levels. Therefore, the Project is consistent with this policy.
Policy 2 – Noise/Land Use compatibility. When acoustical analysis of a proposed project is required, the County shall identify and evaluate potential noise/land use conflicts that could result from the implementation of the Project.	Consistent	A noise analysis was performed for the Project which determined that the Project would not result in land use conflicts. Therefore, the Project is consistent with this policy.

Table 4.9-2: Consistency with County General Plan

Goals, Objectives, and Polices	Consistency with General Plan	Analysis
Policy 4 – Interior Noise Environment. Where acoustical analysis of a proposed project is required, the County shall identify and evaluate projects to ensure compliance to the California (Title 24) interior noise standards and additional requirement of this Element. Prior to the issuance of a building permit, an acoustical analysis, or equivalent documentation, must be submitted that demonstrates compliance with the standard for all buildings to be located in an area of exterior noise level greater than 60 dB CNEL. No formal analysis may be required if the standard can be achieved by the minimum noise reduction indicated in Table 10 of the General Plan Noise Element.	Consistent	The noise analysis performed for the Project follows all County guidelines and is therefore consistent with this policy.
Policy 5 – New Noise Generating Projects. The County shall identify and evaluate projects which have the potential to generate noise in excess of the Property Line Noise Limits. An acoustical analysis must be submitted which demonstrates the Project's compliance.	Consistent	The noise analysis performed for the Project would be submitted to the County as part of this EIR and is therefore consistent with this policy.

Noise Impact Zone

A noise impact zone is an area that is likely to be exposed to significant noise. The County of Imperial defines a Noise Impact Zone as an area that may be exposed to noise greater than 60 dB CNEL or 75 dB Leq. The purpose of the noise impact zone is to define areas and properties where an acoustical analysis of a proposed project is required to demonstrate project compliance with land use compatibility requirements and other applicable environmental noise standards. The County of Imperial Noise Element defines any property meeting one of the following criteria as being in a noise impact zone:

- Within the noise impact zone distances to classified roadways, as indicated in Table 4.9-3
- Within 1,000 feet of the boundary of any railroad switching yard
- Within the existing or projected 60-dB CNEL contour of any airport, as shown in the County of Imperial Airport Land Use Compatibility Plan (ALUCP) or an approved airport master plan which supersedes the ALUCP. Note: Land use compatibility analysis, which may include an acoustical analysis, is required for projects proposed within the "airport vicinity" of each airport, as defined on the Compatibility Maps shown in the ALUCP. This may encompass a much larger area than the 60-dB CNEL contour.
- Within one-quarter mile (1,320 feet) of existing farmland that is in an agricultural zone

Table 4.9-3: Roadway Noise Impact Zones

Roadway Classification	Distance From Centerline (feet)
Interstate Highway	1,500
State Highway or Prime Arterial	1,100
Major Arterial	750
Secondary Arterial	450
Minor Collector	150

Source: General Plan County of Imperial

Construction Noise Standards

The County of Imperial General Plan Noise Element requires that construction noise from a single piece of equipment or a combination of equipment shall not exceed 75 dB Leq when averaged over an 8-hour period and measured at the nearest sensitive receptor. This standard assumes a construction period of days or weeks. In cases where construction times are of extended length, the standard may be tightened so as not to exceed 75 dB Leq when averaged over a 1-hour period.

Noise Ordinance

The standards prescribed in the County Noise Element also establish that operation of construction equipment shall be limited to the hours of 7 a.m. to 7 p.m., Monday through Friday, and 9 a.m. to 5 p.m. Saturday, unless the County Planning and Development Services Director authorizes otherwise. No commercial construction operations are permitted on Sunday or holidays.

Property Line Standards

The property line noise limits listed in Table 4.9-4 apply to noise generation from one property to an adjacent property. The standards imply the existence of a sensitive receptor on the adjacent, or receiving, property. In the absence of a sensitive receptor, an exception or variance to the standards may be appropriate. These standards do not apply to construction noise. These standards are intended to be enforced through the County's code enforcement program on the basis of complaints received from persons impacted by excessive noise. It must be acknowledged that a noise nuisance may occur even though an objective measurement with a sound level meter is not available. In such cases, the County may act to restrict disturbing, excessive, or offensive noise that causes discomfort or annoyance to reasonable persons of normal sensitivity residing in an area.

Table 4.9-4: Property Line Noise Limits

Zone	Time	Applicable Limit One-Hour Average Sound Level (DB)
Residential Zones	7:00 a.m. to 10:00 p.m.	50
	10:00 p.m. to 7:00 a.m.	45
Multi-Residential Zones	7:00 a.m. to 10:00 p.m.	55
	10:00 p.m. to 7:00 a.m.	50
Commercial Zones	7:00 a.m. to 10:00 p.m.	60
	10:00 p.m. to 7:00 a.m.	55

Table 4.9-4: Property Line Noise Limits

Zone	Time	Applicable Limit One-Hour Average Sound Level (DB)
Light Industrial/Industrial Park Zones	Anytime	70
General Industrial Zones	Anytime	75

Source: General Plan County of Imperial

Note: When the noise-generating property and the receiving property have different uses, the more restrictive standard shall apply. When the ambient noise level is equal to or exceeds the property line noise standard, the increase of the existing or proposed noise shall not exceed 3 dB L_{eq}.

New Noise-Generating Projects

The County shall identify and evaluate projects that have the potential to generate noise in excess of the property line noise limits specified in Table 4.9-4. An acoustical analysis must be submitted that demonstrates the projects' compliance with the property line noise limits and/or required mitigation measures to reduce noise to acceptable levels. Mitigation may include a greater property line setback than required by the Land Use Ordinance, use of solid building walls without openings, noise-attenuation walls and/or landscaped earth berms, alternative construction materials or design, alternative traffic patterns, or other noise-reduction techniques.

Agricultural Noise/Right to Farm Ordinance

In recognition of the role of agriculture in the County, the Board of Supervisors has adopted a Right to Farm Ordinance (No. 1031). This ordinance requires a disclosure to owners and purchasers of property that is near agricultural lands or operations or included in an area zoned for agricultural purposes. The disclosure advises persons that discomfort and inconvenience from machinery and aircraft noise resulting from conforming and accepted agricultural operations are a normal and necessary aspect of living in the agricultural areas of the County.

If any residential or other noise-sensitive land use is proposed within one-quarter mile (1,320 feet) of existing farmland that is in an agricultural zone, such proposed project shall be required to prepare an acoustical analysis to evaluate potential noise impacts from farm operations on the proposed project. This may include an analysis of impact of operating farm machinery or trucks hauling farm products on public roads.

County of Imperial Land Use Ordinance Drilling Standards Applicable to Geothermal Projects

The County of Imperial Land Use Ordinance includes general drilling standards specific to geothermal projects (Division 17). This ordinance requires the implementation of County-specified noise control measures, including:

1. The drilling operator shall limit drilling noise to a sound level equivalent to CNEL 60 dBA as measured at the nearest human receptor location outside the parcel boundary. This level may be exceeded by 10 percent if the noise is intermittent and during daylight hours (Land Use Ordinance 91702.01[B]).

2. Diesel equipment used for drilling within 300 feet of any residence shall have hospital-type mufflers. Well-venting and testing at these wells shall be accompanied by the use of an effective muffling device or silencer (Land Use Ordinance 91702.01[D]).

3. Heavy truck traffic, well site preparation, pipe stacking, and hydroblasting (used for descaling operations) shall be limited to the hours between 7:00 a.m. and 7:00 p.m. for any wells within 300 feet of any residence. Exceptions may be made where soundproofing is provided or during summer hours to minimize effects of heat with notice to the planning director and approval thereof (Land Use Ordinance 91702.01[I and M]).

4. Impulse noises such as sudden steam venting shall be controlled by discharge through a muffler or other sound-attenuating system, as appropriate (Land Use Ordinance 91702.01[O]).

5. Drilling may be on a 24-hour basis provided the standards above are met (Land Use Ordinance 91702.01[S])).

4.9.4 Thresholds of Significance

In order to assist in determining whether a project would have a significant effect on the environment, the County utilizes the State CEQA Guidelines Appendix G Guidelines. Appendix G states that a project may be deemed to have a noise impacts if it would:

Threshold a) **Result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

Threshold b) **Result in generation of excessive groundborne vibration or groundborne noise levels?**

Threshold c) **For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public us airport, expose people residing or working in the project area to excessive noise levels?**

Please refer to **Section 6.1: Effects Found Not to Be Significant** for an evaluation of those topics that were determined to be less than significant or have no impact and do not require further analysis in the EIR**.**

4.9.5 Project Impact Analysis

Threshold a) **Result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?**

The Proposed Project would consist of constructing and operating a commercial lithium hydroxide production plant that will utilize post-secondary clarifier brine produced from the geothermal fluid management activities on the neighboring HR1 power plant site as the resource process stream for the commercial production of lithium hydroxide monohydrate (LIOH), and zinc, and manganese products.

Noise would be created from construction of the facility as well as from operational activities that include noise created from onsite equipment as well as from movement and loading of materials. In addition, both construction and operation of the Proposed Project would generate additional worker and truck trips to the Project site that would create additional roadway noise. The onsite (construction and operational noise) and offsite roadway noise impacts have been analyzed separately below.

Onsite Noise Impacts

Onsite Construction Noise Impacts

Project construction would begin when all necessary permits are obtained, which is expected to be Quarter Three (Q3) of 2021. Construction is expected to be complete in Quarter Two (Q2) of 2023. All work would occur in one phase, with approximately 90 percent of work occurring during daylight hours over five or six days per week over an intermittent 24-month period. The remaining 10 percent of work would occur during nighttime hours to avoid extreme summer temperatures. Approximately 200 to 250 construction workers are anticipated at peak periods.

The General Plan Noise Element exempts construction activities from the applicable noise standards, provided that construction activities are limited to between 7 a.m. and 7 p.m. Monday thru Friday and between 9 a.m. and 5 p.m. on Saturday and do not exceed 75 dBA Leq at the nearby homes. All construction activities for the Proposed Project would occur within the allowable times for construction.

In order to determine the construction noise impacts at the nearest home that is located just over a mile (approximately 5,500 feet) north of the proposed construction activities, the construction equipment noise levels compiled by the FHWA have been utilized. The FHWA compiled noise level data regarding the noise-generating characteristics of several different types of construction equipment used during the Central Artery/Tunnel project in Boston. Table 4.9-5 below provides a list of the construction equipment that would be utilized during construction of the Proposed Project that was obtained from the Project Description (Section 2.4.1 of this EIR), along with the associated measured noise emissions and measured percentage of typical equipment use per day. From this acquired data, FHWA developed the Roadway Construction Noise Model (RCNM). The RCNM, has been used to calculate the construction equipment noise emission levels at the nearest home (see Appendix I).

Table 4.9-5: Construction Equipment Noise Characteristics and Noise Levels at Nearest Home

Equipment	Acoustical Use Factor[1] (Percent)	Maximum Sound Level at 50 feet (dBA L_{max}*)	Maximum Sound Level at Nearest Home[2] (dBA L_{max})
Off-Highway Trucks (Flatbed Truck)	40	74.3	33.4
Rollers	20	80.0	39.2
Crawler Tractor (Dozer)	40	81.7	40.8
Excavators	40	80.7	39.9
Graders	40	85.0	44.2
Water Trucks (Dump Truck)	40	76.5	35.6
Compactors	40	83.2	42.4
Rubber-Tired Loaders (Front End Loader)	40	79.1	38.3
Scrapers	40	83.6	42.8
Cranes	16	80.6	39.7
Generator Sets	50	80.6	39.8
Concrete Pump (Pump)	50	80.9	40.1
Plate Compactors (Compactor)	20	83.2	42.4
Rough Terrain Forklifts (Gradall)	40	83.4	42.6
Skid Steer Loaders (Front End Loader)	40	79.1	38.3
Tractor/Loader/Backhoe (Tractor)	40	84.0	43.2
Aerial Lifts (Man Lift)	20	74.7	33.9
Welders	40	74.0	33.2
Air Compressors	40	77.7	36.8
Pavers	50	77.2	36.4
Paving Equipment	50	77.2	36.4

[1] Acoustical use factor is the percentage of time each piece of equipment is operational during a typical workday.

[2] The nearest home is located as near as 5,500 feet to the north of the proposed construction activities.

* L_{max} is the maximum sound level during a measurement period or a noise event.

Source: RCNM Version 1.1 (see Appendix I).

Table 4.9-5 shows that a grader would create the highest noise level of all anticipated equipment to be used during construction of the Proposed Project, with a maximum noise level of 44.2 dBA L_{max} (maximum sound level during a measurement period or a noise event) at the nearest home. The proposed construction activities would be below the County's 75-dBA noise standard at the nearest home. Additionally, the construction noise levels would be below the lowest measured ambient noise level in the Project vicinity of 48.5 dBA Leq and would be below both the residential sound level limits provided in Section 90702.00 of the County's Municipal Code of 50 dB between 7 a.m. and 10 p.m. and 45 dB between 10 p.m. and 7 a.m. Therefore, construction activities for the Proposed Project are not limited to the allowable construction times as detailed in the General Plan Noise Element, since construction-related noise would be below both the ambient noise and allowable noise levels detailed in the Municipal Code at the nearest sensitive receptor. Therefore, onsite construction activities for the Proposed Project would not create a substantial temporary increase in ambient noise levels that are in excess of applicable noise standards. Impacts would be less than significant.

Onsite Operation Noise Impacts

The operation of the Proposed Project would include the use of machinery to separate and purify the minerals obtained from the geothermal fluid management activities on the neighboring HR1 power plant. After the minerals are dried they will be packaged, palletized, staged, and loaded into truck for distribution. Most of the material processing activities would occur within structures and pipelines that would create nominal noise. The exact equipment that will be utilized in the Proposed Project has not yet been determined, so it is not possible to obtain noise specifications from the manufacturers. However, in general, operational activities would be less noise-intensive than what occurs in the adjacent HR1 power plant or the proposed HR2 power plant. According to the *Hudson Ranch II and Simbol Calipatria II Final EIR,* operation of the proposed HR2 power plant would create a noise level of 38 dBA at the nearest home, which is well below both the residential sound level limits provided in Section 90702.00 of the County's Municipal Code of 50 dB between 7 a.m. and 10 p.m. and 45 dB between 10 p.m. and 7 a.m. (HDR 2012). Since the Proposed Project would create lower operational noise levels than the proposed HR2 power plant, it can be reasonably concluded that operation of the Proposed Project would also be below the County's operational noise standards of 50 dB between 7 a.m. and 10 p.m. and 45 dB between 10 p.m. and 7 a.m. at the nearest home to the north. Therefore, onsite operational activities for the Proposed Project would not create a substantial permanent increase in ambient noise levels that are in excess of applicable noise standards. Impacts would be less than significant.

Offsite Roadway Noise Impacts

Vehicle noise is a combination of the noise produced by the engine, exhaust, and tires of moving vehicles. The level of traffic noise depends on three primary factors: (1) the volume of traffic, (2) the speed of traffic, and (3) the number of trucks in the flow of traffic. The Proposed Project does not propose any uses that would require a substantial number of truck trips and would not alter the speed limit on any existing roadway. As such, the Proposed Project's potential offsite noise impacts have been focused on the noise impacts associated with the change of volume of traffic that would occur with development of the Project.

The County of Imperial General Plan Noise Element defines Noise Impact Zone as an area that is likely to be exposed to significant noise and details that the Roadway Noise Impact Zones exist within 1,100 feet of a State Highway or within 150 feet of a Collector Street. However, neither the General Plan nor the CEQA Guidelines define what constitutes a "substantial permanent increase to ambient noise levels"; as such, this impact analysis has utilized guidance from the FTA for a moderate impact that has been detailed above in Table 4.9-1.

The potential offsite traffic noise impacts created by the ongoing operations of the Proposed Project have been analyzed through utilization of the FHWA model. The FHWA model noise calculation spreadsheets that show the parameters utilized in the FHWA model are provided in Appendix I. The Proposed Project's offsite traffic noise impacts have been analyzed for the roadways studied in the Traffic Impact Analysis (Linscott, Law & Greenspan Engineers 2021) and the homes located within 1,100 feet of the roadway. The noise impacts have been calculated for the existing with construction, existing with Project operations, and cumulative with Project operations conditions, which are discussed below.

Existing Year with Project Construction Traffic Conditions

The proposed Project's potential offsite noise impacts have been calculated through a comparison of the Existing scenario with the Existing with Project Construction traffic scenario. The results of this comparison are shown in Table 4.9-6.

Table 4.9-6: Existing Year with Project Construction Traffic Noise Contributions

Roadway	Segment	dBA CNEL at Nearest Receptor[a]			Increase Threshold[b]
		Existing	Existing With Project Construction	Project Contribution	
Highway 111	North of Hazard Road	60.5	60.6	0.1	+2 dBA
Highway 111	South of McDonald Road	62.2	62.2	0.0	+2 dBA
Highway 111	South of Sinclair Road	64.5	64.7	0.2	+1 dBA

Notes:

a. Distances to nearest residential uses are shown in Appendix I. Noise levels do not take into account existing noise barriers.

b. Increase Threshold obtained from the FTA's allowable noise impact exposures.

Source: FHWA Traffic Noise Prediction Model FHWA-RD-77-108 (see Appendix I).

Table 4.9-6 shows that for the existing conditions, the Proposed Project's temporary noise increases to the nearby homes from the generation of additional vehicular traffic during construction activities would not exceed the FTA's allowable increase thresholds detailed above. Therefore, construction of the Proposed Project would not result in a substantial temporary increase in ambient noise levels for the existing conditions. Impacts would be less than significant.

Existing Year with Operational Traffic Conditions

The Proposed Project's potential offsite noise impacts have been calculated through a comparison of the existing year without Project scenario to the existing year with Project operations scenario. The results of this comparison are shown in Table 4.9-7.

Table 4.9-7: Existing Year with Project Operational Traffic Noise Contributions

Roadway	Segment	dBA CNEL at Nearest Receptor[a]			Increase Threshold[b]
		Existing	Existing With Project Operations	Project Contribution	
Highway 111	North of Hazard Road	60.5	60.5	0.0	+2 dBA
Highway 111	South of McDonald Road	62.2	62.4	0.2	+2 dBA
Highway 111	South of Sinclair Road	64.5	64.6	0.1	+1 dBA

Notes:

a. Distances to nearest residential uses are shown in Appendix I. Noise levels do not take into account existing noise barriers.

b. Increase Threshold obtained from the FTA's allowable noise impact exposures.

Source: FHWA Traffic Noise Prediction Model FHWA-RD-77-108 (see Appendix I).

Table 4.9-7 shows that for the existing year conditions, the effects of the Proposed Project's permanent noise increases to the nearby homes from the generation of additional vehicular traffic during operation of the Project would not exceed the FTA's allowable increase thresholds detailed above. Therefore, operation of the Proposed Project would not result in a substantial permanent increase in ambient noise levels for the existing year conditions. Impacts would be less than significant.

Therefore, roadway vehicle noise impacts resulting from both construction and ongoing operation of the Proposed Project would be less than significant.

4.9.6 Cumulative Impacts

Cumulative impacts are defined in CEQA as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines Section 15355). Stated in another way, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing relating impacts" (CEQA Guidelines Section 15130 [a])[1]).

Due to the localized nature of noise and due to the fact that the nearest sensitive receptor to the Project site is a single-family home located over a mile north of the Project site, cumulative noise impacts would be limited to offsite roadway noise impacts. The cumulative roadway noise impacts have been analyzed in the same manner detailed above for the Project roadway noise impacts that included utilization of the FHWA model. The FHWA model noise calculation spreadsheets that show the parameters utilized in the FHWA model are provided in Appendix I.

Cumulative Projects Operational Traffic Conditions

The Proposed Project's potential offsite noise impacts have been calculated through a comparison of the existing year plus cumulative projects without Project scenario to the existing year plus cumulative projects with Project operations scenario. The results of this comparison are shown in Table 4.9-8.

Table 4.9-8: Cumulative Projects with Project Operational Traffic Noise Contributions

Roadway	Segment	dBA CNEL at Nearest Receptor[a]			Increase Threshold[b]
		Existing	Existing With Project Operations	Project Contribution	
Highway 111	North of Hazard Road	60.9	61.0	0.1	+2 dBA
Highway 111	South of McDonald Road	62.7	62.8	0.1	+2 dBA
Highway 111	South of Sinclair Road	64.9	65.0	0.1	+1 dBA

Notes:

a. Distances to nearest residential uses are shown in Appendix I. Noise levels do not take into account existing noise barriers.

b. Increase Threshold obtained from the FTA's allowable noise impact exposures.

Source: FHWA Traffic Noise Prediction Model FHWA-RD-77-108 (see Appendix I).

Table 4.9-8 shows that for the existing year plus cumulative projects conditions, the Proposed Project's permanent noise increases to the nearby homes from the generation of additional vehicular traffic during operation of the Project would not exceed the FTA's allowable increase thresholds detailed above.

Therefore, operation of the Proposed Project would not result in a substantial permanent increase in ambient noise levels for the existing year with cumulative projects conditions. Impacts would be less than significant.

4.9.7 Mitigation Measures

No mitigation measures are required, as all Project impacts regarding noise are less than significant.

4.9.8 Level of Significance After Mitigation

No mitigation measures are required; impacts related to noise would remain less than significant.

4.10 TRANSPORTATION

This section discusses the potential traffic impacts that would occur in association with implementation of the proposed Energy Source Mineral ATLiS Project. This analysis includes a discussion of the effects of Project construction and operational traffic on Highway 111, McDonald Road, and Sinclair Road. Information contained in this section is summarized from the Transportation Impact Analysis (TIA) prepared by Linscott, Law & Greenspan Engineers (June 22, 2021), included in Appendix K: Traffic Impact Study of this EIR.

4.10.1 Existing Environmental Setting

Regional Setting

The following roadway classifications are derived from the County of Imperial General Plan Circulation and Scenic Highways Element (County 2008):

Expressway

The main function of this classification is to provide regional and intra-county travel services. Features include high design standards with six travel lanes; wide landscaped medians; highly restricted access; provisions for public transit lands, including but not limited to, bus lanes, train lanes, or other mass transit type means; and no parking. Minimum right-of-way (ROW) is 210 feet consisting of three travel lanes per direction, a 56-foot median, and shoulders along both sides of the travel way. The ROW width is exclusive of necessary adjacent easements, such as for the IID facilities, as these vary. The minimum intersection spacing is 1 mile (ROWs may be greater if the road segment also serves as a corridor for public utilities).

Prime Arterial

The main function of this classification is to provide regional, subregional, and intra-county travel services. Features include high design standards with four to six travel lanes; raised and landscaped medians; highly restricted access, which in most cases will be a 1-mile minimum; provisions for public transit lanes, including but not limited to bus lanes, train lanes, or other mass transit type means; and no parking. The absolute minimum ROW without public transit lanes is 136 feet. ROW dimensions are specified in the standards for specific road segments.

Minor Arterial

These roadways provide intra-county and subregional service. Access and parking may be allowed but will be closely restricted in such a manner as to ensure proper function of this roadway. Typical standards include the provision for four and six travel lanes with raised, landscaped medians for added safety and efficiency by providing protected left turn lanes at selected locations. Some may also contain provisions for public transit lanes or other mass transit type means. Minimum ROW is 102 feet for four lanes and 126 feet for six lanes.

Major Collector (Collector)

These roadways are designed to provide intra-county travel as a link between the long haul facilities and the collector/local facilities. Although this type of roadway frequently provides direct access to abutting properties, that is not its primary purpose. Typical design features include provision for four travel lanes without a raised median, and some may also contain provisions for public transit lanes or other mass transit type means. Minimum ROW is 84 feet. Parking is generally not permitted.

Minor Local Collector (Local Collector)

This roadway is designed to connect local streets with adjacent Collectors or the arterial street system. Design standards include provision for two travel lanes and parking, except in specific locations where parking is removed to provide a turn lane at intersections. Local Collector streets frequently provide direct access to abutting properties, although that should be avoided where feasible. Minimum ROW is 70 feet.

Residential Street

This street type includes residential cul-de-sac and loop streets and is designed to provide direct access to abutting properties and to give access from neighborhoods to the Local Street and Collector Street system. This classification should be discontinuous in alignment, such that through trips are discouraged. Typical design standards include provision for two travel lanes, parking on both sides, and direct driveway access. Minimum ROW is 60 feet.

Existing Street Network

State Route 111 (Highway 111) is classified as a State Highway/Expressway in the Imperial County General Plan Circulation Element. Highway 111 is a north-south highway connecting the three largest cities in Imperial County — Calexico, El Centro, and Brawley — and runs from Interstate 10 in Riverside County to the international border. Outside the towns of Calipatria and Niland, Highway 111 is constructed as a two-lane undivided north-south roadway, providing one lane of travel per direction; and the posted speed limit is generally 65 mph.

Hazard Road is an east-west route through Imperial County. Hazard Road is currently an unpaved two-lane roadway within the Project vicinity.

Sinclair Road is an east-west route through Imperial County. Sinclair Road is currently a paved two-lane undivided roadway within the Project vicinity.

English Road is a north-south route through Imperial County. English Road is currently an unpaved two-lane roadway north of Sinclair Road and constructed as a two-lane paved roadway south of Sinclair Road.

McDonald Road is an east-west route though Imperial County. Currently, McDonald Road is an unpaved two-lane roadway west of Highway 111 of Sinclair Road and constructed as a two-lane paved roadway east of Highway 111. It is proposed to improve the intersection at Highway 111 and pave McDonald Road between Highway 111 and the site (west of Highway 111) prior to construction of the Project; thus the "Operations" analysis reflects these improvements.

Traffic Study Areas

The following is a list and brief description of the roadways that would be utilized for access to the Project site during construction and subsequent operational activities.

Intersections:

1. Highway 111 / Hazard Road
2. Highway 111 / McDonald Road
3. Highway 111 / Sinclair Road
4. English Road / McDonald Road
5. English Road / Sinclair Road

Segments:

Highway 111:

- North of Hazard Road
- Hazard Road to McDonald Road
- McDonald Road to Sinclair Road
- South of Sinclair Road

McDonald Road:

- Project Site to English Road (currently unpaved)
- English Road to Highway 111 (currently unpaved)

Sinclair Road:

- English Road to Highway 111

The TIA evaluates the project trip generation created during construction and operation of the Project and roadway conditions for roads that would be utilized to access the Project site for construction and operation.

Existing Traffic Volumes in the Project Area

Average Daily Traffic (ADT) volumes on study area segments along Highway 111 were obtained from the Caltrans Traffic Census Program for Year 2017, the latest available as of the date of this report. AM and PM peak-hour intersection turning movement volume counts at study area intersections were commissioned by LLG Engineers (LLG) in September 2019. Table 4.10-1 below summarizes the segment ADT volumes on all the study area segments. It should be noted that all segment ADT volumes were applied a growth factor of 2 percent per year to represent Year 2021 conditions. In addition, it should be noted that for the unpaved segments along McDonald Road and Sinclair Road, the ADTs were estimated based on a relationship that the PM peak-hour volumes comprise approximately 10 percent of the ADT.

Table 4.10-1: Existing Traffic Volumes

Street Segment		Source	ADT[a]
Highway 111	North of Hazard Road	Caltrans	3,800
	Hazard Road to McDonald Road	Caltrans	3,800
	McDonald Road to Sinclair Road	Caltrans	3,800
	South of Sinclair Road	Caltrans	6,400
McDonald Road	Project Site to English Road	LLG	270E
	English Road to Highway 111	LLG	220E
Sinclair Road	English Road to Highway 111	LLG	320E

Notes:

[a] A 2% growth factor per year (8%) was applied to the 2017 Caltrans segment ADTs to reflect 2021 conditions

E – Estimated volumes since road is unpaved

Existing Peak Hour Intersection Levels of Service

The Project study area is located in a rural setting, and all intersections are unsignalized. All studied intersections currently operate at a Level of Service (LOS) B or better during both AM and PM peak hours as shown in Table 4.10-2.

Table 4.10-2: Existing Intersection Operations

Intersection	Control Type[b]	Peak Hour	Existing	
			Delay[a]	LOS
1. Highway 111/Hazard Road	TWSC	AM	0.0	A
		PM	0.0	A
2. Highway 111/McDonald Road	TWSC	AM	8.9	A
		PM	8.9	A
3. English Road/McDonald Road	TWSC	AM	9.0	A
		PM	0.0	A
4. English Road/Sinclair Road	TWSC	AM	0.7	A
		PM	1.0	A
5. Highway 111/Sinclair Road	TWSC	AM	10.2	B
		PM	9.6	A

Notes:

[a.] Delay per Vehicle in Seconds

[b.] TWSC – Minor Street STOP Controlled intersection. Minor street left-turn delay is reported. (Two-Way STOP Controlled Intersection)

Project Site

The Project site is located approximately 3.8 miles southwest of the community of Niland, a census-designated place, in the unincorporated area of Imperial County. The Project site is located on three parcels (APN 020-100-025, 020-100-044, and 020-100-046) north of West Schrimpf Road, east of Davis Road, and south of McDonald Road. Traffic currently exists to and from the site for the operation and maintenance of the HR1 Facility. Currently, two driveways for access to the site exist along McDonald Road.

4.10.2 Regulatory Setting

State

Level of Service and Vehicle Miles Traveled

LOS is a professional industry standard by which the operating conditions of a given roadway segment or intersection are measured. LOS ranges from A through F, where LOS A represents the best operating conditions and LOS F represents the worst operating conditions. LOS A facilities are characterized as having free-flowing traffic conditions with no restrictions on maneuvering or operating speeds; traffic volumes are low and travel speeds are high. LOS F facilities are characterized as having forced flow with many stoppages and low operating needs. Additionally, with the growth of Imperial County, transportation management and systems management will be necessary to preserve and increase roadway "capacity." LOS standards are used to assess the performance of a street or highway system and the capacity of a roadway.

On December 28, 2018, the California Natural Resources Agency adopted revised CEQA Guidelines. Among the changes to the guidelines was the removal of vehicle delay and LOS from consideration for transportation impacts under CEQA. Beginning July 1, 2020, as required in CEQA section 15064.3, transportation impacts are to be evaluated based on the vehicle miles of travel associated with a project.

California Department of Transportation

Caltrans manages more than 50,000 miles of California's highway and freeway lanes, provides inter-city rail services, permits more than 400 public-use airports and special-use hospital heliports, and works with local agencies. Specifically, Caltrans is responsible for the design, construction, maintenance, and operation of the California State Highway System. As it relates to the Proposed Project and potential construction access routes, Caltrans is responsible for maintaining and managing Highway 111.

A project is considered to have a significant impact on Caltrans facilities if the new project traffic has decreased the operations of surrounding roadways by a defined threshold. If the project exceeds the thresholds addressed in Table 4.10-3, then the project may be considered to have a significant project impact. A feasible mitigation measure will need to be identified to return the impact within the thresholds (pre-project + allowable increase) or the impact will be considered significant and unmitigated when affecting any state highway facilities.

Table 4.10-3: Intersection LOS & Delay Ranges

Level of Service	Delay (seconds/vehicle)
A	≤ 10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	≥ 50.1

Regional

2016-2040 Regional Transportation Plan/Sustainable Communities Strategy

On April 7, 2016, the SCAG adopted the 2016-2040 RTP/SCS (SCAG 2016). The RTP/SCS is a long-range visioning plan that balances future mobility and housing needs with economic, environmental, and public health goals. It receives input from local governments, county transportation commissions, tribal governments, non-profit organizations, businesses, and local stakeholders within the counties of Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura. The RTP/SCS demonstrates how the region will reduce emissions from transportation sources to comply with Senate Bill 375 and meet the NAAQS set forth by the Clean Air Act.

The updated RTP/SCS contains thousands of individual transportation projects that aim to improve the region's mobility and air quality and revitalize the economy. Since adoption of the RTP/SCS, the county transportation commissions have identified new project priorities and have experienced technical changes that are time sensitive. Additionally, the new amendments for the plan have outlined minor modifications to project scopes, costs, and/or funding and updates to completion years. The amendments to the RTP/SCS do not change any other policies, programs, or projects in the plan.

Local

County of Imperial Circulation and Scenic Highways Element

The Circulation and Scenic Highways Element identifies the location and extent of transportation routes and facilities. It is intended to meet the transportation needs of local residents and businesses and serve as a source for regional coordination. The inclusion of Scenic Highways provides a means of protecting and enhancing scenic resources within highway corridors in Imperial County. The purpose of the Circulation and Scenic Highways Element is to provide a comprehensive document which contains the latest knowledge about the transportation needs of the County and the various modes available to meet these needs. Additionally, the purpose of this Element is to provide a means of protecting and enhancing scenic resources within both rural and urban scenic highway corridors.

The County of Imperial does not have published significance criteria for circulation. However, the County General Plan does state that the level of service (LOS) goal for intersections and roadway segments is to operate at LOS C or better. Therefore, if an intersection or segment degrades from LOS C or better to LOS D or worse with the addition of project traffic, the impact is considered significant. If the location operates at LOS D or worse with and without project traffic, the impact is considered significant if the project causes the intersection delta to increase by more than two seconds or the volume to capacity (V/C) ratio to increase by more than 0.02. These amounts are consistent with those used in the City of El Centro and the County of Imperial in numerous traffic studies. Table 4.10-4 analyzes the consistency of the Project with specific policies contained in the Imperial County General Plan associated with transportation and traffic.

Table 4.10-4: General Plan Consistency

General Plan Policies	Consistency with General Plan	Analysis

Circulation and Scenic Highways Element		
Safe, Convenient, and Efficient Transportation System		
Goal 1 – The County will provide and require an integrated transportation system for the safe and efficient movement of people and goods within and through the County of Imperial with minimum disruption to the environment.	Consistent	A TIA was prepared for the Project by Linscott, Law & Greenspan Engineers (LLG). The analysis examined a worst-case scenario during construction and operations of the Project to provide a conservative estimate of impacts to movement throughout the County. In order to prevent traffic delays related to the Project, the Applicant shall construct a two-way stop control at the intersection of Highway 111 and McDonald Road in compliance with mitigation measure TRA-1. Therefore, the Project is consistent with this objective.
Objective 1.1 – Maintain and improve the existing road and highway network, while providing for future expansion and improvement based on travel demand and the development of alternative travel modes.	Consistent	In order to improve the existing road and highway network, the Applicant shall construct a two-way stop control at the intersection of Highway 111 and McDonald Road in compliance with mitigation measure TRA-1. A two-way stop control will provide for safe future expansion if travel demand increases. Therefore, the Project is consistent with this objective.
Objective 1.2 – Require a traffic analysis for any new development which may have a significant impact on County roads. A traffic analysis may not be necessary in every situation, such as when the size or location of the project will not have a significant impact upon and generate only a small amount of traffic. Also, certain types of projects, due to the trip generation characteristics, may add virtually no traffic during peak periods. These types of projects may be exempt from the traffic analysis requirements. Whether a particular project qualifies for any exemption will be determined by the Department of Public Works Road Commissioner.	Consistent	A TIA was prepared for the Project by LLG. The analysis examined a worst-case scenario during construction and operations of the Project to provide a conservative estimate of impacts. Therefore, the Project is consistent with this objective.

County of Imperial Bicycle Master Plan Update: Final Plan

In 2012, the County of Imperial adopted an updated Bicycle Master Plan to serve as the guiding document for the development of an integrated network of bicycle facilities and supporting programs designed to link the unincorporated areas and attractive land uses throughout the County. This document is an update to the previously adopted Countywide Bicycle Master Plan and was prepared to accomplish the following goals:

1. To promote bicycling as a viable travel choice for users of all abilities in the County

2. To provide a safe and comprehensive regional connected bikeway network

3. To enhance environmental quality, public health, recreation, and mobility benefits for the County through increased bicycling

The County of Imperial's General Plan, Circulation and Scenic Highways Element and Conservation and Open Space Element provide a solid planning basis for the Bicycle Master Plan. In spite of the fact that Imperial County has a limited number of bicycle facilities and no comprehensive bicycle system, interest in cycling is growing; and numerous cyclists bike on a regular basis for both recreation and commuting to work and school.

4.10.3 Thresholds of Significance

In order to assist in determining whether a project would have a significant effect on the environment, the County utilizes the State CEQA Guidelines Appendix G Guidelines. Appendix G states that a project may be deemed to have an impact on transportation if it would:

Threshold a)	**Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadways, bicycle and pedestrian facilities?**
Threshold b)	**Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?**
Threshold c)	**Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?**
Threshold d)	**Result in inadequate emergency access?**

Please refer to **Section 6.1: Effects Found Not to Be Significant** for an evaluation of those topics that were determined to be less than significant or have no impact and do not require further analysis in the EIR**.**

4.10.4 Methodology

Proposed Project

Construction

As discussed in Chapter 3.0: Project Description, it is estimated that on average 20 to 25 trucks per day will travel in and out of the Project site during construction except during grading when about 50 to 60 trucks will be traveling in and out of the Project site per day. An average of 100 workers will commute to the Project site during construction. It is initially anticipated that the majority of construction workers and trucks will be from the proximate local population centers of Calipatria, Brawley, and El Centro. During the construction phase of the Project, McDonald Road will not be a viable option for construction traffic since it will be unpaved. Construction traffic from the south will utilize the paved Sinclair Road as opposed to the unpaved McDonald Road as east/west access to reach the site during construction.

Operation

Operation of the ATLiS plant may produce multiple products for offsite shipment to market by truck. The average annual amount of product shipped out of the ATLiS plant is estimated at 19,000 metric tons of lithium product, 10,000 to 20,000 metric tons of zinc product(s), and up to 60,000 metric tons of manganese product(s). Products will be transported by freight truck on existing roadways to shipping distribution points. Other products of the production operations may be generated by the proprietary technology on the ATLiS plant site and would also be shipped off site to market by truck. Trucking will generally be to markets in the greater Los Angeles basin, Arizona, and Texas.

It is estimated that approximately 24 trucks per day will travel in and out of the Project site during normal operations. The truck traffic includes about 10 trucks per day of outgoing products, including one truck load of dry lithium, two truckloads of 31-percent hydrochloric acid, three truckloads of zinc, and four truckloads of manganese. Truck traffic also includes about eight truck deliveries of reagent chemicals, cooling tower treatment chemicals, consumptive media, product packaging materials, and fuel. The estimate also includes six trucks of outgoing waste generated on the site. The majority of the outgoing waste generated on site is expected to be delivered to and processed at the Burrtec Solid Waste Facility. However, it is estimated that up to 10 percent of trucks carrying filter cakes (waste debris mix of silica, sand, and iron) from the plant would be required to be delivered to a waste treatment facility in Arizona.

In order to support the Project, at the junction of McDonald Road and Highway 111, improvements will also be constructed to meet the requirements of the County and Caltrans. As currently planned, these improvements will include:

- Relocation of the IID drain exit structure on the west side of Highway 111
- Relocation of the IID canal gates on the west side of Highway 111
- Addition of a northbound left turn lane on Highway 111 (or as required by an approved Traffic Study)

A short power line will be constructed between the current IID/HR1 switchyard and the plant site along McDonald Road to the Project site.

Project Site Access

Two primary entry driveways that serve as the access to the Project site will be constructed from McDonald Road. A secondary access entrance to the Project site will serve as an emergency-only access point and will be constructed off Davis Road. Construction traffic from the south will utilize the paved Sinclair Road as opposed to the unpaved McDonald Road as east/west access to reach the site during construction. Primary highway access to the Project site will be via Highway 111. The Applicant will obtain encroachment permits from the County Department of Public Works for the driveway access. The unpaved portion of McDonald Road between Highway 111 and English Road will be paved.

Project Trip Generation Forecast

Construction Trip Generation

In calculating daily trip generation for the construction portion of the Project, the total construction staff and truck activity were calculated based on the construction information above. As shown on Table 4.10-5, the construction portion of the Project would generate a total of 375 ADT with 84 total AM peak-hour trips and 82 total PM peak-hour trips during Project construction.

Table 4.10-5: Construction Trip Generation

Trip Type	Daily Total (ADT)[a]	AM Peak Hour			PM Peak Hour		
		In	Out	*Total*	In	Out	*Total*
Employees[b]	280	70	0	70	0	70	70
Trucks (w/ PCE)[c]	75	5	5	10	5	5	10
Misc. Trips	20	2	2	4	1	1	2
Total	**375**	**77**	**7**	**84**	**6**	**76**	**82**

Notes:
a. ADT = Average Daily Traffic (24-hour total bi-directional traffic on a roadway segment).
b. Assumes half of total employees begin or leave shift during peak hour.
c. PCE = Passenger Car Equivalent (2.5), used to reflect the additional impacts of heavy vehicles in the technical analyses.
(15 Inbound Trucks * 2 (In + Out) * 2.5 (PCE) = 75 total trips

Day-to-Day Operations Trip Generation

Trip generation for the day-to-day operations portion of the Project was also obtained from the Project description as stated above. As shown on Table 4.10-6, a total of 179 ADT with 47 total AM peak-hour trips and 55 total PM peak-hour trips would occur during Project operations.

Table 4.10-6: Day-to-Day Operations Trip Generation

Trip Type	Daily Total (ADT)[a]	AM Peak Hour			PM Peak Hour		
		In	Out	*Total*	In	Out	*Total*
Employees (42)[b]	84	30	0	30	0	30	30
Trucks (w/ PCE)[c]	75	10	5	15	13	8	21
Misc. Trips/Deliveries	20	1	1	2	2	2	4
Total	**179**	41	6	47	15	40	55

Notes:
a. ADT = Average Daily Traffic (24-hour total bi-directional traffic on a roadway segment).
b. Assumes half of total employees begin or leave shift during peak hour.
c. PCE = Passenger Car Equivalent (2.5), used to reflect the additional impacts of heavy vehicles in the technical analyses.
(15 Inbound Trucks * 2 (In + Out) * 2.5 (PCE) = 75 total trips

Trip Distribution

Separate trip distributions were derived for the construction and operations phases of the Project. During the construction phase of the Project, McDonald Road will not be a viable option for Project construction traffic since it will be unpaved. Construction traffic from the south will utilize the paved Sinclair Road as opposed to the unpaved McDonald Road as east / west access to reach the site during construction. During the operations distribution, McDonald Road will be paved between Highway 111 and the Project site before the start of operations; and thus McDonald Road would serve as the primary road utilized by Project traffic.

Vehicle Miles Traveled

Significance Threshold

Since the County has not yet adopted its own threshold for VMT, the County is relying on the guidance provided in the Technical Advisory published by the Governor's Office of Planning and Research (OPR) in December 2018 (the "OPR Guidance") for purposes of evaluating the potential VMT impacts of development projects. The OPR Guidance for VMT states that depending on the type of project, different thresholds of significance are applicable. The "Recommended Numeric Thresholds for Residential, Office, and Retail Project" section of the OPR Guidance includes a section on "Other Project Types" which applies to the Project:

> "Of land use projects, residential, office, and retail projects tend to have the greatest influence on VMT. For that reason, OPR recommends the quantified thresholds described [in the Residential, Office, and Retail Project section] for purposes of analysis and mitigation. Lead agencies, using more location-specific information, may develop their own more specific thresholds, which may include other land use types...".

Guidance from OPR's Technical Advisory is used to establish a significance threshold of a minimum 15-percent reduction or more from the regional average VMT per employee for this project evaluation. That means that if the Project's VMT per employee is more than 15 percent below the regional average, no significant transportation impact would result. It should be noted that the Technical Advisory has no guidelines for truck trips.

VMT Methodology

The VMT assessment was conducted using California Statewide Travel Demand Model (CSTDM) data provided by Caltrans. The following is a summary of steps involved in calculating the trip length and region-wide VMT:

- Step 1. Determine the project analysis zone.
- Step 2. Determine the VMT per Employee for the zone where proposed project is located.
- Step 3. Determine the average VMT per Employee within the County of Imperial representing the Regional VMT.
- Step 4. Using the average VMT from Step 2, compare the zone VMT against the Regional VMT. It should be noted that this step differs from the typical approach of comparing VMT per Capita because there is no associated population for the Project.

Using the CSTDM, the VMT per Employee can be utilized at both the regional and census tract level.

4.10.5 Project Impact Analysis

Threshold a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadways, bicycle and pedestrian facilities?

The construction phase of the Project would generate a maximum of 375 ADT total. The employee and miscellaneous portion of the construction phase would generate a maximum of 300 ADT, with 74 trips during the AM peak hour and 72 trips during the PM peak hour. Approximately 15 trucks are estimated during construction of the Project. In this analysis, a Passenger Car Equivalent (PCE) of 2.5 is applied to truck trips to account for the reduced performance characteristics (stopping, starting, maneuvering, etc.) of heavy vehicles in the traffic flow, resulting in a maximum of 75 truck trips total. An analysis of the analyzed intersections and street segments is provided in the tables below.

Intersection LOS During Project Construction

Table 4.10-7 summarizes the intersection operations throughout the Project study area during the construction phase of the Project. As shown, all of the intersections in the study area are calculated to operate at LOS B or better during the AM and PM peak hours.

Table 4.10-7: Existing Plus Construction Intersection Operations

Intersection	Control Type	Peak Hour	Existing	
			Delay[a]	LOS[b]
1. Highway 111 / Hazard Road	TWSC[c]	AM	10.0	A
		PM	10.1	B
2. Highway 111 / McDonald Road	TWSC	AM	8.9	A
		PM	9.0	A
3. English Road / McDonald Road	TWSC	AM	10.2	B
		PM	7.2	A
4. English Road / Sinclair Road	TWSC	AM	0.2	A
		PM	0.7	A
5. Highway 111 / Sinclair Road	TWSC	AM	10.8	B
		PM	9.5	A

Notes:

a. Delay per vehicle in seconds

b. LOS - Level of service

c. TWSC - Minor street STOP Controlled intersection. Minor street left-turn delay is reported. TWSC - Two-Way STOP Controlled intersection.

Segment LOS During Project Construction

Table 4.10-8 summarizes the street segment operations throughout the Project study area during the construction phase of the Project. As shown, all of the street segments in the study area are forecasted to operate at LOS A on a daily basis.

Table 4.10-8: Existing Plus Construction Street Segment Operations

Street Segment		Functional Roadway Classification[a]	Capacity (LOS E)[b]	ADT[c]	LOS[d]	V/C[e]
Highway 111	North of Hazard Road	2-Lane Expressway	22,700	3,853	A	0.170
	Hazard Road to McDonald Road	2-Lane Expressway	22,700	3,845	A	0.169
	McDonald Road to Sinclair Road	2-Lane Expressway	22,700	3,800	A	0.167
	South of Sinclair Road	2-Lane Expressway	22,700	6,720	A	0.230
McDonald Road	Project Site to English Road	2-Lane Roadway	1,500	645	A	0.430
	English Road to Highway 111	2-Lane Roadway	1,500	220	A	0.147
Sinclair Road	English Road to Highway 111	2-Lane Roadway	1,500	645	A	0.427

Notes:

a. County of Imperial roadway classification

b. Roadway capacity corresponding to Level of Service E from Imperial County Standard Street Classification, Average Daily Vehicle Trips table.

c. Average Daily Traffic volumes

d. Level of Service

e. Volume / Capacity Ratio.

Trip generation for the day-to-day operations portion of the Project would generate a maximum of 179 ADT total. The employee and miscellaneous portion of the operations would generate a maximum of 104 ADT, with 32 trips during the AM peak hour and 34 trips during the PM peak hour. Day-to-day operations are estimated to generate15 truck trips. A PCE of 2.5 is applied to these trips to account for the reduced performance characteristics (stopping, starting, maneuvering, etc.) of heavy vehicles in the traffic flow, resulting in a maximum of 75 truck trips total. An analysis of the analyzed intersections and street segments is provided in the tables below.

Intersection LOS During Project Operation

Table 4.10–9 summarizes the intersection operations throughout the Project study area during the operations phase of the Project. As shown, all the intersections in the study area are calculated to continue to operate at LOS B or better during the AM and PM peak hours.

Table 4.10-9: Existing Plus Project Intersection Operations

Intersection	Control Type[c]	Peak Hour	Existing Plus Project		Change Delay[b]	Impact Type
			Delay[a]	LOS		
1. Highway 111/Hazard Road	TWSC	AM	0.0	A	0.0	None
		PM	0.0	A	0.0	
2. Highway 111/McDonald Road	TWSC	AM	9.1	A	0.2	None
		PM	9.2	A	0.3	
3. English Road/McDonald Road	TWSC	AM	9.3	A	0.3	None
		PM	0.0	A	0.0	

Table 4.10-9: Existing Plus Project Intersection Operations

Intersection	Control Type[c]	Peak Hour	Existing Plus Project		Change Delay[b]	Impact Type
			Delay[a]	LOS		
4. English Road/Sinclair Road	TWSC	AM	0.7	A	0.0	None
		PM	1.0	A	0.0	
5. Highway 111/Sinclair Road	TWSC	AM	10.6	B	0.4	None
		PM	9.9	A	0.3	

Notes:

[a] Average delay expressed in seconds per vehicle

[b] Denotes an increase in delay due to project

[c] TWSC – Minor Street STOP Controlled intersection. Minor street left-turn delay is reported. (Two-Way STOP Controlled Intersection)

Segment LOS During Project Operation

Table 4.10–10 summarizes the street segment operations throughout the Project study area during the operations phase of the Project. As shown, all the street segments in the study area are calculated to continue to operate at LOS A on a daily basis.

Table 4.10-10: Existing Plus Construction Street Segment Operations

Street Segment		Capacity (LOS E)[b]	Existing Plus Project			Impact Type
			ADT[c]	LOS[d]	V/C[e]	
Highway 111	North of Hazard Road	22,700	3,824	A	0.170	None
	Hazard Road to McDonald Road	22,700	3,824	A	0.169	None
	McDonald Road to Sinclair Road	22,700	3,950	A	0.167	None
	South of Sinclair Road	22,700	6,555	A	0.230	None
McDonald Road	Project Site to English Road	1,500	449	A	0.430	None
	English Road to Highway 111	1,500	394	A	0.147	None
Sinclair Road	English Road to Highway 111	1,500	325	A	0.427	None

Notes:

a. County of Imperial roadway classification

b. Roadway capacity corresponding to Level of Service E from Imperial County Standard Street Classification, Average Daily Vehicle Trips table.

c. Average Daily Traffic volumes

d. Level of Service

e. Volume / Capacity Ratio.

The capacity analyses performed for the key roadway segments and unsignalized and signalized intersections indicate that impacts would be considered less than significant during the construction or day-to-day operations of the Project.

Threshold b) Conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

The Project's VMT amount was calculated for the operational phase of the Project using CSTDM data provided by Caltrans. Caltrans provides Transportation Analysis Zone (TAZ) maps which offer VMT information for each project analysis zone. The Project site is located in the County of Imperial, which includes a total of 17 zones representing the Imperial Region. The Project site is located in the TAZ 5600. The VMT per employee for TAZ 5600 is 20.84.

Table 4.10-11 tabulates the average regional VMT per employee, the significance threshold (15 percent below the regional average VMT), and the VMT per employee for TAZ 5600. The VMT per employee for TAZ 5600, where the Project is located, is 20.84.

Table 4.10-11: VMT per Employee Comparison and Threshold

Regional[1]	Significance Threshold[2]	TAZ (Project)
24.51	20.83	20.84

Notes:
1. Regional VMT per Employee is calculated by Averaging VMT per Employee for 17 TAZs located in the Imperial County.
2. Based on 15% below the Regional VMT Average.

The Project's VMT amount is 0.01 more than the significance threshold of 20.83; therefore, the Project is not 15 percent below the regional VMT average (Table 4.10-11). In accordance with OPR's Guidance for VMT, this concludes a significant transportation impact would result from the Project and mitigation measures are needed. A Commute Trip Reduction (CTR) program would be required by Mitigation Measure (MM) TRA-1 to encourage carpooling, ride-matching assistance, preferential carpool parking, half time transportation coordination, vanpool assistance, and bicycle end-trip facilities. With implementation of MM TRA-1, the potential significant impacts would be mitigated and impacts would be less than significant.

Threshold c) Substantially increases hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

A significant safety impact could potentially occur from traffic going to the Project site if improvements are not implemented at the Highway 111/McDonald Road intersection. Mitigation Measure (MM) TRA-2 would require that Highway 111/McDonald Road intersection be improved to Caltrans' satisfaction prior to the Project's certificate of occupation, including the installation of a northbound left-turn pocket prior to the Project's opening utilizing one of the four intersection control methods (existing two-way stop, all-way stop, signal, roundabout) which was analyzed in an Intersection Control Evaluation (ICE). Providing a southbound right-turn lane was considered but rejected due to the low volumes. The maximum peak hour volume in this movement is 12 during construction and 7 during operations. With the implementation MM TRA-2, the potential significant impact would be fully mitigated; and impacts would be less than significant.

4.10.6 Cumulative Impacts

Cumulative impacts are defined in CEQA as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts” (CEQA Guidelines Section 15355). Stated in another way, “a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing relating impacts” (CEQA Guidelines Section 15130 [a][1]).

To account for potential cumulative project traffic increases that may be unforeseen, a 10-percent growth factor was applied to the existing traffic volumes at the study area intersections and segments. This 10-percent growth would conservatively represent the amount of traffic that may utilize the street system in the Project vicinity based on future development projects planned in Imperial County.

Intersection LOS Cumulative with Project

Table 4.10–12 summarizes the intersection operations throughout the Project study area during the operations phase of the Project and the addition of cumulative growth. As shown, all of the intersections in the study area are calculated to continue to operate at LOS B or better during the AM and PM peak hours.

Table 4.10-12: Cumulative Plus Project Intersection Operations

Intersection	Control Type[c]	Peak Hour	Cumulative Plus Project		Change Delay[b]	Impact Type
			Delay[a]	LOS		
1. Highway 111/Hazard Road	TWSC	AM	0.0	A	0.0	None
		PM	0.0	A	0.0	
2. Highway 111/McDonald Road	TWSC	AM	9.2	A	0.3	None
		PM	9.3	A	0.4	
3. English Road/McDonald Road	TWSC	AM	9.3	A	0.3	None
		PM	0.0	A	0.0	
4. English Road/Sinclair Road	TWSC	AM	0.7	A	0.0	None
		PM	1.0	A	0.0	
5. Highway 111/Sinclair Road	TWSC	AM	10.7	B	0.5	None
		PM	10.1	B	0.5	

Notes:

[a] Average delay expressed in seconds per vehicle

[b] Denotes an increase in delay due to project

[c] TWSC – Minor Street STOP Controlled intersection. Minor street left-turn delay is reported. (Two-Way STOP Controlled Intersection)

Segment LOS Cumulative with Project

Table 4.10–13 summarizes the street segment operations throughout the Project study area during the operations phase of the Project and the addition of cumulative growth. This table shows that all of the street segments in the study area are calculated to continue to operate at LOS A on a daily basis.

Table 4.10-13: Cumulative Plus Construction Street Segment Operations

Street Segment		Capacity (LOS E)[b]	Cumulative Plus Project			Impact Type
			ADT[c]	LOS[d]	V/C[e]	
Highway 111	North of Hazard Road	22,700	4,204	A	0.185	None
	Hazard Road to McDonald Road	22,700	4,204	A	0.185	None
	McDonald Road to Sinclair Road	22,700	4,330	A	0.191	None
	South of Sinclair Road	22,700	7,195	A	0.317	None
McDonald Road	Project Site to English Road	1,500	476	A	0.317	None
	English Road to Highway 111	1,500	416	A	0.277	None
Sinclair Road	English Road to Highway 111	1,500	357	A	0.238	None

Notes:

a. County of Imperial roadway classification

b. Roadway capacity corresponding to Level of Service E from Imperial County Standard Street Classification, Average Daily Vehicle Trips table.

c. Average Daily Traffic volumes

d. Level of Service

e. Volume / Capacity Ratio.

Intersection Control Evaluation

An Intersection Control Evaluation (ICE) has been competed under separate cover. The Highway 111/McDonald Road intersection requires improvement to Caltrans' satisfaction, including the installation of a northbound left-turn pocket prior to the Project's opening. Providing a southbound right-turn lane was considered but rejected due to the low volumes. The maximum peak hour volume in this movement is 12 during construction and 7 during operations. Table 4.10-14 shows the operation of four alternatives that could be implemented at the Highway 111/McDonald Road intersection.

Table 4.10-14: Alternative Intersection Analysis

Intersection	Control Type	Peak Hour	Cumulative	
			Delay	LOS
Highway 111/ McDonald Road	Two-Way Stop	AM	9.2	A
		PM	9.3	A
	All-Way Stop	AM	8.2	A
		PM	8.1	A
	Traffic Signal	AM	5.8	A
		PM	6.8	A
	Single-Lane Roundabout	AM	4.2	A
		PM	4.2	A

Notes:

a. Delay per vehicle in seconds

b. LOS - Level of service

c. TWSC - Minor street STOP Controlled intersection. Minor street left-turn delay is reported.

TWSC - Two-Way STOP Controlled intersection.

Source: LLG 2020

Implementation of the Project in combination with other proposed, approved, and reasonably foreseeable projects in the region would not result in cumulative impacts to any street segments or intersections. Additionally, related projects would similarly undergo CEQA review, and determinations regarding the significance of impacts of the related projects on transportation would be made on a case-by-case basis. If necessary, the applicants of the related projects would be required to implement appropriate mitigation measures. Therefore, implementation of related projects and other anticipated growth in Imperial County would not combine with the Proposed Project to result in cumulatively considerable impacts on transportation.

4.10.7 Mitigation Measures

In order to minimize potential impacts to transportation, specifically to safety, the following mitigation measures shall be implemented:

TRA-1: A Commute Trip Reduction (CTR) program shall be implemented to discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking. The CTR program could include features such as carpooling encouragement, ride-matching assistance, preferential carpool parking, half-time transportation coordinator, vanpool assistance, and bicycle end-trip facilities (parking, showers, and lockers) and provide employees with assistance in using alternative modes of travel.

TRA-2: The Highway 111/McDonald Road intersection shall be improved to Caltrans' satisfaction prior to the Project's certificate of occupation, including the installation of a northbound left-turn pocket prior to the Project's opening, utilizing one of the four intersection control methods (existing two-way stop, all-way stop, signal, roundabout) which was analyzed in an Intersection Control Evaluation (ICE) analysis.

4.10.8 Level of Significance After Mitigation

With the implementation of MM TRA-1 and MM TRA-2, the Project would ensure potential impacts related to transportation and circulation would remain less than significant.

4.11 TRIBAL CULTURAL RESOURCES

This section evaluates the Proposed Project's potential impacts on tribal cultural resources (TCRs). TCRs are defined as sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either included or determined to be eligible for inclusion in the California Register of Historical Resources (CRHR) or included in a local register of historical resources, or a resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant. A cultural landscape that meets these criteria is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape. Historical resources, unique archaeological resources, or non-unique archaeological resources may also be tribal cultural resources if they meet these criteria.

Applicable State and local policies related to TCRs are discussed and potential impacts to TCRs are based on coordination and consultation with California Native American tribes that are traditionally and culturally affiliated with the Project site. The consultation process was conducted pursuant to PRC Section 21080.3. Additionally, information used in preparing this section was derived from the *Archaeological and Paleontological Assessment Report for the Energy Source Mineral, LLC Project* (Cultural Resources Assessment) prepared by Chambers Group in January 2021. This document is contained in Appendix D of this EIR.

4.11.1 Existing Environmental Setting

In accordance with Section 15063(a) of the CEQA Guidelines, the County prepared a Notice of Preparation (dated December 11, 2020) that identified the topics to be analyzed in the EIR. In compliance with Assembly Bill (AB) 52 (2014), the County provided formal notification of the Proposed Project on November 6, 2020, via United States Postal Service (USPS) certified mail to each representative of two Native American groups and individuals who may have knowledge of cultural resources in the Project area. The letters can be seen in Appendix L: AB 52 Tribal Consultation. Letters were sent to the Fort Yuma – Quechan Indian Tribe and the Torres-Martinez Indian Tribe. Both Tribes had until December 9, 2020, to respond. As of February 2021, neither Tribe has responded to the AB 52 consultation letters.

4.11.2 Regulatory Setting

State

Assembly Bill 52

AB 52, in effect as of July 1, 2015, introduces tribal cultural resources as a class of cultural resources and additional considerations relating to Native American consultation into CEQA. As a general concept, a tribal cultural resource is similar to the federally defined Traditional Cultural Properties; however, it incorporates consideration of local and state significance and required mitigation under CEQA. A tribal cultural resource may be considered significant if included in a local or State register of historical resources; determined by the lead agency to be significant pursuant to criteria set forth in PRC Section 5024.1; is a geographically defined cultural landscape that meets one or more of these criteria; or is a historical resource described in PRC Section 21084.1, a unique archaeological resource described in PRC Section 21083.2, or is a nonunique archaeological resource if it conforms with the above criteria.

Native American Historic Resource Protection Act

State law addresses the disposition of Native American burials in archaeological sites and protects such remains from disturbance, vandalism, or inadvertent destruction; establishes procedures to be implemented if Native American skeletal remains are discovered during construction of a project; and establishes the NAHC to resolve disputes regarding the disposition of such remains. In addition, the Native American Historic Resource Protection Act (PRC Section 5097 et seq.) makes it a misdemeanor punishable by up to one year in jail to deface or destroy a Native American historic or cultural site that is listed or may be eligible for listing in the CRHR.

Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act (NAGPRA; 25 U.S.C., Chapter 32), enacted in 2001, requires all State agencies and museums that receive State funding and that have possession or control over collections of human remains or cultural items, as defined, to complete an inventory and summary of these remains and items on or before January 1, 2003, with certain exceptions. The NAGPRA also provides a process for the identification and repatriation of these items to the appropriate tribes.

California Health and Safety Code Section 7050.5

California law protects Native American burials, skeletal remains, and associated grave goods, regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. California Health and Safety Code Section 7050.5 requires that if human remains are discovered in any place other than a dedicated cemetery, no further disturbance or excavation of the site or nearby area reasonably suspected to contain human remains can occur until the County Coroner has examined the remains (Section 7050.5b). If the coroner determines or has reason to believe that the remains are those of a Native American, the coroner must contact the NAHC within 24 hours (Section 7050.5c). The NAHC will notify the most likely descendant; and, with the permission of the landowner, the most likely descendant may inspect the site of discovery. The inspection must be completed within 24 hours of notification of the most likely descendant by the NAHC. The most likely descendant may recommend means of treating or disposing of, with appropriate dignity, the human remains and items associated with Native Americans.

Local

Imperial County General Plan

The Conservation and Open Space Element of the General Plan includes goals, objectives, and policies for the protection of tribal cultural resources and scientific sites that emphasize identification, documentation, and protection of tribal cultural resources. Table 4.11-1 provides a consistency analysis of the applicable Imperial County General Plan policies relevant to cultural resources as they relate to the Project. While this EIR analyzes the Project’s consistency with the General Plan pursuant to State CEQA Guidelines Section 15125(d), the Imperial County Board of Supervisors ultimately determines consistency with the General Plan.

Table 4.11-1: General Plan Consistency

General Plan Policies	Consistency with General Plan	Analysis
Conservation and Open Space Element		
Preservation of Cultural Resources		
Objective 3.3 – Engage all local Native American Tribes in the protection of tribal cultural resources, including prehistoric trails and burial sites.	Consistent	AB 52 letters were sent to the Fort Yuma – Quechan Indian Tribe and the Torres-Martinez Indian Tribe. Both Tribes had until December 9, 2020, to respond. As of February 2021, neither Tribe has responded to the AB 52 consultation letters. The Project is consistent with this objective.

4.11.3 Thresholds of Significance

In order to assist in determining whether a project would have a significant effect on the environment, the County utilizes the State CEQA Guidelines Appendix G Guidelines. Appendix G states that a project may be deemed to have an impact on tribal cultural resources if it would:

Threshold a) **Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place or object with 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 define in Public Resources Code Section 5020.1(k), or**

(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 Section 5024.1. In applying the criteria set forth is subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe?**

4.11.4 Methodology

PRC Sections 21080.3.1 and 21080.3.2 require public agencies to consult with California Native American tribes identified by the NAHC to identify potential significant impacts to TCRs, as further defined in PRC Section 21074 as part of CEQA. In accordance with PRC Section 21080.3.1(d), the County formally notified the California Native American tribes associated with the Project area to address potential impacts associated with California Native American resources.

As previously mentioned in Section 4.3: Cultural Resources, the SCIC record search performed for the Project indicated that no cultural resources have been previously identified within the Project site, and six resources have been identified within a 1-mile radius of the Project site. During completion of the pedestrian survey on the Project site, two newly discovered historic-period sites were identified. These two historic-period sites will be assigned primary numbers by the SCIC (pending) but are temporarily named 21268-001 and 21268-002. Based on the background research and results of the survey, Chambers Group archaeologists determined that 21268-001 and 21268-002 would be unlikely to provide cultural value to any California Native American Tribes and do not require further archaeological testing or evaluation.

4.11.5 Project Impact Analysis

Threshold a) **Cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place or object with 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 define in Public Resources Code Section 5020.1(k), or

(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 Section 5024.1. In applying the criteria set forth is subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe?

As previously mentioned, based on the background research and results of the survey, Chambers Group archaeologists determined that the two newly discovered sites, 21268-001 and 21268-002, are unlikely to provide cultural value to any California Native American Tribes; and, since neither Tribe responded to the AB 52 consultation letters, do not require further archaeological testing or evaluation. No other sites listed or eligible for listing in a historical register were identified within or adjacent to the Project site.

Additionally, AB 52 letters were sent to the Fort Yuma – Quechan Indian Tribe and the Torres-Martinez Indian Tribe. Both Tribes had until December 9, 2020, to respond. As of February 2021, neither Tribe has responded to the AB 52 letters that were sent in the consultation process.

Based on the Cultural Resources Assessment and the lack of response from the tribes, the County has determined there are no known tribal cultural resources within the Project Site and impacts would be considered less than significant.

4.11.6 Cumulative Impacts

Cumulative impacts are defined in CEQA as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts” (CEQA Guidelines Section 15355). Stated in another way, “a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing relating impacts” (CEQA Guidelines Section 15130 [a][1]).

According to CEQA, the importance of TCRs is the value of the resource to California Native American tribes culturally affiliated with the Project area. Therefore, the issue that must be explored in a cumulative analysis is the cumulative loss of TCRs. For TCRs that are avoided or preserved through dedication within open space, no impacts would occur. However, if avoidance or dedication of open space to preserve TCRs is infeasible, those impacts must be considered in combination with TCRs that would be impacted for other projects included in the cumulative project list.

The Project site does not contain any TCRs listed in the CRHR or known to a California Native American tribe; and, therefore, the Project's cumulative impacts to TCRs would be less than significant. Additionally, individual projects would be evaluated on a project-by-project basis to determine the extent of potential impacts to TCRs and historical/archeological resources. Further, each project would be required to comply with AB 52 for the purposes of identifying potential TCRs. With adherence to State laws, as well as implementation of Project-specific mitigation as needed, cumulative impacts to TCRs would be less than significant.

4.11.7 Mitigation Measures

No mitigation measures were required, as all Project impacts regarding TCRs are less than significant.

4.11.8 Level of Significance After Mitigation

No mitigation measures are required; impacts related to TCRs would remain less than significant.

4.12 UTILITIES AND SERVICE SYSTEMS

This section includes an evaluation of potential impacts for identified utilities and service systems that could result from implementation of the Project. Utilities and service systems include water supply and treatment, wastewater treatment facilities, stormwater drainage facilities, electricity, natural gas, telecommunication facilities, and solid waste disposal. The impact analysis provides an evaluation of potential impacts to utilities and service systems based on criteria derived from CEQA Guidelines in conjunction with actions proposed in Section 2, Project Description. Information in this section is based on information obtained from the WSA for the Project (Dubose Design Group 2021) included in Appendix J of this EIR.

4.12.1 Existing Environmental Setting

Regional Setting

Water and Sewer Service

Groundwater underlying the Imperial Valley is generally of poor quality and unsuitable for domestic or irrigation purposes; thus, the main source of water for wholesalers is the Colorado River (IWF 2012).

In the unincorporated areas of the County, water and sewer services are generally limited to parcels within or immediately adjacent to established communities or incorporated cities. Each city and unincorporated community has its own water treatment facilities for treating and distributing water to the users of each jurisdiction. Ten communities within Imperial County receive water for domestic purposes from the IID: Calexico, Holtville, El Centro, Imperial, Brawley, Westmorland, Calipatria, Niland, Seeley, and Heber (County 1997b).

In addition to the water being diverted to the Imperial Valley by the IID, five other water districts supply water to other areas in Imperial County outside the IID boundaries. These additional water districts are the Palo Verde Irrigation District, the Palo Verde County Water District, the Bard Water District, the Winterhaven Water District, and the Coachella Valley Water District. The East Mesa Unit and the West Mesa Unit are located within the IID boundaries; however, the East Mesa Unit relies on four groundwater wells that are approximately 600 feet deep, and the West Mesa Unit has water delivered from the Elder Lateral Canal. The communities of Ocotillo, Nomirage, and Yuha Estates rely on groundwater from the Ocotillo-Coyote Wells groundwater basin (County 1997b).

Outside established communities where urban services cannot be extended or an individual water well cannot be provided, water is available through a canal system for uses other than drinking and through commercial drinking water companies. Sewage is treated by individual septic tank systems. Larger developments may require State-approved sewer or water treatment systems or may have to connect to special districts (County 2013).

Colorado River Water Rights

The 2003 Quantification Settlement Agreement and Related Agreements (QSA) serve as the laws, regulations, and agreements granting California the most senior water rights along the Colorado River and specifying that IID has access to 3.1 million acre-feet (maf) of Colorado River water per year. Imperial Dam, located north of Yuma, Arizona, serves as a diversion structure for water deliveries throughout southeastern California, Arizona, and Mexico. Water is transported to the IID water service area through the All American Canal (AAC) for use throughout the Imperial Valley.

Stormwater

The federal Clean Water Act provides the California RWQCBs with the authority and framework for regulating stormwater discharges under the NPDES Permitting Program. Cities and local jurisdictions that operate municipal stormwater systems must obtain NPDES permit coverage for discharges of municipal stormwater to waters of the United States. The State and RWQCBs implement multiple stormwater permitting programs to regulate stormwater entering local municipal systems, including Municipal Separate Storm Sewer System (MS4) Permits (SWRCB 2020).

Phase 1 MS4 permits regulate stormwater permits for medium (serving between 100,000 and 250,000 people) and large (serving 250,000 people or more) municipalities. The Statewide Phase II MS4 permit regulates small municipalities (population of less than 100,000 people). On April 30, 2003, the California SWRCB issued a General Permit for the Discharge of Storm Water from Small MS4s (WQ Order No. 2003-0005-DWQ) to provide permit coverage for smaller municipalities (population less than 100,000). The Cities of Imperial and El Centro, Calexico, and Brawley and the County of Imperial are enrolled under the State Water Board General Order for Phase II MS4s (RWQCB 2021b).

Electricity and Natural Gas

Electricity is available for most areas of the County through IID, Southern California Edison, or San Diego Gas and Electric Company (SDG&E; County 2013). IID provides electricity to more than 150,000 customers in Imperial County as well as parts of Riverside and San Diego Counties. The service area covers approximately 6,471 square miles. IID's generating facilities and sources of power are varied and dispersed across the County. Renewable sources of energy generation include solar, hydroelectric, geothermal, and wind. More diverse sources include biomass and biowaste (IID 2021).

IID's transmission system consists primarily of 161-kilovolt (kV) and 92-kV transmission lines and lower-voltage distribution lines. IID also has two 230-kV transmission lines that allow for import/export of electrical power to its system in the County. SDG&E/IID operate a 500-kV transmission line that traverses the southern part of Imperial County and interconnects with the transmission system in Arizona. This 500-kV transmission line is the primary import line for electrical power to be wheeled into SDG&E's system to supply power to San Diego County and the City of San Diego. This line also provides import/export capacity to IID's service area (EDAW 2006).

Natural gas service within the County is provided by SoCalGas, with transmission lines following mainly along Highway 111, Interstate 8, Dogwood Road, and Barbara Worth Road. Transmission lines stretch from the Chocolate Mountains in the northern portion of the County to the Mexico border in the southern portion. High-pressure distribution lines branch off the transmission lines in all directions. The majority of high-pressure distribution lines are concentrated around the City of El Centro (SoCalGas 2021).

In 2019, Imperial County consumed a total of approximately 1,415.8 GWh of electricity and approximately 43.9 million therms of natural gas (CEC 2021a; 2021b). IID, specifically, consumed approximately 3,462.78 GWh over the course of 2019 (CEC 2021c).

Solid Waste

The County has eight permitted landfills: Calexico, Holtville, Hot Spa, Imperial, Niland, Ocotillo, Palo Verde, and Salton City (County 2021). In 2019, Imperial County disposed of approximately 135,092 tons of solid waste (CalRecycle 2019). The locations of those landfills are listed in Table 4.12-1 below.

Table 4.12-1: Imperial County Waste Disposal Sites

Name of Landfill	Address
Calexico	133 West Highway 98, Calexico, CA 92231 East of Hammers Road on Highway 98 Approximately 3 miles west of Calexico
Holtville	Whitlock Road north of Norrish Road
Hot Spa	10466 Spa Road, Niland, CA 92257 Spa Road west of Frink Road
Imperial	1705 West Worthington Road, Imperial, CA 92251 3 miles west of Forrester Road on Worthington Road
Niland	8450 Cuff Road, Niland, CA 92257 Cuff Road north of Beal Road
Ocotillo	1802 Shell Canyon Road, Ocotillo, CA 92259 Shell Canyon Road north of Ocotillo
Palo Verde	589 Stallard Road, Palo Verde, CA 92266 Stallard Road approximately 3 miles south of Palo Verde
Salton City	935 West Highway 86, Salton City, CA 92275 South of State Route 22 and west of Highway 86

Source: https://www.icphd.org/environmental-health/solid-waste/solid-waste-facilities/

Project Site

The Project intends to use or connect to the existing utility infrastructure at the neighboring HR1 plant to the greatest extent possible. The Project site was previously permitted for a geothermal/mineral recovery project Hudson Ranch I (2007) CUP #06-0047 & Hudson Ranch Power II Geothermal Plant/Simbol Calipatria II Plant Project (2012). Therefore, the HR1 facility was designed to meet many of the utility needs for a future mineral processing plant. Descriptions of the HR1 utilities are included below.

Water and Wastewater

HR1 currently receives raw water from the IID. Raw IID water is used directly for the HR1 facility's freshwater storage containment pond and fire suppression system. Potable water on site is supplied by treating IID raw water using the HR1 facility's water treatment plant. Sanitary waste generated by the HR1 facility is currently collected in a septic tank to initially digest the sewer effluent. Liquid waste is then treated using the onsite wastewater treatment plant. Sludge retained in the septic tank is pumped by licensed contractors as needed and transported to either the Calipatria or Holtville wastewater treatment plants.

Stormwater

Stormwater on the HR1 plant site is managed using an existing stormwater retention basin. Rain and storm drainage is collected in the stormwater retention pond on the east side of the facility. The drainage pond is designed for a 24-hour, 100-year storm event. Water accumulated in the stormwater detention pond is allowed to evaporate, seep into the ground, or be pumped into the aerated brine injection well. The collected stormwater runoff in the stormwater retention basin is sampled and analyzed for quality and compatibility before releasing the stormwater runoff from the stormwater retention basin.

Solid Waste

Non-hazardous waste and debris resulting from the HR1 site is currently disposed of using a locally licensed waste hauling service, Allied Waste, and is hauled to the Niland Solid Waste Facility. The Niland Solid Waste Facility is approximately 5.75 miles northeast of the HR1 site.

Hazardous wastes are managed and disposed of properly at a licensed Class I or II waste disposal facility authorized to accept the waste.

Electricity and Natural Gas

The HR1 facility is located within the IID's energy service area and is connected to the IID electrical transmission system (IID 2021). The HR1 facility does not receive natural gas service.

Telecommunications

The Applicant has indicated that the HR1 facility is currently connected to AT&T for phone service and Beamspeed for internet service.

4.12.2 Regulatory Setting

Federal

Federal Energy Regulatory Commission

The Federal Energy Regulatory Commission (FERC) is an independent agency that regulates the interstate transmission of electricity, natural gas, and oil. The Energy Policy Act of 2005 gave FERC additional responsibilities in this capacity. The Federal Communications Commission (FCC) regulates interstate and international communications by radio, television, wire, satellite, and cable in all 50 states.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) was enacted in 1976 and is the principal federal law in the United States governing the disposal of solid waste and hazardous waste. The USEPA oversees waste management regulation pursuant to Title 40 of the CFR. Under RCRA, however, states are authorized to carry out many of the functions of the federal law through their own hazardous waste programs and laws if they are at least as stringent (or more so) than the federal regulations. Thus, the California Department of Resources Recycling and Recovery (CalRecycle) manages the State of California's solid waste and hazardous materials programs pursuant to USEPA approval.

State

Senate Bill 610

SB 610 is an act that amended Section 21151.9 of the PRC, and sections 10631, 10656, 10910, 10911, 10912, and 10915 of the Water Code. SB 221 is an act that amended Section 11010 of the Business and Professions Code, while amending Section 65867.5 and adding Sections 66455.3 and 66473.7 to the Government Code. SB 610 was approved by the Governor and filed with the Secretary of State on October 9, 2001, and became effective January 1, 2002. SB 610 requires a lead agency to determine that a project (as defined in Water Code section 10912) subject to CEQA), to identify any public water system that may supply water for the project and to request the applicants to prepare a specified WSA.

Water Code section 10911(c) requires that the lead agency “determine, based on the entire record, whether projected water supplies will be sufficient to satisfy the demands of the project, in addition to existing and planned future uses.” Specifically, Water Code section 10910(c)(3) states that, “If the projected water demand associated with the proposed project was not accounted for in the most recently adopted urban water management plan, or the public water system has no urban water management plan, the water supply assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry water years during a 20 year projection, will meet the projected water demand associated with the proposed project, in addition to the public water system’s existing and planned future uses, including agricultural and manufacturing uses.”

With the introduction of SB 610, any project under the CEQA shall provide a WSA if the project meets the definition of Water Code section 10912:

> For the purposes of this part, the following terms have the following meanings:
>
> (a) ‘‘Project’’ means any of the following:
>
> (1) A proposed residential development of more than 500 dwelling units
>
> (2) A proposed shopping center or business establishment employing more than 1,000 persons or having more than 500,000 square feet of floor space
>
> (3) A proposed commercial office building employing more than 1,000 persons or having more than 250,000 square feet of floor space
>
> (4) A proposed hotel or motel, or both, having more than 500 rooms
>
> (5) A proposed industrial, manufacturing, or processing plant, or industrial park planned to house more than 1,000 persons, occupying more than 40 acres of land, or having more than 650,000 square feet of floor area
>
> (6) A mixed-use project that includes one or more of the projects specified in this subdivision
>
> (7) A project that would demand an amount of water equivalent to, or greater than, the amount of water required by a 500-dwelling unit project

(b) If a public water system has fewer than 5,000 service connections, then ‘‘project’’ means any proposed residential, business, commercial, hotel or motel, or industrial development that would account for an increase of 10 percent or more in the number of the public water system's existing service connections, or a mixed-use project that would demand an amount of water equivalent to, or greater than, the amount of water required by residential development that would represent an increase of 10 percent or more in the number of the public water system's existing service connections.

After review of Water Code section 10912a and section 10912 (a)(5)(B), it was determined that the Project is deemed a project under Water Code section 10912, as it is considered an industrial water use project that is considered a processing plant in accordance with Water Code section 10912a (5).

Porter-Cologne Water Quality Act

The California Legislature enacted the Porter-Cologne Water Quality Control Act in 1969 to preserve, enhance, and restore the quality of the State's water resources. The SWRCB and nine RWQCBs were established by the Act as the primary state agencies charged with controlling water quality in California. The Porter-Cologne Water Quality Control Act establishes water quality policy, enforces surface water and groundwater quality standards, and regulates point and nonpoint source pollutants. The Act also authorizes the SWRCB to establish water quality principles and guidelines for long-range resource planning including groundwater and surface water management programs and the control and use of recycled water.

State Water Resources Control Board

The SWRCB has dual authority to allocate and protect water. This two-fold responsibility enables the SWRCB to provide comprehensive protection for California's waters. Nine RWQCBs dispersed throughout California carry out the duties of the SWRCB. The RWQCBs develop and enforce water quality objectives and implementation plans that will best protect the beneficial uses of the State's waters. The Project is within the jurisdiction of the Colorado River Basin (CRB) RWQCB, Region 7. The CRB RWQCB regulates the discharge of waste to surface waters (rivers, streams, lakes, wetlands, and the Pacific Ocean) as well as to storm drains, to the ground surface, and to groundwater.

Water Quality Control Plan for the Colorado River Basin

The Water Quality Control Plan for the Colorado River Basin (or Basin Plan) prepared by the CRB RWQCB identifies beneficial uses of surface waters within the Colorado River Basin region, establishes quantitative and qualitative water quality objectives for protection of beneficial uses, and establishes policies to guide the implementation of these water quality objectives. Water bodies that have beneficial uses that may be affected by construction activity and post-construction activity include the Imperial Valley Drains (includes the Wistaria Drain and Greeson Wash), New River, and the Salton Sea.

Assembly Bill 885 - California Onsite Wastewater Treatment Systems

Assembly Bill (AB) 885 was signed into law in September 2000. AB 855 requires the SWRCB to develop statewide regulations for the permitting and operation of onsite wastewater treatment systems, better known as septic systems. These regulations are developed through consultation with the Department of Health Services (DHS), California Conference of Directors of Environmental Health (CCDEH), California

Coastal Commission (CCC), counties, cities, and other interested parties. Individual disposal systems that use subsurface disposal are all included under AB 885.

National Pollution Discharge Elimination System General Industrial and Construction Permits

The NPDES General Industrial Permit requirements apply to the discharge of stormwater associated with industrial sites. The permit requires implementation of management measures that will achieve the performance standard of the best available technology economically achievable and best conventional pollutant control technology. Under the statute, operators of new facilities must implement industrial BMPs in the projects' SWPPP and perform monitoring of stormwater discharges and unauthorized non–stormwater discharges.

Construction activities are regulated under the NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (General Construction Permit) which covers stormwater runoff requirements for projects where the total amount of ground disturbance during construction exceeds 1 acre. Coverage under a General Construction Permit requires the preparation of a SWPPP and submittal of a NOI to comply with the General Construction Permit. The SWPPP includes a description of BMPs to minimize the discharge of pollutants from the sites during construction. Typical BMPs include temporary soil stabilization measures (e.g., mulching and seeding), storing materials and equipment to ensure that spills or leaks cannot enter the storm drain system or stormwater, and using filtering mechanisms at drop inlets to prevent contaminants from entering storm drains. Typical post-construction management practices include street sweeping and cleaning stormwater drain inlet structures. The NOI includes site-specific information and the certification of compliance with the terms of the General Construction Permit.

California Public Utilities Commission

The California Public Utilities Commission (CPUC) regulates privately owned electric, natural gas, telecommunications, water, railroad, rail transit, and passenger transportation companies, in addition to authorizing video franchises. CPUC is responsible for regulating electric utility rates, electric power procurement and generation, some electric infrastructure, ratepayer-funded energy efficiency programs, and other areas. The CPUC evaluates the necessity for additional power generation by the regulated utilities in California in both the long and short term, accomplished using public input, data provided by the utilities, the California Energy Commission, the California Independent System Operator (CAISO), and following the regulations of the Commission, the Public Utilities Code, and FERC. CPUC has primary ratemaking jurisdiction over the funding of distribution-related expenditures generally for power lines of 66 kV or less. While CPUC does not have ratemaking responsibility for transmission lines, CPUC does have a substantial role in permitting transmission and substation facilities. CPUC regulates natural gas rates and natural gas services, including in-state transportation over the utilities' transmission and distribution pipeline systems, storage, procurement, metering, and billing. Additionally, CPUC regulates telecommunications and broadband operations and infrastructure in the state, being responsible for licensing, registration, and the processing of tariffs on local exchange carriers, competitive local carriers, and nondominant interexchange carriers. It is also responsible for registration of wireless service providers and franchising of video service providers, among other duties.

California Integrated Waste Management Act

The California Integrated Waste Management Act of 1989 (AB 939) was signed into law by the Governor of California on September 29, 1989. AB 939 requires each California city and county to divert 25 percent of its waste stream by 1995 and 50 percent by 2000 (PRC, Section 41780) and to manage waste disposal through the implementation of the Source Reduction and Recycling Element (SRRE). The SRRE was approved by CalRecycle (formerly the California Integrated Waste Management Board on November 17, 1993, and adopted in December 1993. Under the SRRE, counties are required to demonstrate how they intend to achieve the mandated diversion goals through the implementation of various programs. The County of Imperial agreed to implement the following programs to meet the required diversion goals:

1. Agriculture Plastic
2. Commercial Source and Recycling
3. Compost Operation
4. Construction and Demolition
5. Procurement Policy
6. School Recycling
7. Christmas Tree Diversion
8. County Waste Reduction Policy

CalRecycle

This State agency performs a variety of regulatory functions pursuant to CCR Title 27 and other rules. Among other things, CalRecycle sets minimum standards for the handling and disposal of solid waste designed to protect public health and safety, as well as the environment. It is also the lead agency for implementing the State of California’s municipal solid waste program, deemed adequate by USEPA for compliance with RCRA.

Integrated Waste Management Act (AB 939)

The Integrated Waste Management Act (IWMA), introduced as AB 939, was passed by the State Legislature in 1989 to reduce dependence on landfills for the disposal of solid waste and to ensure an effective and coordinated system for the safe management of all solid waste generated within California. With its passage, solid waste management practices were redefined to require California’s cities and counties to divert disposal of solid waste by 50 percent by the year 2000. It also required local governments to prepare and implement plans to improve waste resource management by integrating management principles that place importance on first reducing solid waste through source reduction, reuse, recycling, and composting before disposal at environmentally safe landfills or via transformation (e.g., regulated incineration of solid waste materials). These plans must also be updated every five years.

Construction and Demolition Waste Materials Diversion Requirements (SB 1374)

Construction and Demolition Waste Materials Diversion Requirements, passed in 2002, added Section 42912 to the California PRC. SB 1374 requires that jurisdictions include a summary of the progress made in diverting construction and demolition waste in their annual AB 939 report. The legislation also requires that CalRecycle adopt a model ordinance for diverting 50 to 75 percent of all construction and demolition waste from landfills.

Local

Southern California Association of Governments

The SCAG is a council of governments representing Imperial, Los Angeles, Orange, Riverside, San Bernardino, and Ventura Counties. SCAG is the federally recognized MPO for this region, which encompasses more than 38,000 square miles. SCAG is a regional planning agency and a forum for addressing regional issues concerning transportation, the economy, community development, and the environment. SCAG is also the regional clearinghouse for projects requiring environmental documentation under federal and State law. In this role, SCAG reviews proposed development and infrastructure projects to analyze their impacts on regional planning programs. As the southern California region's MPO, SCAG cooperates with SCAQMD, Caltrans, and other agencies in preparing regional planning documents. SCAG has developed regional plans to achieve specific regional objectives, including the Regional Transportation Plan (RTP) and Sustainable Communities Strategies (SCS) component pursuant to State law.

Imperial Integrated Water Resources Management Plan

The Imperial IRWMP serves as the governing document for regional water planning to meet present and future water resource needs and demands by addressing such issues as additional water supply options, demand management, and determination and prioritization of uses and classes of service provided. In November 2012, the Imperial County Board of Supervisors approved the Imperial IRWMP, and the City of Imperial City Council and the IID Board of Directors approved it in December 2012. Approval by these three stakeholders meets the basic requirement of California Department of Water Resources (CDWR) for an IRWMP. Through the IRWMP process, IID presented options to the region's stakeholders, such as water storage and banking, recycling of municipal wastewater, and desalination of brackish water, in the event long-term water supply augmentation is needed.

Imperial Irrigation District

The IID is an irrigation district organized under the California Irrigation District Law, codified in Section 20500 et seq. of the California Water Code. Critical functions of IID include diversion and delivery of Colorado River water to the Imperial Valley, operation and maintenance of the drainage canals and facilities, including those in the Project area, and generation and distribution of electricity. Several policy documents govern IID operations and are summarized below:

- The Law of the River and historical Colorado River decisions, agreements and contracts
- The Quantification Settlement Agreement and Transfer Agreements
- The Definite Plan, now referred to as the Systems Conservation Plan, which defines the rigorous agricultural water conservation practices being implemented by growers and IID to meet the Quantification Settlement Agreement commitments
- The Equitable Distribution Plan, which defines how IID will prevent overruns and stay within the cap on the Colorado River water rights
- Existing IID standards and guidelines for evaluation of new development and defining IID's role as a responsible agency and wholesaler of water

IID has adopted an Interim Water Supply Policy (IWSP) for Non-Agricultural Projects during the development of the Imperial IWRMP, from which water supplies can be contracted to serve new developments within IID's water service area. For applications processed under the IWSP, applicants shall be required to pay a processing fee and, after IID board approval of the corresponding agreement, will be required to pay a reservation fee(s) and annual water supply development fees.

Imperial County Public Health Department, Division of Environmental Health

The Imperial County Public Health Department, Division of Environmental Health is responsible for issuance of sanitation permits for private onsite sewage disposal systems in the County. Coordination of site design for proposed projects must occur with the Public Health Department to obtain final permits.

Imperial County Land Use Ordinance, Division 10 Building, Grading, and Sewage Regulations

Chapter 13, Sanitation Permits, of the Imperial County Land Use Ordinance, Division 10 Building, Grading, and Sewage Regulations, regulates the construction, relocation, and alteration of sewage disposal systems in the unincorporated areas of Imperial County. Standards for such systems described in this chapter must be met for a permit to be issued by the County Public Health Department.

Countywide Integrated Waste Management Plan for Imperial County

All California counties are required to prepare and submit to CalRecycle a Countywide Integrated Waste Management Plan (CIWMP). The CIWMP is to include all SRREs, all Household Hazardous Waste Elements, a Countywide Siting Element, all Non-Disposal Facility Elements, all applicable regional SRREs, Household Hazardous Waste Elements, and an applicable Regional Siting Element (if regional agencies have been formed).

CalRecycle summarizes waste management problems specific to each county and provides an overview of actions that would be taken to achieve the SRRE implementation schedule (PRC Section 41780). Imperial County's CIWMP was approved by CalRecycle (formerly CIWMB) in May of 2000. The Executive Director of the CIWMB approved by Resolution 2008-91 the Five-Year Review Report of the Countywide Integrated Waste Management Plan for the County of Imperial on June 17, 2008.

Imperial County General Plan

The Land Use Element and the Conservation and Open Space Element of the General Plan contain goals, objectives, policies, and programs to ensure water resources in the County are preserved and coordination occurs among local agencies. The Imperial County General Plan does not contain any goals, objectives, policies, or programs pertaining to solid waste that are applicable to the Project. Table 4.12-2 provides a consistency analysis of the applicable Imperial County General Plan goals and objectives as they relate to the Project. While this EIR analyzes the Project's consistency with the General Plan pursuant to CEQA Guidelines Section 15125(d), the Imperial County Board of Supervisors ultimately determines consistency with the General Plan.

Table 4.12-2: General Plan Consistency

General Plan Policies	Consistency with General Plan	Analysis
Land Use Element		
Public Facilities		
Goal 8 – Coordinate local land use planning activities among all local jurisdictions and state and federal agencies.	Consistent	The Project is being planned and designed in coordination with the County of Imperial as well as State and federal agencies as appropriate. Examples include but are not limited to the IID Water, IID Energy, Imperial County Planning and Development Services Department, Imperial County Public Works Department, California Department of Fish and Wildlife, and Imperial County Air Pollution Control District. Therefore, the Project is consistent with this goal.
Conservation and Open Space Element		
Preservation of Water Resources		
Objective 6.3 – Protect and improve water quality and quantity for all water bodies in Imperial County.	Consistent	The Project will require 56 acre-feet of water per year (AFY) for construction, representing 0.025% of the annual unallocated water supply. The Project requires 3,400 AFY for operations, which represents 14% of the unallocated supply. Thus, the Project's estimated water demand would not affect IID's ability to provide water to other users in IID's water service area.. The Project would protect water quality during construction through compliance with the NPDES General Construction Permit, SWPPP, and BMPs. The Project will be designed to include site design, source control, and treatment control BMPs. The use of source control, site design, and treatment BMPs would result in a decreased potential for stormwater pollution.
Objective 6.10 – Encourage water conservation and efficient water use among municipal and industrial water users, as well as reclamation and reuse of wastewater.	Consistent	As previously mentioned, the Project's water use represents 14% of the unallocated supply set aside in the IWSP for nonagricultural projects and approximately 14% of forecasted future nonagricultural water demands planned in the Imperial IRWMP through 2055. Wastewater in the form of spent process fluid will be reused on site through injection back into the injection wells to replenish the geothermal resource.

4.12.3 Thresholds of Significance

In order to assist in determining whether a project would have a significant effect on the environment, the County utilizes the State CEQA Guidelines Appendix G Guidelines. Appendix G states that a project may be deemed to have impacts to utilities and services systems if it would:

Threshold a) **Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction of which could cause significant environmental effects?**

Threshold b) **Have sufficient water supplies available to serve the project from existing and reasonably foreseeable future development during normal, dry and multiple dry years?**

Threshold c) **Result in a 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?**

Threshold 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?**

Threshold e) **Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?**

Please refer to **Section 6.1: Effects Found Not to Be Significant** for an evaluation of those topics that were determined to be less than significant or have no impact and do not require further analysis in the EIR.

4.12.4 Methodology

Dubose Design Group was retained by the County to prepare a WSA for the Project in April 2021 (Appendix J). The WSA evaluates water availability during a normal year, single-dry, and multiple-dry water years for the required 20-year period, plus an additional 10 years for a total of a 30-year water demand for the Project. The WSA also evaluates reasonably foreseeable planned future water demands to be served by the IID. Evaluations of potential wastewater, stormwater, electricity and natural gas usage, telecommunications, and solid waste impacts are based on information provided by the Applicant, as well as information from publicly available federal, State, and local government sources.

Regional Water Demand

The 2012 Imperial IRWMP addresses water supplies (Colorado River and groundwater), demand, baseline and forecasted through 2050, and IID water budget. The IRWMP also addresses projects, programs and policies, and funding alternatives. The IRMWP lists and details a set of capital projects that IID might pursue, including the amount of water that might result (AFY) and cost (dollars per acre-foot [$/AF]) if necessary. These also highlight potential capital improvement projects that could be implemented in the future.

Imperial Valley's historic nonagricultural water demand for 2015 and forecasted nonagricultural water demand for 2020 to 2055 are provided in Table 4.12-3 in five-year increments. Total water demand for nonagricultural uses is projected to be 198.4 kilo acre feet (kaf) in the year 2055. This is a forecasted increase in the use of nonagricultural water from 107.4 kaf for the period of 2015 to 2055. These values were modified from the Imperial IRWMP to reflect updated conditions from the IID Provisional Water Balance for calendar year 2015. Due to the recession in 2009 and other factors, nonagricultural growth projections have lessened since the 2012 Imperial IRWMP. Projections in Table 4.12-3 have been adjusted (reduced by 3 percent) to reflect IID 2015 delivery data.

Table 4.12-3: Nonagricultural Water Demand in IID Water Service Area, 2015-2055 (kaf per Year)

	2015	2020	2025	2030	2035	2040	2045	2050	2055
Municipal	30.0	33.9	36.8	39.8	41.5	46.3	51.7	57.8	61.9
Industrial	26.4	33.1	39.8	46.5	53.2	59.9	66.6	73.3	80.0
Other	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Feedlots/Dairies	17.8	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Envr Resources	8.3	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Recreation	7.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Service Pipes	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Total Non-Ag	**107.4**	**123.5**	**133.3**	**142.8**	**151.2**	**162.7**	**174.8**	**187.6**	**198.4**

Notes: 2015 nonagricultural water demands are from IID 2015 Provisional Water Balance rerun 03/28/2019 2020-2055 demands are modified from 2012 Imperial IRWMP Chapter 5, Table 5-22 p 5-50 based on IID 2015 Provisional Water Balance. Industrial Demand includes geothermal, but not solar, energy production.

In addition to agricultural and nonagricultural water demands, system operational demands must be included to account for operational discharge, main and lateral canal seepage; and for AAC seepage, river evaporation, and phreatophyte evapotranspiration from Imperial Dam to IID's measurement site at AAC Mesa Lateral 5. These system operation demands are shown in Table 4.12-4. IID measures system operational uses and at AAC Station 2900 just upstream of Mesa Lateral 5 Heading.

Table 4.12-4: IID System Operations Consumptive Use within IID Water Service Area and from AAC at Mesa Lateral 5 to Imperial Dam, 2019

System Operational Use	Kilo Acre Feet (kaf)
Delivery System Evaporation	24.6
Canal Seepage	91.7
Canal Spill	13.1
Lateral Spill	118.1
Seepage Interception	-39.8
Unaccounted Canal Water	30.9
Total System Operational Use, In valley	**238.6**
Imperial Dam to AAC @ Mesa Lat 5	29.2
LCWSP	-10
Total System Operational Use in 2019	**257.9**

Total system operational use for 2019 was 257.9 kaf, including 10 kaf of Lower Colorado Water Supply Project (LCWSP) input, 39.8 kaf of seepage interception input, and 30.9 kaf of unaccounted canal water input.

Table 4.12-5 shows historic 2015 nonagricultural water demand compared to delivery and forecasts the IID's demand and delivery to nonagricultural land uses through 2055. This data reflects the IID's ability to meet nonagricultural water demands through 2055.

Table 4.12-5: IID Historic and Forecasted Consumptive Use for Non-Agricultural Land Uses

	2015	2020	2025	2030	2035	2040	2045	2050	2055
Non-Ag Demand	107.4	123.5	133.3	142.8	151.2	162.7	174.8	187.6	198.4
Non-Ag Delivery	110.1	123.4	133.1	142.9	151.4	163.2	175.4	188.4	199.3

Notes:
2015 Provisional Water Balance rerun 06/28/2019
Non-Ag Delivery CI 15.0%, Ag Delivery CI 3.0%, QSA SS mitigation CI 15%

As shown above, IID forecasted nonagricultural demand has the potential to exceed delivery volumes during several time intervals through the projected lifespan for the Project. However, due to temporary land conversion for solar use and urban land expansion that will reduce agricultural acres in the future, a water savings of approximately 217,000 AFY will be generated into the future and for the lifetime of the Project.

Project Site

The Project site is located in the Imperial Valley Planning Area of the Colorado River Basin. The Colorado River Basin Region is divided into seven major planning areas on the basis of different economic and hydrologic characteristics. The Imperial Valley Planning Area is characterized as a closed basin; and, therefore, all runoff generated within the watershed discharges into the Salton Sea (RWQCB 2021b).

Imperial Valley relies on the Colorado River for its water, which IID transports, untreated, to delivery gates for agricultural, municipal, industrial (including geothermal and solar energy), environmental (managed marsh), recreational (lakes), and other nonagricultural uses. IID supplies the cities, communities, institutions, and Golden State Water Company (which includes all or portions of Calipatria, Niland, and some adjacent Imperial County territory) with untreated water that they treat to meet State and federal drinking water guidelines before distribution to their customers.

The Project site is located within IID's Imperial Unit and district boundary and as such is eligible to receive water service (IWF 2012). The Project is also located within the IID's energy service area (IID 2021). The Project operations would consume approximately 81,290 megawatt-hours (MWh) of electricity, 56 AFY of water for construction, and 3,400 AFY of water for operations, as disclosed by the Project Applicant. No natural gas usage would be required for the Project.

4.12.5 Project Impact Analysis

Threshold a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction of which could cause significant environmental effects?

The Project intends to use or connect to the HR1 plant's utility infrastructure to the greatest extent possible. Since the Project site was previously permitted for a geothermal/mineral recovery project through Hudson Ranch I (2007) Conditional Use Permit (CUP) #06-0047 and Hudson Ranch Power II Geothermal Plant/Simbol Calipatria II Plant Project (2012), the HR1 facility was designed to meet many of the utility needs for a future mineral processing plant. The Project will therefore require additional connections from the HR1 facility only for water, wastewater, and electric power to the Project site and for increased usage.

Water

The Project's potable water requirements include washbasin water, eyewash equipment water, water for showers and toilets in the crews' quarters, and sink water in the sample laboratory. The HR1 potable water treatment plant was designed to accommodate sufficient use and reliability for both the HR1 and the Project facilities, anticipating a future mineral extraction plant. This system will be operated under one permit by HR1, and the Project will purchase water from HR1.

The Project would share the freshwater storage containment pond with HR1, which would be expanded to meet the requirements of the Project site and HR1. The fresh water storage pond currently located on the east side of the HR1 plant will continue to receive canal water from the IID "O" lateral canal north of the Project site. However, a backup delivery line will also be installed from the IID "N" lateral canal located about 0.25 mile south of the Project site. A 500,000-gallon aboveground water tank will be constructed to serve as the primary water supply for the joint fire suppression system for the HR1 and ATLiS sites. This 500,000-gallon tank will be a one-time fill from the IID unless a fire occurs on site.

Installation of water and fire infrastructure would be limited to onsite connections, and no offsite connections would need to be installed or upgraded. A more detailed discussion of water requirements can be found in Threshold b) below.

Wastewater

Sanitary waste generated by the Project would be collected in the HR1 septic tank to initially digest the sewer effluent, and liquid waste would be treated using the HR1 wastewater treatment plant. The HR1 sewer treatment plant has a capacity of 2,100 gallons per day and was designed to process 20 gallons per person per day. However, according to the HR1 Plant Manager, the current usage is operating at five gallons per person per day. The total combined staff of HR1 and the Project will be a maximum of 100 people, requiring at most 500 gallons of capacity per day. This would leave 1,600 gallons per day remaining to be processed by the onsite wastewater treatment plant. Additionally, the Calipatria and Holtville wastewater treatment plants would be able to process additional wastewater. The capacity of Calipatria Waste Water Treatment Plant is 1.7 million gallons per day (mgd), with a projected wastewater flow of 1.47 mgd by 2035 (Calipatria 2018). This leaves 0.23 mgd in remaining capacity for the Project in approximately 15 years, which is well-beyond the Project's requirements and expected to be sufficient for the Project's 30-year lifespan. The capacity of the Holtville Waste Water Treatment Plant is 0.87 mgd; and, although the projected wastewater flow for 2035 is 0.87 mgd, the Holtville plant would have sufficient capacity for the foreseeable future (Holtville 2017). If issues arise regarding capacity at the Holtville plant, the Project would favor the Calipatria plant. Wastewater in the form of processed spent fluid would be returned to the HR1 facility via a brine return pipeline and would be injected directly into the injection wells to replenish the geothermal resource in conformance with the CalGEM guidelines.

Stormwater

The Project would share the HR1 stormwater retention basin, which would be expanded to contain the combined stormwater storage requirements for both the Project and HR1 sites. The stormwater runoff will be contained on the HR1 site and will be managed using any single, or any combination, of the following methods: (1) allowed to evaporate or percolate into the soil, (2) released for non-Project beneficial use onto the undeveloped portion of the Project parcel, and/or (3) pumped from the stormwater basin into the freshwater pond for onsite uses. The collected stormwater runoff in the basin will be sampled and analyzed for quality and compatibility prior to releasing or removing the runoff from the retention basin.

Electricity and Natural Gas

Electrical power required for the Project will be purchased from the IID, and a new power line will be constructed to the Project site from the current IID/HR1 substation located near the northeast corner of the HR1 property. Electrically driven equipment, including a power distribution unit, will be installed at the neighboring HR1 facility to deliver geothermal brine, steam/steam condensate, and non-condensable gas to the Project site. The power distribution unit would be provided power via a distribution line from the Project electrical building or the IID/HR1 substation. Project operations would consume approximately 81,290 MWh of electricity, which is approximately 6 percent of the County's total electricity usage in 2019 and approximately 2 percent of IID's total electricity usage in 2019 (CEC 2021a; 2021c).

Natural gas is not expected to be required or delivered to the Project site.

Telecommunications

Telecommunication services on site would likely be provided by AT&T for phone and by Beamspeed for internet, the same as the HR1 site. All utility infrastructure required for the Project would be built entirely within previously disturbed areas, particularly within the HR1 plant site, and would consist only of expanding currently existing utilities.

No new facilities would be constructed for the purpose of water, wastewater treatment, stormwater drainage, electric power, natural gas, or telecommunications. Therefore, no significant environmental effects are expected to result. Impacts would be less than significant.

Threshold b) Have sufficient water supplies available to serve the project from existing and reasonably foreseeable future development during normal, dry and multiple dry years?

The Project's WSA evaluates the required 20-year water demands per SB 610, plus an additional 10 years, for a 30-year water demand of the Project. The WSA evaluates reasonably foreseeable planned future water demands to be served by the IID to determine whether or not the IID water supply will be adequate to serve the Project in conjunction with other projects in the area. The IID's IWSP for Non-Agricultural Projects dedicates 25,000 AFY of IID's annual water supply to serve new projects. As of June 2020, 23,800 AFY remain available for new projects, ensuring reasonably sufficient supplies for new nonagricultural water users.

Additionally, the Project site has already been permitted in the past for a Geothermal/Mineral recovery project Hudson Ranch I (2007) CUP #06-0047 & Hudson Ranch Power II Geothermal Plant/Simbol Calipatria II Plant Project (2012). The HR1 facility has a water system available to meet potable water needs. The Project will require increased water service only for dust mitigation during construction, as well as processing, landscaping, fire suppression, and dust mitigation during operations. Project water uses are summarized in Table 4.12-6.

Table 4.12-6: Project Water Uses (AFY)

Water Use	Expected Years	Water Required
Construction	2 Years	56 AFY
Total for Water Construction		*112 AF*
Processing, Daily Plant Operations & Mitigation	30 Years	3,400 AFY
Operations		3,393 AFY
Landscaping		1 AFY
Fire Suppression		2 AFY
Dust Mitigation		4 AFY
Total Water Usage for Processing Daily Plant Operations & Mitigation		*102,000 AFY*

Approximately 56 AFY of water would be needed for fugitive dust control during Project site grading and construction activities, which are anticipated to last up to 2 years (Table 4.12-6). Approximately 3,400 AFY would be required for Project operations, lasting up to 30 years. The Project's total water demand is approximately 3,456 AFY, resulting in 102,112 AF total over the 30-year lifespan of the Project (Table 4.12-7).

Table 4.12-7: Project Water Summary

Water Use	Expected Years	Total AFY
Construction	2 years	56
Operations	1-30 Years	3,400.00
Total	*32 Years*	*102,112.00*

Table 4.12-8 shows the Project's water use amortized, calculated to define the Project's proportion of unallocated water supply set aside in the IWSP for nonagricultural projects and the Project's proportion of forecasted future nonagricultural water demands planned in the Imperial IRWMP through 2055.

Table 4.12-8: Amortized Project Water Summary

Project Water Use – Life of Project	Years	Total Years Combined*	IWSP	% of IWSP per Year**
56 AFY	2 Years	112 AF	23,800 AFY	0.025%
3,400 AFY	30 Years	102,000 AF	23,800 AF	14 %

Notes:
*(3,400 AFY x 30 Years)
**(3,400 AFY/23,800 AFY x 100)

Project construction represents 0.025 percent of the unallocated supply set aside in the IWSP for nonagricultural projects and approximately 0.025 percent of forecasted future nonagricultural water demands planned in the Imperial IRWMP through 2055. Project operations represent 14 percent of the unallocated supply set aside in the IWSP for nonagricultural projects and approximately 14 percent of forecasted future nonagricultural water demands planned in the Imperial IRWMP through 2055. The amount of water available and the stability of the IID water supply along with on-farm and system efficiency conservation and other measures being undertaken by IID and its customers ensure that the Project's water needs will be met for the next 30 years.

When drought conditions exist within the IID water service area, as has been the case for the past decade or so, the water supply available to meet agricultural and nonagricultural water demands remains the same as normal year water supply because IID continues to rely on its entitlement for Colorado River water. Due to the priority of their water rights and other agreements, drought affecting Colorado River water supplies causes shortages for Arizona, Nevada, and Mexico, not California or IID. Therefore, the likelihood that IID will not receive its annual 3.1 million AF apportionment under the QSA obligations of Colorado River water is low due to the high priority of the IID entitlement relative to other Colorado River contractors (see Appendix J for further details on the IID's water rights). If such reductions were to come into effect within the life of the 30-year Project, a significant impact would occur. If such reductions do occur, Mitigation Measure (MM) UTIL-1 would be implemented, requiring the Applicant to work with IID to ensure any reduction in water availability during the life of the Project can be managed. Therefore with implementation of MM UTIL-1, impacts would remain less than significant.

Threshold c) **Result in a 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?**

The Project would not introduce new sources of sanitary wastewater during construction, as construction workers would use the existing restrooms at the HR1 site. This wastewater would then be stored and processed by the HR1 septic tank and existing wastewater treatment plant on site, which was permitted and designed to meet water and wastewater capacities required for a future mineral processing plant like the Project.

The Project would contain new sources of wastewater for operations including washbasins, eyewash equipment, showers, toilets, and sinks in the sample laboratory. For these new wastewater sources, the Project would connect to and utilize the existing HR1 facility's septic tank to initially digest sewer effluent; and liquid waste would be pumped to the HR1 wastewater treatment plant. HR1's sewer treatment plant has a capacity of 2,100 gallons per day and was designed to process 20 gallons per person per day. However, according to the HR1 Plant Manager, the current usage is operating at five gallons per person per day. Wastewater typically represents about 75 percent of water usage. As previously mentioned, the Project would require 3,400 AFY of operational water which would represent 9.3 AF per day, or 6.9 AF per day of wastewater equating to approximately 6,160 gallons per day of wastewater. A majority of this water would be spent fluid that would be injected back into the geothermal wells in conformance with CalGEM guidelines. Spent fluid from the HR1 secondary clarifiers, which is brine from which heat energy has been removed, would be sent from HR1 to the Project's processing area via a brine delivery pipeline. Once the brine has been processed, it would be returned to the HR1 facility via a brine return pipeline and would be injected directly into the injection wells to replenish the geothermal resource.

However, some of this wastewater may require the use of the HR1 wastewater treatment processing plant. The total combined staff of HR1 and the Project will be a maximum of 100 employees, requiring at most 500 gallons per day of capacity. This would leave a remaining 1,600 gallons per day to be processed by HR1 which would be sufficient capacity. Additionally, if needed, the Project would have access to the Calipatria Waste Water Treatment Plant and Holtville Waste Water Treatment Plant both of which have sufficient capacity for the Project in the foreseeable future. The sludge retained in the HR1 septic tank will continue to be pumped by licensed contractors as needed and transported to the Calipatria or Holtville wastewater treatment plants.

The wastewater treatment plant serving the Project has adequate capacity for the Project; thus, impacts are less than significant.

Threshold 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?**

All nonhazardous and hazardous wastes generated during Project construction and operation would be handled and disposed of in accordance with applicable laws, ordinances, regulations, and standards. Nonhazardous solid waste would be disposed of using a locally licensed waste hauling service, Allied Waste. Wastes that exceed CCR toxicity standards would be required to be trucked out of state to Arizona. If Arizona toxicity standards are exceeded, hazardous wastes would be sent to Idaho or Nevada. A summary of the different waste types is provided below.

Nonhazardous Solid Waste

Nonhazardous solid waste from construction activities may include lumber, excess concrete, metal, glass, scrap, and empty nonhazardous containers. Management of these wastes will be the responsibility of the construction contractors and would involve management practices such as recycling when required, proper storage of waste and debris to prevent wind dispersion, and weekly pickup and disposal to Class III landfills.

The total amount of nonhazardous solid waste to be generated by Project construction activities has been estimated to be up to about 1,750 tons (2.5 pounds per square foot), which is similar to that generated for normal commercial construction. Although the number of tons per cubic yard for construction waste varies by material, CalRecycle estimates that there are 2,400 pounds in 1 cubic yard of construction debris (asphalt or concrete, loose) (CalRecycle 2021a). Therefore, because 1,750 tons is equivalent to 3.5 million pounds, 3.5 million pounds is roughly equivalent to 1,458 cubic yards (3.5 million / 2,400 = 1,458). Nonhazardous waste generated during operations is expected to be nominal, as it would result from limited office waste and general refuse from employees.

Hazardous Wastes Meeting California Disposal Standards

Hazardous solid wastes may be generated over the course of construction as a result of empty hazardous material containers, spill cleanup wastes, and welding. Any hazardous wastes generated during Project construction and operations would be collected in hazardous waste accumulation containers near the point of generation and moved daily to the contractor’s 90-day hazardous waste storage area or operational hazardous material storage area located on the Project site. The accumulated waste would be subsequently delivered to an authorized Class I or Class II landfill authorized to accept the waste for proper disposal.

It is estimated that upwards of about 115,000 metric tons, or approximately 41,780 cubic yards (cy)[1], per year of iron-silica material in the form of filter cakes would be generated from Project operations at the full 7,200 gallons-per-minute geothermal brine flow rate. The iron-silica stream may be converted to a product stream(s) after Project operations begin; however, a portion of the iron-silica material would be managed as solid waste. The iron-silica filter cakes would be sampled and laboratory-tested to ensure that the material is below the CCR Section 66261.24(a)(2) STLC and TTLC regulatory levels and, if below, would be trucked off site and recycled for beneficial use. It is estimated that 90 percent of the filter cakes, approximately 37,602 cy of iron silica, would fall below California's thresholds for STLC and TTLC and could be disposed of within the state of California. Six trucks per day, 20 cy in size, would be required for offsite removal of waste generated during Project operations.

The solid wastes as discussed above, would be hauled to either the Allied Imperial Landfill, Niland Solid Waste Site, or the Salton City Landfill located in the County, which have an approximate combined remaining capacity of 13,859,609 cy, as shown in Table 4.12-9. The Allied Imperial Landfill has approximately 12,384,000 cy of remaining capacity and is expected to remain in operation through 2040 (CalRecycle 2021b). Niland Solid Waste Site has approximately 211,439 cy of remaining capacity and is estimated to remain in operation through 2046 (CalRecycle 2021c). The Salton City Landfill has a remaining capacity of 1,264,170 cy as of 2018 and is expected to have sufficient capacity for the foreseeable future (CalRecycle 2021d). The Project represents approximately 0.3 percent of the remaining capacity of the three landfills, which would be considered nominal; therefore, the County has ample landfill capacity to receive the solid waste generated by the Project.

Table 4.12-9: County of Imperial Landfills in Vicinity of Project Site

Name of Landfill	Location	Permitted Capacity	Remaining Capacity	Class	Approximate Distance from Project Site
Niland Solid Waste Site	8450 Cuff Road, Niland CA	318,673 cy	211,439 cy	III	4.5 miles northeast
Allied Imperial Landfill	104 East Robinson Road, Imperial, CA	19,514,700 cy	12,384,000 cy	III	23 miles south
Salton Sea Solid Waste Facility	935 West Highway 86, Salton City, CA	65,100,000 cy	1,264,170 cy	III	32 miles northwest

Source: CalRecycle 2021b-d

Hazardous Wastes Exceeding California Standards

As previously mentioned, it is estimated that 90 percent of filter cakes would fall below California thresholds for STLC and TTLC. The remaining 10 percent, or approximately 4,178 cy, would exceed these standards and would be trucked to the Copper Mountain Landfill located at 34853 County 12th Street in Wellton, Arizona, approximately 96 miles southeast of the Project site. This landfill has a design capacity for 2.5 million megagrams. Although the amount of remaining capacity is not information that has been made available, the amount of solid waste sent to this facility would be minimal. Although it is not

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[1] 115,000 metric tons converted to kilograms (x 1,000) = 115,000,000 kilograms. Divide by dry bulk density of iron silicate (3.6 grams per cubic meter or 3,600 kilograms/cubic meter) (American Elements 2021) = 31,944 cubic meters, convert to cubic yards (multiply by 1.3079) = 41,780 cubic yards.

expected, if the filter cakes exceed Arizona's toxicity standards, the Applicant will arrange for hazardous materials to be trucked to Idaho or Nevada.

As mentioned in Section 2, Project Description, approximately every three years the Project facility will be shut down for about three weeks to complete a facility cleaning in alignment with the HR1 plant cleaning. This process would remove mineral scale from Project plant piping. The scale removed during this process has the potential to exceed STLC and TTLC standards for Arizona, in which case solid waste would be required to be trucked to Nevada. However, this is an extremely rare occurrence, and in the past 10 years only two truck loads have needed to be transported to Nevada. The implementation of the Proposed Project would not increase the amount of solid waste needing to go out of state.

Therefore, solid waste facilities have adequate permitted capacity for solid waste materials generated by the Project. Impacts would be less than significant.

Threshold e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

As discussed above, solid waste would be generated during construction and operation. Some construction waste would be recycled prior to the remainder of the waste being disposed of at the local landfill. During Project operations, the iron-silica filter cake would be sampled and laboratory-tested to ensure that the material meets California standards for STLC and TTLC and then would be trucked off site and recycled for beneficial use. Any filter cake materials exceeding these standards would be delivered to a Class I landfill or a Class II landfill authorized to accept the waste for proper disposal. The Proposed Project would be operated in a manner that would be consistent with all source reduction and recycling goals set forth by the City to achieve compliance with the applicable regulatory plans consistent with the City's obligations under AB 939, including the Countywide Integrated Waste Management Plan for Imperial County, by appropriately distributing solid waste materials and recycling materials when feasible.

Disposal of solid/hazardous wastes generated during Project construction and operations would be in compliance with local federal, State, and County regulations and disposed of at authorized facilities. Therefore, a less than significant impact would occur.

4.12.6 Cumulative Impacts

Cumulative impacts are defined in CEQA as "two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts" (CEQA Guidelines Section 15355). Stated in another way, "a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing relating impacts" (CEQA Guidelines Section 15130 [a][1]).

The cumulative setting and geographic scope for water service is the IID water service area, which includes 10 cities and approximately 500,000 acres of agricultural, municipal, and industrial use (IID 2008). The cumulative setting for electrical service is also IID's service area, which encompasses almost all of Imperial County. Only a small portion of the northeast corner of the County receives service from Southern California Edison. The geographic scope for the cumulative setting for solid waste is the service area of the solid waste contractor chosen by each individual CUP owner or operator. For conservative purposes, this solid waste service area is assumed in this analysis to encompass the entire County of Imperial. As previously described in the Existing Setting, the County has permitted eight landfills and contracts with private collection companies for solid waste pickup.

Other proposed, approved, and reasonably foreseeable projects in the region are identified in Table 3.0-1 in Chapter 3.0, Environmental Setting. All of these projects are located within the cumulative setting for water, electricity, and solid waste. Water for Project construction and operations represents 14 percent of the unallocated supply set aside in the IWSP for nonagricultural projects and approximately 14 percent of forecasted future nonagricultural water demands planned in the Imperial IRWMP through 2055. The amount of water available and the stability of the IID water supply, along with on-farm and system efficiency conservation and other measures being undertaken by IID and its customers, ensure that the Project's water needs will be met for the next 30 years. Additionally, as previously mentioned, the Calipatria and Holtville wastewater treatment plants have sufficient available capacity to be able to support future and related projects. The electricity required for the Project would be approximately 81,290 MWh, which represents approximately 6 percent of the County's electricity usage and 2 percent of IID's electricity usage (CEC 2021a; 2021c).

Waste resulting from Project construction and operations is anticipated to result in approximately 0.3 percent of the Allied Imperial Landfill, Niland Solid Waste, and Salton Sea Solid Waste Facility's combined remaining capacity. Remaining capacity would be available for cumulative projects in the area.

Implementation of the Project, in combination with other proposed, approved, and reasonably foreseeable projects in the County of Imperial, would result in cumulative demand for water, electricity, and solid waste service and landfill capacity. However, similar to the Project, new development projects would be subject to County review to assure that the existing public utility facilities would be adequate to meet the demands of each project; and individual projects would be subject to federal, State, and local requirements regarding infrastructure improvements needed to meet respective future demands. Implementation of related projects and other anticipated growth in Imperial County would not combine with the Proposed Project to result in cumulatively considerable impacts on utility and service systems.

4.12.7 Mitigation Measures

In order to minimize potential impacts to future water resources for the Project, the following mitigation measure shall be implemented:

UTIL-1: If the IID does not receive its annual 3.1 maf water apportionment according to the QSA obligations of Colorado River water during the Project's 30-year lifespan, the Applicant shall work with IID to ensure any reduction in water availability can be managed by the Project.

4.12.8 Level of Significance After Mitigation

With the implementation of MM UTIL-1, the Project would ensure potential impacts related to utilities, specifically water availability, would remain less than significant.

CHAPTER 5.0 – ALTERNATIVES ANALYSIS

5.1 INTRODUCTION AND OVERVIEW

CEQA requires that an EIR describe a range of reasonable alternatives to the Proposed Project, or to the location of the Proposed Project, which could feasibly avoid or lessen any significant environmental impacts while substantially attaining the basic objectives of the project. An EIR should also evaluate the comparative merits of the alternatives. This chapter describes potential alternatives to the Proposed Project that were considered, identifies alternatives that were eliminated from further consideration and reasons for dismissal, and analyzes available alternatives in comparison to the potential environmental impacts associated with the Proposed Project.

Key provisions of the CEQA Guidelines (§15126.6) pertaining to the alternatives analysis are summarized below:

- The discussion of alternatives shall focus on alternatives to the Proposed Project or its location that are capable of avoiding or substantially lessening any significant effects of the Proposed Project, even if these alternatives would impede to some degree the attainment of the Proposed Project objectives or would be more costly.

- The No Project Alternative shall be evaluated along with its impact. The No Project analysis shall discuss the existing conditions at the time the Notice of Preparation is published. Additionally, the analysis shall discuss what would be reasonably expected to occur in the foreseeable future if the Proposed Project were not approved, based on current plans and consistent with available infrastructure and community services.

- The range of alternatives required in an EIR is governed by a “rule of reason”; therefore, the EIR must evaluate only those alternatives necessary to permit a reasoned choice. Alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the Proposed Project.

- For alternative locations, only locations that would avoid or substantially lessen any of the significant effects of the Proposed Project need to be considered for inclusion in the EIR.

- An EIR need not consider an alternative whose effects cannot be reasonably ascertained and whose implementation is remote and speculative.

The range of feasible alternatives is selected and discussed in a manner to foster meaningful public participation and informed decision-making. Among the factors that may be taken into account when addressing the feasibility of alternatives are environmental impacts, site suitability, economic viability, availability of infrastructure, general plan contingency, regulatory limitation, jurisdictional boundaries, and whether the proponent could reasonably acquire, control, or otherwise have access to the alternative site. An EIR need not consider an alternative whose effects cannot be reasonably identified, whose implementation is remote or speculative, and that would not achieve the basic Project Objectives.

5.2 PROJECT OBJECTIVES

The Project has the following objectives:

- To produce quantities of lithium, manganese, zinc, and other strategic minerals from geothermal brine for commercial sale
- To collocate near a geothermal flash plant to minimize the distance required to pipe the brine between the geothermal plant and the mineral extraction plant
- To provide a supplemental domestic source of lithium, a designated critical material identified by the U.S. Department of Energy
- To minimize and mitigate any potential impact to sensitive environmental resources within the Project area

5.3 ALTERNATIVES CONSIDERED BUT REJECTED

Several alternatives could be considered for the Project which address the Project size or development of a similar project elsewhere in the Project area. A range of alternatives that are “reasonable” for analysis have been defined by the County and are discussed below in Section 5.4 Alternatives Analyzed. The following section describes alternatives or alternative concepts that were given consideration but rejected from further analysis in the EIR due to their infeasibility.

5.3.1 Reduced Project Size Alternative

The possibility of reducing the overall size of the Project was considered; however, this alternative was deemed infeasible. The Project has been designed using three different components crafted by three different companies, each having very specific parameters. Considering the components currently on market and available for sale to the Applicant, the current scale of the Project is the smallest system possible to execute Project objectives. The various vessels associated with the Project all have to match each other to ensure proper function of the facility and to uphold safety standards. Engineers have not been able to identify a feasible way to scale the Project down. As a result, the reduced Project alternative was considered but rejected from further review.

5.3.2 Other Project Location Alternative

The potential for relocating the Project to another site in the area was considered but deemed infeasible. Locations further from the HR1 facility would require a longer pipeline system between the HR1 facility and the Project site. A post clarifier brine delivery pipeline from HR1 to the Project’s process area and a depleted brine return pipeline from the process area to HR1 will be constructed on one or more pipe racks. Longer pipelines between the two sites would increase the travel time of post clarifier brine and depleted brine, increasing the cooling time of the brine during transfer. The chemistry required for mineral extraction is temperature-dependent; thus, increased cooling of the brine would not allow for the Project to operate as required. As a result, the other Project location alternative was considered but rejected from further review.

5.4 ALTERNATIVES ANALYZED

In accordance with CEQA Guidelines Section 15126.6(d), each alternative is evaluated in sufficient detail to determine whether the overall environmental impacts would be less, similar, or greater than the corresponding impacts of the Project. Furthermore, each alternative is evaluated to determine whether the Project objectives would be substantially attained by the alternative.

5.4.1 No Project Alternative

Section 15126.6(e) of the CEQA Guidelines requires analysis of a No Project alternative that (1) discusses existing site conditions at the time the NOP is prepared or the Draft EIR is commenced and (2) analyzes what is reasonably expected to occur in the foreseeable future based on current plans if the Project were not approved. Potential effects for the No Project Alternative were compared to the environmental topics that were analyzed as a part of this Draft EIR.

The No Project Alternative would mean that the Project would not be constructed. No additional lithium, manganese, zinc, and other strategic minerals from geothermal brine would be processed for commercial sale and no additional supplemental supply of lithium for domestic use would be available. Under the No Project Alternative, the Project site would remain in its existing condition, which would mean a majority of the site would remain vacant. The No Project Alternative would continue to take geothermal brine waste from the existing HR1 plant and inject it back into the ground instead of allowing for a secondary extraction process to extract additional minerals prior to injection back into the ground.

Air Quality

Under the No Project Alternative, construction of the Project would not occur and the Project site would remain as it currently exists, mostly vacant. Moreover, long-term operational emissions would also be eliminated. Although the Proposed Project's air quality impacts would be less than significant, the potential impacts to air quality would be reduced under the No Project Alternative.

Biological Resources

The No Project Alternative would result in no change in conditions within the Project boundaries. While impacts under the Proposed Project would be less than significant with mitigation, as no construction is proposed, the No Project Alternative would avoid the need for pre-construction Burrowing Owl surveys. Like the Proposed Project, the No Project Alternative would not affect riparian habitat or other sensitive natural community, wetlands, wildlife corridors, or native wildlife nursery sites; conflict with local policies or ordinance protecting biological resources; or conflict with the provisions of a Habitat Conservation Plan. Although the Proposed Project's biological resource impacts would be less than significant with mitigation, impacts to biological resources under the No Project Alternative would be considered reduced compared to the Project.

Cultural

Under the No Project Alternative, no excavation and trenching would occur. Therefore, potential impacts to undiscovered human remains would have no potential to occur. Although the Proposed Project's cultural resources impacts would be less than significant, the potential impacts to cultural resources would be reduced under the No Project Alternative.

Energy

Under the No Project Alternative, the need for fuel and electricity for Project construction would not increase, as no construction would occur. The use of electricity, water, or natural gas during operations would not increase. As with the Proposed Project, impacts to energy would be less than significant; however, impacts would be reduced under the No Project Alternative.

Geology and Soils

Under the No Project Alternative, no new structures would be built, avoiding exposure to potential seismic hazards. Likewise, no impacts associated with seismic ground shaking, expansive soils, or paleontological resources would occur under the No Project Alternative. Although the Proposed Project's geology and soils impacts would be less than significant with mitigation, impacts to geology and soils under the No Project Alternative would be considered reduced compared to the Project.

Greenhouse Gas

Under the No Project Alternative, construction of the Project would not occur; and the Project site would remain as it currently exists, mostly vacant. Operational greenhouse gas impacts would not occur under the No Project Alternative. The Proposed Project's greenhouse gas impacts would be less than significant; however, the potential impacts to greenhouse gases would be reduced under the No Project Alternative.

Hazards and Hazardous Materials

The No Project Alternative would not involve the transport, use, and disposal of hazardous materials, as no construction or operation would occur. Although the Proposed Project's impacts related to hazards and hazardous materials would be less than significant, impacts associated with accidental release during hazardous materials transport, use, and disposal would be reduced under the No Project Alternative.

Hydrology and Water Quality

Under this Alternative, the Project site would remain in its current condition, and no grading or development would occur. Existing stormwater flows across the Project site would continue to occur, and the existing hydrologic and drainage patterns would remain unchanged. Changes to hydrology and water quality during construction of the Project would not occur, and no water would be required for construction or operation. While the Proposed Project would result in less than significant impacts, impacts under the No Project Alternative would be reduced when compared to those of the Proposed Project.

Noise

No short-term construction-related noise impacts would occur under the No Project Alternative, as no mineral extraction plant would be built. Operational noise would be similar to the Project because truck trips between the No Project Alternative and the Project would be substantially similar due to the presence of the neighboring HR1 facility. Noise impacts associated with the Proposed Project would be less than significant; however, under the No Project Alternative, impacts would be reduced when compared to the Project.

Transportation

No construction traffic would be generated in association with the No Project Alternative because no mineral extraction plant would be constructed. Additionally, fewer truck trips would occur under the No Project Alternative, resulting in less impacts and no need to mitigate the potential safety impact at the intersection of Highway 111 and McDonald Road. Although with mitigation, Project impacts to transportation would be less than significant, impacts under the No Project Alternative would be reduced when compared to the Project.

Tribal Cultural Resources

Under the No Project Alternative, the Project site would remain in its existing condition. Maintaining the site in its existing condition would not affect any Tribal Cultural Resources in the vicinity of the site. Additionally, no new ground-disturbing activities would occur; therefore, the potential to disturb or unearth human remains would be reduced when compared to the Proposed Project. Although the Proposed Project's Tribal Cultural Resource impacts would be less than significant, the potential impacts to Tribal Cultural Resources would be reduced under the No Project Alternative.

Utilities and Service Systems

Under the No Project Alternative, no new structures would be built, avoiding the need for new and expanded utility connections. Likewise, no impacts associated with water, electricity, stormwater, and solid waste would occur under the No Project Alternative. Neither the No Project Alternative nor the Project would result in unmitigable impacts to water, wastewater, natural gas, telecommunications, or solid waste. However, impacts to utility and service systems would be reduced under the No Project Alternative.

Conclusion and Relationship to Project Objectives

The No Project Alternative would not change existing conditions at the Project site. The No Project Alternative would result in mostly reduced environmental effects compared to the Proposed Project's less than significant impacts. However, under the No Project Alternative, impacts to transportation would be considered greater and potentially significant without the mitigation to install a northbound left-turn pocket lane to improve the current safety hazards at this intersection.

The No Project Alternative would not develop the site to fully utilize the existing geothermal operations on the HR1 site. Additionally, the No Project Alternative would not help the County provide a supplemental domestic source of lithium, a designated critical material identified by the U.S. Department of Energy. Furthermore, by not producing lithium under the No Project Alternative, the need for lithium production to meet certain technical processing needs would remain and may result in future mining projects other than and potentially with greater impacts than the Proposed Project. While the No Project Alternative would also minimize and mitigate any potential impacts to sensitive environmental issues, the No Project Alternative would not meet any other Project objectives. The Project's objectives and the ability for the No Project Alternative to meet those objectives are summarized in Table 5.0-1.

Table 5.0-1: Comparison of Alternatives – Project Objectives

Project Objectives	Ability of Alternatives to Meet Project Objectives
	No Project
To produce quantities of lithium, manganese, zinc, and other strategic minerals from geothermal brine for commercial sale	Unable to meet Project objective.
To colocate near a geothermal flash plant to minimize the distance required to pipe the brine between the geothermal plant and the mineral extraction plant	Unable to meet Project objective.
To provide a supplemental domestic source of lithium, a designated critical material identified by the U.S. Department of Energy	Unable to meet Project objective.
To minimize and mitigate any potential impact to sensitive environmental resources within the Project area	Able to meet Project objective.

5.5 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

As previously discussed, only one alternative was considered feasible and analyzed in this analysis. A comparison of the Project's impacts and the No Project Alternative impacts is shown in Table 5.0-2. The No Project Alternative would be considered the environmentally superior alternative, as it would avoid or reduce all of the potential impacts associated with construction and operation of the Project. Additionally, the No Project Alternative would not allow for full utilization of the existing HR1 site and would not allow for a secondary extraction process to extract additional minerals prior to injection back into the ground. The No Project Alternative would not meet most of the Project objectives including that it would not (1) produce quantities of lithium, manganese, zinc, and other strategic minerals from geothermal brine for commercial sale; (2) colocate a mineral extraction plant near a geothermal flash plant to minimize the distance required to pipe the brine between the geothermal plant and the mineral extraction plant; or (3) provide a supplemental domestic source of lithium, a designated critical material identified by the U.S. Department of Energy. Furthermore, by not producing lithium under the No Project Alternative, the need for lithium production to meet certain technical processing needs would remain and may result in future mining projects other than and potentially with greater impacts than the Proposed Project.

CEQA Guidelines requires that, if the No Project Alternative is determined to be the environmentally superior alternative, an environmentally superior alternative must also be identified among the remaining alternatives. However, reducing the Project size and relocating the Project to another site in the area were deemed to be infeasible alternatives. Thus, the only environmentally superior alternative identified is the No Project Alternative.

Table 5.0-2: Comparison of Environmental Issues

Environmental Issue Area	Project	No Project Alternative
Air Quality	Less than Significant	Reduced (Less than Significant)
Biological Resources	Less than Significant with Mitigation	Reduced (Less than Significant)
Cultural Resources	Less than Significant	Reduced (Less than Significant)
Energy	Less than Significant	Reduced (Less than Significant)
Geology and Soils	Less than Significant with Mitigation	Reduced (Less than Significant)
Greenhouse Gas	Less than Significant	Reduced (Less than Significant)
Hazards and Hazardous Materials	Less than Significant	Reduced (Less than Significant)
Hydrology and Water Quality	Less than Significant	Reduced (Less than Significant)
Noise	Less than Significant	Reduced (Less than Significant)
Transportation	Less than Significant with Mitigation	Reduced (Less than Significant)
Tribal Cultural Resources	Less than Significant	Reduced (Less than Significant)
Utilities and Service Systems	Less than Significant with Mitigation	Reduced (Less than Significant)

CHAPTER 6.0 – OTHER CEQA CONSIDERATIONS

This chapter presents the evaluation of other types of environmental impacts required by CEQA that are not covered within the other chapters of this Draft EIR. The other CEQA considerations include effects not found to be significant, irreversible environmental changes, growth-inducing impacts, and significant and unavoidable adverse impacts.

6.1 EFFECTS NOT FOUND TO BE SIGNIFICANT

This section includes information from the Initial Study that was prepared by Chambers Group on December 11, 2020, which can be found in Appendix A: Initial Study (County 2020). In addition to the environmental impact thresholds analyzed in detail in this EIR, the County has determined through the preparation of an Initial Study that the development and operation of the Project would not result in potentially significant impacts to the environmental impact topics discussed below. Section 15128 of the CEQA Guidelines requires a brief description of any possible significant effects that were determined not to be significant and were not analyzed in detail within the environmental analysis. Therefore, this section has been included in this Draft EIR as required by CEQA.

The discussion below presents the analysis of the effects related to aesthetics, agriculture and forestry resources, air quality, biological resources, geology and soils, hazards and hazardous materials, hydrology and water quality, land use and planning, mineral resources, noise, population and housing, public services, recreation, transportation, and wildfire not found to be significant. Any thresholds or topics not addressed in this section are addressed in Section 4.0: Environmental Impact Analysis of this Draft EIR.

6.1.1 Aesthetics

Threshold a) Have a substantial adverse effect on a scenic vista or scenic highway?

Threshold b) Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?

The Project is not located within the viewshed of any scenic vistas or officially designated State scenic highways (Caltrans 2019). The closest scenic viewpoint is an observation deck located within the Sonny Bono Salton Sea National Wildlife Refuge, approximately 3 miles southwest of the Project site (USFWS 2019). Although the area is relatively flat, an extensive shrub-covered marsh and the Alamo River separate the viewpoint from the Project site; thus, the Project site would not be within the viewshed of the observation deck. Additionally, Highway 111 is listed by Caltrans as eligible for State scenic highway designation and is located 3 miles east of the Project site. However, Highway 111 has not been officially designated, and the eligible section of highway is from Bombay Beach to the Imperial County-Riverside County line, approximately 13 miles northwest of the Project site at the closest point (Caltrans 2019). Further, the site is void of any trees, rock outcrops, or historic buildings; and, therefore, no scenic resources would be damaged as a result of the Project. No impacts would occur to scenic vistas or scenic resources along a State scenic highway, and no further analysis is required.

Threshold c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surrounding? (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?

The Project is located on a vacant, nonurbanized area characterized by agricultural and industrial land uses, as well as vacant desert land. Public viewers of the Project site would be limited to workers at HR1 power plant and any passersby on nearby roads. No residences or recreation areas are in proximity of the Project site. In addition, construction of the Project would be temporary, occurring from approximately Quarter 3 of 2021 to Quarter 2 of 2023. Views of Project operations will be consistent with current views of the area, which include the neighboring HR1 power plant. The Project would not substantially degrade the existing visual character or public views of the site or surroundings, and no impacts would occur. Thus, no further analysis is required.

Threshold d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

As part of the Project design, industrial-grade lighting sources would be required for Project operations and safety purposes. Lighting would be covered and directed downward (downshielded) or toward the proposed facility to avoid backscatter. Nighttime illumination features for the Project would be controlled with sensors or switches operated such that lighting would be activated only when needed. In addition, the Project is in a rural area of the County with the closest sensitive receptor being a residence over 1 mile north of the Project site on Pound Road. Industrial-level lighting that would be associated with the Proposed Project would not be significant when compared to the existing uses on the site. Impacts related to increased light and glare from operation of the proposed facility would be less than significant, and no further analysis is required.

6.1.2 Agricultural and Forest Resources

Threshold 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?

According to the California Department of Conservation’s Farmland Mapping and Monitoring Program, the Project site is a combination of “Urban and Built-Up Land” and “Other Land” (DOC 2020a). No Prime Farmland, Unique Farmland, or Farmland of Statewide Importance is located within or in proximity to the Project site. The County General Plan designates the Project site as Agriculture land use; however, according to the General Plan Land Use Element, a nonagricultural land use may be permitted within General Plan-designated agricultural land if the use does not conflict with agricultural operations and will not result in the premature elimination of agricultural operations (County 2015a). No existing agricultural land is present on the Project site, thus the Project would not conflict with or eliminate agricultural operations. Historically agricultural operations occurred on the Project site, but the conversion of this agricultural land to another use was analyzed as part of the 2007 Hudson Ranch Power I Project and determined to be below the level of CEQA significance. No impacts would occur, and no further analysis is required.

Threshold b) Conflict with existing zoning for agricultural use, or a Williamson Act Contract?

The Project site is zoned M-2 and is located within the geothermal overlay zone (G) and pre-existing allowed/restricted overlay zone (PE). No land within the Project site is zoned for agricultural use, and the

Project was considered consistent with the site zoning with the approval of the CUP in June 2020. The Project site is not subject to the provisions of a Williamson Act contract (DOC 2018). No impacts would occur, and no further analysis is required.

Threshold c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

Threshold d) Result in the loss of forest land or conversion of forest land to non-forest use?

As previously mentioned, the Project site is zoned M-2-G-PE. No land within the Project site is zoned forest land or timberland, and no forest land exists on the Project site or in the immediate vicinity. The Project would not result in the loss of forest land or the conversion of forest land to non-forest use; no impacts would occur, and no further analysis is required.

Threshold 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 forest land to non-forest use?

The Project site is zoned M-2-G-PE and does not contain agricultural land or forest land. The Project would not result in the conversion of agricultural land or forest land. No impacts would occur, and no further analysis is required.

6.1.3 Air Quality

Threshold c) Expose sensitive receptors to substantial pollutants concentrations?

The Project is located in a rural area of the County and is not in close proximity to any sensitive receptors such as residences, hospitals, or schools. The closest residence is over a mile north of the Project site along Pound Road, the closest school is approximately 4 miles southeast of the Project site, and the closest hospital is approximately 16 miles south of the Project site (Google 2021). Approximately 62 full-time employees are expected to be working on site, but these employees will be provided the proper personal protective equipment (PPE) and training in accordance with OSHA regulations to protect them from substantial pollutant concentrations. A less than significant impact is expected to result, but these issues will be evaluated further in the EIR.

Threshold d) Result in other emissions (such as those leading to odors adversely affecting a substantial number of people)?

As mentioned above, the Project is located in a rural area of the County and is not in close proximity to any sensitive receptors, with the closest residence over a mile north of the Project site along Pound Road, the closest school approximately 4 miles southeast of the Project site, and the closest hospital approximately 16 miles south of the Project site (Google 2021). Approximately 62 full-time employees are expected to be working on site, but these employees will be provided the PPE and training in accordance with OSHA regulations. Any odors on site are expected to affect only employees and are not anticipated to affect a substantial amount of people. Less than significant impacts are expected, but odors will be evaluated further in the EIR.

6.1.4 Biological Resources

Threshold b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Threshold 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?

According to the U.S. Fish and Wildlife Service's National Wetland Inventory, the Project site does not contain any wetland or riparian habitat. The closest potential wetland and riparian habitats include freshwater emergent wetlands and the Alamo River, which is likely to have riparian habitat along its banks, located approximately 1 mile southwest of the Project site (USFWS 2021). The Project site is approximately 500 feet north of IID canals and agricultural drains that flow into these wetlands and the Alamo River; however, to prevent offsite impacts to nearby wetlands resulting from stormwater runoff during construction, the Project would be required to obtain coverage under a Construction General Permit to comply with NPDES requirements. Compliance with the Construction General Permit would require the development and implementation of a SWPPP and associated BMPs. These BMPs will include measures that would be implemented to prevent discharges into adjacent wetland and riparian habitat from the Project site during construction activities.

To prevent significant impacts to the nearby wetland and riparian habitat due to increased runoff at the Project site during operations, a stormwater retention basin will be developed on site. The Project will likely share the HR1 stormwater retention basin and will ensure the basin is engineered and constructed to contain the combined stormwater storage requirements of both the HR1 and Project plant sites. If a basin cannot be shared for technical, legal, or other reasons, then the Project will construct its own separate basin on the far south side of the parcel. Overall, impacts to wetland and riparian habitats resulting from the Project would be less than significant, and no further analysis is required.

Threshold e) Conflict with any local policies or ordinance protecting biological resource, such as a tree preservation policy or ordinance?

Threshold 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?

The County General Plan Conservation and Open Space Element policies require conservation of native habitat of sensitive plants and animals through the dedication of open space easements or other means that will ensure their long-term protection and survival. As mentioned above, the Project site is highly disturbed from previous uses and is not expected to contain high quality native habitat. However, the Project site is located within the boundaries of the Desert Renewable Energy Conservation Plan (DRECP), which aims to protect irreplaceable desert habitats, plants, animals, and ecological processes and allows for the development of a significant amount of centralized renewable energy (from solar, wind, and geothermal facilities, which will also require transmission lines) by focusing on areas with the least ecological impact. Because the DRECP's intent is to identify areas in the desert appropriate for the utility-scale development of wind, solar, and geothermal energy projects and the Project does not include the development of such energy projects, the Project would neither conflict with nor does it require compliance with the DRECP. Impacts to native habitat of sensitive plants and animals resulting from the Project would be less than significant, and no further analysis is required

6.1.5 Geology and Soils

Threshold a) Directly or indirectly cause potential substantial adverse effects, including 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?

The Project site is not located within an Alquist-Priolo fault zone, and the closest fault zone is the San Andreas fault zone approximately 13 miles northwest (DOC 2020b). However, the County General Plan shows that the potentially active Calipatria Fault runs underneath the Project site (County 1997a). Despite a known earthquake fault within the Project site, all parcels encompassing the site have been previously graded and would not require excavation. Approximately 10,000 cubic yards of soil will be brought on site to raise the elevation, but no significant ground-disturbing activities that could directly cause rupture of the Calipatria Fault would occur during Project construction or operation. Further, no Project activities would indirectly cause rupture of any known earthquake faults in the area. Impacts would be less than significant.

iv) Landslides?

The Project site is flat and is not located within an identified landslide zone (DOC 2020b). According to the County General Plan, the closest area of landslide activity is on the border of San Diego and Imperial Counties approximately 30 miles west of the Project site (County 1997a). The Project would not exacerbate the risk of loss, injury, or death involving landslides. No impacts would occur, and no further analysis is required.

Threshold b) Result in substantial soil erosion or the loss of topsoil?

Project construction and operations have the potential to result in soil erosion and loss of topsoil mainly through increasing impervious surfaces on site and increasing vehicle and foot traffic on site. All parcels encompassing the Project site have been previously graded and would not require excavation. Approximately 10,000 cubic yards of soil will be brought on site to raise the elevation, and approximately 55 acres of the Project site would be permanently disturbed by the Project. The Project would implement standard industry methods, such as BMPs, to prevent surface runoff and erosion where applicable. These BMPs would comply with the County Building & Grading Regulations and the SWPPP developed for the Project. Moreover, a Drainage and Grading Plan will be submitted to the County to ensure implementation of all required BMPs. Impacts related to soil erosion would be less than significant, and no further analysis is required.

Threshold e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

During construction of the Project, portable toilets would be provided for construction workers, and waste would be transported off site to a sanitary water treatment plant. Sewage generated during Project operations would be processed by the existing HR1 sewer treatment plant adjacent to the Project site, which has available capacity. No new septic tanks or alternative wastewater disposal systems will be constructed as a result of the Project; thus, no impacts would occur, and no further analysis will be required.

6.1.6 Hazards and Hazardous Materials

Threshold c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Although the Project has the potential to emit hazardous emissions and/or handle hazardous substances, the Project site is not within 0.25 mile of an existing or proposed school. The closest school to the Project site is Grace Smith Elementary School, approximately 4 miles northeast in Niland. Additionally, the Emergency Response Plan (ERP) that would be prepared and implemented for the Project will limit human risk associated with exposure to hazardous materials, with special consideration of the schools in the area. Impacts would be less than significant, and no further analysis is required.

Threshold 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 or excessive noise for people residing or working in the project area?

The Project site is not located within 2 miles of a public airport or public use airport or within the boundaries of an airport land use plan. The closest airport is Calipatria Municipal Airport approximately 6 miles southeast of the Project site. Therefore, the Project would not expose people working in the Project area to safety hazards or excessive noise. No impact would occur, and no further analysis is required.

Threshold f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Temporary or single-lane closure of some roadways may occur during the transport of oversized equipment or construction activities. Road closures would be coordinated with County Public Works, the County Sheriff, and the Imperial County Fire District (ICFD) prior to closure and would be scheduled to occur during off-peak commute hours. The Project's construction and operational activities would be in compliance with the Imperial County Emergency Operations Plan (EOP) and Multi-Jurisdiction Hazard Mitigation Plan (MJHMP) and would not physically interfere with the execution of the policies and procedures in these plans (County 2016, 2021b). Therefore, the Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Impacts would be less than significant, and no further analysis is required.

Threshold g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

The Seismic and Public Safety Element of the County General Plan states that the potential for a major fire in the unincorporated areas of the County is generally low (County 1997a). According to the California Department of Forestry and Fire Protection's (CAL FIRE) Fire Hazard Severity Zone Viewer, no very high, high, or moderate fire hazard severity zones are in the local or State responsibility areas within 30 miles of the Project site (CAL FIRE 2020). Additionally, the Project will include fire suppression systems designed in accordance with federal, State, and local fire codes; occupational health and safety regulations; and other jurisdictional codes, requirements, and standard practices. Included in the fire suppression system is a 500,000-gallon aboveground water tank to be installed on site, serving as the primary water supply for the joint fire suppression system. In addition, during construction the Project site and access road will be cleared of all vegetation and cleared areas will be maintained throughout construction. Fire extinguishers will be available around the construction site as well. During operations, a brush control program will be prepared and implemented on those portions of the Project site that will not be developed. The ICFD will be consulted to review and approve any and all proposed fire equipment, apparatus, and related fire prevention plans. Impacts would be less than significant, and no further analysis is required.

6.1.7 Hydrology and Water Quality

Threshold a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

The Project site is located within the California RWQCB's Colorado River Basin Region. The Project is therefore subject to standards set forth in the Colorado River Basin's (CRB) Water Quality Control Plan. As previously mentioned, Project construction and operations would have the potential to result in soil erosion and runoff on and off site mainly due to grading and increased impervious surfaces. Through implementation of a SWPPP and a Drainage and Grading Plan, the Project would implement standard industry BMPs and relevant CRB BMPs to control offsite discharges. Additionally, the Project would develop a stormwater retention basin, either shared with HR1 or independent, which would be engineered and constructed to contain any stormwater runoff. If a retention basin cannot be shared for technical, legal, or other reasons, then the Project will construct its own basin on the far south side of the parcel. Stormwater flows will be directed to the retention basin via ditches, culverts, and/or swales.

Spill containment areas and sumps subject to spills of immiscible chemicals would be drained to a dilution water tank. Any oil contamination spills would be collected with absorbent pads and disposed as required by law. The Project site would be graded and constructed so that all process spills would drain into area drains that would be reprocessed into the system. Excess process spills would drain into the brine pond.

The Project will not allow any offsite discharges that could violate water quality standards or waste discharge requirements, or otherwise substantially degrade surface or groundwater quality. Impacts would therefore be less than significant, and no further analysis is required.

Threshold 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 which would:

(i) result in 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 offsite;
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or;
(iv) impede or redirect flood flows?

No rivers or streams travel through the Project site or are directly adjacent to the Project site. The Alamo River is approximately 0.7 mile southwest of the Project site, and drainage channels are approximately 500 feet south of the Project site (along Schrimpf Road) lead toward the Alamo River and surrounding wetlands. Although Project construction and operations would have the potential to result in soil erosion and runoff on and off site due to grading and increased impervious surfaces, through implementation of a SWPPP and a Drainage and Grading Plan, the Project would implement standard industry BMPs and relevant CRB BMPs to control offsite discharges. Additionally, a stormwater retention basin would be developed on the site. In order to prevent substantial erosion resulting from high winds in the area, a Fugitive Dust Suppression Plan will be prepared, and the Project site will be watered as necessary.

The western portion of the Project site, currently APN 020-100-025, is located within the FEMA 100-year floodplain (FEMA 2020). However, during construction of the HR1 plant an administrative Flood Plan permit was approved for the HR1 site and an earthen flood protection berm was constructed. This berm, constructed on the west and south sides of APN 020-100-025, would prevent flooding of the Project site.

With implementation of BMPs and construction of a new retention basin, substantial erosion and runoff on and off site is not expected. Less than significant impacts would occur, and no further analysis is required.

Threshold d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

As mentioned above, the western portion of the Project site (APN 020-100-025) is located within the FEMA 100-year floodplain; however, an earthen flood protection berm surrounds the western and southern sides of the parcel (FEMA 2020). The flood protection berm would prevent flooding onto the Project site. Additionally, the Project site is 2 miles east of the Salton Sea, which is a potential source of seiche. According to the County General Plan's Seismic and Public Safety Element, a seiche at the Salton Sea could occur under the appropriate seismic conditions, but a number of seismic events have occurred with no significant seiches resultingto date (County 1997a). Further, all dams within the County are approximately 65 miles east of the Project site, and the Project site is approximately 100 miles from the coast of the Pacific Ocean. Thus, no risk of dam inundation or tsunami within the Project site exists. Impacts would be less than significant, and no further analysis is required.

6.1.8 <u>Land Use and Planning</u>

Threshold a) Physically divide an established community?

The Project is located in a rural area approximately 3 miles south of Niland, which is the closest nearby community. No residences are in close proximity to the Project site; thus, the Project would not physically divide an established community, and no impacts would occur and no further analysis is required.

Threshold 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?

The Project site is zoned M-2-G-PE (Medium Industrial /Geothermal Overlay), and the County General Plan designates the Project site as Agriculture land use. According to the General Plan Land Use Element, a nonagricultural land use may be permitted within General Plan-designated agricultural land if the use does not conflict with agricultural operations and will not result in the premature elimination of agricultural operations (County 2015a). No agricultural land exists on the Project site, and the land is not designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance by the Department of Conservation (DOC 2020a). A CUP was issued for the Project in June 2020, making the Project consistent with the site zoning in accordance with the County's Zoning Ordinance. No impacts would occur, and no further analysis is required.

6.1.9 <u>Mineral Resources</u>

Threshold 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?

Threshold 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?

Other than the geothermal resources being developed in the Project vicinity, no mineral resources or mineral resource recovery sites are known to exist within the vicinity of the Project site (DOC 2021a; County 1993). A number of mines are found along the Chocolate Mountain Range to the east, but the closest is approximately 6 miles from the Project site (DOC 2020c). Additionally, the Project is a geothermal brine-processing plant that would produce commercial-grade lithium, zinc, and manganese products, increasing the availability of these mineral resources. The Project would therefore be in alignment with the County General Plan's Renewable Energy and Transmission Element, Objective 3.2, which states that the County should "encourage the continued development of the mineral extraction/production industry for job development using geothermal brines from the existing and future geothermal flash power plants" (County 2015b). No known mineral resources or mineral resource recovery sites would be lost as a result of the Project; thus, no impacts would occur and no further analysis is required.

6.1.10 <u>Noise</u>

Threshold b) Generation of excessive groundborne vibration or groundborne noise levels?

Groundborne vibration and groundborne noise could originate from earth movement during the construction phase of the Project. However, significant vibration is typically associated with activities such as blasting or the use of pile drivers, neither of which would be required during Project construction. Additionally, the closest sensitive receptor is a residence over 1 mile north of the Project site which would not experience damage or nuisance. The Project would be expected to comply with all applicable requirements for long-term operation, as well as with measures to reduce excessive groundborne vibration and noise to ensure that the Project would not expose persons or structures to excessive groundborne vibration. Impacts would be less than significant, and no further analysis is warranted.

Threshold c) For a project located within the vicinity of a private airstrip or an airport land use plan or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

The Project site is not located within 2 miles of a public airport or public use airport. The closest airport is Calipatria Municipal Airport approximately 6 miles southeast of the Project site. Therefore, the Project would not expose people working in the Project area to excessive noise levels. No impact would occur, and no further analysis is required.

6.1.11 Population and Housing

Threshold a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and business) or indirectly (for example, through extension of roads or other infrastructure)?

The Project involves construction and operation of a geothermal brine processing plant and does not propose the development of any housing on site. The Project would require approximately 62 full-time employees. The Applicant expects to utilize available workers from the local and regional area who are already be residents of and would commute from the surrounding communities. Therefore, the Project is not anticipated to induce population growth directly or indirectly; impacts would be less than significant and no further analysis is required.

Threshold b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

The Project site is partially on the existing HR1 site, which was previously permitted for the geothermal plant. In addition to the actual power plant, the rest of the land has been used for laydown areas, storage areas, and stormwater management. The additional land that will be included is an approximately 15-acre parcel, APN 020-100-025, and an approximate 40-acre portion of APN 020-100-046, both of which have been vacant for several decades and were previously used for geothermal testing and associated activities. No residences are within the Project site or within close proximity; thus no existing people or housing would be displaced as a result of the Project. No impacts would occur, and no further analysis is required.

6.1.12 Public Services

Threshold a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental 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?

Fire protection and emergency medical services in the Project area are provided by the ICFD. The closest station to the Project site is the Niland Station, approximately 4 miles northeast, or an approximately 9-minute drive (Google 2021). During construction, the Project site and access road will be cleared of all vegetation, and cleared areas will be maintained throughout construction. Fire extinguishers will also be available around the construction site. In case of emergency response during operations, both the Project access roads (off McDonald Road and Davis Road) would have turnaround areas to allow clearance for fire trucks per fire department standards: 70 feet by 70 feet, and 20 feet wide. In addition, a 500,000-gallon firewater storage tank will be constructed adjacent to the HR1 water storage pond (on the east side of the site) to serve as the primary water supply for the new joint fire suppression system to be constructed near the storage tank. The joint fire protection system will be equipped with quick-connect hose bibs; an underground fire main and surface distribution equipment such as yard hydrants and hose houses; monitors around the perimeter of the cooling tower; automatic sprinklers for the buildings, if needed; and a complete detection and alarm system. The fire-fighting water supply and pumping system will provide an adequate quantity of fire-fighting water and a 62-horsepower diesel-fueled firewater pump will be available on site. A brush control program will also be prepared and implemented on those portions of the Project site not being developed to mitigate the potential of an offsite brush fire.

All fire suppression systems will be designed in accordance with federal, State, and local fire codes; occupational health and safety regulations; and other jurisdictional codes, requirements, and standard practices. The ICFD will be consulted to review and approve any and all proposed fire equipment, apparatus, and related fire prevention plans. Acceptable service ratios and response times for fire protection will be maintained following Project implementation through consultation with the ICFD and the County. Impacts would be less than significant, and no further analysis is required.

ii) Police Protection?

Police protection services in the area are provided by the Imperial County Sheriff's Department. The closest police station to the Project site is the Imperial County Sheriff's office in Niland, approximately 4 miles northeast or an approximately 10-minute drive (Google 2021). The increase in construction-related traffic is not anticipated to significantly increase demand on law enforcement services due to the rural nature of the Project vicinity. Additionally, the Project site would be fenced with 6-foot-high chain-link security fence, which may be topped with three-strand barbed wire; and points of ingress/egress would be accessed via locked gates with a guard house. As part of the Project design, industrial grade lighting sources would also be required for Project operations and safety purposes. This lighting will include sensors or switches operated such that lighting would be activated when needed during nighttime hours. In addition, approximately 62 full-time employees will be on site 24 hours a day, 7 days a week during operation of the Project, thereby minimizing the need for police surveillance. Impacts would be less than significant, and no further analysis is required.

iii) Schools?
iv) Parks?
v) Other Public Facilities?

An estimated up to 200 to 250 workers would be traveling to the Project site during construction and approximately 62 full-time employees during operations. It is expected that most of these workers/employers will commute to the Project site from surrounding communities. Therefore, substantial temporary increases in population that will adversely affect local schools, parks, or other public facilities are not anticipated. No impacts would occur, and no further analysis is required.

6.1.13 Recreation

Threshold a) Would the project increase the use of the existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Threshold b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse effect on the environment?

No parks or other developed federal, State, or county recreational facilities are in the Project area or immediate vicinity. Further, the Project involves the construction of a geothermal brine processing plant and would not construct any recreational facilities. During construction 200 to 250 workers are anticipated to be on the Project site, and operation would include 62 full-time workers employed on site; but these workers and employees are expected to come from existing populations that live in and commute from the surrounding local communities. Therefore, no increase in population would result, and no physical deterioration of existing recreational facilities would occur. No impacts would occur, and no further analysis is required.

6.1.14 Transportation

Threshold d) Result in inadequate emergency access?

The Project would not impact emergency access. For emergency response, both the Project access roads (off McDonald Road and Davis Road) would have turnaround areas to allow clearance for fire trucks per fire department standards: 70 feet by 70 feet, and 20 feet wide. The County Department of Public Works, the County Sheriff, and ICFD will be consulted as necessary to ensure that any potential impacts to the public or emergency services traveling on McDonald Road or Davis Road during Project construction or operations would be minimized. Impacts would be less than significant, and no further analysis will be required.

6.1.15 Wildfire

Threshold a) Substantially impair an adopted emergency response plan or emergency evacuation plan?

CAL FIRE's Fire Hazard Severity Zone Viewer identifies no very high, high, or moderate fire hazard severity zones in the local or State responsibility areas within 30 miles of the Project site (CAL FIRE 2020). Additionally, all fire suppression systems will be designed in accordance with federal, State, and local fire codes; occupational health and safety regulations; and other jurisdictional codes, requirements, and standard practices. The ICFD will also be consulted to review and approve any and all proposed fire equipment, apparatus, and related fire prevention plans. Compliance with local emergency response and evacuation plans, including the EOP and MJHMP, will be maintained through consultation with the ICFD and the County. Impacts would be less than significant, and no further analysis is required.

Threshold b) **Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?**

As mentioned above, CAL FIRE does not have any designated very high, high, or moderate fire hazard severity zones in the local or State responsibility areas within 30 miles of the Project site (CAL FIRE 2020). The Seismic and Public Safety Element of the County General Plan also states that the potential for a major fire in the unincorporated areas of the County is generally low (County 2015b). Moreover, the Project site is flat and is not within an area of risk due to slope. Although the County has experienced damage from heavy winds in the past, hazards in the County are managed by the MJHMP, which is reviewed and updated every five years (County 2021b). Further, during construction the Project site and access road will be cleared of all vegetation, and cleared areas will be maintained throughout construction. Fire extinguishers will be available around the construction site as well. During operations, a brush control program will be prepared and implemented on those portions of the Project site that will not be developed. Hazardous materials on site during operations may be flammable, but fire suppression systems will be installed; and the ICFD will be consulted to review and approve any and all proposed fire equipment, apparatus, and related fire prevention plans. Thus, employees on site would not be exposed to pollutant concentrations from a wildfire. Impacts would be less than significant, and no further analysis is required.

Threshold 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 temporary or ongoing impacts to the environment?**

CAL FIRE maps note that no very high, high, or moderate fire hazard severity zones in the local or State responsibility areas are within 30 miles of the Project site (CAL FIRE 2020). To prevent fire-related impacts on the Project site, Project access roads (off McDonald Road and Davis Road) would be constructed with turnaround areas; a 500,000-gallon fire-fighting water storage tank will be constructed; and a joint fire protection system will be installed. These features would help fire suppression and would not exacerbate fire risk. Further, these features will be constructed/installed and maintained within previously disturbed areas of the Project site in accordance with federal, State, and local fire codes; occupational health and safety regulations; and other jurisdictional codes, requirements, and standard practices. No significant environmental impacts would result. Impacts would be less than significant, and no further analysis is required.

Threshold 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?**

CAL FIRE does not have any designated very high, high, or moderate fire hazard severity zones in the local or State responsibility areas within 30 miles of the Project site (CAL FIRE 2020). The Project site is also flat and is not located within an identified landslide zone (DOC 2020b). According to the County General Plan, the closest area of landslide activity is on the border of San Diego and Imperial Counties approximately 30 miles west of the Project site (County 1997a). Flooding on site would be prevented by the flood protection berm on the southern and western sides of the Project site. The Project would not expose people or structures to significant risks as a result of runoff, post-fire instability, or drainage changes. Impacts would be less than significant, and no further analysis is required.

6.2 IRREVERSIBLE ENVIRONMENTAL CHANGES

According to CEQA Guidelines, "[u]ses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvement which provides access to a previously inaccessible area) generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to assure that such current consumption is justified." Therefore, the purpose of this analysis is to identify any significant irreversible environmental effects of Project implementation that cannot be avoided.

Energy resources needed for the construction and operation of the Project would contribute to the incremental depletion of renewable and nonrenewable resources. Resources, such as timber used in building construction are generally considered renewable and would ultimately be replenished. Nonrenewable resources, such as petrochemical construction materials, steel, copper, lead and other metals, gravel, concrete, and other materials, are typically considered finite and would not be replenished over the lifetime of the Project.

Although the Project is a mineral extraction project, the Project would use geothermal brine to produce quantities of lithium, manganese, zinc, and other minerals for commercial sale. Geothermal energy generation, which involves the extraction of geothermal brine, is considered a renewable process because its source is the almost unlimited amount of heat generated by the Earth's core. Even in geothermal areas dependent on a reservoir of hot water, the volume taken out can be reinjected, making it a sustainable energy source. This is the case for the Project site, as spent process fluid will be reinjected into the geothermal resource; thus, the geothermal brine used for mineral extraction is considered a renewable resource, and no mineral resources would be depleted as a result of the Project. However, during Project operations approximately 81,290 MWh of electricity is required from the IID. IID has met or exceeded all Renewable Portfolio Standard requirements to date, procuring renewable energy from diverse sources, including biomass, biowaste, geothermal, hydroelectric, solar, and wind. Nevertheless, according to IID's 2018 Integrated Resource Plan, only 35 percent of IID's overall generation delivered to customers was from renewable energy sources; and that number is anticipated to reach only 50 percent by 2030 (IID 2018c).The Project would irretrievably commit resources over the anticipated 30-year life of the Project; however, these electric resources would represent a nominal amount of usage, which would be approximately 6 percent of the County's total electricity usage in 2019 and approximately 2 percent of IID's total electricity usage in 2019 (CEC 2021a; 2021c).

At the end of the Project's operation term, the Applicant may determine that the Project should be decommissioned and deconstructed. Should the Project be decommissioned, the Project Applicant is required to restore land to its pre-project state. Consequently, some of the resources on the site could potentially be retrieved after the site has been decommissioned. Concrete footings, foundations, and pads would be removed and recycled at an offsite location. All remaining components would be removed, and all disturbed areas would be reclaimed and recontoured. The Applicant anticipates using the best available recycling measures at the time of decommissioning.

6.3 GROWTH-INDUCING IMPACTS

Pursuant to Section 15126.2 of the CEQA Guidelines: an EIR must address whether a project will directly or indirectly foster growth as follows:

> *[An EIR shall] discuss the ways in which the Proposed Project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment. Included in this are projects which would remove obstacles to population growth (a major expansion of wastewater treatment plant, might, for example, allow for more construction in service areas). Increases in the population may further tax existing community service facilities so consideration must be given to this impact. Also, discuss the characteristic of some projects, which may encourage and facilitate other activities that could significantly affect the environment, either individually or cumulatively. It must not be assumed that growth in any area is necessarily beneficial, detrimental, or of little significance to the environment.*

As discussed below, this analysis evaluates whether the Project would directly or indirectly induce economic, population, or housing growth in the surrounding environment.

6.3.1 Direct Growth-Inducing Impacts

Direct growth-inducing impacts occur when the development of a project induces population growth or the construction of additional developments in the same area of a proposed project and produces related growth-associated impacts. Growth-inducing projects remove physical obstacles to population growth, such as the construction of a new road into an undeveloped area, a wastewater treatment plant expansion, and projects that allow new development in the service area.

If the growth is not consistent with or accommodated by local land use plans and growth management plans and policies for the area affected, then the growth inducement may constitute an adverse impact. Local land use plans provide for land use development patterns and growth policies that allow for the orderly expansion of urban development supported by adequate urban public services. A project that would conflict with the local land use plans (i.e., “disorderly” growth) could indirectly cause additional adverse environmental impacts and other public services impacts. To assess whether a growth-inducing project would result in adverse secondary effects, the growth accommodated by a project must be assessed to determine if it would or would not be consistent with applicable land use plans.

The Project involves construction and operation of a plant to extract lithium, manganese, zinc, and other commercially viable substances from geothermal brine produced at HR1. The Project also includes paving McDonald Road from Highway 111 to English Road (approximately 2 miles); however, the Project would not include the construction of any housing. McDonald Road is already currently utilized by the community; and a new commercial source of minerals would not have direct growth-inducing impacts in the area. The Project would not involve the development of any new roadways, new water systems, or sewer. Therefore, the Project would not further facilitate additional development into outlying areas.

The County General Plan designates the Project site as Agriculture land use; however, according to the General Plan Land Use Element, a nonagricultural land use may be permitted within General Plan-designated agricultural land if the use does not conflict with agricultural operations and will not result in the premature elimination of agricultural operations (County 2015a). No agricultural land exists on the

Project site; thus, the Project would not conflict with or eliminate agricultural operations. Historically, agricultural operations did occur on the Project site, but the conversion of this agricultural land to another use was analyzed as part of the 2007 Hudson Ranch Power I Project. The Project site is zoned Medium Industrial (M-2) and is located within the geothermal overlay zone (G) and pre-existing allowed/restricted overlay zone (PE). A CUP was issued for the Project in June 2020, making the Project consistent with the site zoning in accordance with the County's Zoning Ordinance.

6.3.2 Indirect Growth-Inducing Impacts

CEQA Guidelines also specify that the environmental effects of induced growth are considered indirect impacts of the Proposed Project. The additional demand for housing, commodities, and services that new development causes or attracts by increasing population in the area are examples of indirect growth-inducing impacts or secondary effects of growth.

Indirect growth-inducing impacts typically include substantial new, permanent employment opportunities that can result from a project. The Project is located within the unincorporated area of Imperial County, and it does not involve the development of permanent residences that would directly result in population growth in the area. Approximately 200 to 250 workers are anticipated to be required at peak periods of Project construction. Beginning with startup operations, the Project is expected to be operated by a total staff of approximately 62 full-time, onsite employees. The unemployment rate in Imperial County as of December 2020 was 17.7 percent with 11,900 people unemployed (EDD 2021). The Applicant expects to utilize available workers from the local and regional area. The Applicant is currently in the process of establishing a Project Labor Agreement (PLA) with local labor organizations to support employment in the County. Based on the unemployment rate, the Project's PLA, and the availability of the local workforce, the Project would not have a growth-inducing effect related to workers moving into the area and increasing the demand for housing and services.

6.4 SIGNIFICANT UNAVOIDABLE ENVIRONMENTAL IMPACT

The potentially adverse effects of the Project are discussed in Chapter 3.0 of this Draft EIR. Mitigation measures have been recommended that would reduce impacts to biological resources, geology and soils, hazards and hazardous materials, utilities and service systems, and transportation impacts to less than significant based on each set of significance criteria. No significant and unavoidable impacts to any environmental resources would occur.

CHAPTER 7.0 – REFERENCES

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CHAPTER 8.0 – REPORT PREPARATION

8.1 EIR PREPARERS

This Draft EIR was prepared for the County of Imperial by Chambers Group, Inc. at 9620 Chesapeake Drive, Suite 202, San Diego, CA 92123. The following professionals participated in its preparation:

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8.2 PERSONS AND ORGANIZATIONS CONTACTED

The following persons and organizations were contacted in preparation of this document:

- California Department of Transportation
- California Department of Toxic Substances/Certified Unified Program Agency
- Regional Water Quality Control Board
- Imperial Irrigation District
- Imperial County Air Pollution Control District
- Environmental Health Departments for Hudson Ranch I Geothermal Plant
- Imperial County Public Works
- Imperial County Fire Department
- Imperial County Agricultural Commissioner

CHAPTER 9.0 – ACRONYMS AND ABBREVIATIONS

Term	Definition
μg/m^3	micrograms per cubic meter
AAC	All American Canal
AB	Assembly Bill
ACM	asbestos-containing material
A.D.	Anno Domini
ADT	Average Daily Traffic
AF	acre-foot
AFY	acre-foot per year
Air Basin	Salton Sea Air Basin
ALUCP	Airport Land Use Compatibility Plan
APN	Assessor Parcel Number
Applicant	Energy-Source Minerals LLC
ASCE	American Society of Civil Engineers
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
BAU	business as usual
BG	Bare Ground
BMP	best management practice
bmsl	below mean sea level
B.P.	Before Present
BTR	Biological Technical Report
BUOW	burrowing owl
°C	degrees Celsius
CAAQS	California Ambient Air Quality Standards
CAFE	corporate average fuel economy
CAISO	California Independent System Operator
Cal/ARP	California Accidental Release Prevention Program
CAL FIRE	California Department of Forestry and Fire Protection
CalEEMod	California Emissions Estimator Model
CalEPA	California Environmental Protection Agency
CalGEM	California Geologic Energy Management Division
CALGreen	California Green Building Standards Code
Cal/OSHA	Division of Occupational Safety and Health
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CBC	California Building Code
CCC	California Coastal Commission

Term	Definition
CCDEH	California Conference of Directors of Environmental Health
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CDOGGR	California Division of Oil, Gas, and Geothermal Resources
CDRW	California Department of Water Resources
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CH_4	methane
CHP	California Highway Patrol
CIWMP	Countywide Integrated Waste Management Plan
CNEL	Community Noise Equivalent Level
CNPS	California Native Plant Society
CNPSEI	California Native Plant Society Electronic Inventory
CO	carbon monoxide
CO_2	carbon dioxide
County	Imperial County
CPT	cone penetrometer
CPUC	California Public Utilities Commission
CRB	Colorado River Basin
CRHR	California Register of Historical Resources
CRIT	Colorado River Indian Tribes
CRNA	California Natural Resources Agency
CRPR	California Rare Plant Rank
CSTDM	California Statewide Travel Demand Model
CUP	Conditional Use Permit
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
cy	cubic yard
dB	decibel
dBA	A-weighted decibel
DHS	Department of Health Systems
DOC	California Department of Conservation
DRECP	Desert Renewable Energy Conservation Plan
DTSC	Department of Toxic Substances Control
DWR	California Department of Water Resources
EI	Expansion Index
EIR	Environmental Impact Report
EO	Executive Order
EOP	Emergency Operations Plan

Term	Definition
ERP	Emergency Response Plan
°F	degrees Fahrenheit
FAA	Federal Aviation Administration
FCC	Federal Communications Commission
Fe	iron
FE	federally listed endangered
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FHWA	Federal Highway Administration
FT	federally listed threatened
FTA	Federal Transit Administration
g/h	gallons per hour
GHG	greenhouse gas
gpm	gallons per minute
GPS	Global Positioning Systems
GSA	groundwater sustainability agency
GWh	gigawatt-hours
GWP	global warming potential
HAP	hazardous air pollutant
HCl	hydrochloric acid
HDPE/PVC	high-density polyethylene/polyvinyl chloride
HCF	hydrofluorocarbon
HI	hazard index
Highway 111	State Route 111
HMBP	Hazardous Materials Business Plan
HR1	Hudson Ranch Power I Geothermal Plant
HR2	Hudson Ranch II and Simbol Calipatria II Geothermal Plant
HVAC	heating/ventilating/air conditioning
HWCL	Hazardous Waste Control Law
IBC	International Building Code
ICAPCD	Imperial County Air Pollution Control District
ICFD	Imperial County Fire District
ICE	Intersection Control Evaluation
ICPDSD	Imperial County Planning and Development Services Department
IID	Imperial Irrigation District
IPCC	Intergovernmental Panel on Climate Change
IRWMP	Integrated Regional Water Management Plan
IS	Initial Study
IWF	Imperial Water Forum
IWMA	Integrated Waste Management Act

Term	Definition
IWSP	Interim Water Supply Policy
JHA	job hazard analysis
kaf	kilo acre foot
kg	kilogram
KGRA	Known Geothermal Resource Area
kV	kilovolt
Ldn	Day-Night Average Level
LEED	Leadership in Energy and Environmental Design
Leq	the sound level in decibels equivalent to the total sound energy measured over a stated period of time
Li	lithium
LiCl	lithium chloride
Li_2CO_3	lithium carbonate
LIOH	lithium hydroxide monohydrate
L_{max}	maximum sound level during a measurement period or a noise event
LOS	Level of Service
maf	million acre-feet
MERV	Minimum Efficiency Reporting Value
mgd	million gallons per day
MJHMP	Multi-Jurisdiction Hazard Mitigation Plan
MLD	most likely descendant
MM	mitigation measure
MMT	million metric ton
$MMTCO_2e$	million metric ton of carbon dioxide equivalent
Mn	manganese
mph	miles per hour
MPO	Metropolitan Planning Organization
MS4	Municipal Separate Storm Sewer System
$MtCO_2e$	metric tons of carbon dioxide equivalent
MW	megawatt
MWh	megawatt-hour
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
NEHRPA	National Earthquake Hazards Reduction Program
N_2O	nitrous oxide
NO_2	nitrogen dioxide
NOI	Notice of Intent
NOP	Notice of Preparation
NOx	nitrogen oxides

Term	Definition
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O_3	ozone
OEHHA	California Office of Environmental Health Hazard Assessment
ONAC	Office of Noise Abatement and Control
ONC	California Office of Noise Control
OSHA	Occupational Safety and Health Administration
OSHPD	Office of Statewide Health Planning and Development
Pb	lead
PCB	polychlorinated biphenyl
PCE	Passenger Car Equivalent
pcf	equivalent fluid pressure
PFC	perfluorocarbon
PFO	Potential for Occurrence
PLA	Project Labor Agreement
$PM_{2.5}$	fine particulate matter less than 2.5 microns in diameter
PM_{10}	inhalable particulate matter less than 10 microns in diameter
PPE	personal protective equipment
ppm	parts per million
PRC	Public Resources Code
PSD	Prevention of Significant Deterioration
psf	pounds per square foot
psi	pounds per square inch
PURPA	Public Utility Regulatory Policies Act
PV	photovoltaic
QF	qualifying facility
QSA	Quantification Settlement Agreement
Q2	Business Quarter 2
Q3	Business Quarter 3
RCNM	Roadway Construction Noise Model
RCRA	Resource Conservation and Recovery Act
REC	recognized environmental condition
REL	reference exposure level
ROG	reactive organic gas
ROW	right-of-way
RPS	Renewable Portfolio Standards
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
RWQCB	Regional Water Quality Control Board
SB	Senate Bill
SCAG	Southern California Association of Governments

Term	Definition
SCAQMD	South Coast Air Quality Management District
SCIC	South Coastal Information Center
SCS	sustainable communities strategy
SDG&E	San Diego Gas and Electric Company
SDNHM	San Diego Natural History Museum
SF6	sulfur hexafluoride
SE	state listed endangered
SEAOC	Structural Engineers Association of California
SGMA	Sustainable Groundwater Management Act
SiO_2	silica
SIP	State Implementation Plan
SLF	Sacred Lands File
SO_2	sulfur dioxide
SPCC	spill prevention control and countermeasure
SRRE	Source Reduction and Recycling Element
STLC	soluble threshold limit concentration
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
SSC	Species of Special Concern
ST	stated listed threatened
SWR	State Water Project
TAC	toxic air contaminant
TAZ	Transportation Analysis Zone
TCR	Tribal Cultural Resource
TIA	Traffic Impact Analysis
TTLC	total threshold limit concentration
TWSC	Two-Way Stop Controlled (intersection)
UBC	Uniform Building Code
UCMP	University of California Museum of Paleontology
UMTA	Urban Mass Transit Administration
UNFCCC	United Nations’ Framework Convention on Climate Change
U.S.	United States
USACE	U.S. Army Corps of Engineers
U.S.C.	U.S. Code
USCS	Unified Soil Classification System
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
USPS	U.S. Postal Service

Term	Definition
UST	underground storage tank
UV	ultraviolet
V/C	volume to capacity
VMT	vehicle miles traveled
VOC	volatile organic compound
WPLT	Western Pluvial Lakes Tradition
WQMP	Water Quality Management Plan
WSA	Water Supply Assessment
Zn	zinc

APPENDIX A – INITIAL STUDY AND ENVIRONMENTAL ANALYSIS FOR THE ENERGY SOURCE MINERAL ATLIS PROJECT

Initial Study & Environmental Analysis For:

Energy Source Mineral ATLiS Project

Prepared By:

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December 2020

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SECTION 1
INTRODUCTION

A. PURPOSE

This document is a ☐ policy-level, ☒ project level Initial Study for evaluation of potential environmental impacts resulting with the proposed Energy Source Mineral ATLiS Facility (Refer to Figure 1 & 2).

B. CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA) REQUIREMENTS AND THE IMPERIAL COUNTY'S GUIDELINES FOR IMPLEMENTING CEQA

As defined by Section 15063 of the State California Environmental Quality Act (CEQA) Guidelines and Section 7 of the County's "CEQA Regulations Guidelines for the Implementation of CEQA, as amended", an **Initial Study** is prepared primarily to provide the Lead Agency with information to use as the basis for determining whether an Environmental Impact Report (EIR), Negative Declaration, or Mitigated Negative Declaration would be appropriate for providing the necessary environmental documentation and clearance for any proposed project.

☒ According to Section 15065, an **EIR** is deemed appropriate for a particular proposal if the following conditions occur:

- The proposal has the potential to substantially degrade quality of the environment.
- The proposal has the potential to achieve short-term environmental goals to the disadvantage of long-term environmental goals.
- The proposal has possible environmental effects that are individually limited but cumulatively considerable.
- The proposal could cause direct or indirect adverse effects on human beings.

☐ According to Section 15070(a), a **Negative Declaration** is deemed appropriate if the proposal would not result in any significant effect on the environment.

☐ According to Section 15070(b), a **Mitigated Negative Declaration** is deemed appropriate if it is determined that though a proposal could result in a significant effect, mitigation measures are available to reduce these significant effects to insignificant levels.

This Initial Study has determined that the proposed applications will result in potentially significant environmental impacts and therefore, an Environmental Impact Report is deemed as the appropriate document to provide necessary environmental evaluations and clearance as identified hereinafter.

This Initial Study (IS) is prepared in conformance with the California Environmental Quality Act of 1970, as amended (Public Resources Code, Section 21000 et. seq.); Section 15070 of the State & County of Imperial's Guidelines for Implementation of the California Environmental Quality Act of 1970, as amended (California Code of Regulations, Title 14, Chapter 3, Section 15000, et. seq.); applicable requirements of the County of Imperial; and the regulations, requirements, and procedures of any other responsible public agency or an agency with jurisdiction by law.

Pursuant to the County of Imperial Guidelines for Implementing CEQA, depending on the project scope, the County of Imperial Board of Supervisors, Planning Commission and/or Planning Director is designated the Lead Agency, in accordance with Section 15050 of the CEQA Guidelines. The Lead Agency is the public agency which has the principal responsibility for approving the necessary environmental clearances and analyses for any project in the County.

C. INTENDED USES OF INITIAL STUDY AND NOTICE OF PREPARATION

This IS and Notice of Preparation (NOP) are informational documents which are intended to inform County decision-makers, other responsible or interested agencies, and the general public of potential environmental effects of the proposed applications. The environmental review process has been established to enable public agencies to evaluate environmental consequences and to examine and implement methods of eliminating or reducing any potentially adverse impacts. While CEQA requires that consideration be given to avoiding environmental damage, the Lead Agency and other responsible public agencies must balance adverse environmental effects against other public objectives, including economic and social goals. The IS and NOP prepared for the Project will be circulated for a period of 35 days for public and agency review and comments.

D. CONTENTS OF INITIAL STUDY

This Initial Study is organized to facilitate a basic understanding of the existing setting and environmental implications of the proposed applications.

SECTION 1

I. INTRODUCTION presents an introduction to the entire report. This section discusses the environmental process, scope of environmental review, and incorporation by reference documents.

SECTION 2

II. ENVIRONMENTAL CHECKLIST FORM contains the County's Environmental Checklist Form. The checklist form presents results of the environmental evaluation for the proposed applications and those issue areas that would have either a significant impact, potentially significant impact, or no impact.

PROJECT SUMMARY, LOCATION AND EVIRONMENTAL SETTINGS describes the proposed project entitlements and required applications. A description of discretionary approvals and permits required for project implementation is also included. It also identifies the location of the project and a general description of the surrounding environmental settings.

ENVIRONMENTAL ANALYSIS evaluates each response provided in the environmental checklist form. Each response checked in the checklist form is discussed and supported with sufficient data and analysis as necessary. As appropriate, each response discussion describes and identifies specific impacts anticipated with project implementation.

SECTION 3

III. MANDATORY FINDINGS presents Mandatory Findings of Significance in accordance with Section 15065 of the CEQA Guidelines.

IV. PERSONS AND ORGANIZATIONS CONSULTED identifies those persons consulted and involved in preparation of this Initial Study and Negative Declaration.

V. REFERENCES lists bibliographical materials used in preparation of this document.

E. SCOPE OF ENVIRONMENTAL ANALYSIS

For evaluation of environmental impacts, each question from the Environmental Checklist Form is summarized and responses are provided according to the analysis undertaken as part of the Initial Study. Impacts and effects will be evaluated and quantified, when appropriate. To each question, there are four possible responses, including:

1. **No Impact:** A "No Impact" response is adequately supported if the impact simply does not apply to the proposed applications.
2. **Less Than Significant Impact:** The proposed applications will have the potential to impact the environment. These impacts, however, will be less than significant; no additional analysis is required.
3. **Less Than Significant With Mitigation Incorporated:** This applies where incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact".
4. **Potentially Significant Impact:** The proposed applications could have impacts that are considered significant. Additional analyses and possibly an EIR could be required to identify mitigation measures that could reduce these impacts to less than significant levels.

F. POLICY-LEVEL or PROJECT LEVEL ENVIRONMENTAL ANALYSIS

This Initial Study will be conducted under a ☐ policy-level, ☒ project level analysis. Regarding mitigation measures, it is not the intent of this document to "overlap" or restate conditions of approval that are commonly established for future known projects or the proposed applications. Additionally, those other standard requirements and regulations that any development must comply with, that are outside the County's jurisdiction, are also not considered mitigation measures and therefore, will not be identified in this document.

G. TIERED DOCUMENTS AND INCORPORATION BY REFERENCE

Information, findings, and conclusions contained in this document are based on incorporation by reference of tiered documentation, which are discussed in the following section.

1. Tiered Documents

As permitted in Section 15152(a) of the CEQA Guidelines, information and discussions from other documents can be included into this document. Tiering is defined as follows:

"Tiering refers to using the analysis of general matters contained in a broader EIR (such as the one prepared for a general plan or policy statement) with later EIRs and negative declarations on narrower projects; incorporating by reference the general discussions from the broader EIR; and concentrating the later EIR or negative declaration solely on the issues specific to the later project."

Tiering also allows this document to comply with Section 15152(b) of the CEQA Guidelines, which discourages redundant analyses, as follows:

"Agencies are encouraged to tier the environmental analyses which they prepare for separate but related projects including the general plans, zoning changes, and development projects. This approach can eliminate repetitive discussion of the same issues and focus the later EIR or negative declaration on the actual issues ripe for decision at each level of environmental review. Tiering is appropriate when the sequence of analysis is from an EIR prepared for a general plan, policy or program to an EIR or negative declaration for another plan, policy, or program of lesser scope, or to a site-specific EIR or negative declaration."

Further, Section 15152(d) of the CEQA Guidelines states:

"Where an EIR has been prepared and certified for a program, plan, policy, or ordinance consistent with the requirements of this section, any lead agency for a later project pursuant to or consistent with the program, plan, policy, or ordinance should limit the EIR or negative declaration on the later project to effects which:

(1) Were not examined as significant effects on the environment in the prior EIR; or

(2) Are susceptible to substantial reduction or avoidance by the choice of specific revisions in the project, by the imposition of conditions, or other means."

2. Incorporation By Reference

Incorporation by reference is a procedure for reducing the size of EIRs/MND and is most appropriate for including long, descriptive, or technical materials that provide general background information, but do not contribute directly to the specific analysis of the project itself. This procedure is particularly useful when an EIR or Negative Declaration relies on a broadly-drafted EIR for its evaluation of cumulative impacts of related projects (*Las Virgenes Homeowners Federation v. County of Los Angeles* [1986, 177 Ca.3d 300]). If an EIR or Negative Declaration relies on information from a supporting study that is available to the public, the EIR or Negative Declaration cannot be deemed unsupported by evidence or analysis (*San Francisco Ecology Center v. City and County of San Francisco* [1975, 48 Ca.3d 584, 595]). This document incorporates by reference appropriate information from the "Final Environmental Impact Report and Environmental Assessment for the "County of Imperial General Plan EIR" prepared by Brian F. Mooney Associates in 1993 and updates.

When an EIR or Negative Declaration incorporates a document by reference, the incorporation must comply with Section 15150 of the CEQA Guidelines as follows:

- The incorporated document must be available to the public or be a matter of public record (CEQA Guidelines Section 15150[a]). The General Plan EIR and updates are available, along with this document, at the County of Imperial Planning & Development Services Department, 801 Main Street, El Centro, CA 92243 Ph. (442) 265-1736.

- This document must be available for inspection by the public at an office of the lead agency (CEQA Guidelines Section 15150[b]). These documents are available at the County of Imperial Planning & Development Services Department, 801 Main Street, El Centro, CA 92243 Ph. (442) 265-1736.

- These documents must summarize the portion of the document being incorporated by reference or briefly describe information that cannot be summarized. Furthermore, these documents must describe the relationship between the incorporated information and the analysis in the tiered documents (CEQA Guidelines Section 15150[c]). As discussed above, the tiered EIRs address the entire project site and provide background and inventory information and data which apply to the project site. Incorporated information and/or data will be cited in the appropriate sections.

- These documents must include the State identification number of the incorporated documents (CEQA Guidelines Section 15150[d]). The State Clearinghouse Number for the County of Imperial General Plan EIR is SCH #93011023.

- The material to be incorporated in this document will include general background information (CEQA Guidelines Section 15150[f]). This has been previously discussed in this document.

II. Environmental Checklist

1. **Project Title**: Energy Source Mineral ATLiS Project
2. **Lead Agency**: Imperial County Planning & Development Services Department
3. **Contact person and phone number**: David Black, Planner IV, (442) 265-1736, ext. 1746
4. **Address**: 801 Main Street, El Centro CA, 92243
5. **E-mail**: davidblack@co.imperial.ca.us
6. **Project location**: The Project's lithium hydroxide production plant and facilities will be located at 477 West McDonald Road, Calipatria, California which is approximately 3.8 miles southwest of the community of Niland on three parcels privately owned by Hudson Ranch Power I LLC in the County: APNs 020-100-025, 020-100-044, 020-100-046. Currently, the HR1 power plant exists within the northeast corner of the 65.12-acre parcel, APN 020-100-044. The Project's plant facilities would be built on an approximately 37-acre area that would be subdivided out of the existing 65.12 acres. An additional 15 acres of the Project site located on the northwestern parcel APN 020-100-025 and approximately 40 acres of the Project site located on the southeast parcel APN 020-100-046 will be added to the 37-acres through a subdivision map application to form the new parcel for the Project.
7. **Project sponsor's name and address**: Energy-Source Mineral, LLC
8. **General Plan designation**: Medium Industrial
9. **Zoning**: M-2-G-PE (Medium Industrial/Geothermal Overlay Zone/Pre-existing Overlay Zone

10. **Description of project**: Energy-Source Minerals LLC is proposing to construct and operate a commercial lithium hydroxide production plant within the Salton Sea geothermal field in Imperial County, California (Project). The facility will process geothermal brine from the neighboring Hudson Ranch Power I Geothermal Plant (HR1) to produce lithium hydroxide, as well as zinc and manganese products which would be sold commercially.

11. **Surrounding land uses and setting**: To the west of the Project site is generally Imperial Irrigation District (IID)-owned vacant marsh land adjoining to the Salton Sea. To the north of the Project site is vacant land that now is mostly used for duck hunting clubs and is the location of the production and injection wells for HR1. To the south is vacant land that has never been in any production and is also the site of numerous "mud-pots". There are no residential uses within at least two miles of the Project site.

12. **Other public agencies whose approval is required** (e.g., permits, financing approval, or participation agreement.):

- Caltrans – Encroachment Permit
- California Department of Toxic Substances/Certified Unified Program Agency (CUPA) – Hazardous Materials / Environmental Protection Agency Approvals and Permits
- Regional Water Quality Control Board – Water Discharge Requirement
- Imperial Irrigation District – Encroachment Permit
- Imperial County Air Pollution Control District – Permit to Construct and Permit to Operate
- Environmental Health Departments for HR1 – Potable Water Treatment Modified Permit
- Imperial County Public Works
- Imperial County Fire Department and Office of Emergency Services

13. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures

regarding confidentially, etc.?

In accordance with California Assembly Bill (AB) 52, Native American tribes with potential resources in the area were notified of the Project on November 6, 2020 and offered the opportunity for consultation. As of November 20, 2020, the Quechan Tribe has requested consultation for the Project. Any other results regarding consultation will be outlined in the Cultural Resources Report being prepared for the Project.

Note: Conducting consultation early in the CEQA process allows tribal governments, lead agencies, and project proponents to discuss the level of environmental review, identify and address potential adverse impacts to tribal cultural resources, and reduce the potential for delay and conflict in the environmental review process. (See Public Resources Code, Section 21080.3.2). Information may also be available from the California Native American Heritage Commission's Sacred Lands File per Public Resources Code, Section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation. Please also note that Public Resources Code, Section 21082.3 (c) contains provisions specific to confidentiality.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages.

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

ENVIRONMENTAL EVALUATION COMMITTEE (EEC) DETERMINATION

After Review of the Initial Study, the Environmental Evaluation Committee has:

☐ Found that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.

☐ Found that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.

☒ Found that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ Found that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ Found that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE DE MINIMIS IMPACT FINDING: ☐ Yes ☒ No

EEC VOTES	**YES**	**NO**	**ABSENT**
PUBLIC WORKS	☐	☐	☐
ENVIRONMENTAL HEALTH SVCS	☐	☐	☐
OFFICE EMERGENCY SERVICES	☐	☐	☐
APCD	☐	☐	☐
AG	☐	☐	☐
SHERIFF DEPARTMENT	☐	☐	☐
ICPDS	☐	☐	☐

Jim Minnick, Director of Planning/EEC Chairman Date:

PROJECT SUMMARY

Energy-Source Minerals LLC (Applicant) is proposing to construct and operate a commercial lithium hydroxide production plant within the Salton Sea geothermal field in Imperial County (County), California. The facility (ALTiS Plant) will process geothermal brine from the neighboring Hudson Ranch Power I Geothermal Plant (HR1) to produce lithium hydroxide, as well as zinc and manganese products which would be sold commercially.

A. Project Location:

The Project's production plant and facilities will be located at 477 West McDonald Road, Calipatria, California which is approximately 3.8 miles southwest of the community of Niland on three parcels privately owned by Hudson Ranch Power I (HR1) LLC in the County: APNs 020-100-025, 020-100-044, 020-100-046 (Project site; Figure 1). Currently, the HR1 power plant exists within the northeast corner of the 65.12-acre parcel, APN 020-100-044. The Project's plant facilities would be built on an approximately 37-acre area that would be subdivided out of the existing 65.12 acres. An additional 15 acres of the Project site located on the northwestern parcel APN 020-100-025 and approximately 40 acres of the Project site located on the southeast parcel APN 020-100-046 will be added to the 37-acres through a subdivision map application to form the new parcel for the Project. The layout of the Project is shown in the Project Site Plan (Figure 2).

All parcels that make up the Project site are zoned medium industrial (M-2) and are located within the geothermal overlay zone (G) and pre-existing allowed/restricted overlay zone (PE). The M-2 zone is to designate areas for wholesale commercial, storage, trucking, assembly type manufacturing, general manufacturing, research and development, medium intensity fabrication and other similar medium intensity processing facilities. Land in the PE overlay zone is also classified in another "base" zone, and is intended to allow an existing base zoned use to continue with its current use, even though through the strict interpretation of the County General Plan and Zoning Ordinances, such use is a pre-existing, non-conforming use. Additionally, the geothermal overlay zone designates the area for geothermal energy extraction and associated activities. The Project is located entirely within the Salton Sea Geothermal Overlay Zone.

Two primary entry driveways that serve as the access to the Project site will be constructed from McDonald Road. A secondary access entrance to the Project site will serve as an emergency only access point and will be constructed off Davis Road. Primary highway access to the proposed Project site will be via State Highway (HWY) 111. The Applicant will obtain encroachment permits from the County Department of Public Works for the driveway access. The unpaved portion of McDonald Road between Highway 111 and English Road will be paved.

The western portion of the Project site is located within the Federal Emergency Management Agency (FEMA) "Zone A" flood zone, in which there is a one percent annual chance of flooding. However, to comply with FEMA regulations, during the construction of Hudson Ranch I a berm was installed along the exterior boundary to eliminate possible flooding.

B. Current Use of the Project Site and Surrounding Areas

Currently, the location of the proposed Project is partially on the existing HR1 site, which was previously permitted for the geothermal plant. In addition to the actual power plant, the rest of the land has been used for laydown areas, storage areas, and stormwater management. The additional land that will be included is an approximately 15-acre parcel, APN 020-100-025, located at the southeast corner of Davis Road and McDonald Road. This 15-acre site has been vacant for several decades and was previously used for geothermal testing. Also added to the Project site is an approximate 40-acre portion of APN 020-100-046, directly south of the HR1 plant site.

To the west of the Project site (on the west side of Davis Road) is generally Imperial Irrigation District (IID)-owned vacant marsh land adjoining to the Salton Sea. To the north of the Project site is vacant land that now is mostly used for duck hunting clubs and the location of the production and injection wells for HR1. To the south is vacant land that has never been in any production and is also the site of numerous "mud-pots". There are no residential uses within at least two miles of the Project site.

C. Project Summary:

The Project would consist of the following activities:

- Construction and operation of a plant to extract lithium, manganese, zinc, and other commercially viable substances from geothermal brine and process the extracted substances to produce commercial quantities of lithium, and to the extent possible, manganese and zinc products and other products;
- Construction and operation of brine supply and return pipelines and other associated interconnection facilities with the HR1 power plant;
- Construction of a primary access road from McDonald Road (approximately 500 feet west of the HR 1 entrance),a second primary access about 800 feet west, and an emergency access entrance only from Davis Road;
- Paving of McDonald Road from Highway 111 to English Road (approximately 3 miles);
- Construction of a power interconnection line from the IID and HR1 switchyard located at the northeast corner of the HR1 site;
- Construction of associated facilities between HR1 and the Project site to facilitate the movement of brine and other services;
- Construction of a laydown yard that will also support temporary offices during construction as well as serving as a truck management yard during operations; and
- Construction of offices, repair facilities, shipping and receiving facilities and other infrastructure components.

Structures

The Project site will include construction of the following buildings and structures:

- Plant offices (which will house offices and meeting rooms);
- Operations and employee facilities (which will house offices for supervisors, meeting rooms, breakroom/lunch room, lockers/shower rooms);
- Maintenance shop, materials warehouse (which will house plant maintenance equipment and supplies, and shops such as machine, paint, welding, and electronic);
- Materials warehouse (which will store equipment, reagents, etc.);
- Electrical building(s) (which will house motor control centers, electric power switchgear and metering to provide power for plant operations);
- Emergency generator building;
- Two reagent storage and preparation buildings;
- Chemical laboratory building (which will contain a wet chemistry laboratory and analytical instruments for analysis of in-process and finished products);
- Filter press sheds (which will house filter presses);
- Lithium product production building (which will house the proprietary technology for manufacturing the lithium carbonate and lithium hydroxide products);
- Lithium product handling, packaging, and warehouse buildings (which will house the filtration and drying equipment for the lithium products and bagging and palletizing of finished products);
- Manganese product handling, production, and warehouse building (which will house the filtration and drying equipment for the manganese product and bagging and palletizing of finished products);
- Zinc product handling, production, and warehouse building (which will house the filtration and drying equipment for the zinc product and bagging, palletizing and storage of finished products);
- Calcium oxide silo and slacker;
- Limestone stockpile and solution tanks;

- Hydrogen chloride offloading and storage tank(s);
- Gate guard house; and
- Cooling tower.

The product production, handling, and warehouse buildings will be about 80 feet tall, and the various other components of the plant may be as high as 100 feet tall.

The sewage from the Project will be processed by the HR1 sewer treatment plant, hence no further permitting for solid waste is required. Potable water will be provided from the HR1 permitted water treatment plant via an agreement between HR1 and the ATLiS Plant. An application to modify the HR1 water treatment plant by using both the existing approved plant and the former Simbol plant will be made to EHS to HR1.

Impurity Removal and Production Extraction Facilities

The impurity removal and the product extraction process areas will be constructed within designated areas of the plant site on concrete pads with a containment curb. These process areas may not be located within a building but will consist of a series of interconnected tanks and pipelines. The arrangement of these facilities is part of the Applicant's proprietary technology.

Product Production Facilities

Product production facilities consisting of a series of interconnected tanks and pipelines will also be constructed on the site. The processing facilities will also be erected within designated portions of the plant site on concrete pads with a concrete containment curb or in designated buildings. The arrangement of these facilities is also part of the Applicant's proprietary technology.

Pipe Rack and Process Pipelines

A pipe rack will be constructed from the Project's process area to the HR1 site. A post clarifier brine delivery pipeline from HR1 to the Project's process area and a depleted brine return pipeline from the process area to HR1 will be constructed on one or more pipe racks. A steam/steam condensate delivery pipeline will also be constructed on the pipe rack. The Project will be responsible for returning the depleted barren brine to the HR1 site. Additional delivery or return pipelines may also be constructed onto the pipe rack as needed to handle the different fluids transported. The delivery and return pipelines will be constructed with minimal usage of flanged connections to reduce the potential for pipe leaks. Automatic valves will be integrated into the pipeline system which would close quickly in the event of a pipe rupture to minimize the size of any potential spill. An Emergency Response Plan will be prepared and implemented should a fluid spill event occur.

Fire Water and Freshwater Pond

The Project will share with HR1 the fire suppression system, and the freshwater storage containment pond. The fire suppression system will be re-designed to accommodate the overall fire protection obligation to both plants along with the necessary controls. The raw water storage pond currently located on the east side of the HR1 plant will continue to receive canal water from the IID "O" lateral. However, a backup delivery line will also be installed from the "N" lateral located about ¼ mile south of the plant. This redundancy is necessary for two reasons, first when IID does maintenance work on canals they can be out of service for several days and second in the event of a natural interruption such as an earthquake that may render the "O" lateral out of service. The Imperial County Fire Department will be consulted as appropriate to review and approve the proposed fire water and freshwater pond facilities. A 500,000-gallon above-ground water tank will be constructed to serve as the primary water supply for the joint fire suppression system for the HR1 and ATLiS sites.

Stormwater Retention Basin

The Project may share the HR1 stormwater retention basin. The retention basin will be engineered and constructed to contain the combined stormwater storage requirements of both the HR1 and Project plant sites. If a shared facility cannot be done for technical, legal or other reasons then the Project will construct its own basin on the far south side of the parcel. The current HR 1 Plant site was constructed to eliminate any off-site discharge and this site will be designed in the same manner.

Security Fence and Landscaping

A nominal six-foot-high chain-link security fence, which may be topped with three-strand barbed wire, will be constructed around the Project plant site. The fence will be constructed to meet County standards for obscured fencing around processing areas. Due to security levels required for the HR1 power plant and because of the interconnectivity between HR1 and the Project, security protocols for both HR1 and the Project will be similar in nature.

Substation and Power Line Facilities

Up to 8 MW of electrical power will be needed for the Project operations. The power will be purchased from the IID. The Project will construct an electrical substation on the Project site. An emergency 600 HP diesel generator(s) will be used to keep vital Project plant systems operating during power outages.

Road Improvements

At the junction of McDonald Road and HWY 111, improvements will also be constructed to meet the requirements of the County and the California Department of Transportation (Caltrans). As currently planned these improvements will include:

- Relocation of the IID drain exit structure on the west side of HWY 111
- Relocation of the IID canal gates on the west side of HWY 111
- Northbound left turn lane on HWY 111 (or as required by an approved Traffic Study)
- Southbound right turn lane on HWY 111 (or as required by an approved Traffic Study)

A short power line will be constructed between the current IID/HR1 switchyard and the plant site along McDonald Road to the Project site.

D. PROJECT CONSTRUCTION

Construction will include light grading of approximately 30 acres of land that will include the Project site, new entry road off of McDonald Road, an emergency access road off of Davis Road, and a connection to the IID/HR1 electric substation. The Project site driveway, parking, and maneuvering areas will be constructed to County standards (generally a minimum of three inches of asphaltic concrete paving or higher quality material).

The Project will either be constructed to an elevation above the Imperial County designated special flood hazard for lands near the Salton Sea, or have the existing berm extended to the outer perimeter of the site. The Project will be constructed so that no off-site discharge of any waters will be allowed and all of the runoff or discharge will be managed on site.

It is estimated that on average 20-25 trucks per day will travel in and out of the Project site during construction except during grading when about 50-60 trucks will be traveling in and out of the Project site. An average of 100 workers will commute to the Project site during construction.

Construction Work Force and Schedule

Project construction would begin when all necessary permits are obtained, expected to be Quarter Three (Q3) of 2021. Construction is expected to be complete Quarter Two (Q2) of 2023. All work would occur in one phase, with approximately 90% of work occurring during daylight hours over 5 or 6 days per week over an intermittent 24-month period. The remaining 10% of work would occur during nighttime hours to avoid extreme summer temperatures. Approximately 200 to 250 workers are anticipated at peak periods. Construction workers will commute to the site and there will be no onsite housing of workers. Construction parking will be in the 15 acre laydown area, which will be located at the southeast corner of Davis Road and McDonald Road on what is currently APN 020-100-025.

Construction Equipment

Below is a list of construction equipment anticipated to be required for the Project:

- Off-highway trucks
- Rollers
- Crawler tractors
- Excavators
- Graders
- Water trucks
- Compactors
- Rubber tired loaders
- Scrapers
- Cranes
- Generator sets
- Concrete pump
- Plate compactors
- Rough terrain forklifts
- Skid steer loaders
- Tractor/Loader/Backhoe
- Aerial lifts
- Welders
- Air compressors
- Pavers
- Paving equipment

Construction Water Supply Source and Requirements

It is estimated that up to 50,000 gallons per day of water will be needed during Project construction for fugitive dust control during Project site grading and construction activities. This water will be purchased from the IID and will be transported to the site via temporary pipeline or via water truck. A Water Supply Assessment is being prepared for the Project to analyze the impacts associated with the Project's construction and operational water requirements.

E. PROJECT OPERATIONS

The Project's plant will utilize post-secondary clarifier brine produced from the geothermal fluid management activities on the neighboring HR1 power plant site as the resource process stream for the commercial production of lithium hydroxide monohydrate (LIOH), and zinc and manganese products. The production operations will consist of the following general processing steps:

1. Impurity removal
2. Lithium extraction as Lithium Chloride (LiCl)
3. Conversion and processing of LiCl to Lithium products
4. Drying and packaging of lithium products
5. Zinc extraction and processing to Zinc products
6. Manganese extraction and processing to manganese products
7. Offsite product shipping

The production processing steps may be altered over time as production methods and efficiencies evolve and new or revised product lines are developed at the facility. The arrangement of the processing equipment is part of the proprietary technology developed for the Project.

Impurity Removal

Post heat extraction geothermal brine from the secondary clarifier of the HR1 power plant site will be transported via pipeline to the impurity removal process area on the ATLiS plant site. A nominal 7,000 gallons per minute (gpm) of the brine will be processed by the facility. This projected process rate is used as the basis for the estimate provided throughout this Project description, but the actual rate of brine eventually processed on the site will be optimized to take advantage of the available facilities on the HR1 and ATLiS plant sites.

Iron (Fe) and silica (SiO2) will be removed from the brine followed by the removal of the manganese (Mn) and zinc (Zn) in a two-stage process. The separated Fe-SiO2 material, and the Mn-Zn material will be dewatered in the Filter Press sheds. The mineral depleted brine will then be transported via pipeline to the Lithium (Li) Extraction process area.

The separated Fe- SiO2 material will be initially managed as a waste stream. The waste material will be collected and analyzed in conformance with appropriate laboratory testing protocols to ensure that it is handled and disposed of in an appropriate manner.

If and when in the future, opportunities exist to use this material, the Applicant plans to market Fe- SiO2 material as an additional product(s) to be shipped to a third party(ies) for use in other industrial processes, and it will no longer be a waste but a product. The market for Fe- SiO2 material is currently being developed. Based on average production rates at the target nominal process rate of 7,000 gmp, approximately 136,200 metric tons of Fe- SiO2 material will be processed annually.

Li Extraction as Lithium Chloride

The treated brine will be fed to a Li extraction process located within the Li extraction process area on the ATLiS plant site. This area will be outside on a concrete pad. The area will contain proprietary Li extraction media. Li from the brine will be retained on the extraction media. A lithium chloride (LiCl) product stream will be produced from the extraction process. The LiCl will be transported via pipeline from the Li extraction area into the Li purification process area. Impurities will be removed from the LiCl product stream and handled as nonhazardous waste. The purified LiCl will then be concentrated in an evaporator or equivalent process.

Conversion and Processing of LiCl into Li Products

The purified, concentrated LiCl will be transported via pipeline from the Li purification area to the Li Product Production Building. Proprietary technology will be used to convert the LiCl and then into lithium carbonate (Li2CO3) and then into LiOH product stream.

Drying and Packaging of Li Products

The lithium hydroxide (LiOH) product stream will be transported to a Lithium Product Handling, Production and Warehouse building where the crystals will be separated from the Li-rich process fluid in a dewatering system. LiOH crystals will be dried, sized, and cooled.

Packaging of the Li Products

The dried Li products will be packaged, palletized, staged, and loaded into trucks for distribution in the Li Product Handling, Production, and Warehouse buildings. The dried Li products will be loaded into bulk bags in a bagging station. Packaging is expected to be 500 kilograms (kg) to 1,000 kg super sacks.

Extraction of Zn and Mn

Zn/Mn filter cake will be acid leashed, separated and purified in a two-part solvent extraction process. The separated steams will each then be dried and packaged for further processing by others.

Mn Extraction and Processing to Mn Products

The Mn removed by the solvent extraction process will be precipitated into Mn oxides/hydroxides products, then dewatered in filter presses into wet cake product. The products will be transported to the Mn Product Handling, Production and Warehouse building for further handling, packaging, and offsite shipment to market.

Product Shipping to Offsite Markets

The ATLiS plant may produce multiple products for offsite shipment to market by truck. The average annual amount of product shipped out of the ATLiS plant is estimated as 19,000 metric tons of Li product, 10,000 to 20,000 metric tons of Zn product(s), and up to 60,000 metric tons of Mn product(s). Products will be transported by freight truck on existing roadways to shipping distribution points. Other products of the production operations may be generated by the proprietary technology on the ATLiS plant site and would also be shipped offsite to market by truck. Trucking will generally be to markets in the greater Los Angeles basin, Arizona, and Texas.

Operational Truck Traffic

It is estimated that approximately 24 trucks per day will travel in and out of the Project site during normal operations. The truck traffic includes about 10 trucks per day of outgoing products, including one truck load of dry lithium, two truckloads of 31% HCl, three truckloads of zinc, and four truckloads of manganese. Truck traffic also includes about eight truck deliveries of reagent chemicals; cooling tower treatment chemicals; consumptive media; product packaging materials; and fuel. The estimate also includes six trucks of outgoing waste generated on the site. The majority of the outgoing waste generated onsite is expected to be delivered to and processed at the Burrtec Solid Waste Facility. However, it is estimated that up to 10% of trucks carrying filter cakes (waste debris mix of silica, sand and iron) from the plant would be required to be delivered to a waste treatment facility in Arizona.

Operational Water Supply Source and Requirements

Approximately 90,000 gallons per hour (g/h) or about 3,400 acre-feet per year (AFY) of canal water will be purchased from the IID for project cooling water makeup and additional process water. Approximately 112 g/h or about 3 AFY of the canal water to be purchased will be used for potable water purposes, including potable washbasin water, eyewash equipment water, water for showers and toilets in crew change quarters, and sink water in the sample laboratory. A Water Supply Assessment is being prepared for the Project to analyze the impacts associated with the Project's construction and operational water requirements.

Operational Plant Maintenance

Operation of the Project would be dependent on the ability of the HR1 facility to deliver spent geothermal brine for processing at the ATLiS facility. Thus, approximately every three years the Project facility will be shut down for about three weeks to complete a facility cleaning in alignment with the HR1 plant cleaning. This process would remove mineral scale from Project plant piping.

Operational Work Force and Schedule

Project operations will begin as soon as construction activities are completed, expected to be Q2 of 2023. Beginning with startup operations, the Project is expected to be operated by a total staff of approximately 62 full-time, onsite employees. Plant operations will continue 24 hours per day, 7 days per week. It is projected that up to 40 employees will be onsite at any given time with 24 day-staff employees and two rotating shifts of 16 additional employees overlapping the day-staff and covering nights, weekend, and holidays.

F. PROJECT DECOMISSIONING

The projected life of the Project is a nominal 30 to 40 years. The Applicant will prepare a Site Abandonment Plan in conformance with Imperial County requirements, for consideration by the Planning Commission prior to Project approval. This plan would describe the proposed equipment dismantling and site restoration program in conformance with the wishes of the respective landowners/lessors and Imperial County requirements in effect at the time of abandonment and would be implemented at the end of Project operations. Decommissioning activities would be similar to project construction activities; however, decommissioning is likely to be less intensive than construction. Because this phase would occur approximately 30 to 40 years into the future, decommissioning is anticipated to employ equipment that is more technologically advanced than that which will be used during construction. Further, there will be a reduction in the need for site preparation and associated activities.

G. REQUIRED PERMITS AND APPROVALS

Lead Agency Approval

Imperial County Planning Department would be the lead agency for the proposed Project. The following permits would be required from the lead agency:

- Imperial County Planning Department – Minor Subdivision
- Imperial County Planning Department – Water Supply Assessment
- Imperial County Planning Department – Conditional Use Permit
- Imperial County Planning Department – Development Agreement (if required)
- Imperial County Building Department – Building and Grading Permits
- Imperial County Public Works Department – Encroachment Permit(s)

Reviewing Agencies

State Agencies

- Caltrans – Encroachment Permit
- California Department of Toxic Substances/Certified Unified Program Agency (CUPA) – Hazardous Materials / Environmental Protection Agency Approvals and Permits
-

Regional Agencies

- Regional Water Quality Control Board – Water Discharge Requirement
- Imperial Irrigation District – Encroachment Permit
- Imperial County Air Pollution Control District – Permit to Construct and Permit to Operate
- Environmental Health Departments for HR1 – Potable Water Treatment Modified Permit
- Imperial County Public Works
- Imperial County Fire Department and Office of Emergency Services

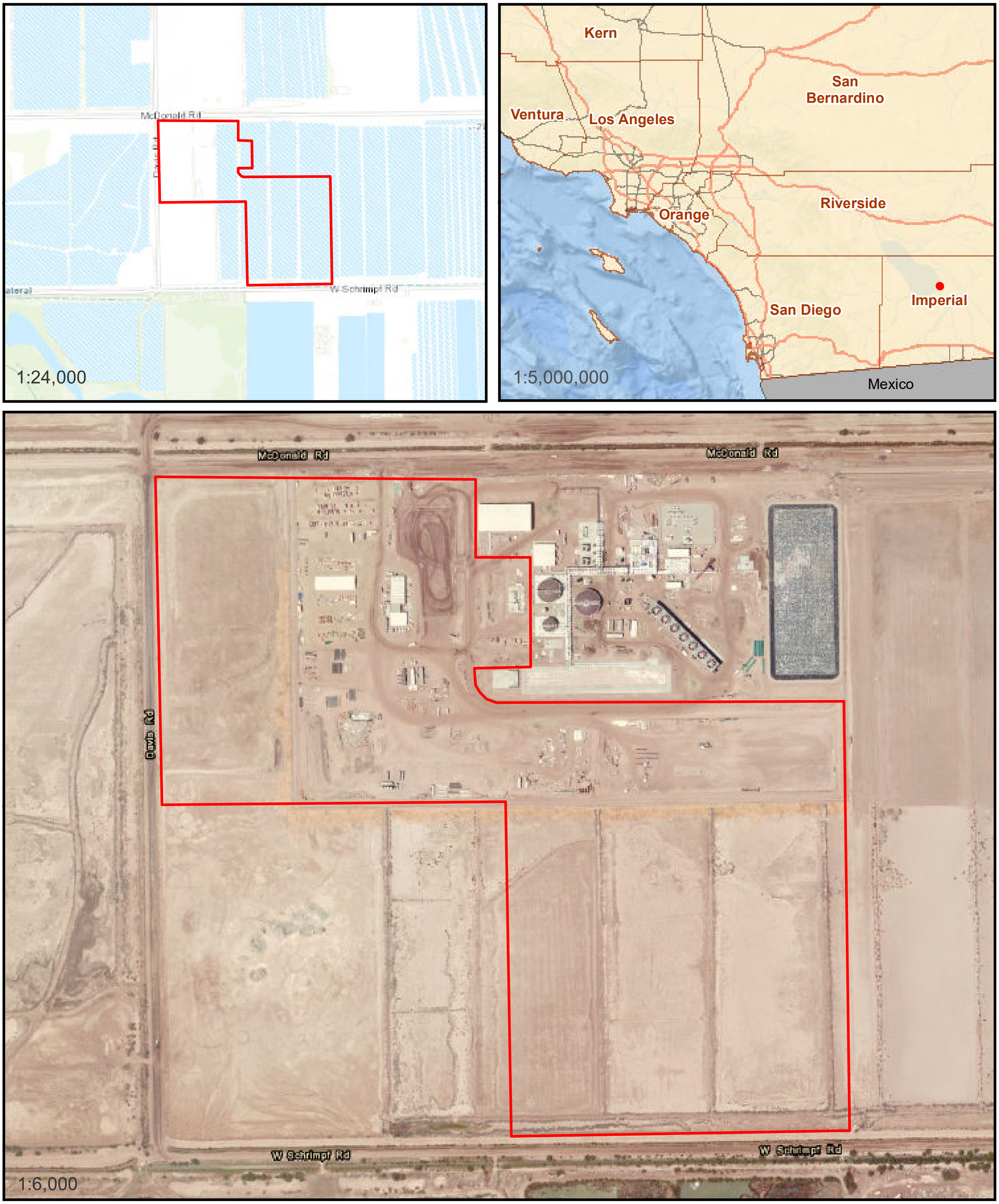
H. OBJECTIVES

The Project has the following objectives:

- To produce quantities of lithium, manganese, zinc and other strategic minerals from geothermal brine for commercial sale.
- To co-locate near a geothermal flash plant to minimize the distance required to pipe the brine between the

geothermal plant and the mineral extraction plant.

- To provide a supplemental domestic source of lithium, a designated critical material identified by the U.S. Department of Energy.
- Minimize and mitigate any potential impact to sensitive environmental resources within the Project area.



🟥 Project Location

Figure 1

Energy Source Mineral Project
Project Location & Vicinity

Name: 21268 BIO Fig 1 Project Location and Vicinity.Mxd
Print Date: 11/9/2020, Author: pcarlos

CHAMBERS GROUP

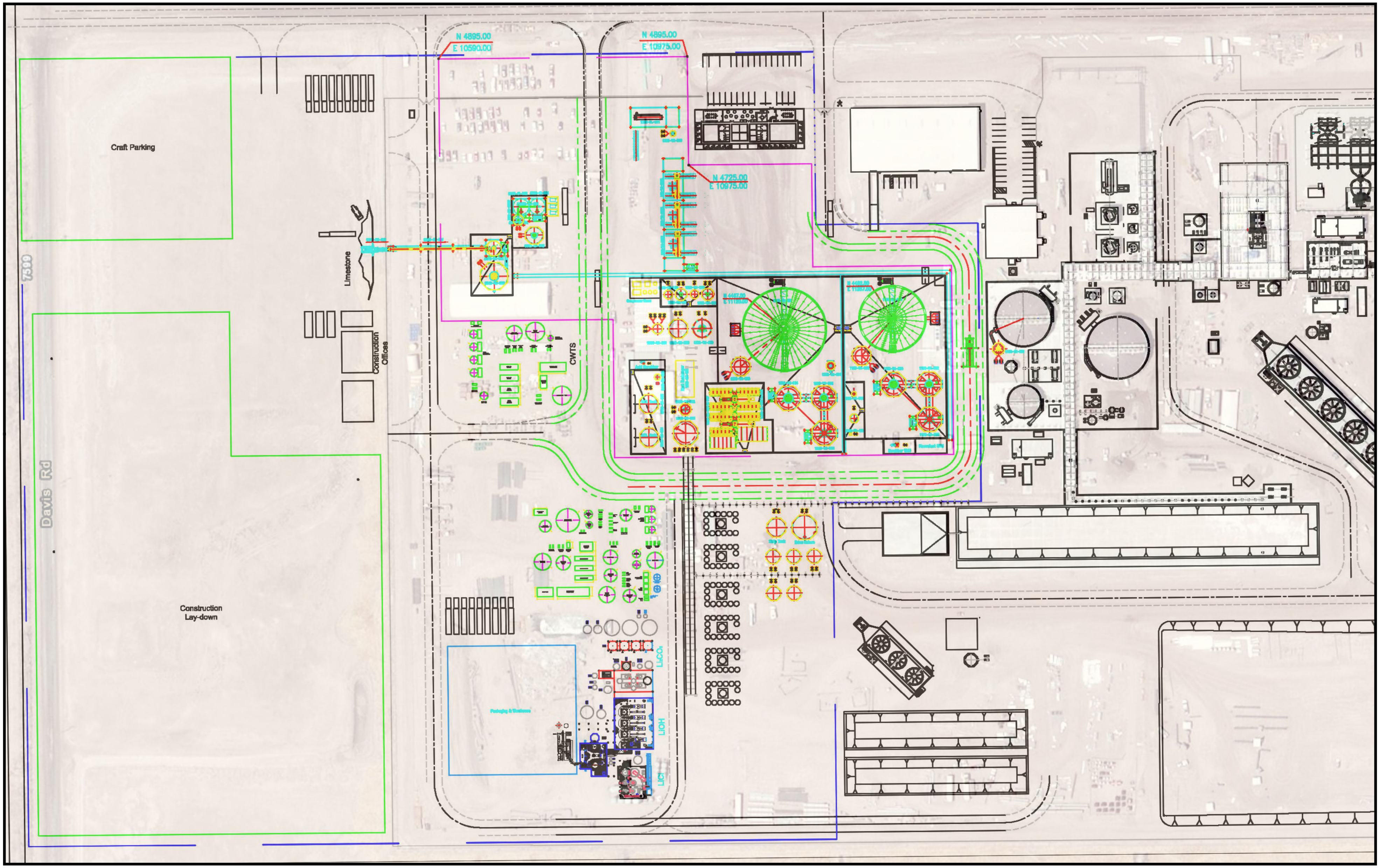


Figure 2

Energy Source Mineral Project
Project Site Plan

Name: 21268 PLAN Fig 2 Project Site Plan.Mxd
Print Date: 11/25/2020, Author: pcarlos

CHAMBERS GROUP

EVALUATION OF ENVIRONMENTAL IMPACTS:

1) A brief explanation is required for all answers except "No Impact" answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A "No Impact" answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A "No Impact" answer should be explained where it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).

2) All answers must take account of the whole action involved, including off-site as well as on-site, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.

3) Once the lead agency has determined that a particular physical impact may occur, then the checklist answers must indicate whether the impact is potentially significant, less than significant with mitigation, or less than significant. "Potentially Significant Impact" is appropriate if there is substantial evidence that an effect may be significant. If there are one or more "Potentially Significant Impact" entries when the determination is made, an EIR is required.

4) "Negative Declaration: Less Than Significant With Mitigation Incorporated" applies where the incorporation of mitigation measures has reduced an effect from "Potentially Significant Impact" to a "Less Than Significant Impact." The lead agency must describe the mitigation measures, and briefly explain how they reduce the effect to a less than significant level (mitigation measures from "Earlier Analyses," as described in (5) below, may be cross-referenced).

5) Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, an effect has been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D). In this case, a brief discussion should identify the following:

   a) Earlier Analysis Used. Identify and state where they are available for review.
   b) Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards, and state whether such effects were addressed by mitigation measures based on the earlier analysis.
   c) Mitigation Measures. For effects that are "Less than Significant with Mitigation Measures Incorporated," describe the mitigation measures which were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.

6) Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, where appropriate, include a reference to the page or pages where the statement is substantiated.

7) Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.

8) This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project's environmental effects in whatever format is selected.

9) The explanation of each issue should identify:

   a) the significance criteria or threshold, if any, used to evaluate each question; and
   b) the mitigation measure identified, if any, to reduce the impact to less than significance

		Potentially Significant Impact **(PSI)**	Potentially Significant Unless Mitigation Incorporated **(PSUMI)**	Less Than Significant Impact **(LTSI)**	No Impact **(NI)**

I. *AESTHETICS*

Except as provided in Public Resources Code Section 21099, would the project:

a)	Have a substantial adverse effect on a scenic vista or scenic highway?	☐	☐	☐	☒
b)	Substantially damage scenic resources, including, but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☐	☒

a) and b) No Impact. The Project is not located within the viewshed of any scenic vistas or officially designated State scenic highways (Caltrans 2019). The closest scenic viewpoint is an observation deck located within the Sonny Bono Salton Sea National Wildlife Refuge, approximately 3 miles southwest of the Project site (USFWS 2019). Although the area is relatively flat, an extensive shrub-covered marsh and the Alamo River separate the viewpoint from the Project site; thus, the Project site would not be within the viewshed of the observation deck. Additionally, HWY 111 is listed by Caltrans as eligible for State scenic highway designation and is located 3 miles east of the Project site. Though, HWY 111 has not been officially designated and the eligible section of highway is from Bombay Beach to the Imperial County-Riverside County line, approximately 13 miles northwest of the Project site at the closest point (Caltrans 2019). Further, the site is void of any trees, rock outcrops, or historic buildings and therefore, no scenic resources would be damaged as a result of the Project. No impacts would occur to scenic vistas or scenic resources along a State scenic highway and no further analysis is required.

c)	In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surrounding? (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?	☐	☐	☐	☒

c) No Impact. The Project is located on a vacant, non-urbanized area characterized by agricultural and industrial land uses, as well as vacant desert land. Public viewers of the Project site would be limited to workers at HR1 power plant, workers at the aquaculture farm to the southeast, and any passersby on nearby roads. There are no residences or recreation areas in proximity of the Project site. In addition, construction of the Project would be temporary occurring from approximately Q3 of 2021 to Q2 of 2023. Views of Project operations will be consistent with current views of the area, which includes the neighboring HR1 power plant. The Project would not substantially degrade the existing visual character or public views of the site or surroundings and no impacts would occur. Thus, no further analysis is required.

d)	Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

d) Less Than Significant Impact. As part of the Project design, industrial grade lighting sources would be required for Project operations and safety purposes. Lighting would be covered and directed downward (downshielded) or towards the proposed facility to avoid backscatter. Nighttime illumination features for the Project would be controlled with sensors or switches operated such that lighting would only be activated when needed. In addition, the Project is in a rural area of the County with the closest sensitive receptor being a residence over 1 mile north of the Project site on Pound Road. Industrial level lighting that would be associated with the proposed Project, would not be significant when compared to the existing uses on the site. Impacts related to increased light and glare from operation of the proposed facility would be less than significant and no further analysis is required.

II. *AGRICULTURE AND FOREST RESOURCES*

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. --Would the project:

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?	☐	☐	☐	☒

a) No Impact. According to the California Department of Conservation's Farmland Mapping and Monitoring Program, the Project site is a combination of "Urban and Built-Up Land" and "Other Land" (DOC 2020a). No Prime Farmland, Unique Farmland, or Farmland of

Statewide Importance is located within or in proximity to the Project site. The County General Plan designates the Project site as Agriculture land use; however, according to the General Plan Land Use Element, a non-agricultural land use may be permitted within General Plan-designated agricultural land if the use does not conflict with agricultural operations and will not result in the premature elimination of agricultural operations (County 1993). There is no existing agricultural land on the Project site, thus the Project would not conflict with or eliminate agricultural operations. Historically there were agricultural operations on the Project site, but the conversion of this agricultural land to another use was analyzed as part of the 2007 Hudson Ranch Power I Project and determined to be below the level of CEQA significance. No impacts would occur and no further analysis is required.

	PSI	PSUMI	LTSI	NI
b) Conflict with existing zoning for agricultural use, or a Williamson Act Contract?	☐	☐	☐	☒

b) No Impact. The Project site is zoned M-2 and is located within the geothermal overlay zone (G) and pre-existing allowed/restricted overlay zone (PE). No land within the Project site is zoned for agricultural use and the Project was considered consistent with the site zoning with the approval of the Conditional Use Permit in June 2020. The Project site is not subject to the provisions of a Williamson Act contract (DOC 2018). No impacts would occur and no further analysis is required.

	PSI	PSUMI	LTSI	NI
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒

c) and d) No Impact. As previously mentioned, the Project site is zoned M-2-G-PE. No land within the Project site is zoned forest land or timberland and there is no existing forest land on the Project site or in the immediate vicinity. The Project would not result in the loss of forest land or the conversion of forest land to non-forest use; no impacts would occur and no further analysis is required.

	PSI	PSUMI	LTSI	NI
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 forest land to non-forest use?	☐	☐	☐	☒

e) No Impact. The Project site is zoned M-2-G-PE and does not contain agricultural land or forest land. The Project would not result in the conversion of agricultural land or forest land. No impacts would occur and no further analysis is required.

III. *AIR QUALITY*

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to the following determinations. Would the Project:

	PSI	PSUMI	LTSI	NI
a) Conflict with or obstruct implementation of the applicable air quality plan?	☒	☐	☐	☐

a) Potentially Significant Impact. The Project is located within the Salton Sea Air Basin (SSAB) and is subject to the jurisdiction of the Imperial County Air Pollution Control District (ICAPCD) Rules and Regulations (CARB 1999). The ICAPCD is charged with upholding ambient air quality standards set forth by the state and federal government for the area within its jurisdictional limits. The ICAPCD also serves as a regional authority to legally enforce air pollution regulations related to the release of toxic and hazardous emissions.

The Project has potential to create emissions during construction and operation including dust, fumes, equipment exhaust, and other air contaminates that could conflict with the ICAPCD Rules and Regulations as well as the County's Air Quality Attainment Plan. To limit impacts during site construction, the Project will implement a dust control plan consisting of dust-reducing Best Management Practices (BMPs). Some of these BMPs include frequent watering of the Project site during construction activities and limiting vehicle traffic to 15 miles per hour on unpaved onsite access roads. In addition, the Project would comply with the applicable ICAPCD regulations including but not limited to Rule 801, Rule 803, Rule 804, and Rule 805 (ICAPCD 2020).

During Project operations small quantities of criteria air pollutants, criteria air pollutant precursors, and hazardous air pollutants would be released during extraction, processing, and packaging activities. Additionally, the Project will utilize a backup diesel generator. Other than emergency uses, regular tests will be conducted in accordance with operational requirements. A Permit to Construct and a Permit to Operate would be obtained, as required by ICAPCD, for the facility's stationary air pollutant emission sources and air pollutant control equipment. Warehouse and yard vehicles (forklifts and manlift) would be propane-powered to minimize combustion emissions from these non-stationary sources. Moreover, the Project will utilize a small cooling tower designed to minimize particulate emissions.

		Potentially Significant Impact **(PSI)**	Potentially Significant Unless Mitigation Incorporated **(PSUMI)**	Less Than Significant Impact **(LTSI)**	No Impact **(NI)**

Although Project emissions may be reduced through the use of pollution control devices and dust control measures, Imperial County is currently designated as a serious nonattainment area for PM10 (CARB 2019), and therefore potentially significant impacts may still result and impacts will be further addressed in the EIR.

b)	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?	☒	☐	☐	☐

b) Potentially Significant Impact. Currently, the SSAB is either in attainment or unclassified for all federal and state air pollutant standards with the exception of ozone (O3) and total suspended particulate matter less than 2.5 microns in diameter (PM2.5) and 10 microns or less in diameter (PM10). SSAB is in federal and state nonattainment for ozone and PM10, and partially in federal nonattainment for PM2.5 (CARB 2019). As mentioned above, both Project construction and operations have the potential to create emissions that could result in a cumulatively considerable net increase of a criteria pollutant for which the Project region is in non-attainment, namely O3, PM10, and PM2.5. Project emissions may be reduced through the use of pollution control devices and dust control measures previously discussed, but a potentially significant may still result. Thus, impacts are considered potentially significant and will be addressed in the EIR.

c)	Expose sensitive receptors to substantial pollutants concentrations?	☐	☐	☒	☐

c) Less Than Significant Impact. The Project is located in a rural area of the County and is not in close proximity to any sensitive receptors such as residences, hospitals, or schools. The closest residence is over a mile north of the Project site along Pound Road, the closest school is approximately 4 miles southeast of the Project site, and the closest hospital is approximately 16 miles south of the Project site (Google 2020).Approximately 62 full-time employees are expected to be working onsite, but these employees will be provided the proper personal protective equipment (PPE) and training in accordance with Occupational Safety and Health Administration (OSHA) regulations to protect them from substantial pollutant concentrations. A less than significant impact is expected to result, but these issues will be evaluated further in the EIR.

d)	Result in other emissions (such as those leading to odors adversely affecting a substantial number of people)?	☐	☐	☒	☐

d) Less Than Significant Impact. As mentioned above, the Project is located in a rural area of the County and is not in close proximity to any sensitive receptors with the closest residence over a mile north of the Project site along Pound Road, the closest school approximately 4 miles southeast of the Project site, and the closest hospital approximately 16 miles south of the Project site (Google 2020). Approximately 62 full-time employees are expected to be working onsite, but these employees will be provided the PPE and training in accordance with OSHA regulations. Any odors onsite are expected to only affect employees and are not anticipated to affect a substantial amount of people. Less than significant impacts are expected, but odors will be evaluated further in the EIR.

IV. *BIOLOGICAL RESOURCES* *Would the project:*

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?	☒	☐	☐	☐

a) Potentially Significant Impact. The Project site is heavily disturbed from historic agricultural operations onsite and construction of the HR1 plant. Yet, the Project site is approximately two miles east of the Salton Sea, which serves as an important wintering and staging site for migratory birds and several endangered species populations. Biological surveys were conducted by biologists at Chambers Group, Inc. in November 2020. A Biological Technical Report is being prepared for the Project to identify the potential for endangered, threatened, sensitive or species of concern within the Project area; map habitats; and ascertain the probability of the presence of sensitive species onsite. Due to previous disturbance of the Project site, high quality habitat is not expected to exist onsite. However, impacts from the Project on migratory birds may be potentially significant and will be addressed in the EIR.

b)	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
c)	Have a substantial adverse effect on state or federally	☐	☐	☒	☐

		Potentially Significant Impact **(PSI)**	Potentially Significant Unless Mitigation Incorporated **(PSUMI)**	Less Than Significant Impact **(LTSI)**	No Impact **(NI)**
	protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?				

b) and c) Less Than Significant Impact. According to the U.S. Fish and Wildlife Service's National Wetland Inventory, the Project site does not contain any wetland or riparian habitat. The closest potential wetland and riparian habitats include freshwater emergent wetlands and the Alamo River, which is likely to have riparian habitat along its banks, located approximately 1 mile southwest of the Project site (USFWS 2020). The Project site is approximately 500 feet north of IID canals and agricultural drains that flow into these wetlands and the Alamo River; however, to prevent offsite impacts to nearby wetlands resulting from stormwater runoff during construction the Project would be required to obtain coverage under a Construction General Permit to comply with National Pollutant Discharge Elimination System (NPDES) requirements. Compliance with the Construction General Permit would require the development and implementation of a Stormwater Pollution Prevent Plan (SWPPP) and associated BMPs. These BMPs will include measures that would be implemented to prevent discharges into adjacent wetland and riparian habitat from the Project site during construction activities.

To prevent significant impacts to the nearby wetland and riparian habitat due to increased runoff at the Project site during operations, a stormwater retention basin will be developed on site. The Project will likely share the HR1 stormwater retention basin and will ensure the basin is engineered and constructed to contain the combined stormwater storage requirements of both the HR1 and Project plant sites. If a shared basin cannot be done for technical, legal, or other reasons then the Project will construct its own, separate basin on the far south side of the parcel. Overall, impacts to wetland and riparian habitats resulting from the Project would be less than significant and no further analysis is required.

d)	Interfere substantially with the movement of any resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☒	☐	☐	☐

d) Potentially Significant Impact. The Project site is heavily disturbed from previous agricultural operations and construction of the HR1 plant. Additionally, there are no identified wildlife corridors within the Project site (County 1993). However, as mentioned above, the Project site is approximately two miles east of the Salton Sea, which serves as an important wintering and staging site for migratory birds and several endangered species populations. A Biological Technical Report is being prepared for the Project to identify the potential for native or migratory wildlife within the Project area; map habitats; and ascertain the probability of the presence of sensitive species onsite. Due to previous disturbance of the Project site, high quality habitat is not expected to exist. However, impacts from the Project on migratory birds, may be potentially significant and will be addressed in the EIR.

e)	Conflict with any local policies or ordinance protecting biological resource, 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?	☐	☐	☒	☐

e) and f) Less Than Significant Impact. The County General Plan Conservation and Open Space Element policies require conservation of native habitat of sensitive plants and animals through the dedication of open space easements, or other means that will ensure their long-term protection and survival. As mentioned above, the Project site is highly disturbed from previous uses and is not expected to contain high quality native habitat. However, the Project site is located within the Desert Renewable Energy Conservation Plan (DRECP) boundaries which aims at protecting irreplaceable desert habitats, plants, animals and ecological processes and allowing for the development of a significant amount of centralized renewable energy (from solar, wind and geothermal facilities, which will also require transmission lines) by focusing on areas with the least ecological impact. Because the DRECP's intent is to identify areas in the desert appropriate for the utility-scale development of wind, solar, and geothermal energy projects and the Project does not include the development of such energy projects, the Project would neither conflict with nor does it require compliance with the DRECP. Impacts to native habitat of sensitive plants and animals resulting from the Project would be less than significant and no further analysis is required.

V. ***CULTURAL RESOURCES*** ***Would the project:***

a)	Cause a substantial adverse change in the significance of a historical resource pursuant to §15064.5?	☒	☐	☐	☐

		Potentially Significant Impact **(PSI)**	Potentially Significant Unless Mitigation Incorporated **(PSUMI)**	Less Than Significant Impact **(LTSI)**	No Impact **(NI)**
b)	Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☒	☐	☐	☐

a) and b) Potentially Significant Impact. Unrecorded subsurface archaeological and historical resources may be impacted, if present, by minor grading of the Project site and installation of footings four to six feet below the ground surface. A Cultural Resources Report will be prepared for the Project detailing the results of an archaeological literature review, records search, and intensive pedestrian survey of the Project site. Further analysis of the historical and archaeological resources is required and will be addressed in the EIR.

c)	Disturb any human remains, including those interred outside of dedicated cemeteries?	☒	☐	☐	☐

c) Potentially Significant Impact. The Project is not expected to disturb any human remains. However, with grading involved, a potential to find human remains exists. A Cultural Resources Report will be prepared for the Project detailing the results of an archaeological literature review, records search, and intensive pedestrian survey of the Project site. Further analysis of potential impacts to human remains is required and will be addressed in the EIR.

VI. *ENERGY Would the project:*

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) and b) Potentially Significant Impact. Both Project construction and operational activities would require energy consumption. Construction activities consume energy temporarily through the use of heavy construction equipment, as well as truck and worker traffic. It is estimated on average 20 to 25 trucks per day will travel to and from the construction site, except during grading when about 50 to 60 trucks are anticipated. Approximately 200 to 250 workers are anticipated to be onsite during Project construction. Construction equipment anticipated for the Project is listed in Section 2 D above. The Project will use energy-conserving construction equipment to the extent possible, including standard mitigation measures for construction combustion equipment recommended in the Imperial County Air Pollution Control District (ICAPCD) CEQA Air Quality Handbook. The use of better engine technology, in conjunction with the ICAPCD's standard mitigation measures will reduce the amount of energy used for Project construction.

For operation of the ATLiS plant, up to 8 MW of electrical power is required. Power will be purchased from the IID and a new power line will be constructed to the ATLiS plant site from the current IID/HR1 substation located near the northeast corner of the HR1 property. Electrically driven equipment including a power distribution unit will be installed at the HR1 facility to deliver geothermal brine, steam/stream condensate and no condensable gas to the Project site. The power distribution unit will be provided power via a distribution line from either the ATLiS electrical building or the IID/HR1 substation. Further, a 600 HP emergency diesel generation will be used to keep vital plant systems operating during plant outages. Project operations would also require daily gasoline- and diesel-fueled vehicle travel for up to 62 full-time staff and approximately 24 trucks traveling to and from the Project site. Six of these trucks are estimated for outgoing waste generated on the site, which is expected to be delivered to and processed at the Burrtec Solid Waste Facility. However, it is estimated that up to 10% of trucks carrying filter cakes (waste debris mix of silica, sand and iron) from the plant would be required to be delivered to a waste treatment facility out of state.

Buildings onsite will be designed in accordance with the California Energy Commission's 2019 Building Energy Efficiency Standards for Residential and Nonresidential Buildings and the California Green Building Standards (CCR, Title 24, Part 11). Additionally, an energy analysis will be prepared for the Project to quantify energy consumption. Further analysis of the Project's energy consumption and consistency with applicable plans, policies, and regulations for reducing wasteful, inefficient, and unnecessary energy usage. Impacts will be analyzed further in the EIR.

VII. *GEOLOGY AND SOILS Would the project:*

a) Directly or indirectly cause potential substantial adverse effects, including risk of loss, injury, or death involving:

1)	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?	☐	☐	☒	☐

1) Less Than Significant Impact. The Project site is not located within an Alquist-Priolo fault zone and the closest fault zone is the San Andreas fault zone approximately 13 miles northwest (DOC 2020b). However, the County General Plan shows that the potentially active Calipatria Fault runs underneath the Project site (County 1993). Despite a known earthquake fault within the Project site, all parcels encompassing the site have been previously graded and would not require excavation. Approximately 10,000 cubic yards of soil will be brought onsite to raise the elevation, but no significant ground disturbing activities that could directly cause rupture of the Calipatria Fault would occur during Project construction or operation. Further, no Project activities would indirectly cause rupture of any known earthquake faults in the area. Impacts would be less than significant.

2) Strong Seismic ground shaking? ☒ ☐ ☐ ☐

2) Potentially Significant Impact. As mentioned above, the Project site is not located within an Alquist-Priolo fault zone and the closest fault zone is the San Andreas fault zone approximately 13 miles northwest (DOC 2020b). However, the Project site is located within a seismically active area of Southern California and the County General Plan shows that the potentially active Calipatria Fault is underlying the Project site (County 1993). Additionally, approximately 62 full-time employees would be on the Project site 24 hours per day, 7 days a week. To lessen potential hazards related to seismic ground shaking, Project structures would be analyzed for earthquake loading during design, and would be designed in accordance with the 2019 seismic requirements provided in the California Building Code. A registered professional civil/geotechnical engineer will also prepare a geotechnical investigation of the Project site that includes comprehensive subsurface exploration, appropriate laboratory testing, and detailed evaluation of potential constraints to critical project structures. The geotechnical investigation and proposed site measures may prevent Project activities from exacerbating the risk of loss, injury, or death involving rupture of a known earthquake fault or seismic ground shaking; however, further analysis is required and these issues will be addressed in the EIR.

3) Seismic-related ground failure, including liquefaction and seiche/tsunami? ☒ ☐ ☐ ☐

3) Potentially Significant Impact. The Project site is not located within a Department of Conservation identified liquefaction zone, but the County General Plan identifies that liquefaction is a common hazard in the County due to geologically young, unconsolidated sediments of the Salton Trough (DOC 2020b; County 1993). Soils on the Project site are also majority wet Imperial silty clay, which may be susceptible to ground failure (USDA 2020). Additionally, approximately 62 full-time employees would be on the Project site 24 hours per day, 7 days a week. As mentioned above, a registered professional civil/geotechnical engineer will prepare a geotechnical investigation of the Project site. Impacts involving seismic-related ground failure require further analysis and will be addressed in the EIR.

4) Landslides? ☐ ☐ ☐ ☒

4) No Impact. The Project site is flat and is not located within an identified landslide zone (DOC 2020b). According to the County General Plan, the closest area of landslide activity is on the border of San Diego and Imperial Counties approximately 30 miles west of the Project site (County 1993). The Project would not exacerbate the risk of loss, injury, or death involving landslides. No impacts would occur and no further analysis is required.

b) Result in substantial soil erosion or the loss of topsoil? ☐ ☐ ☒ ☐

b) Less Than Significant Impact. Project construction and operations have the potential to result in soil erosion and loss of topsoil mainly through increasing impervious surfaces onsite and increasing vehicle and foot traffic onsite. All parcels encompassing the Project site have been previously graded and would not require excavation. Approximately 10,000 cubic yards of soil will be brought onsite to raise the elevation and approximately 55 acres of the Project site would be permanently disturbed by the Project. The Project would implement standard industry methods, such as BMPs, to prevent surface runoff and erosion where applicable. These BMPs would comply with the County Building & Grading Regulations and the SWPPP developed for the Project. Moreover, a Drainage and Grading Plan will be submitted to the County to ensure implementation of all required BMPs. Impacts related to soil erosion would be less than significant and no further analysis is required.

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 landslides, lateral spreading, subsidence, liquefaction or collapse? ☒ ☐ ☐ ☐

d) Be located on expansive soil, as defined in the latest Uniform Building Code, creating substantial direct or indirect risk to life or property? ☒ ☐ ☐ ☐

c) and d) Potentially Significant Impact. As previously discussed, the Project site is flat and is not located within a Department of Conservation identified liquefaction or landslide zone (DOC 2020b). However, the County General Plan identifies that liquefaction is a common hazard in the County (County 1993). Soils on the Project site are also majority wet Imperial silty clay, which may be susceptible to soil instabilities causing subsidence, liquefaction, and expansion (USDA 2020). A registered professional civil/geotechnical engineer will prepare a geotechnical investigation of the Project site that includes comprehensive subsurface exploration, appropriate laboratory testing, and detailed evaluation of potential constraints to critical project structures, including liquefaction, subsidence, and expansive soils. Impacts involving geologic unit or soil instability require further analysis and will be addressed in the EIR.

		Potentially Significant Impact **(PSI)**	Potentially Significant Unless Mitigation Incorporated **(PSUMI)**	Less Than Significant Impact **(LTSI)**	No Impact **(NI)**
e)	Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

e) No Impact. During construction of the Project, portable toilets would be provided for construction workers and waste would be transported offsite to a sanitary water treatment plant. Sewage generated during Project operations would be processed by the existing HR1 sewer treatment plant adjacent to the Project site which as discussed in Section XIX Utilities and Service Systems, has available capacity. No new septic tanks or alternative waste water disposal systems will be constructed as a result of the Project; thus, no impacts would occur and no further analysis will be required.

		PSI	PSUMI	LTSI	NI
f)	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☒	☐	☐	☐

f) Potentially Significant Impact. Paleontological resources are typically impacted when earthwork activities, such as mass excavation cut into geological deposits (formations) with buried fossils. The Project is anticipated to only require minor grading and installation of footings four to six feet below the ground surface. Moreover, the entire Project site development area has been previously disturbed during early agricultural operations and during the construction of HR1. No paleontological resources are known to occur in the area. However, the potential to disturb unknown resources may still exist as, many paleontological fossil sites have been recorded in Imperial County and have been discovered during construction activities. Further analysis is required and will be addressed in the EIR.

VIII. *GREENHOUSE GAS EMISSION* ***Would the project:***

		PSI	PSUMI	LTSI	NI
a)	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☒	☐	☐	☐
b)	Conflict with an applicable plan or policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☒	☐	☐	☐

a) and b) Potentially Significant Impact. The primary climate change legislation in California is Assembly Bill (AB) 32, the California Global Warming Solutions Act of 2006. AB 32 focuses on reducing greenhouse gas (GHG) emissions in California, and AB 32 required that GHGs emitted in California be reduced to 1990 levels by the year 2020. In addition to AB 32, Executive Order B-30-15 was issued on April 29, 2015 that aims to reduce California's GHG emissions 40 percent below 1990 levels by 2030. In September 2016, AB 197 and Senate Bill (SB) 32 codified into statute the GHG emission reduction targets provided in Executive Order B-20-15.

Project construction activities are expected to emit GHGs including carbon dioxide (CO2), nitrogen oxides (NOx), and methane (CH4), from the combustion of fossil fuels during the operation of gasoline and diesel-fueled construction equipment and vehicles. A list of anticipated construction equipment for the Project can be found in Section D of the Project Description above. Project operations would create new sources of particulate matter from drying, transfer, and packing lithium products; operation of the cooling tower; and maintenance, testing, and emergency operations of the emergency diesel engine-generator. The emergency diesel engine-generator would also generate NOx, carbon monoxide (CO), PM, and sulfur dioxide (SO2). These emissions may potentially conflict with an applicable plan, policy, or regulation for reducing the emissions of GHGs. Further analysis of potential impacts related to GHG emissions generated by the Project, will be quantified and assessed in the EIR.

IX. *HAZARDS AND HAZARDOUS MATERIALS* ***Would the project:***

		PSI	PSUMI	LTSI	NI
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 reasonable foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☒	☐	☐	☐

a) and b) Potentially Significant Impact. Construction of the Project would require the limited transport and temporary use of materials deemed to be hazardous, including unleaded gasoline, diesel fuel, oil, lubricants (i.e., motor oil, transmission fluid, and hydraulic fluid), solvents, adhesives, and paint materials. However, any potentially hazardous materials used or found onsite during construction would be handled in accordance with state and federal regulations regarding the transport, use, and storage of hazardous materials.

Project operations would generate solid hazardous waste through geothermal brine processing, including iron-silica filter cakes, lead sulfide, and various laboratory wastes. Hazardous materials/waste generated by the Project would not be left on-site and will be transported to an approved hazardous waste landfill. The majority of the outgoing waste generated onsite is expected to be delivered to and processed at the Burrtec Solid Waste Facility. However, filter cakes generated during the impurity removal process may contain hazardous materials at higher levels than allowed at waste facilities in the state of California. These filter cakes will be tested and routed to the appropriate disposal location. It is estimated that up to 10% of trucks carrying hazardous waste from the plant would therefore be delivered to a waste treatment facility in Arizona or Idaho.

To prevent accidental release of hazardous materials, spill containment areas and sumps subject to spills of immiscible chemicals would be drained to a dilution water tank. Any oil contamination spills would be collected with absorbent pads and disposed as required by law. The Project site would be graded and constructed so that all process spills would drain into area drains that would be reprocessed into the system. Excess process spills would drain into the brine pond.

Additionally, an Emergency Response Plan (ERP) would be prepared and implemented, which will identify proper hazardous materials handling, use, and storage; emergency response; spill control and prevention; employee training; and reporting and record keeping. This would help to limit human risk and environmental risk associated with exposure to hazardous materials. Nonetheless, impacts from hazardous materials may occur and further analysis would be required. This issue will be addressed in the EIR.

c)	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐

c) Less Than Significant Impact. Although the Project has the potential to emit hazardous emissions and/or handle hazardous substances, the Project site is not within one-quarter mile of an existing or proposed school. The closest school to the Project site is Grace Smith Elementary School, approximately 4 miles northeast in Niland, CA. Additionally, the ERP that would be prepared and implemented for the Project will limit human risk associated with exposure to hazardous materials, with special consideration of the schools in the area. Impacts would be less than significant and no further analysis is required.

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?	☒	☐	☐	☐

d) Potentially Significant Impact. According to the Department of Toxic Substance Control's EnviroStor Database and the State Water Resources Control Board's GeoTracker Database, there are no recorded hazardous material sites within a mile of the Project site (DTSC 2020; SWRCB 2020). However, due to the neighboring HR1 plant, a Phase I Environmental Site Assessment will be prepared to analyze the potential for contaminants within the Project site resulting from HR1 plant operations. Further analysis is required and will be addressed in the EIR.

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 or excessive noise for people residing or working in the project area?	☐	☐	☐	☒

e) No Impact. The Project site is not located within two miles of a public airport or public use airport or within the boundaries of an airport land use plan. The closest airport is Calipatria Municipal Airport approximately 6 miles southeast of the Project site. Therefore, the Project would not expose people working in the Project area to safety hazards or excessive noise. No impact would occur and no further analysis is required.

f)	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐

f) Less Than Significant Impact. Temporary or single-lane closure of some roadways may occur during the transport of oversized equipment or construction activities. Road closures would be coordinated with County Public Works, the County Sheriff, and ICFD prior to closure, and would be scheduled to occur during off-peak commute hours. The Project's construction and operational activities would be in compliance with the Imperial County Emergency Operations Plan (EOP) and Multi-Jurisdiction Hazard Mitigation Plan (MJHMP), and would not physically interfere with the execution of the policies and procedures in these plans (County 2015; 2016).

Therefore, the Project would not impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. Impacts would be less than significant and no further analysis is required.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires? ☐ ☐ ☒ ☐

g) Less Than Significant Impact. The Seismic and Public Safety Element of the County General Plan states that the potential for a major fire in the unincorporated areas of the County is generally low (County 1993). According to the California Department of Forestry and Fire Protection's (CALFIRE) Fire Hazard Severity Zone Viewer, there are no very high, high, or moderate fire hazard severity zones in the local or state responsibility areas within 30 miles of the Project site (CALFIRE 2020). Additionally, the Project will include fire suppression systems designed in accordance with federal, state, and local fire codes; occupational health and safety regulations; and other jurisdictional codes, requirements, and standard practices. Included in the fire suppression system is a 500,000 gallon above-ground water tank to be installed onsite, serving as the primary water supply for the joint fire suppression system. In addition, during construction the Project site and access road will be cleared of all vegetation and cleared areas will be maintained throughout construction. Fire extinguishers will be available around the construction site as well. During operations, a brush control program will be prepared and implemented on those portions of the Project site that will not be developed. The Imperial County Fire District (ICFD) will be consulted to review and approve any and all proposed fire equipment, apparatus, and related fire prevention plans. Impacts would be less than significant and no further analysis is required.

X. *HYDROLOGY AND WATER QUALITY* *Would the project:*

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality? ☐ ☐ ☒ ☐

a) Less Than Significant Impact. The Project site is located within the California Regional Water Quality Control Board's Colorado River Basin Region (RWQCB 2019). The Project is therefore subject to standards set forth in the Colorado River Basin's (Basin) Water Quality Control Plan. As previously mentioned, Project construction and operations would have the potential to result in soil erosion and runoff on and offsite mainly due to grading and increased impervious surfaces. Through implementation of a SWPPP and a Drainage and Grading Plan, the Project would implement standard industry BMPs and relevant Basin BMPs to control off-site discharges. Additionally, the Project would develop a stormwater retention basin, either shared with HR1 or independent, which would be engineered and constructed to contain any stormwater runoff. If a shared facility cannot be done for technical, legal, or other reasons then the Project will construct its own basin on the far south side of the parcel. Stormwater flows will be directed to the retention basin via ditches, culverts, and/or swales.

As previously mentioned in Section IX, Hazards and Hazardous Materials, spill containment areas and sumps subject to spills of immiscible chemicals would be drained to a dilution water tank. Any oil contamination spills would be collected with absorbent pads and disposed as required by law. The Project site would be graded and constructed so that all process spills would drain into area drains that would be reprocessed into the system. Excess process spills would drain into the brine pond.

The Project will not allow any offsite discharges that could violate water quality standards or waste discharge requirements, or otherwise substantially degrade surface or ground water quality. Impacts would therefore be less than significant and no further analysis is required.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin? ☒ ☐ ☐ ☐

b) Potentially Significant Impact. It is estimated that the Project would require up to 50,000 gallons of water per day during construction for fugitive dust control; approximately 90,000 gallons per hour for operational cooling and other processes; and approximately 112 gallons per hour for potable water purposes during operations. All water required for the Project would be purchased from the IID, whose only source of water is the Colorado River. IID operates no water wells or groundwater recharge areas due to the lack of rainfall and poor quality of groundwater resources in the area (IID 2017). However, a Water Supply Assessment will be prepared for the Project to analyze potential impacts to groundwater supplies in the area. Further analysis is required and would be included in the EIR.

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 which would:

	Potentially Significant Impact **(PSI)**	Potentially Significant Unless Mitigation Incorporated **(PSUMI)**	Less Than Significant Impact **(LTSI)**	No Impact **(NI)**
(i) result in 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 offsite;	☐	☐	☒	☐
(iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or;	☐	☐	☒	☐
(iv) impede or redirect flood flows?	☐	☐	☒	☐

c) i) through iv) Less Than Significant Impact. No rivers or streams travel through the Project site or are directly adjacent to the Project site. The Alamo River is approximately 0.7 mile southwest of the Project site and drainage channels approximately 500 feet south of the Project site (along Schrimpf Road) lead towards the Alamo River and surrounding wetlands. Although Project construction and operations would have the potential to result in soil erosion and runoff on and offsite due to grading and increased impervious surfaces, through implementation of a SWPPP and a Drainage and Grading Plan, the Project would implement standard industry BMPs and relevant Basin BMPs to control off-site discharges. Additionally, a stormwater retention basin would be developed on the site. In order to prevent substantial erosion resulting from high winds in the area, a Fugitive Dust Suppression Plan will be prepared and the Project site will be watered as necessary.

The western portion of the Project site, currently APN 020-100-025, is located within the Federal Emergency Management Agency (FEMA) 100-year floodplain (FEMA 2020). However, during construction of the HR1 plant an administrative Flood Plan permit was approved for the HR1 site and an earthen flood protection berm was constructed. This berm, constructed on the west and south sides of APN 020-100-025, would prevent flooding of the Project site.

With implementation of BMPs and construction of a new retention basin, substantial erosion and runoff on and offsite is not expected. Less than significant impacts would occur and no further analysis is required.

	PSI	PSUMI	LTSI	NI
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☒	☐

d) Less Than Significant Impact. As mentioned above, the western portion of the Project site (APN 020-100-025) is located within the FEMA 100-year floodplain; although, an earthen flood protection berm surrounds the western and southern sides of the parcel (FEMA 2020). The flood protection berm would prevent flooding onto the Project site. Additionally, the Project site is two miles east of the Salton Sea, which is a potential source of seiche. According to the County General Plan's Seismic and Public Safety Element, a seiche at the Salton Sea could occur under the appropriate seismic conditions, but there have been a number of seismic events with no significant seiches occurred to date (County 1993). Further, all dams within the County are approximately 65 miles east of the Project site and the Project site is approximately 100 miles from the coast of the Pacific Ocean. Thus, there is no risk of dam inundation or tsunami within the Project site. Impacts would be less than significant and no further analysis is required.

	PSI	PSUMI	LTSI	NI
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☒	☐	☐	☐

e) Potentially Significant Impact. As discussed above, implementation of a SWPPP and a Drainage and Grading Plan would ensure the Project would implement standard industry BMPs and relevant Basin BMPs to control off-site discharges. Additionally, a stormwater retention basin would be developed on the site. The Project will not allow any offsite discharges that could violate water quality standards or waste discharge requirements, or otherwise substantially degrade surface or ground water quality. Additionally, all water required for the Project would be purchased from the IID, and IID operates no water wells or groundwater recharge areas (IID 2017). A Water Supply Assessment will be prepared to ensure the Project would not conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. Further analysis is required and would be discussed in the EIR.

XI. *LAND USE AND PLANNING Would the project:*

	PSI	PSUMI	LTSI	NI
a) Physically divide an established community?	☐	☐	☐	☒

a) No Impact. The Project is located in a rural area approximately 3 miles south of Niland, CA, which is the closest nearby community. There are no residences in close proximity to the Project site; thus, the Project would not physically divide an established community and no impacts would occur and no further analysis is required.

	PSI	PSUMI	LTSI	NI
b) Cause a significant environmental impact due to a conflict with	☐	☐	☐	☒

	Potentially Significant Impact **(PSI)**	Potentially Significant Unless Mitigation Incorporated **(PSUMI)**	Less Than Significant Impact **(LTSI)**	No Impact **(NI)**
any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?				

b) No Impact. The Project site is zoned M-2-G-PE (Medium Industrial /Geothermal Overlay) and the County General Plan designates the Project site as Agriculture land use. According to the General Plan Land Use Element, a non-agricultural land use may be permitted within General Plan-designated agricultural land if the use does not conflict with agricultural operations and will not result in the premature elimination of agricultural operations (County 1993). As analyzed in Section II, Agriculture and Forest Resources above, there is no existing agricultural land on the Project site and the land is not designated as Prime Farmland, Unique Farmland, or Farmland of Statewide Importance by the Department of Conservation (DOC 2020a). A CUP was issued for the Project in June 2020, making the Project consistent with the site zoning in accordance with the County's Zoning Ordinance. No impacts would occur and no further analysis is required.

XII. *MINERAL RESOURCES* *Would the project:*

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) and b) No Impact. Other than the geothermal resources being developed in the Project vicinity, there are no known mineral resources or mineral resource recovery sites within the vicinity of the Project site (DOC 2020d; County 1993). There are a number of mines along the Chocolate Mountain Range to the east, but the closest is approximately 6 miles from the Project site (DOC 2020c). The County General Plan's Additionally, the Project is a geothermal brine processing plant that would produce commercial-grade lithium, zinc, and manganese products, increasing the availability of these mineral resources. The Project would therefore be in alignment with the County General Plan's Renewable Energy and Transmission Element, Objective 3.2, which states that the County should "encourage the continued development of the mineral extraction/production industry for job development using geothermal brines from the existing and future geothermal flash power plants" (County 1993). No known mineral resources or mineral resource recovery sites would be lost as a result of the Project; thus no impacts would occur and no further analysis is required.

XIII. *NOISE* *Would the project result in:*

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?	☒	☐	☐	☐

a) Potentially Significant Impact. The Imperial County Municipal Code Title 9 Land Use Code, Division 7, Chapter 2, Section 90702.00 - Sound level limits, establishes one-hour average sound level limits for the County's land use zones. Industrial operations are required to comply with the noise levels prescribed under the general industrial zones. Therefore, the Project is required to maintain noise levels below 75 decibels (dB) (averaged over one hour) during any time of day. The Project would also be expected to comply with the Noise Element of the General Plan, which states that construction noise from a single piece of equipment or a combination of equipment shall not exceed 75 dB when averaged over an eight hour period and measured at the nearest sensitive receptor. The County Noise Element also requires construction equipment operation to be limited to the hours of 7 a.m. to 7 p.m., Monday through Friday, and 9 a.m. to 5 p.m. on Saturdays (County 1993). Approximately 90% of Project construction would occur during daylight hours, but the remaining 10% of work would occur during nighttime hours to avoid extreme summer temperatures. Although the closest sensitive receptor is a residence over one mile north on Pound Road, construction would occur outside the allowable construction noise hours set within the County Noise Element. Impacts would therefore be potentially significant and will be analyzed in the EIR.

b) Generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐

b) Less Than Significant Impact. Groundborne vibration and groundborne noise could originate from earth movement during the construction phase of the Project. However, significant vibration is typically associated with activities such as blasting or the use of pile drivers, neither of which would be required during Project construction. Additionally, the closest sensitive receptor is a residence over one mile north of the Project site and therefore would not experience damage or nuisance. The Project would be expected to comply with all applicable requirements for long-term operation, as well as with measures to reduce excessive groundborne vibration and noise to ensure that the Project would not expose persons or structures to excessive groundborne vibration. Impacts would be less than significant and no further analysis is warranted.

		Potentially Significant Impact **(PSI)**	Potentially Significant Unless Mitigation Incorporated **(PSUMI)**	Less Than Significant Impact **(LTSI)**	No Impact **(NI)**
c)	For a project located within the vicinity of a private airstrip or an airport land use plan or where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

c) No Impact. The Project site is not located within two miles of a public airport or public use airport. The closest airport is Calipatria Municipal Airport approximately 6 miles southeast of the Project site. Therefore, the Project would not expose people working in the Project area to excessive noise levels. No impact would occur and no further analysis is required.

XIV. *POPULATION AND HOUSING* *Would the project:*

		PSI	PSUMI	LTSI	NI
a)	Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and business) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐

a) Less Than Significant Impact. The Project involves construction and operation of a geothermal brine processing plant and does not propose the development of any housing onsite. The Project would require approximately 62 full-time employees who are expected to live in and commute from the local surrounding communities. Therefore, the Project is not anticipated to induce population growth directly or indirectly, thus impacts would be less than significant and no further analysis is required.

		PSI	PSUMI	LTSI	NI
b)	Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

b) No Impact. The Project site is partially on the existing HR1 site, which was previously permitted for the geothermal plant. In addition to the actual power plant, the rest of the land has been used for laydown areas, storage areas, and stormwater management. The additional land that will be included is an approximately 15-acre parcel, APN 020-100-025, and an approximate 40-acre portion of APN 020-100-046 both of which have been vacant for several decades and were previously used for geothermal testing and associated activities. There are no residences within the Project site or within close proximity, thus no existing people or housing would be displaced as a result of the Project. No impacts would occur and no further analysis is required.

XV. *PUBLIC SERVICES*

a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental 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:

	PSI	PSUMI	LTSI	NI
1) Fire Protection?	☐	☐	☒	☐

1) Less Than Significant Impact. Fire protection and emergency medical services in the Project area are provided by the ICFD. The closest station to the Project site is the Niland Station, approximately 4 miles northeast or an approximately 9 minute drive (Google 2020). During construction, the Project site and access road will be cleared of all vegetation and cleared areas will be maintained throughout construction. Fire extinguishers will also be available around the construction site. In case of emergency response during operations, both the Project access roads (off McDonald Road and Davis Road) would have turnaround areas to allow clearance for fire trucks per fire department standards: 70 feet by 70 feet, and 20-foot-wide. In addition, a 500,000 gallon fire water storage tank will be constructed adjacent to the HR1 water storage pond (on the east side of the site) to serve as the primary water supply for the new joint fire suppression system to be constructed near the storage tank. The joint fire protection system will be equipped with quick connect hose bibs; an underground fire main and surface distribution equipment such as yard hydrants and hose houses; monitors around the perimeter of the cooling tower; automatic sprinklers for the buildings, if needed; and a complete detection and alarm system. The firewater supply and pumping system will provide an adequate quantity of fire-fighting water and a 62 HP diesel-fueled firewater pump will be available onsite. A brush control program will also be prepared and implemented on those portions of the Project site not being developed to mitigate the potential of an offsite brush fire.

All fire suppression systems will be designed in accordance with federal, state, and local fire codes; occupational health and safety regulations; and other jurisdictional codes, requirements, and standard practices. The ICFD will be consulted to review and approve any and all proposed fire equipment, apparatus, and related fire prevention plans. Acceptable service ratios and response times for fire protection will be maintained following Project implementation through consultation with the ICFD and the County. Impacts would be less than significant and no further analysis is required.

	PSI	PSUMI	LTSI	NI
2) Police Protection?	☐	☐	☒	☐

2) Less Than Significant Impact. Police protection services in the area are provided by the Imperial County Sheriff's Department. The closest police station to the Project site is the Imperial County Sheriff's office in Niland, approximately 4 miles northeast or an approximately 10 minute drive (Google 2020). The increase in construction related traffic is not anticipated to significantly increase demand on law enforcement services due to the rural nature of the Project vicinity. Additionally, the Project site would be fenced with 6-foot-high chain-link security fence, which may be topped with three-strand barbed wire, and points of ingress/egress would be accessed via locked gates with a guard house. As part of the Project design, industrial grade lighting sources would be also required for Project operations and safety purposes. This lighting will include sensors or switches operated such that lighting would be activated when needed during nighttime hours. In addition, approximately 62 full-time employees will be onsite 24 hours a day, 7 days a week during operations of the Project, thereby minimizing the need for police surveillance. Impacts would be less than significant and no further analysis is required.

	PSI	PSUMI	LTSI	NI
3) Schools?	☐	☐	☐	☒
4) Parks?	☐	☐	☐	☒
5) Other Public Facilities?	☐	☐	☐	☒

3) through 5) No Impact. There is estimated to be up to 200 to 250 workers traveling to the Project site during construction and approximately 62 full-time employees during operations. It is expected that most of these workers/employers will commute to the Project site from surrounding communities. Therefore, substantial temporary increases in population that will adversely affect local schools, parks, or other public facilities are not anticipated. No impacts would occur and no further analysis is required.

XVI. *RECREATION*

	PSI	PSUMI	LTSI	NI
a) Would the project increase the use of the existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse effect on the environment?	☐	☐	☐	☒

a) and b) No Impact. There are no parks or other developed federal, State or county recreational facilities in the Project area or immediate vicinity. Further, the Project involves the construction of a geothermal brine processing plant and would not construct any recreational facilities. During construction 200 to 250 workers are anticipated to be on the Project site and operation would include 62 full-time workers employed onsite, but these workers and employees are expected to come from existing populations that live in and commute from the surrounding local communities. Therefore, no increase in population would result and no physical deterioration of existing recreational facilities would occur. No impacts would occur and no further analysis is required.

XVII. *TRANSPORTATION* *Would the project:*

	PSI	PSUMI	LTSI	NI
a) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☒	☐	☐	☐
b) Would the project conflict or be inconsistent with the CEQA Guidelines section 15064.3, subdivision (b)?	☒	☐	☐	☐

a) and b) Potentially Significant Impact. Primary access to the Project site would be located off of McDonald Road and secondary access would be located off of Davis Road. According to the County General Plan's Circulation Element, McDonald Road is a Minor Collector and Davis Road is a Major Collector (County 2008). During construction it is estimated that on average 20 to 25 trucks per day will travel in and out of the Project site, except during grading when about 50 to60 trucks will be traveling in and out of the Project site. An average of 100 workers will commute to the Project site during construction. Approximately 24 trucks per day are anticipated to travel in and out of the Project site during normal operations and approximately 62 full-time employees will be commuting to and from the Project site. Six of these trucks are estimated for outgoing waste generated on the site, which is expected to be delivered to and processed at the Burrtec Solid Waste Facility. However, it is estimated that up to 10% of trucks carrying hazardous filter cakes from the plant would be required to be delivered to a waste treatment facility out of State. Although the Project site is located in a rural area of the County, a Traffic Impact Study will be prepared to calculate estimated Vehicle Miles Traveled (VMT) for the Project and to analyze whether or not the Project aligns with the County's Circulation Plan. Further analysis is required and will be addressed in the EIR.

		Potentially Significant Impact **(PSI)**	Potentially Significant Unless Mitigation Incorporated **(PSUMI)**	Less Than Significant Impact **(LTSI)**	No Impact **(NI)**
c)	Substantially increases 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?	☐	☐	☒	☐

c) and d) Less than Significant Impact. The Project would not increase hazards due to a design feature, nor impact emergency access. For emergency response, both the Project access roads (off McDonald Road and Davis Road) would have turnaround areas to allow clearance for fire trucks per fire department standards: 70 feet by 70 feet, and 20-foot-wide. The County Department of Public Works, the County Sheriff, and ICFD will be consulted as necessary to ensure that any potential impacts to the public or emergency services traveling on McDonald Road or Davis Road during Project construction or operations would be minimized. Impacts would be less than significant and no further analysis will be required.

XVIII. *TRIBAL CULTURAL RESOURCES*

		PSI	PSUMI	LTSI	NI
a)	Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place or object with 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 define in Public Resources Code Section 5020.1(k), or	☒	☐	☐	☐
(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 Section 5024.1. In applying the criteria set forth is subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.	☒	☐	☐	☐

(i) and (ii) Potentially Significant Impact. Unrecorded subsurface Tribal cultural resources may be impacted, if present, by minor grading of the Project site and installation of footings four to six feet below the ground surface. In accordance with California Assembly Bill (AB) 52, Native American tribes with potential resources in the area were notified of the Project on November 6, 2020 and offered the opportunity for consultation. As of November 20, 2020, the Quechan Tribe has requested consultation for the Project. Any other requests regarding consultation will be outlined in the Cultural Resources Report being prepared for the Project in addition to the results of an archaeological literature review, records search, and intensive pedestrian survey of the Project site. Further analysis of the potential impact to Tribal cultural resources is required and will be addressed in the EIR.

XIX. *UTILITIES AND SERVICE SYSTEMS* *Would the project:*

		PSI	PSUMI	LTSI	NI
a)	Require or result in the relocation or construction of new or expanded water, wastewater treatment or stormwater drainage, electric power, natural gas, or telecommunications facilities, the construction of which could cause significant environmental effects?	☒	☐	☐	☐

	Potentially Significant Impact **(PSI)**	Potentially Significant Unless Mitigation Incorporated **(PSUMI)**	Less Than Significant Impact **(LTSI)**	No Impact **(NI)**

a) Potentially Significant Impact. During operations, the Project intends to use or connect to HR1 plant utility infrastructure to the extent possible. The HR1 potable water treatment plant has been renovated to accommodate sufficient use and reliability for both HR1 and the Project facilities. This system will be operated under one permit by HR1 and the Project will purchase water from HR1. Liquid waste generated by the Project will be processed by the HR1 sewer treatment plant and sludge will be pumped by licensed contractors as needed and transported to a sanitary water treatment plant. The Project may also share the HR1 stormwater retention basin, which would be engineered and constructed to contain the combined stormwater storage requirements for both the Project and HR1 sites. If a shared retention basin cannot be done for technical, legal, or other reasons then the Project will construct its own retention basin on the far south side of the parcel. Electrical power required for the Project will be purchased from the IID and a new power line will be constructed to the ATLiS plant site from the current IID/HR1 substation located near the northeast corner of the HR1 property. Natural gas and telecommunications facilities at the Project site would also tie into the existing infrastructure for HR1. A Water Supply Assessment and Energy Analysis will be prepared to analyze potential impacts resulting from the Project's water and power requirements. Approximate wastewater generation will be estimated using water requirements calculated in the Water Supply Assessment. All new utility infrastructure would be built entirely within the previously disturbed parcel, however further analysis is required and potential impacts to utilities will be analyzed in the EIR.

b)	Have sufficient water supplies available to serve the project from existing and reasonably foreseeable future development during normal, dry and multiple dry years?	☒	☐	☐	☐

b) Potentially Significant Impact. As described in Section X Hydrology and Water Quality, it is estimated that the Project would require up to 50,000 gallons of water per day during construction for fugitive dust control; approximately 90,000 gallons per hour for operational cooling and other processes; and approximately 112 gallons per hour for potable water purposes during operations. All water required for the Project would be purchased from the IID, whose only source of water is the Colorado River. Climate change scenarios predict a decrease in annual runoff from the Basin to the Colorado River of about 400,000 acre-feet of water 40 percent of the time by 2025 (IID 2012). Therefore, a Water Supply Assessment will be prepared for the Project to analyze potential impacts to the available water supply. Further analysis is required and potential impacts to water will be analyzed in the EIR.

c)	Result in a 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?	☒	☐	☐	☐

c) Potentially Significant Impact. As mentioned above, the Project would utilize the HR1 facility's potable water treatment plant and sewer treatment plant for liquid waste. Both of the plants accommodate sufficient use and reliability for the HR1 and the Project facilities. A Water Supply Assessment is being prepared to estimate the Project's water requirements, which will be used to calculate approximate wastewater generation. Further analysis is required in the EIR to determine potential impacts.

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?	☒	☐	☐	☐

d) and e) Potentially Significant Impact. All non-hazardous and hazardous wastes generated during Project construction and operation would be handled and disposed of in accordance with applicable laws, ordinances, regulations, and standards. Non-hazardous solid waste would be disposed of using a locally-licensed waste hauling service, most likely Allied Waste. Solid waste would likely be hauled to the Niland Solid Waste Site located in Niland. The Niland Solid Waste Site has approximately 211,439 cubic yards of remaining capacity and is estimated to remain in operation through 2046 (CalRecycle 2020). Therefore, there is ample landfill capacity in the County to receive the non-hazardous solid waste generated by construction and operation of the Project.

Hazardous materials/waste generated by the Project would not be left onsite and will be transported to an approved hazardous waste landfill. The majority of the outgoing waste generated onsite is expected to be delivered to and processed at the Burrtec Solid Waste Facility, which is anticipated to have ample capacity. Filter cakes generated during the impurity removal process may contain hazardous materials at higher levels than allowed at waste facilities in the state of California, therefore approximately 10% of hazardous waste trucks may be routed to a waste treatment facility in Arizona or Idaho. Further analysis of potential impacts to solid waste is required and would be addressed in the EIR.

	Potentially Significant Impact **(PSI)**	Potentially Significant Unless Mitigation Incorporated **(PSUMI)**	Less Than Significant Impact **(LTSI)**	No Impact **(NI)**

XX. *WILDFIRE*

If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the Project:

a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐

a) Less Than Significant Impact. As mentioned in Section IX Hazards and Hazardous Materials above, CALFIRE's Fire Hazard Severity Zone Viewer identifies no very high, high, or moderate fire hazard severity zones in the local or state responsibility areas within 30 miles of the Project site (CALFIRE 2020). Additionally, as mentioned in Section XV Public Services, all fire suppression systems will be designed in accordance with federal, state, and local fire codes; occupational health and safety regulations; and other jurisdictional codes, requirements, and standard practices. The ICFD will also be consulted to review and approve any and all proposed fire equipment, apparatus, and related fire prevention plans. Compliance with local emergency response and evacuation plans, including the EOP and MJHMP, will be maintained through consultation with the ICFD and the County. Impacts would be less than significant and no further analysis is required.

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☒	☐

b) Less Than Significant Impact. As mentioned above, CALFIRE does not have any designated very high, high, or moderate fire hazard severity zones in the local or state responsibility areas within 30 miles of the Project site (CALFIRE 2020). The Seismic and Public Safety Element of the County General Plan also states that the potential for a major fire in the unincorporated areas of the County is generally low (County 1993). Moreover, the Project site is flat and is not within an area of risk due to slope. Although the County has experienced damage from heavy winds in the past, hazards in the County are managed by the MJHMP which is reviewed and updated every 5 years (County 2015). Further, during construction the Project site and access road will be cleared of all vegetation and cleared areas will be maintained throughout construction. Fire extinguishers will be available around the construction site as well. During operations, a brush control program will be prepared and implemented on those portions of the Project site that will not be developed. Hazardous materials onsite during operations may be flammable, but fire suppression systems will be installed and the ICFD will be consulted to review and approve any and all proposed fire equipment, apparatus, and related fire prevention plans. Thus, employees onsite would not be exposed to pollutant concentrations from a wildfire. Impacts would be less than significant and no further analysis is required.

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 temporary or ongoing impacts to the environment?	☐	☐	☒	☐

c) Less Than Significant Impact. CALFIRE maps note that no very high, high, or moderate fire hazard severity zones in the local or state responsibility areas are within 30 miles of the Project site (CALFIRE 2020). To prevent fire-related impacts on the Project site, Project access roads (off McDonald Road and Davis Road) would be constructed with turnaround areas; a 500,000 gallon fire water storage tank will be constructed; and a joint fire protection system will be installed. These features would help fire suppression and would not exacerbate fire risk. Further, these features will be constructed/installed and maintained within previously disturbed areas of the Project site in accordance with federal, state, and local fire codes; occupational health and safety regulations; and other jurisdictional codes, requirements, and standard practices. No significant environmental impacts would result. Impacts would be less than significant and no further analysis is required.

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?	☐	☐	☒	☐

d) Less than Significant Impact. CALFIRE does not have any designated very high, high, or moderate fire hazard severity zones in the local or state responsibility areas within 30 miles of the Project site (CALFIRE 2020). The Project site is also flat and is not located within an identified landslide zone (DOC 2020b). According to the County General Plan, the closest area of landslide activity is on the border of San Diego and Imperial Counties approximately 30 miles west of the Project site (County 1993). As described in Section X Hydrology and Water Quality, flooding onsite would be prevented by the flood protection berm on the southern and western sides of the Project site. The Project would not expose people or structures to significant risks as a result of runoff, post-fire instability, or drainage changes. Impacts would be less than significant and no further analysis is required.

Note: Authority cited: Sections 21083 and 21083.05, Public Resources Code. Reference: Section 65088.4, Gov. Code; Sections 21080(c), 21080.1, 21080.3, 21083, *21083.05, 21083.3, 21093, 21094, 21095, and 21151, Public Resources Code; Sundstrom v. County of Mendocino,(1988) 202 Cal.App.3d 296; Leonoff v. Monterey Board of Supervisors, (1990) 222 Cal.App.3d 1337; Eureka Citizens for Responsible Govt. v. City of Eureka (2007) 147 Cal.App.4th 357; Protect the Historic Amador Waterways v. Amador Water Agency (2004) 116 Cal.App.4th at 1109; San Franciscans Upholding the Downtown Plan v. City and County of San Francisco (2002) 102 Cal.App.4th 656.*

Revised 2009- CEQA
Revised 2011- ICPDS
Revised 2016 – ICPDS
Revised 2017 – ICPDS
Revised 2019 – ICPDS

SECTION 3

III. MANDATORY FINDINGS OF SIGNIFICANCE

The following are Mandatory Findings of Significance in accordance with Section 15065 of the CEQA Guidelines.

a) Does the project have the potential to substantially 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, eliminate tribal cultural resources or eliminate important examples of the major periods of California history or prehistory?	☒	☐	☐	☐

a) Potentially Significant Impact. As discussed in Sections IV Biological Resources and V Cultural Resources, implementation of the Project has the potential to impact sensitive biological resources and cultural/paleontological resources. A Biological Technical Report and Cultural Resources Assessment are being prepared for the Project. Further analysis is required and potential impacts will be addressed in the EIR.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that 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.)	☒	☐	☐	☐

b) Potentially Significant Impact. The Project has the potential to result in significant impacts, and when combined with existing conditions or related projects, may result in a cumulatively considerable impact. Specifically, the Project has the potential to result in a cumulatively considerable net increase in one or more criteria pollutants for which the Project region is in non-attainment under applicable federal and state ambient air quality standards. Therefore further analysis is required and will be analyzed in the EIR.

c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?	☒	☐	☐	☐

c) Potentially Significant Impact. The Project has the potential to result in significant environmental effects, which could directly or indirectly cause adverse effects on human beings. As demonstrated in this Initial Study, the Project has the potential to result in significant impacts to air quality, biological resources, cultural resources, energy, geology and soils, greenhouse gasses, hazards and hazardous materials, hydrology and water quality, noise, transportation, Tribal cultural resources, and utilities and services systems. These impact areas could result in direct or indirect adverse effects on human beings. Further analysis is required and these issues will be discussed in the EIR.

IV. PERSONS AND ORGANIZATIONS CONSULTED

This section identifies those persons who prepared or contributed to preparation of this document. This section is prepared in accordance with Section 15129 of the CEQA Guidelines.

A. COUNTY OF IMPERIAL

- Jim Minnick, Director of Planning & Development Services
- Michael Abraham, AICP, Assistant Director of Planning & Development Services
- David Black, Project Planner
- Imperial County Air Pollution Control District
- Department of Public Works
- Fire Department
- Ag Commissioner
- Environmental Health Services
- Sheriff's Office

B. CHAMBERS GROUP

- Corinne Lytle-Bonine, Principal In Charge
- Victoria Boyd, Project Manager
- Elizabeth Fortin, Environmental Planner
- Phillip Carlos, GIS Specialist

C. OTHER AGENCIES/ORGANIZATIONS

- Quechan Tribe

V. REFERENCES

California Air Resources Board (CARB)

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United States Fish and Wildlife Service (USFWS)

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Imperial County
Planning & Development Services Department

NOTICE OF PREPARATION OF DRAFT EIR FOR ENERGY SOURCE MINERAL ATLiS PROJECT AND NOTICE OF PUBLIC EIR SCOPING MEETING

The Imperial County Planning & Development Services Department intends to prepare an Environmental Impact Report (EIR) for the proposed Energy Source Mineral ATLiS Project as described below. A public scoping meeting for the proposed EIR will be held by the Imperial County Planning & Development Services Department on January 14, 2021 at 6:00 PM. The scoping meeting will be held virtually via the Zoom platform. Comments regarding the scope of the EIR will be accepted at this meeting.

SUBJECT: Energy Source Mineral ATLiS Project EIR

BOARD OF SUPERVISORS CONSIDERATION: To Be Determined.

PROJECT LOCATION: The Project's plant and facilities will be located at 477 West McDonald Road, Calipatria, California which is approximately 3.8 miles southwest of the community of Niland on three parcels privately owned by Hudson Ranch Power I (HR1) LLC in the County: APNs 020-100-025, 020-100-044, 020-100-046 (Figure 1). Currently, the HR1 power plant exists within the northeast corner of the 65.12-acre parcel, APN 020-100-044. The Project's plant facilities would be built on an approximately 37-acre area that would be subdivided out of the existing 65.12 acres, an additional 15 acres of the Project site located on the northwestern parcel APN 020-100-025, and approximately 40 acres of the Project site located on the southeast parcel APN 020-100-046 will be added to the 37-acres through a subdivision map application to form the new parcel for the Project. The layout of the Project is shown in the Project Site Plan (Figure 2).

PROJECT DESCRIPTION: Energy-Source Minerals LLC (Applicant) is proposing to construct and operate a commercial lithium hydroxide production plant within the Salton Sea geothermal field in Imperial County (County), California (Project). The facility (ALTiS Plant) will process geothermal brine from the neighboring Hudson Ranch Power I Geothermal Plant (HR1) to produce lithium hydroxide, as well as zinc and manganese products which would be sold commercially.

The Project would consist of the following activities:

- Construction and operation of a plant to extract lithium, manganese, zinc, and other commercially viable substances from geothermal brine and process the extracted substances to produce commercial quantities of lithium, and to the extent possible, manganese and zinc products and other products;
- Construction and operation of brine supply and return pipelines and other associated interconnection facilities with the HR1 power plant;
- Construction of a primary access road from McDonald Road (approximately 500 feet west of the HR1 entrance) and an emergency access entrance only from Davis Road;
- Paving of McDonald Road from Highway 111 to English Road (approximately 3 miles);
- Construction of a power interconnection line from the IID and HR1 switchyard located at the northeast corner of the HR1 site;
- Construction of associated facilities between HR1 and the Project site to facilitate the movement of brine and other services;
- Construction of a laydown yard that will also support temporary offices during construction as well as serving as a truck management yard during operations; and
- Construction of offices, repair facilities, shipping and receiving facilities and other infrastructure components.

Project Applicant: Energy Source Mineral, LLC

URBAN AREA PLAN: None, located in unincorporated area of County of Imperial

BOARD OF SUPERVISORS DISTRICT: District 4, Supervisor Ryan E. Kelley

ANTICIPATED SIGNIFICANT EFFECTS: The EIR will analyze potential impacts associated with the following: Air Quality; Biological Resources; Cultural Resources; Energy; Geology and Soils; Greenhouse Gas Emissions; Hazards and Hazardous Materials; Hydrology and Water Quality; Noise; Transportation; Tribal Cultural Resources; and Utilities and Service Systems.

COMMENTS REQUESTED: The Imperial County Planning & Development Services Department would like to know your ideas about the potential effects this project might have on the environment and your suggestions as to mitigation or ways the project may be revised to reduce or avoid any potentially significant environmental impacts. Your comments will guide the scope and content of potential environmental issues to be examined in the EIR. Your comments may be submitted in writing to David Black, Imperial County Planning & Development Services Department, 801 Main Street, El Centro, CA 92243. Available project information may be reviewed at this location.

NOTICE OF PREPARATION REVIEW PERIOD: December 11, 2020 through January 14, 2021.

IID

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January 14, 2021

Mr. David Black
Planner IV
Planning & Development Services Department
County of Imperial
801 Main Street
El Centro, CA 92243

SUBJECT: NOI to Prepare a Draft EIR for Energy Source Mineral Atlis Project; CUP #20-0008

Dear Mr. Black:

On December 8, 2020, the Imperial Irrigation District received from the Imperial County Planning & Development Services Dept. a request for agency comments on the Notice of Preparation of a Draft Environmental Impact Report for the Energy Source Mineral Atlis Project. The applicant, Energy Source Mineral, LLC, is proposing to construct and operate a commercial lithium hydroxide production plant within the Salton Sea geothermal field in Imperial County, California. The plant will process geothermal brine from the neighboring Hudson Ranch Power I geothermal plant to produce lithium hydroxide, as well as zinc and manganese products to be sold commercially. Among other activities, the project is considering the construction of a primary access road from McDonald Road (approx. 500 ft. west of the HRP I geothermal plant entrance) and an emergency access entrance from Davis Road, the paving of McDonald Road from Highway 111 to English Road (about 3 miles) and the construction of a power interconnection line from the IID and the existing HRP I switchyard. The project will be located at 477 West McDonald Road, Calipatria, CA on land owned by Hudson Ranch Power I, LLC: APNs 020-100-025, -100-044, and -100-046. Currently, the HRP I geothermal plant is sited within the northeast corner of parcel APN 020-100-044.

The Imperial Irrigation District has reviewed the project information and has the following comments:

1. Since the project considers the installation of 600 HP emergency diesel electricity generation to be used to keep vital plant systems operating during plant outages, this will need to vetted by IID Energy Department for system impacts. For further information, the applicant should be advised to contact Jesus Martinez who oversees the district's Transmission Planning section at (760) 339-0574.

2. For distribution-rated electrical service for the project (15kV or less), the applicant should be advised to contact Ignacio Romo, IID Customer Project Development Planner, at (760) 482-3426 or e-mail Mr. Romo at igromo@iid.com to initiate the customer service application process. In addition to submitting a formal application (available for download at the district website http://www.iid.com/home/showdocument?id=12923), the applicant will be required to submit a complete set of County-approved plans (including CAD files),

project schedule, estimated in-service date, one-line diagram of facility, electrical panel specifications (size, voltage, and location) and the applicable fees, permits, easements and environmental compliance documentation pertaining to the provision of temporary and permanent electrical service to the project. The applicant shall be responsible for all costs and mitigation measures related to providing electrical service to the project.

3. IID water facilities that may be impacted include the O Lateral and the O Drain due to road improvements to be undertaken at Highway 111 and McDonald Road. The project proposes the relocation of canal gates on the west side of Highway 111 and relocation of a drain exit structure on the west side of Highway 111.

4. To insure there are no impacts to IID water facilities, the applicant should submit the project's design plans to the IID Water Department Engineering Services section for review prior to final design approval. The IID WDES Section can be contacted at (760) 339-9265 for additional information.

5. To obtain water for construction, the applicant should be advised to contact IID North End Division at (760) 482-9800. The use of IID water during the project's construction phase will require an encroachment permit.

6. The applicant may not use IID's canal or drain banks to access the project site. Any abandonment of easements or facilities will be approved by IID based on systems (irrigation, drainage, power, etc.) needs.

7. Any construction or operation on IID property or within its existing and proposed right of way or easements including but not limited to: surface improvements such as proposed new streets, driveways, parking lots, landscape; and all water, sewer, storm water, or any other above ground or underground utilities; will require an encroachment permit, or encroachment agreement (depending on the circumstances). A copy of the IID encroachment permit application and instructions are available for download at http://www.iid.com/departments/real-estate. The IID Real Estate Section should be contacted at (760) 339-9239 for additional information regarding encroachment permits or agreements.

8. In addition to IID's recorded easements, IID claims, at a minimum, a prescriptive right of way to the toe of slope of all existing canals and drains. Where space is limited and depending upon the specifics of adjacent modifications, the IID may claim additional secondary easements/prescriptive rights of ways to ensure operation and maintenance of IID's facilities can be maintained and are not impacted and if impacted mitigated. Thus, IID should be consulted prior to the installation of any facilities adjacent to IID's facilities. Certain conditions may be placed on adjacent facilities to mitigate or avoid impacts to IID's facilities.

9. Any new, relocated, modified or reconstructed IID facilities required for and by the project (which can include but is not limited to canals, drains, electrical utility substations, electrical transmission and distribution lines, water deliveries, canals, drains, etc.) need to be included as part of the project's CEQA and/or NEPA documentation, environmental

impact analysis and mitigation. Failure to do so will result in postponement of any construction and/or modification of IID facilities until such time as the environmental documentation is amended and environmental impacts are fully analyzed. **Any and all mitigation necessary as a result of the construction, relocation and/or upgrade of IID facilities is the responsibility of the project proponent**.

Should you have any questions, please do not hesitate to contact me at 760-482-3609 or at dvargas@iid.com. Thank you for the opportunity to comment on this matter.

Respectfully,

Donald Vargas
Compliance Administrator II

Enrique B. Martinez – General Manager
Mike Pacheco – Manager, Water Dept.
Marilyn Del Bosque Gilbert – Manager, Energy Dept.
Sandra Blain – Deputy Manager, Energy Dept.,
Constance Bergmark – Mgr. of Planning & Eng./Chief Elect. Engineer, Energy Dept.
Jamie Asbury – Assoc. General Counsel
Vance Taylor – Asst. General Counsel
Michael P. Kemp – Superintendent, Regulatory & Environmental Compliance
Laura Cervantes. – Supervisor, Real Estate
Jessica Humes – Environmental Project Mgr. Sr., Water Dept.

STATE OF CALIFORNIA **Gavin Newsom, *Governor***

NATIVE AMERICAN HERITAGE COMMISSION

NAHC HEADQUARTERS
1550 Harbor Boulevard
Suite 100
West Sacramento,
California 95691
(916) 373-3710
nahc@nahc.ca.gov
NAHC.ca.gov

December 9, 2020

Governor's Office of Planning & Research

DEC 10 2020

STATE CLEARINGHOUSE

David Black, Planner IV
Imperial County Planning and Development Department
801 Main Street
El Centro, CA 92243

Re: 2020120143, Energy Source Mineral ALTiS Project, Imperial County

Dear Mr. Black:

The Native American Heritage Commission (NAHC) has received the Notice of Preparation (NOP), Draft Environmental Impact Report (DEIR) or Early Consultation for the project referenced above. The California Environmental Quality Act (CEQA) (Pub. Resources Code §21000 et seq.), specifically Public Resources Code §21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource, is a project that may have a significant effect on the environment. (Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, §15064.5 (b) (CEQA Guidelines §15064.5 (b)). If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an Environmental Impact Report (EIR) shall be prepared. (Pub. Resources Code §21080 (d); Cal. Code Regs., tit. 14, § 5064 subd.(a)(1) (CEQA Guidelines §15064 (a)(1)). In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources within the area of potential effect (APE).

CEQA was amended significantly in 2014. Assembly Bill 52 (Gatto, Chapter 532, Statutes of 2014) (AB 52) amended CEQA to create a separate category of cultural resources, "tribal cultural resources" (Pub. Resources Code §21074) and provides that a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment. (Pub. Resources Code §21084.2). Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource. (Pub. Resources Code §21084.3 (a)). **AB 52 applies to any project for which a notice of preparation, a notice of negative declaration, or a mitigated negative declaration is filed on or after July 1, 2015.** If your project involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space, on or after March 1, 2005, it may also be subject to Senate Bill 18 (Burton, Chapter 905, Statutes of 2004) (SB 18). **Both SB 18 and AB 52 have tribal consultation requirements.** If your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966 (154 U.S.C. 300101, 36 C.F.R. §800 et seq.) may also apply.

The NAHC recommends consultation with California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources. Below is a brief summary of <u>portions</u> of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

RECEIVED

DEC 10 2020

IMPERIAL COUNTY
PLANNING & DEVELOPMENT SERVICES

AB 52

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

1. Fourteen Day Period to Provide Notice of Completion of an Application/Decision to Undertake a Project: Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a lead agency shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice, to be accomplished by at least one written notice that includes:

- **a.** A brief description of the project.
- **b.** The lead agency contact information.
- **c.** Notification that the California Native American tribe has 30 days to request consultation. (Pub. Resources Code §21080.3.1 (d)).
- **d.** A "California Native American tribe" is defined as a Native American tribe located in California that is on the contact list maintained by the NAHC for the purposes of Chapter 905 of Statutes of 2004 (SB 18). (Pub. Resources Code §21073).

2. Begin Consultation Within 30 Days of Receiving a Tribe's Request for Consultation and Before Releasing a Negative Declaration, Mitigated Negative Declaration, or Environmental Impact Report: A lead agency shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project. (Pub. Resources Code §21080.3.1, subds. (d) and (e)) and prior to the release of a negative declaration, mitigated negative declaration or Environmental Impact Report. (Pub. Resources Code §21080.3.1(b)).

- **a.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code §65352.4 (SB 18). (Pub. Resources Code §21080.3.1 (b)).

3. Mandatory Topics of Consultation If Requested by a Tribe: The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

- **a.** Alternatives to the project.
- **b.** Recommended mitigation measures.
- **c.** Significant effects. (Pub. Resources Code §21080.3.2 (a)).

4. Discretionary Topics of Consultation: The following topics are discretionary topics of consultation:

- **a.** Type of environmental review necessary.
- **b.** Significance of the tribal cultural resources.
- **c.** Significance of the project's impacts on tribal cultural resources.
- **d.** If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency. (Pub. Resources Code §21080.3.2 (a)).

5. Confidentiality of Information Submitted by a Tribe During the Environmental Review Process: With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code §6254 (r) and §6254.10. Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public. (Pub. Resources Code §21082.3 (c)(1)).

6. Discussion of Impacts to Tribal Cultural Resources in the Environmental Document: If a project may have a significant impact on a tribal cultural resource, the lead agency's environmental document shall discuss both of the following:

- **a.** Whether the proposed project has a significant impact on an identified tribal cultural resource.
- **b.** Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code §21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource. (Pub. Resources Code §21082.3 (b)).

7. Conclusion of Consultation: Consultation with a tribe shall be considered concluded when either of the following occurs:

- **a.** The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
- **b.** A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached. (Pub. Resources Code §21080.3.2 (b)).

8. Recommending Mitigation Measures Agreed Upon in Consultation in the Environmental Document: Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code §21080.3.2 shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program, if determined to avoid or lessen the impact pursuant to Public Resources Code §21082.3, subdivision (b), paragraph 2, and shall be fully enforceable. (Pub. Resources Code §21082.3 (a)).

9. Required Consideration of Feasible Mitigation: If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, the lead agency shall consider feasible mitigation pursuant to Public Resources Code §21084.3 (b). (Pub. Resources Code §21082.3 (e)).

10. Examples of Mitigation Measures That, If Feasible, May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

- **a.** Avoidance and preservation of the resources in place, including, but not limited to:
  - **i.** Planning and construction to avoid the resources and protect the cultural and natural context.
  - **ii.** Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.
- **b.** Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
  - **i.** Protecting the cultural character and integrity of the resource.
  - **ii.** Protecting the traditional use of the resource.
  - **iii.** Protecting the confidentiality of the resource.
- **c.** Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
- **d.** Protecting the resource. (Pub. Resource Code §21084.3 (b)).
- **e.** Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed. (Civ. Code §815.3 (c)).
- **f.** Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated. (Pub. Resources Code §5097.991).

11. Prerequisites for Certifying an Environmental Impact Report or Adopting a Mitigated Negative Declaration or Negative Declaration with a Significant Impact on an Identified Tribal Cultural Resource: An Environmental Impact Report may not be certified, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

- **a.** The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code §21080.3.1 and §21080.3.2 and concluded pursuant to Public Resources Code §21080.3.2.
- **b.** The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
- **c.** The lead agency provided notice of the project to the tribe in compliance with Public Resources Code §21080.3.1 (d) and the tribe failed to request consultation within 30 days. (Pub. Resources Code §21082.3 (d)).

The NAHC's PowerPoint presentation titled, "Tribal Consultation Under AB 52: Requirements and Best Practices" may be found online at: http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf

SB 18

SB 18 applies to local governments and requires local governments to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. (Gov. Code §65352.3). Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf.

Some of SB 18's provisions include:

1. Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.** (Gov. Code §65352.3 (a)(2)).
2. No Statutory Time Limit on SB 18 Tribal Consultation. There is no statutory time limit on SB 18 tribal consultation.
3. Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research pursuant to Gov. Code §65040.2, the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code §5097.9 and §5097.993 that are within the city's or county's jurisdiction. (Gov. Code §65352.3 (b)).
4. Conclusion of SB 18 Tribal Consultation: Consultation should be concluded at the point in which:
    - **a.** The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    - **b.** Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation. (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

Agencies should be aware that neither AB 52 nor SB 18 precludes agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52 and SB 18. For that reason, we urge you to continue to request Native American Tribal Contact Lists and "Sacred Lands File" searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/.

NAHC Recommendations for Cultural Resources Assessments

To adequately assess the existence and significance of tribal cultural resources and plan for avoidance, preservation in place, or barring both, mitigation of project-related impacts to tribal cultural resources, the NAHC recommends the following actions:

1. Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    - **a.** If part or all of the APE has been previously surveyed for cultural resources.
    - **b.** If any known cultural resources have already been recorded on or adjacent to the APE.
    - **c.** If the probability is low, moderate, or high that cultural resources are located in the APE.
    - **d.** If a survey is required to determine whether previously unrecorded cultural resources are present.

2. If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    - **a.** The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    - **b.** The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

3. Contact the NAHC for:

a. A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.

b. A Native American Tribal Consultation List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.

4. Remember that the lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

a. Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources per Cal. Code Regs., tit. 14, §15064.5(f) (CEQA Guidelines §15064.5(f)). In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.

b. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.

c. Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code §7050.5, Public Resources Code §5097.98, and Cal. Code Regs., tit. 14, §15064.5, subdivisions (d) and (e) (CEQA Guidelines §15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

If you have any questions or need additional information, please contact me at my email address: Andrew.Green@nahc.ca.gov.

Sincerely,

Andrew Green

Andrew Green
Cultural Resources Analyst

cc: State Clearinghouse

STATE OF CALIFORNIA—CALIFORNIA STATE TRANSPORTATION AGENCY Gavin Newsom, Governor

DEPARTMENT OF TRANSPORTATION
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Making Conservation
a California Way of Life.

December 14, 2020

11-IMP-111
PM 38.1
Energy Source Minerals (Hudson Ranch)
Nov 2020 TIS

Mr. John A. Boarman
Linscott, Law & Greenspan, Engineers
4542 Ruffner Street, Suite 100
San Diego, CA 92111

Dear Mr. Boarman:

Thank you for including the California Department of Transportation (Caltrans) in the review process for the Energy Source Minerals (Hudson Ranch) project located near State Route 111 (SR-111). The mission of Caltrans is to provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability. The Local Development-Intergovernmental Review (LD-IGR) Program reviews land use projects and plans to ensure consistency with our mission and state planning priorities.

Caltrans has the following comments for the November 2020 Traffic Study:

- Section 7.3 states: "It is also noted that during the construction phase of the project, McDonald Road was not a viable option for project traffic since it is assumed to be currently unpaved." Then Section 7.3.1 states: "It should be noted that McDonald Road would be utilized as the primary road to access the construction site." These statements seem to be contradicting. Please clarify when will McDonald Road be paved between SR-111 and the project site. Before this segment of McDonald Road is open to traffic, the northbound left turn pocket needs to be completed at the SR-111 and McDonald Road intersection.

- If excessive traffic is using the SR-111 and McDonald Road intersection before the northbound left turn pocket is installed, access at this intersection may need to be prevented.

- The Intersection Control Evaluation (ICE) analysis is very minimal and Caltrans would not consider it to be an adequate ICE. All four alternatives will need to proceed to the ICE step 2 and be evaluated in depth.

- The VMT analysis is incomplete and insufficient. Per CEQA and Senate Bill 743, the VMT for the project needs to be compared to thresholds, and provide determinations of whether there are VMT based impacts. If there are impacts, then mitigations need to be implemented.

- Please clarify the statement in Section 12.0. "It is recommended that the SR-111/McDonald Road intersection be improved to Caltrans satisfaction prior to the completion of the project." Are these improvements the northbound left turn pocket? Please clarify if the lead agency will condition the developer to install the left turn pocket and/or other improvements before the Energy Source Minerals site begins operations.

If you have any questions, please contact Roger Sanchez, of Caltrans' District 11 Development Review Branch, at (619) 987-1043 or by e-mail sent to roger.sanchez-rangel@dot.ca.gov.

Sincerely,

electronically signed by

MAURICE EATON, Branch Chief
Local Development and Intergovernmental Review Branch

STATE OF CALIFORNIA—CALIFORNIA STATE TRANSPORTATION AGENCY Gavin Newsom, Governor

DEPARTMENT OF TRANSPORTATION
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Making Conservation
a California Way of Life.

January 14, 2021

11-IMP-111
PM 38.1
Energy Source Minerals (Hudson Ranch)
Dec 2020 NOP SCH 2020120143

Mr. David Black
Imperial County Planning & Development Services Department
801 Main Street
El Centro, CA 92243

Dear Mr. Black:

Thank you for including the California Department of Transportation (Caltrans) in the environmental review process for the Energy Source Minerals (Hudson Ranch) project located near State Route 111 (SR-111). The mission of Caltrans is to provide a safe, sustainable, integrated and efficient transportation system to enhance California's economy and livability. The Local Development-Intergovernmental Review (LD-IGR) Program reviews land use projects and plans to ensure consistency with our mission and state planning priorities.

Caltrans has previously coordinated with Jurg Heuberger at Energy Source and John Boarman at Linscott, Law & Greenspan (LLG) for the proposed roadway improvements on SR-111 at McDonald Road in Caltrans Right-of-Way (R/W). Caltrans will require an approved Traffic Analysis and may require an Intersection Control Evaluation (ICE) analysis to determine the appropriate roadway improvement on State R/W.

Right-of-Way

Any work performed within Caltrans' Right-of-Way (R/W) will require discretionary review and approval by Caltrans and an encroachment permit will be required for any work within the Caltrans' R/W prior to construction.

If you have any questions, please contact Roger Sanchez, of Caltrans' District 11 Development Review Branch, at (619) 987-1043 or by e-mail sent to roger.sanchez-rangel@dot.ca.gov.

Sincerely,

electronically signed by

MAURICE EATON, Branch Chief
Local Development and Intergovernmental Review Branch

Attachment.

150 SOUTH NINTH STREET
EL CENTRO, CA 92243-2850

TELEPHONE: (442) 265-1800
FAX: (442) 265-1799

AIR POLLUTION CONTROL DISTRICT

January 15, 2021

Jim Minnick, Director
Imperial County Planning & Development Services
801 Main Street
El Centro, CA 92243

SUBJECT: Notice of Preparation for Draft Environmental Impact Report for Energy Source Mineral ATLiS Project (Energy-Source Minerals, LLC)

Dear Mr. Minnick:

The Imperial County Air Pollution Control Air District (Air District) appreciates the opportunity to comment on the Notice of Preparation (NOP) and Initial Study (IS) 20-0014 for the Energy Source Mineral ATLiS Project ("Project") which will allow the construction and operation of a commercial lithium hydroxide production facility. The intended commercial purpose is to produce lithium hydroxide, along with zinc and manganese by utilizing geothermal brine from the adjacent Hudson Ranch Power 1 Geothermal Plant (HR1), located at 477 West McDonald Road also identified as APNs 020-100-025, 020-100-044 and 020-100-046. The nearest community, Niland, is approximately 3.8 miles northeast of the facility.

In keeping with the spirit of the California Environmental Quality Act (CEQA), the Air District, in reviewing Environmental Impact Reports (EIRs), does not look to technical perfection but rather for adequacy, completeness and a good-faith effort at full disclosure.[1] To assist the applicant understand the Imperial County specific requirements under CEQA we strongly recommends the Imperial County CEQA Air Quality Handbook revised 2017 (IC Handbook). While all sections of the IC Handbook are important, Section 6 describes the preparation of an Air Quality Analysis and section 7 provides a menu of reasonable and standard mitigation measures should prove helpful. The California Emissions Estimator Model (CalEEMod) is recommended, however the applicant may choose to use individualized models such as CARB's certified model EMFAC to support the findings. In either case the Air District request that all input and output files be provided as part of the Air Quality Analysis, thus part of the EIR to the Air District for review and analysis. As a final thought, the EIR should provide sufficient detailed information concerning the impact and process of permitting through the Air District.

---

[1] Guidelines of the California Environmental Quality Act (CEQA), Section 15003(i), 2020, https://govt.westlaw.com/calregs/Document/I970DFA50D48811DEBC02831C6D6C108E?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)

In closing, the Air District would like to again thank the Planning Department for providing the opportunity for the Air District to review and comment on the NOP for Draft EIR for the Energy Source Mineral ATLiS Project. Should you have any questions please feel free to contact the Air District offices at (442) 265-1800.

Respectfully,
Monica N. Soucier
Monica N Soucier
APC Division Manager

APPENDIX B – AIR QUALITY ASSESSMENT HUDSON RANCH MINERAL RECOVERY

AIR QUALITY ASSESSMENT

Hudson Ranch Mineral Recovery
County of Imperial

Prepared for:

Energy Source LLC
409 W. McDonald Rd.
Calipatria, CA 92233

Prepared by:

Ldn Consulting, Inc.
42428 Chisolm Trail
Murrieta, CA 92562

June 17, 2021

Project: 20-30 Hudson Ranch AQ

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EXECUTIVE SUMMARY

This air quality analysis has been completed to determine impacts, which may be associated with the construction or operation of the proposed Hudson Ranch Mineral Recovery Project is located on a 37-acre project site located within the County of Imperial near Niland, CA.

During construction, the proposed Project would not be expected to produce significant air quality impacts under the California Environmental Quality Act or exceed thresholds of significance established by the Imperial County Air Pollution Control District (ICAPCD).

The proposed Project would not generate significant operational impacts offsite either during construction or during post construction operations.

Finally, the project would not be expected to generate offensive objective odors during either the construction or operation of the project.

Per the requirements of ICAPCD, the project would be required to implement standard mitigation measures for both construction and operations and are identified below:

Standard Construction Site Design Measures (SDM):

1. Use of alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel powered equipment.
2. Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes as a maximum.
3. Limit, to the extent feasible, the hours of operation of heavy duty equipment and/or the amount of equipment in use.
4. Replace fossil fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).

Standard Operations Site Design Measures:

1. Provide on-site bicycle lockers and/or racks.
2. Provide on-site eating, refrigeration and food vending facilities to reduce lunchtime trips.
5. Provide shower and locker facilities to encourage employees to bike and/or walk to work.
6. Provide for paving a minimum of 100 feet from the property line for commercial driveways that access County paved roads as per County Standard Commercial Driveway Detail 410B (formerly SW-131A). It should be noted that the project would also pave McDonald Road from HWY 111 to English Road.

3. Measures which meet mandatory, prescriptive and/or performance measures as required by Title 24.

The project will include a number of design features during construction as follows:

1. Diesel equipment required which does not satisfy SDM 1 shall be rated Tier 4 per EPA requirements. All modeling assumes the use of this equipment and is therefore a condition to the project.
2. Access to the site will be via HWY 111 and McDonald Rd. All equipment workers, vendors and haul trucks will be required to utilize these roadways.
3. Operational On-Road trips will not operate on unpaved dirt roads.
4. An agreement between County of Imperial Public Works and the applicant has been established requiring the applicant to improve a 2-mile section of the unpaved portion of McDonald Road adjacent to the site by installing a 12-18" thick engineered Class II base section. In addition, at the request of the County, the applicant would utilize the improved section during construction and would wet the site continuously during construction activities. The road would be immediately paved after construction prior to operations of the plant to avoid damaging a new asphalt section.
5. During construction of the project, the project would be required to maintain daily dust suppression at the 2-mile section of McDonald Road using a water truck operating continuously while vehicles are using it.
6. The project will provide wheel shakers at both the exit of the construction site to minimize dust being tracked off the project site and onto the roadways.

An operational health risk analysis was performed which referenced the nearest residential receptor approximately 1 mile from the project site. Based on that analysis, less than significant PM_{10} exhaust health risks would be expected from both onsite and offsite diesel truck operations from the project.

The proposed Project is consistent with the existing land use zoning designation which is designated as industrial. Also, since no direct or cumulative impacts are expected, the proposed project would be consistent with the AQMP and SIP. Given this, less than significant cumulative operational impacts would be expected.

1.0 INTRODUCTION

1.1 Purpose of this Study

The purpose of this Air Quality analysis is to determine potential air quality impacts (if any) that may be created by construction, area or operational emissions (short term or long term) from the proposed Project. Should impacts from the proposed project be determined, the intent of this study would be to recommend suitable mitigation measures to bring those impacts to a level that would be considered less than significant.

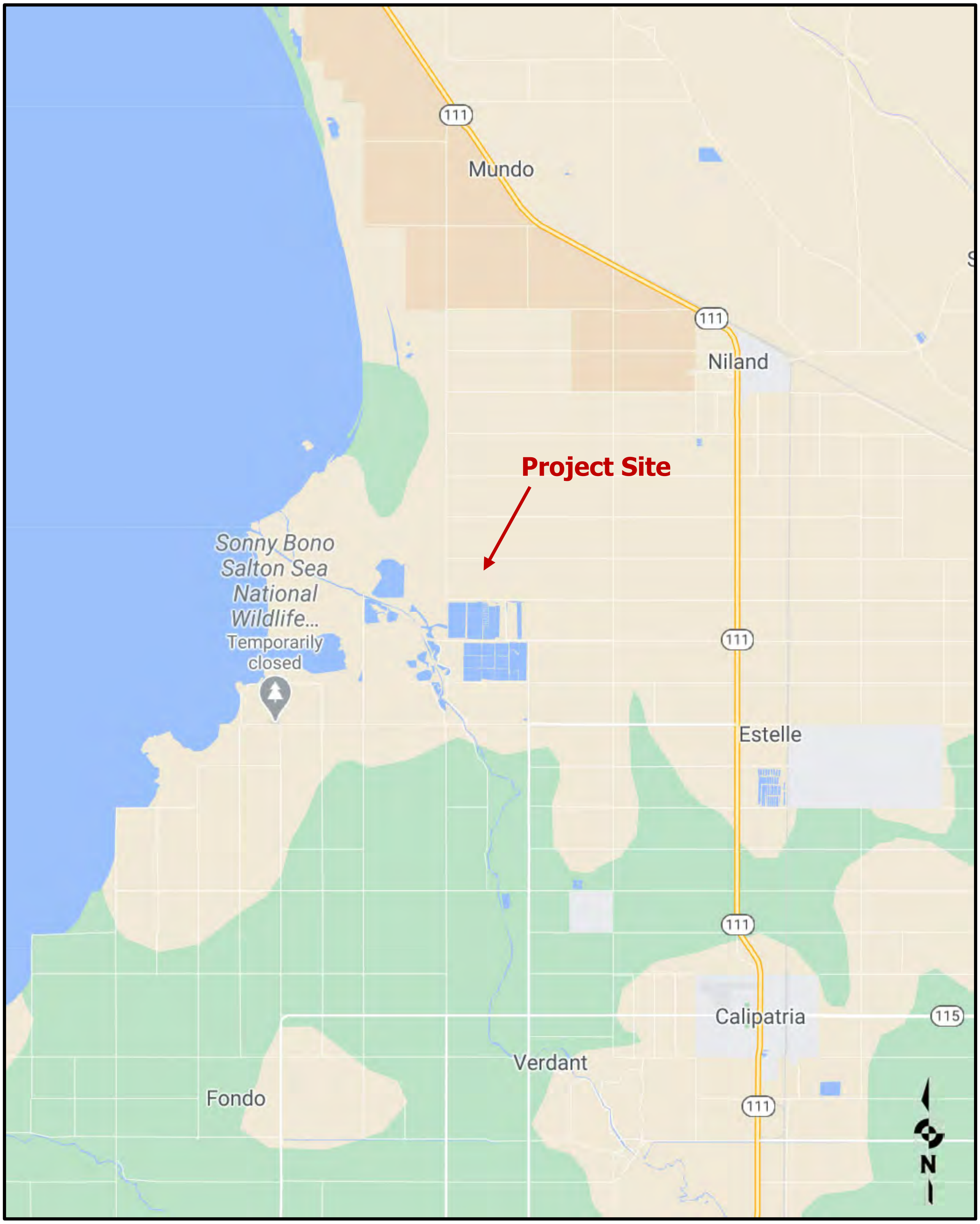
1.2 Project Location

The project applicant, Energy Source Minerals LLC (E S Minerals), seeks to construct a mineral recovery facility using geothermal brine from the neighboring Hudson Ranch I Geothermal Power Plant (HR1). The Project facilities will be located in the north half of Section 24 in Township 11 South, Range 13 East, San Bernardino Base and Meridian (SBB&M) as shown on the USGS Niland Quadrangle topographic map within the County of Imperial California. The site is located about 3 miles west-southwest of the community of Niland near the southwest corner of the existing HR1 power plant site, on Imperial County parcel APN 020-100-044 (about 65.12 acres). The proposed ATLiS plant site and associated plant facilities would be built within an existing approximately 37–acre project area, with the addition of the 15 acres located at the southeast corner of Davis Rd. and McDonald Rd. Primary highway access to the proposed plant site will be via State Highway 111. A general project vicinity map is shown in Figure 1–A.

1.3 Project Description

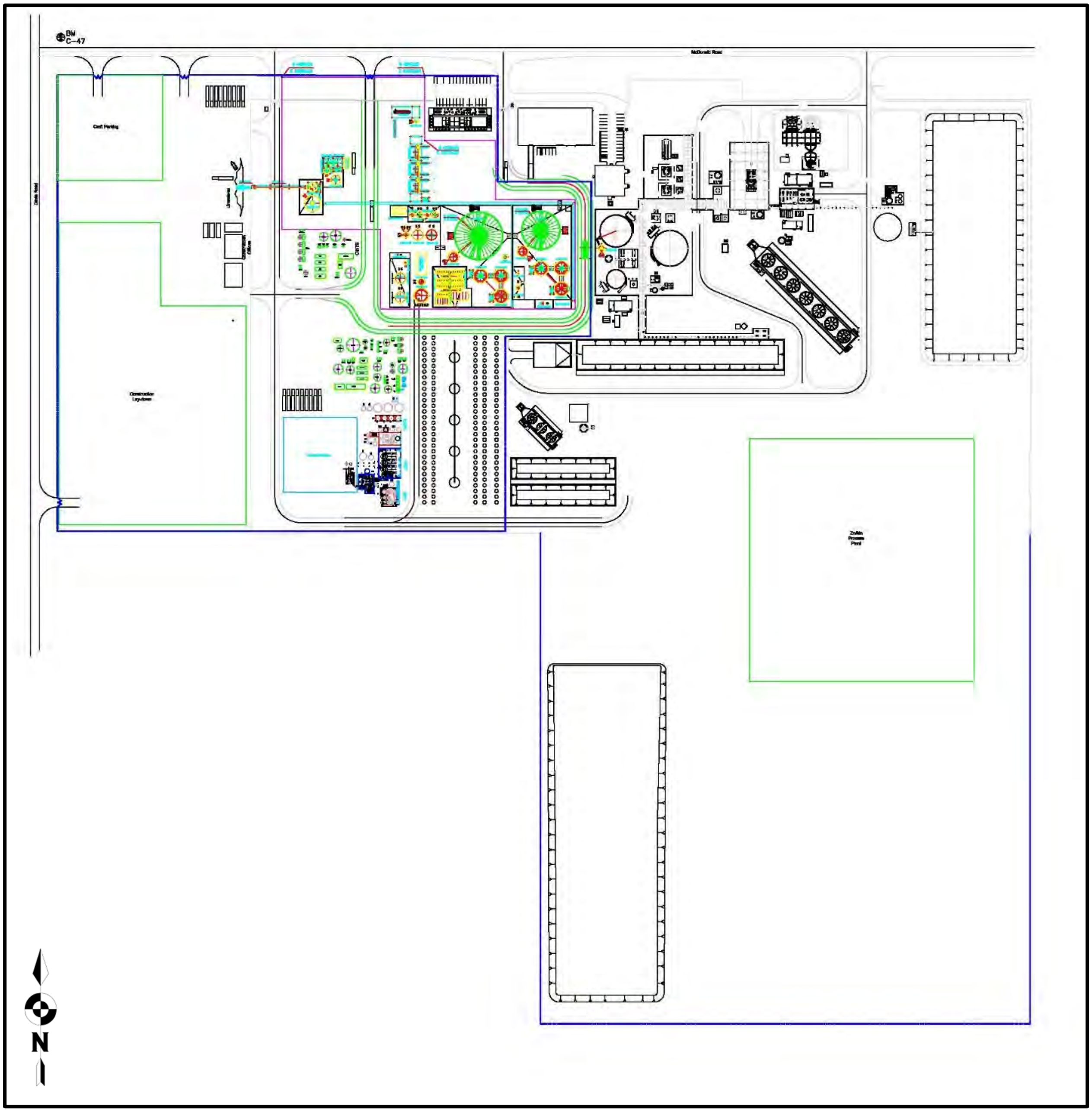
The facility will process geothermal brine from HR1 to produce lithium hydroxide (LiOH), zinc (Zn), and manganese (Mn) products which will be sold commercially. The proposed Project seeks to construct and operate a facility capable of extracting and producing viable lithium (Li), Mn and Zn and other commercially viable substances from geothermal brine. The facility will include a brine supply and return pipeline system and other associated interconnection facilities, infrastructure and systems linking to the HR1 power plant as well as a shipping and receiving area. Additionally, the project would construct a primary access road from McDonald Road as well as an emergency access entrance from Davis Road. Also, the project will pave McDonald Road from SR-111 to English Road. Finally, a laydown yard will be constructed with temporary offices which will be utilized during construction. The project site plan is shown in Figure 1–B.

Figure 1-A: Project Vicinity Map



Source: (Google, 2020)

Figure 1-B: Proposed Project Site Layout



Source: (Energy Source LLC, 2020)

Based on discussions with the Project applicant, the total combined facility area is not known at this time but would be expected to be no more than 100,000 square Feet (SF) also, paving quantities are not known at this time but would be expected to be less than 10 acres of asphalt and includes paving McDonald Road from SR-111 to English Road.

The project will include a number of design features during construction as follows:

1. Diesel equipment required which does not satisfy SDM 1 shall be rated Tier 4 per EPA requirements. All modeling assumes the use of this equipment and is therefore a condition to the project.
2. Access to the site will be via HWY 111 and McDonald Rd. All equipment workers, vendors and haul trucks will be required to utilize these roadways. On-Road trips will not operate on unpaved dirt roads.
3. An agreement between County of Imperial Public Works and the applicant has been established requiring the applicant to improve a 2-mile section of an unpaved portion of McDonald Road adjacent to the site by installing a 12-18” thick engineered Class II base section. In addition, at the request of the County, the applicant would utilize the improved section during construction and would wet the site continuously during construction activities. The road would be immediately paved after construction prior to operations of the plant to avoid damaging a new asphalt section.
4. During construction of the project, the project would be required to maintain daily dust suppression at the 2-mile section of McDonald Road using a water truck operating continuously while vehicles are using it.
5. The project will provide wheel shakers at both the exit of the construction site to minimize dust being tracked off the project site and onto the roadways.

The ATLiS plant site will include construction of the following buildings and structures:

- Plant offices (which will house offices and meeting rooms) [Note: offices for both plants may be incorporated into one building].
- Operations and employee facilities (which will house offices for supervisors, meeting rooms, breakroom/lunchroom, locker/shower rooms); [Note: these may all be in one building with the main offices]
- Maintenance shop, materials warehouse (which will house plant maintenance equipment and supplies, and shops such as machine, paint, welding and electronic);
- Materials warehouse (which will store equipment, reagents, etc.);
- Electrical building(s) (which will house motor control centers, electric power switchgear and metering to provide power for plant operations);
- Emergency generator building;
- Two reagent storage and preparation buildings;
- Chemical laboratory building (which will contain a wet chemistry laboratory and analytical instruments for analysis of in-process and finished products);

- Filter press sheds (which will house filter presses. Li product production building (which will house the proprietary technology for manufacturing the lithium carbonate and lithium hydroxide products);
- Li product handling, packaging and warehouse buildings (which will house the filtration and drying equipment for the Li products and bagging and palletizing of finished products);
- Manganese product handling, production, and warehouse building (which will house the filtration and drying equipment for the Mn product and bagging and palletizing of finished products);
- Zn product handling, production, and warehouse building (which will house the filtration and drying equipment for the Zn product and bagging and palletizing and storage of finished products);
- Calcium oxide (CaO) silo and slacker;
- Limestone stockpile and solution tanks
- HCL offloading and storage tank(s)
- Gate (guard) house; and
- Cooling tower
- The sewage from this plant will be processed by the HR 1 sewer treatment plant, hence no further permitting is required.

Production Plant Operations

The ATLiS plant will utilize post-secondary clarifier brine produced from the geothermal fluid management activities on the neighboring HR1 power plant site as the resource process stream for the commercial production of LiOH, Zn and Mn products.

Impurity Removal

Post heat extraction geothermal brine from the secondary clarifier of the HR1 power plant site will be transported via pipeline to the impurity removal process area on the ATLiS plant site. A nominal 7,000 gallons per minute (gpm) of the brine will be processed by the facility. This process rate is used as the basis for the estimates provided throughout this Project description, but the actual rate of brine eventually processed on the site will be optimized to take advantage of the available facilities on the HR1 and ATLiS plant sites.

Iron (Fe) and silica (SiO_2) will be removed from the brine followed by the removal of the Mn and Zn in a two-stage process. The separated Fe-SiO_2 material, and the Mn-Zn material will be dewatered in the Filter Press sheds. The mineral depleted brine will then be transported via pipeline to the Li Extraction process area.

The separated Fe-SiO_2 material will be initially managed as a waste stream. The waste material will be collected and analyzed in conformance with appropriate laboratory testing protocols to ensure that it is handled and disposed of in an appropriate manner. If and when in the future, opportunities exist to use this material, ATLiS plans to market iron-silica material as an additional product(s) to be shipped to a third party(ies) for use in other industrial processes. Based on average production rates at the target nominal process rate of 7,000 gpm, approximately 136,200 metric tons of iron-silica material will be produced annually.

Lithium Chloride Extraction

The treated brine will be fed to a Li extraction process located within the Li Extraction process area on the ATLiS plant site. This area will be outside on a concrete pad. The area will contain proprietary Li extraction media. Li from the brine will be retained on the extraction media. A lithium chloride (LiCl) product stream will be produced from the extraction process. The LiCl will be transported via pipeline from the Li Extraction area into the Li Purification process area. Impurities will be removed from the LiCl product stream and handled as nonhazardous waste. The purified LiCl will then be concentrated and transported via pipeline to a Li Product Production Building where the materials will be processed into a usable product which will consist of a packaged palletized unit ready of shipping.

The dried Li products will be packaged, palletized, staged, and loaded into trucks for distribution in the Li Product Handling, Production and Warehouse buildings. The dried Li products will be loaded into bulk bags in a bagging station. Packaging is expected to be 1,000 kg super sacks.

Extraction of Zink and Manganese

Zn/Mn filter cake will be acid leached, separated and purified int a two-part solvent extraction process. The separated steams will each then be dried and packaged for further processing by others.

Manganese Extraction and Processing

The SiO_2-, -Fe -depleted brine from the impurity removal process will be transported to the Mn Extraction and Production Area. Mn will be precipitated from the brine into Mn oxides/hydroxides by adding reagents, then dewatered in filter presses into wet cake product. The products will be transported to the Mn Product Handling, Production and Warehouse building for further handling, packaging, and offsite shipment to market.

Product Shipping to Offsite Markets

The ATLiS plant may produce multiple products for offsite shipment to market by truck. The average annual amount of product shipped out of the plant is estimated at 19,000 metric tons of Li product 10,000 to 20,000 metric tons of Zn product(s), and up to 60,000 metric tons of Mn product(s), Products will be transported by freight truck on existing roadways to shipping distribution point(s). Other products of the production operations may be generated by the proprietary technology on the plant site and would also be shipped offsite to market by truck.

Air Quality Emissions from onsite equipment operations

Small quantities of criteria air pollutants, criteria air pollutant precursors and hazardous air pollutants would be released into the atmosphere from the ATLiS plant extraction, processing and packaging equipment during normal plant operations. Small quantities of diesel particulate matter (DPM) emissions would also be released to the atmosphere from the emergency diesel engines during testing and any emergency operations. Testing operations are required each year. Based on historic testing at the HR 1, it is expected that each unit will have 50 hours runtime each year for testing and maintenance.

A Permit to Construct and a Permit to Operate would be obtained, as required by the ICAPCD, for the facility stationary air pollutant emission sources and air pollutant control equipment. Warehouse/yard vehicles (forklifts and manlift) would electric powered to minimize particulate emissions from these sources though the project will have two propane forklifts each being less than 50 horsepower.

The following paragraphs describe the principal operational emission sources, abatement equipment and emission control methods that will be incorporated into the ATLiS plant and operations.

Cooling Tower: The ATLiS plant will utilize a small cooling tower that will operate at a relatively low circulation rate. The cooling tower will be designed and operated to minimize particulate emissions. Dissolved solids in the circulating cooling water would be released to the environment as particulate emissions via “drift” (small water droplets that become entrained in the air stream leaving the cooling tower). Drift eliminators are designed to capture the water droplets in the cooling tower air stream and prevent their escape by causing the droplets to change direction, lose velocity and fall back into the circulating cooling water. Particulate emissions from the ATLiS cooling tower will be minimized by maintaining a low total dissolved solids (TDS) concentration in the circulating water by removing a slipstream of the higher TDS circulating cooling water as blowdown and replacing it with the lower TDS canal water; and by controlling cooling tower drift losses by using high efficiency drift eliminators, which are considered best available control technology (BACT) for cooling tower drift. The cooling tower blowdown will be used within the process dilution water. Cooling tower particulate emissions are estimated at 4.37 lbs/day and 0.80 tons/yr.

Operating Equipment and Emission Abatement: Other plant operating equipment will also be designed and operated to minimize particulate and other air pollutant emissions. Small quantities of particulates will be released from the loading and unloading of the dry materials in open areas, as well as chemical storage silos and tanks; and the drying, transfer and packaging of the Li, and Zn/Mn products.

Drying, transfer and packaging the lithium and zinc/manganese products would create small amounts of particulate matter which, in each case, would be collected by a wet scrubber, baghouse or other dust collector to prevent the loss of product, as well as to minimize particulate emissions to the atmosphere. The estimated controlled particulate emissions from these production processes are 0.97 lbs./day and 0.17 tons/year. The Li Product Handling Buildings' and Packaging and Warehouse Buildings' air will also be filtered and operated with a negative pressure to further prevent dust emissions from these operations. As an alternative Nitrogen Gas may be used to create a positive pressure system.

The loading of bulk dry reagent chemicals into storage silos or tanks is typically done pneumatically, which can release particulate matter into the atmosphere. These silo or tank loading particulate emissions would be controlled using fabric filter units called "bin vents," which are typically installed on top of silos, or other dust collectors to prevent the loss of reagent, as well as to minimize particulate emissions to the atmosphere. Bin vent fans induce a draft which directs any particulate emissions to the fabric filter. Dust collected on the filters or the other types of dust collectors is discharged back into the appropriate silo. Bulk dry chemicals removed from the silos or tanks are discharged into wet processes which would not result in particulate emissions. As a group, the emissions from the loading of the bulk dry reagent from open areas and from silos and tanks is estimated at 0.07 lbs./day and 0.01 tons/year.

Combined, the project operations from the mineral extraction processes from the existing geothermal brine will produce 5.41 lb/day of particulate matter and 0.98 tons/year.

Furthermore, the extraction process will require the use of concentrated liquid Hydrochloric Acid. Due to the offload operations, the project would produce HCl vapor emissions from the storage tank(s). Scrubbers will be installed on the storage tanks to control HCl vapor emissions from the storage tank though it is estimated that roughly 12.5lbs/day and 3.72 tons/year or 7,440 pounds per year would evaporate and become an aerosol form of Hydrochloric Acid otherwise known as Hydrogen Chloride.

2.0 EXISTING ENVIRONMENTAL SETTING

2.1 Existing Setting

The location of the ATLiS project is on the existing HR 1 site which was previously permitted for the Geothermal Plant. The site is zoned manufacturing (medium industrial) (M2G-PE), and is located entirely within the existing Salton Sea Geothermal Overlay Zone. In addition to the actual power plant, the rest of the land has been used for lay down areas, storage areas and storm water management. The only additional land that will be included is an approximate 15-acre parcel located at the southeast corner of Davis Rd. and McDonald Rd. This 15-acre site has been vacant for several decades and was previously used for geothermal testing.

To the west of the site and west of Davis Rd. is generally IID owned vacant marsh land adjoining the Salton Sea. To the north of the site and north of McDonald Rd. is vacant land that that now is mostly used for duck hunting clubs and the location of the production and injection wells for HR 1. To the south is vacant land that has never been in any production and is also the site of numerous" mud-pots". The nearest residential unit is roughly one mile north of the proposed project's northern property line.

2.2 Climate and Meteorology

Climate within the SSAB experiences mild and dry winters with daytime temperatures ranging from 65 to 75 °F, extremely hot summers with daytime temperatures ranging from 104 to 115 °F, and very little rain. Imperial County usually receives approximately three inches of rain per year mostly occurring in late summer or midwinter. Summer weather patterns are dominated by intense heat induction low-pressure areas over the interior desert. The flat terrain of the Imperial Valley and the strong temperature differentials created by intense solar heating produce moderate winds and deep thermal convection.

The general wind speeds in the area are less than 10 mph, but occasionally experience winds speeds of greater than 30 mph during the months of April and May. Statistics reveal that prevailing winds blow from the northwest-northeast; a secondary trend of wind direction from the southeast is also evident.

2.3 Regulatory Standards

2.3.1 Federal Standards and Definitions

The Federal Air Quality Standards were developed per the requirements of The Federal Clean Air Act, which is a federal law that was passed in 1970 and further amended in 1990. This law provides the basis for the national air pollution control effort. An important element of the act included the development of national ambient air quality standards (NAAQS) for major air pollutants.

The Clean Air Act established two types of air quality standards otherwise known as primary and secondary standards. ***Primary Standards*** set limits for the intention of protecting public health, which includes sensitive populations such as asthmatics, children and elderly. ***Secondary Standards*** set limits to protect public welfare to include the protection against decreased visibility, damage to animals, crops, vegetation and buildings.

The EPA Office of Air Quality Planning and Standards (OAQPS) has set NAAQS for principal pollutants, which are called "criteria" pollutants. These pollutants are defined below:

1. ***Carbon Monoxide (CO):*** *is a colorless, odorless, and tasteless gas and is produced from the partial combustion of carbon-containing compounds, notably in internal-combustion engines. Carbon monoxide usually forms when there is a reduced availability of oxygen present during the combustion process. Exposure to CO near the levels of the ambient air quality standards can lead to fatigue, headaches, confusion, and dizziness. CO interferes with the blood's ability to carry oxygen.*
2. ***Lead (Pb):*** *is a potent neurotoxin that accumulates in soft tissues and bone over time. The major sources of lead emissions have historically been motor vehicles (such as cars and trucks) and industrial sources. Because lead is only slowly excreted, exposures to small amounts of lead from a variety of sources can accumulate to harmful levels. Effects from inhalation of lead near the level of the ambient air quality standard include impaired blood formation and nerve conduction. Lead can adversely affect the nervous, reproductive, digestive, immune, and blood-forming systems. Symptoms can include fatigue, anxiety, short-term memory loss, depression, weakness in the extremities, and learning disabilities in children.*
3. ***Nitrogen Dioxide (NO_2):*** *is a reactive, oxidizing gas capable of damaging cells lining the respiratory tract and is one of the nitrogen oxides emitted from high-temperature combustion, such as those occurring in trucks, cars, power plants, home heaters, and gas stoves. In the presence of other air contaminants,* NO_2 *is usually visible as a reddish-brown air layer over urban areas.* NO_2 *along with other traffic-related pollutants is associated with respiratory symptoms, respiratory illness and respiratory impairment. Studies in animals have reported biochemical, structural, and cellular changes in the lung when exposed to* NO_2 *above the level of the current state air quality standard. Clinical studies of human subjects suggest that* NO_2 *exposure to levels near the current standard may worsen the effect of allergens in allergic asthmatics, especially in children.*
4. ***Particulate Matter (PM_{10} or $PM_{2.5}$):*** *is a complex mixture of tiny particles that consists of dry solid fragments, solid cores with liquid coatings, and small droplets of liquid. These particles vary in shape, size and chemical composition, and can be made up of multiple materials such as metal, soot, soil, and dust.* PM_{10} *particles are 10 microns (µm) or less and* $PM_{2.5}$ *particles are 2.5 (µm) or less. These particles can contribute significantly to regional haze and reduction of visibility in California. Exposure to PM levels exceeding current air quality standards increases the risk of allergies such as asthma and respiratory illness.*
5. ***Ozone (O_3)****: is a highly oxidative unstable gas capable of damaging the linings of the respiratory tract. This pollutant forms in the atmosphere through reactions between chemicals directly emitted from vehicles, industrial plants, and many other sources. Exposure to ozone above ambient air quality standards can lead to human health effects such as lung inflammation, tissue damage and impaired lung functioning. Ozone can also damage materials such as rubber, fabrics and plastics.*

6. ***Sulfur Dioxide (SO_2)****: is a gaseous compound of sulfur and oxygen and is formed when sulfur-containing fuel is burned by mobile sources, such as locomotives, ships, and off-road diesel equipment. SO_2 is also emitted from several industrial processes, such as petroleum refining and metal processing. Effects from SO_2 exposures at levels near the one-hour standard include bronchoconstriction accompanied by symptoms, which may include wheezing, shortness of breath and chest tightness, especially during exercise or physical activity. Children, the elderly, and people with asthma, cardiovascular disease or chronic lung disease (such as bronchitis or emphysema) are most susceptible to these symptoms. Continued exposure at elevated levels of SO_2 results in increased incidence of pulmonary symptoms and disease, decreased pulmonary function, and increased risk of mortality.*

The project will utilize Liquid Hydrochloric Acid and has indicated that some of the liquid hydrochloric Acid may be converted to the aerosol form (Hydrogen Chloride). Release of hydrogen chloride must comply with Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) (US EPA, 2012) requires certain facilities manufacturing, processing, or otherwise using listed toxic chemicals to report their environmental releases of such chemicals annually. Thresholds are specified amounts of toxic chemicals manufactured, processed, or otherwise used during the calendar year that trigger reporting requirements. Reporting is required for hydrochloric acid aerosols if the following thresholds are exceeded.

1. *If a facility manufactures or imports 25,000 pounds of hydrochloric acid aerosols over the calendar year.*
2. *If a facility processes 25,000 pounds of hydrochloric acid aerosols over the calendar year.*
3. *If a facility otherwise uses 10,000 pounds of hydrochloric acid aerosols over the calendar year.*

Acute (short-term) inhalation exposure to Hydrogen Chloride may cause eye, nose, and respiratory tract irritation and inflammation and pulmonary edema in humans. Acute oral exposure may cause corrosion of the mucous membranes, esophagus, and stomach and dermal contact may produce severe burns, ulceration, and scarring in humans. Chronic (long-term) occupational exposure to hydrochloric acid has been reported to cause gastritis, chronic bronchitis, dermatitis, and photosensitization in workers. Prolonged exposure to low concentrations may also cause dental discoloration and erosion. Th US EPA has not classified Hydrogen Chloride for carcinogenicity.

2.3.2 State Standards and Definitions

The State of California Air Resources Board (CARB) sets the laws and regulations for air quality on the state level. The California Ambient Air Quality Standards (CAAQS) are either the same as or more restrictive than the NAAQS with the exception of the 1-hr NO_2 standards which are stricter under the NAAQS. The CAAQS also restricts four additional contaminants. Table 2.1 identifies both the NAAQS and CAAQS.

Table 2.1: Ambient Air Quality Standards

Ambient Air Quality Standards

Pollutant	Average Time	California Standards[1]		Federal Standards[2]		
		Concentration[3]	Method[4]	Primary[3,5]	Secondary[3,6]	Method[7]
Ozone (O_3)[8]	1 Hour	0.09 ppm (180 µg/m3)	Ultraviolet Photometry	-	Same as Primary Standard	Ultraviolet Photometry
	8 Hour	0.070 ppm (137 µg/m3)		0.070 ppm (137 µg/m3)		
Respirable Particulate Matter (PM10)[9]	24 Hour	50 µg/m3	Gravimetric or Beta Attenuation	150 µg/m3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	20 µg/m3		-		
Fine Particulate Matter (PM2.5)[9]	24 Hour	No Separate State Standard		35 µg/m3	Same as Primary Standard	Inertial Separation and Gravimetric Analysis
	Annual Arithmetic Mean	12 µg/m3	Gravimetric or Beta Attenuation	12.0 µg/m3	15 µg/m3	
Carbon Monoxide (CO)	8 hour	9.0 ppm (10mg/m3)	Non-Dispersive Infrared Photometry (NDIR)	9 ppm (10 mg/m3)	-	Non-Dispersive Infrared Photometry
	1 hour	20 ppm (23 mg/m3)		35 ppm (40 mg/m3)		
	8 Hour (Lake Tahoe)	6 ppm (7 mg/m3)		-	-	-
Nitrogen Dioxide (NO_2)[10]	Annual Arithmetic Mean	0.030 ppm (57 µg/m3)	Gas Phase Chemiluminescence	0.053 ppm (100 µg/m3)[8]	Same as Primary Standard	Gas Phase Chemiluminescence
	1 Hour	0.18 ppm (339 µg/m3)		0.100 ppm[8] (188/ µg/m3)	-	
Sulfur Dioxide (SO_2)[11]	Annual Arithmetic Mean	-	Ultraviolet Fluorescence	0.030 ppm[10] (for Certain Areas)	-	Ultraviolet Flourescence; Spectrophotometry (Pararoosaniline Method)[9]
	24 Hour	0.04 ppm (105 µg/m3)		0.14 ppm[10] (for Certain Areas) (See Footnote 9)	-	
	3 Hour	-		-	0.5 ppm (1300 µg/m3)	
	1 Hour	0.25 ppm (655 µg/m3)		75 ppb (196 µg/m3)	-	
Lead[12,13]	30 Day Average	1.5 µg/m3	Atomic Absorption	-		-
	Calendar Quarter	-		1.5 µg/m3	Same as Primary Standard	High Volume Sampler and Atomic Absorption
	Rolling 3-Month Average	-		0.15 µg/m3		
Visibility Reducing Particles	8 Hour	See footnote 14				
Sulfates	24 Hour	25 µg/m3	Ion Chromatography			
Hydrogen Sulfide	1 Hour	0.03 ppm (42 µg/m3)	Ultraviolet Fluorescence			
Vinyl Chloride[12]	24 Hour	0.01 ppm (26 µg/m3)	Gas Chromatography			

1. California standards for ozone, carbon monoxide (except 8-hour Lake Tahoe), sulfur dioxide (1 and 24 hour), nitrogen dioxide, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded. California ambient air quality standards are listed in the Table of Standards in Section 70200 of Title 17 of the California Code of Regulations.
2. National standards (other than ozone, particulate matter, and those based on annual arithmetic mean) are not to be exceeded more than once a year. The ozone standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. For PM10, the 24-hour standard is attained when the expected number of days per calendar year with a 24-hour average concentration above 150 µg/m3 is equal to or less than one. For PM2.5, the 24-hour standard is attained when 98 percent of the daily concentrations, averaged over three years, are equal to or less than the standard. Contact the U.S. EPA for further clarification and current national policies.
3. Concentration expressed first in units in which it was promulgated. Equivalent units given in parentheses are based upon a reference temperature of 25°C and a reference pressure of 760 torr. Most measurements of air quality are to be corrected to a reference temperature of 25°C and a reference pressure of 760 torr; ppm in this table refers to ppm by volume, or micromoles of pollutant per mole of gas.
4. Any equivalent procedure which can be shown to the satisfaction CARB to give equivalent results at or near the level of the air quality standard may be used.
5. National Primary Standards: The levels of air quality necessary, with an adequate margin of safety to protect the public health.
6. National Secondary Standards: The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
7. Reference method as described by the EPA. An "equivalent method" of measurement may be used but must have a "consistent relationship to the reference method" and must be approved by the EPA.
8. On October 1, 2015, the national 8-hour ozone primary and secondary standards were lowered from 0.075 to 0.070 ppm.
9. On December 14, 2012, the national annual PM2.5 primary standard was lowered from 15 µg/m3 to 12.0 µg/m3 . The existing national 24- hour PM2.5 standards (primary and secondary) were retained at 35 µg/m3 , as was the annual secondary standard of 15 µg/m3 . The existing 24-hour PM10 standards (primary and secondary) of 150 µg/m3 also were retained. The form of the annual primary and secondary standards is the annual mean, averaged over 3 years.
10. To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb. Note that the national 1-hour standard is in units of parts per billion (ppb). California standards are in units of parts per million (ppm). To directly compare the national 1-hour standard to the California standards the units can be converted from ppb to ppm. In this case, the national standard of 100 ppb is identical to 0.100 ppm.
11. On June 2, 2010, a new 1-hour SO2 standard was established and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The 1971 SO2 national standards (24-hour and annual) remain in effect until one year after an area is designated for the 2010 standard, except that in areas designated nonattainment for the 1971 standards, the 1971 standards remain in effect until implementation plans to attain or maintain the 2010 standards are approved.
12. The CARB has identified lead and vinyl chloride as 'toxic air contaminants' with no threshold level of exposure for adverse health effects determined. These actions allow for the implementation of control measures at levels below the ambient concentrations specified for these pollutants.
13. The national standard for lead was revised on October 15, 2008 to a rolling 3-month average. The 1978 lead standard (1.5 µg/m3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 standard, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.
14. In 1989, the CARB converted both the general statewide 10-mile visibility standard and the Lake Tahoe 30-mile visibility standard to instrumental equivalents, which are "extinction of 0.23 per kilometer" and "extinction of 0.07 per kilometer" for the statewide and Lake Tahoe Air Basin standards, respectively.

Source: (California Air Resources Board, 5/4/2016)

The additional contaminants as regulated by the CAAQS are defined below:

1. ***Visibility Reducing Particles**: Particles in the Air that obstruct the visibility.*
2. ***Sulfates**: are salts of Sulfuric Acid. Sulfates occur as microscopic particles (aerosols) resulting from fossil fuel and biomass combustion. They increase the acidity of the atmosphere and form acid rain.*
3. ***Hydrogen Sulfide (H_2S)**: is a colorless, toxic and flammable gas with a recognizable smell of rotten eggs or flatulence. H_2S occurs naturally in crude petroleum, natural gas, volcanic gases, and hot springs. Usually, H_2S is formed from bacterial breakdown of organic matter. Exposure to low concentrations of hydrogen sulfide may cause irritation to the eyes, nose, or throat. It may also cause difficulty in breathing for some asthmatics. Brief exposures to high concentrations of hydrogen sulfide (greater than 500 Parts per Million (ppm)) can cause a loss of consciousness and possibly death.*
4. ***Vinyl Chloride**: also known as chloroethene and is a toxic, carcinogenic, colorless gas with a sweet odor. It is an industrial chemical mainly used to produce its polymer, polyvinyl chloride (PVC).*

2.3.3 Regional Standards

The State of California has 35 specific air districts, which are each responsible for ensuring that the criteria pollutants are below the NAAQS and CAAQS. Air basins that exceed either the NAAQS or the CAAQS for any criteria pollutants are designated as “non-attainment areas” for that pollutant. Currently, there are 15 non-attainment areas for the federal ozone standard and two non-attainment areas for the PM2.5 standard and many areas are in non-attainment for PM10 as well. California therefore created the California State Implementation Plan (SIP), which is designed to provide control measures needed to attain ambient air quality standards.

The Imperial County Air Pollution Control District (ICAPCD) is the government agency which regulates stationary sources of air pollution within Imperial County and the SSAB. Currently, the SSAB is in “non-attainment” status for O_3 and serious non-attainment of PM10. Therefore, the ICAPCD developed an Ambient Air Quality Plan (AAQP) to provide control measures to try to achieve attainment status. The AAQP was adopted in 1991. A new NAAQS for ozone was adopted by EPA in 1997 and required modified strategies to decrease higher ozone concentrations.

In order to guide non-attainment areas closer to NAAQS requirements an 8-hr Ozone Air Quality Management Plan (AQMP) was approved by ICAPCD in 2009 and was accepted by the EPA in 2010. Similarly, in 2009 the County revised their SIP to address the serious non-attainment status of PM_{10} and again revised the plan in 2013, 2017 and 2018 (ICAPCD, 2018). The criteria pollutant standards are generally attained when each monitor within the region that has had no exceedances during the previous three calendar years. Attainment status within the County of Imperial as of the date of this report is shown below in Table 2.2.

Table 2.2: Imperial County Air Basin Attainment Status by Pollutant

Criteria Pollutant	Federal Designation	State Designation
Ozone	Marginal Nonattainment	Nonattainment
Carbon Monoxide	Unclassified/ Attainment	Attainment
PM10	Serious Nonattainment	Nonattainment
PM2.5	Moderate Nonattainment – partial*	Attainment
Nitrogen Dioxide	Unclassified/ Attainment	Attainment
Sulfur Dioxide	Attainment	Attainment
Lead	Unclassified/ Attainment	Attainment
Sulfates	No Federal Standard	Attainment
Hydrogen Sulfide	No Federal Standard	Unclassified
Visibility	No Federal Standard	Unclassified

2.4 California Environmental Quality Act (CEQA) Significance Thresholds

CEQA has provided a checklist to identify the significance of air quality impacts. These guidelines are found in Appendix G of the CEQA guidelines and are as follows:

AIR QUALITY -- Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the Project:

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 non-attainment under an applicable federal or state ambient air quality standard?
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?

2.5 ICAPCD Air Quality Impact Assessment Screening Thresholds (CEQA)

The ICAPCD has established significance thresholds in the 2017 ICAPCD CEQA Handbook for the preparation of Air Quality Impact Assessments (AQIA) (ICAPCD, 2017). The screening criteria within this handbook can be used to determine whether a project’s total emissions would result in a significant impact as defined by CEQA. Should emissions be found to exceed these thresholds, additional modeling is required to demonstrate that the project’s total air quality impacts are below the state and federal ambient air quality standards. These screening thresholds for construction and daily operations are shown in Table 2.3.

Table 2.3: Screening Threshold for Criteria Pollutants

Pollutant	**Total Emissions (Pounds per Day)**	
Construction Emissions		
Respirable Particulate Matter (PM_{10} and $PM_{2.5}$)	150	
Nitrogen Oxide (NO_x)	100	
Carbon Monoxide (CO)	550	
Reactive Organic Gases (ROG)	75	
Operational Emissions		
Pollutant	Tier I (Pounds per Day)	Tier II (Pounds per Day)
PM_{10} and Sulfur Oxide (SO_x)	< 150	150 or greater
NO_x and ROG	< 137	137 or greater
CO	< 550	550 or greater
Level of Significance:	Less Than Significant	Significant Impact
Level of Analysis:	Initial Study	Comprehensive Air Quality Analysis Report
Environmental Document:	Negative Declaration	Mitigated ND or EIR
Source: (ICAPCD, 2017)		

The CEQA handbook further states that any proposed project with a potential to emit less than the Tier I thresholds during operations may potentially still have adverse impacts on the local air quality and would be required to develop an Initial Study to help the Lead Agency determine whether the project would have a less than significant impact. On the other hand, if the proposed project's operational development fits within the Tier II classification, it is considered to have a significant impact on regional and local air quality. Therefore, Tier II projects are required to implement all standard mitigation measures as well as all feasible discretionary mitigation measures. Additionally, ICAPCD defined standard mitigation measures for construction equipment and fugitive PM10 must be implemented at all construction sites. The implementation of mitigation measures, as listed in the ICAPCD CEQA handbook, apply to those construction sites which are 5 acres or more for non-residential developments such as the proposed Project. In an effort to reduce PM_{10} or Fugitive Dust from ambient air, the Project would be required to develop a dust management plan consistent with Regulation VIII of ICAPCD's Rules and Regulations. Additionally, the project shall not exceed the 20 percent opacity threshold under Rule 801.

Standard Construction Site Design Measures:

1. *Use of alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel powered equipment.*
2. *Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes as a maximum.*

3. *Limit, to the extent feasible, the hours of operation of heavy duty equipment and/or the amount of equipment in use.*
4. *Replace fossil fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).*

Should the project be sufficiently large enough that operational mitigation measures simply cannot reduce pollutant levels below thresholds of significance, pollutant levels the ICAPCD has adopted the Operation Development Fee as was adopted under Rule 310 which provides the ICAPCD with a sound method for mitigating the emissions produced from the operation of new commercial and residential development projects. Projects unmitigable through standard procedures are assessed a one-time fee for either Ozone Precursors or PM_{10} impacts, which is based upon either the square footage of the commercial development or the number of residential units. Impacts of this sort are calculated based on the assumption that the worst-case daily emissions are allowed for an entire year and then converted to an annual emission equivalent. Emissions exceeding annual thresholds would pay a fair share sum to reduce impacts to below significance.

Similar to construction, the project would be required to implement standard mitigation measures for operations. According to Table 2.3, Tier I, projects generating less than 137 lbs/day of NOx or ROG; less than 150 lbs/day of PM10 or SOX; or less than 550 lbs/day of CO or PM2.5, the Project is required to implement all the Standard Operational Mitigation Measures in order to help mitigate or reduce the air quality impacts to a level of insignificance. Theses mitigation measures are identified below:

Standard Operations Site Design Measures:

1. *Provide on-site bicycle lockers and/or racks.*
2. *Provide on-site eating, refrigeration and food vending facilities to reduce lunchtime trips.*
3. *Provide shower and locker facilities to encourage employees to bike and/or walk to work.*
4. *Provide for paving a minimum of 100 feet from the property line for commercial driveways that access County paved roads as per County Standard Commercial Driveway Detail 410B (formerly SW-131A). It should be noted that the project would also pave McDonald Road from HWY 111 to English Road.*
5. *Measures which meet mandatory, prescriptive and/or performance measures as required by Title 24.*

Furthermore, consistent with the California Air Resource Board, ICAPCD requires PM_{10} emitted by diesel powered construction equipment (DPM) to be analyzed. DPM can potentially increase the cancer risk for nearby residential receptors if any. Generally, sites increasing the cancer risk between one and ten in one million need to implement toxics best available control technology or impose effective emission limitations, emission control devices or control techniques to reduce the cancer risk. Finally, at no time shall the project increase the cancer risk to over 10 in one million.

2.6 Local Air Quality

Criteria pollutants are measured continuously throughout the County of Imperial and the data is used to track ambient air quality patterns throughout the County. As mentioned earlier, this data is also used to determine attainment status when compared to the NAAQS and CAAQS. The ICAPCD is responsible for monitoring four sites which collect meteorological and criteria pollutant data used by the district to assist with pollutant forecasting, data analysis and characterization of air pollutant transport. Also, a fifth monitoring locations is located in the City of Calexico which is monitored by CARB.

The monitoring stations surrounding the project provide various pieces of data but no single station has all the data. Table 2.4 provides the criteria pollutant levels monitored within the Basin for 2017-2019. The criteria pollutants monitored closest to the Project [Ambient data was obtained from the California Environmental Protection Agency's Air Resources Board Website (ARB, 2020). Based on review of the ambient data, Both Ozone and PM emissions exceed AAQS and therefore are in non-attainment status. The 8 hour Ozone non-Attainment is considered moderate Non-Attainment while the 24-Hour PM10 is considered "Serious" Non-Attainment. Therefore, to comply with the ICAPCDs SIP and AAQP, the project must implement Best Available Control Measure (BACM) and BACT as outlined in the standard mitigation measures that all projects must implement in Section 2.5.

Table 2.4: SSAB Three-Year Ambient Air Quality data

Pollutant	Averaging Time	CAAQS	NAAQS	2017	2018	2019
O_3 (ppm)	1 Hour	0.09 ppm	No Standard	0.122	0.111	0.106
	8 Hour	0.070 ppm	0.070 ppm	0.097	0.099	0.089
PM_{10} (µg/m3)	24 Hour	50 µg/m3	150 µg/m3	477.6	422.3	324.4
	Annual Arithmetic Mean	20 µg/m3	No Standard	45.0	41.3	46.9
$PM_{2.5}$ (µg/m3)	24 Hour	No standard	35 µg/m3	49.1	90.6	53.1
	Annual Arithmetic Mean	12 µg/m3	15 µg/m3	11.9	10.4	10.8
NO_2 (ppm)	Annual Arithmetic Mean	0.030 ppm	0.053 ppm	0.012	0.012	0.09
	1 Hour	0.18 ppm	0.100 ppm	0.074	0.073	0.096
ppm=Parts per Million N/A=Not Available for give year						

3.0 METHODOLOGY

3.1 Construction Emissions Calculations

CalEEMod

Air Quality impacts related to construction and daily operations were calculated using the latest CalEEMod 2016.3.2 air quality model, which was developed by BREEZE Software for South Coast Air Quality Management District (SCAQMD) in 2017. The construction module in CalEEMod is used to calculate the emissions associated with the construction of the Project and uses methodologies presented in the US EPA AP-42 document with emphasis on Chapter 11.9. The CalEEMod input/output model is shown in ***Attachment A*** to this report.

It should be noted that default settings for CalEEMod include an assumption for roads within imperial county to be only 50% paved. The County has been improving many of these roads to paved sections. As noted in construction design measures 2-4 above, the project would implement design features which would require all construction workers, vendors and hauling to only used paved or improved roads to minimize dust. Based on this the default setting was revised to 100% paved. The project would also install wheel shakers leaving the project site to minimize dust from leaving the project site onto the roadways.

AERMOD

The AERMOD dispersion model was used to determine the concentration for air pollutants at any location near the pollutant generator. Additionally, the model will predict the maximum exposure distance and concentrations. The notable toxic air contaminant from construction is diesel exhaust since exposure to diesel exhaust is known to cause cancer and acute and chronic health effects. Diesel exhaust emissions can be estimated using the annual PM_{10} exhaust emissions from onsite construction operations obtained from the annual CalEEMod model output by summing each onsite source for the construction duration. The AERMOD input/output file for the proposed project is shown in ***Attachment B*** at the end of this report for both an unmitigated scenario with sensitive residential receptors included.

Health Risks

Once the dispersed concentrations of diesel particulates are estimated in the surrounding air, they are used to evaluate estimated exposure to people. Exposure is evaluated by calculating the dose in milligrams per kilogram body weight per day (mg/kg/d). For exposure, the breathing rates are determined for specific age groups, so inhalation dose (Dose-air) is calculated for each of these age groups, 3rd trimester, 0<2, 2<9, 2<16, 16<30 and 16-70 years. The following calculates this dose for exposure through the inhalation pathways and the worst case cancer risk dose calculation is defined in Equation 1 (OEHHA, February 2015):

Equation 1

$$Dose_{air}=C_{air}*(BR/BW)*A*EF*(1x10^{-6})$$

$Dose_{air}$ = Dose through inhalation (mg/kg/d)
C_{air} = Concentration in air (µg/m3) Annual average DPM concentration in µg/m^3
BR/BW = Daily breathing rate normalized to body weight (L/kg BW-day). See Table I.2 for the daily breathing rate for each age range.
A = Inhalation absorption factor (assumed to be 1)
EF = Exposure frequency (unitless, days/365 days)
1x10-6 = Milligrams to micrograms conversion (10^{-3} mg/ µg), cubic meters to liters conversion (10^{-3} m^3/l)

Cancer risk is calculated by multiplying the daily inhalation or oral dose, by a cancer potency factor, the age sensitivity factor, the frequency of time spent at home and the exposure duration divided by averaging time, to yield the excess cancer risk. As described below, the excess cancer risk is calculated separately for each age grouping and then summed to yield cancer risk for any given location. Specific factors as modeled are shown within the project models attached to this report. The worst case cancer risk calculation is defined in Equation 2 (OEHHA, 2015):

Equation 2

$$RISK_{inh\text{-}res}=DOSE_{air} \times CPF \times ASF \times ED/AT \times FAH$$

$RISK_{inh\text{-}res}$ = Residential inhalation cancer risk
$DOSE_{air}$ = Daily inhalation dose (mg/kg-day)
CPF = Inhalation cancer potency factor (mg/kg-day^{-1})
ASF = Age sensitivity factor for a specified age group (unitless)
ED = Exposure duration (in years) for a specified age group
AT = Averaging time for lifetime cancer risk (years)
FAH = Fraction of time spent at home (unitless)

The California Office of Environmental Health Hazard Assessment (OEHHA) recommends that an exposure duration (residency time) of 30 years be used to estimate individual cancer risk for the Maximally Exposed Individual Resident (MEIR). OEHHA also recommends that the 30-year exposure duration be used as the basis for public notification and risk reduction audits and plans. Exposure durations of 9-years and 70-years are also recommended to be evaluated for the MEIR to show the range of cancer risk based on residency periods. If a facility is notifying the public regarding cancer risk, the 9-and 70-year cancer risk estimates are useful for people who have resided in their current residence for periods shorter and longer than 30 years. Health risk calculations are shown in ***Attachment C*** to this report.

Non-Cancer risks or risks defined as chronic or acute are also known with respect to DPM and are determined by the hazard index. To calculate hazard index, DPM concentration is divided by its chronic Reference Exposure Levels (REL). Where the total equals or exceeds one, a health hazard is presumed to exist. RELs are published by the Office of Environmental Health Hazard Assessment (OEHHA, 2015). Diesel Exhaust has a REL of 5 $\mu g/m^3$ and targets the respiratory system. A graphical representation of the modeling locations is shown on a site aerial below in Figure 3-A. The red point (1) represents the only sensitive residential receptors near the project located approximately one mile to the north of the project. This location was selected and AERMOD will calculate the air quality emission concentrations.

Figure 3-A: Construction Health Risk Model Setup

3.2 Construction Assumptions

The Project construction dates were estimated based on a construction kickoff starting 2021 with construction ending two years later. CalEEMod 2016.3.2 was utilized for all construction calculations. Table 3.1 shows the expected timeframes for the construction processes for all the project infrastructure, and structures at the site, as well as the expected number of pieces of equipment. Additionally, the project would implement a number of design features which are identified on the following page.

Table 3.1: Expected Construction Equipment

Equipment Identification	Proposed Start	Proposed Complete	Quantity
Demolition	03/01/2021	03/12/2021	
Concrete/Industrial Saws			1
Excavators			3
Rubber Tired Dozers			2
Grading	03/01/2021	05/07/2021	
Graders			1
Off-Highway Trucks			7
Rollers			1
Rubber Tired Dozers			2
Scrapers			4
Tractors/Loaders/Backhoes			1
Building Construction	04/12/2021	04/07/2023	
Aerial Lifts			7
Air Compressors			4
Bore/Drill Rigs			1
Cranes			7
Excavators			2
Forklifts			7
Generator Sets			4
Off-Highway Trucks			1
Tractors/Loaders/Backhoes			13
Welders			1
Trenching	04/19/2021	10/08/2021	
Excavators			2
Off-Highway Trucks			3
Rollers			1
Skid Steer Loaders			1
Tractors/Loaders/Backhoes			3
Paving	09/30/2022	03/10/2023	
Graders			2
Pavers			1
Rollers			2
Rubber Tired Dozers			2
Tractors/Loaders/Backhoes			3
Architectural Coating	12/05/2022	03/31/2023	
Air Compressors			1

The PDFs included for construction were included in the CalEEMod program. The list is as follows:

1. Diesel equipment required which does not satisfy SDM 1 shall be rated Tier 4 per EPA requirements. All modeling assumes the use of this equipment and is therefore a condition to the project.
2. Access to the site will be via HWY 111 and McDonald Rd. All equipment workers, vendors and haul trucks will be required to utilize these roadways.
3. Operational On-Road trips will not operate on unpaved dirt roads.
4. An agreement between County of Imperial Public Works and the applicant has been established requiring the applicant to improve a 2-mile section of the unpaved portion of McDonald Road adjacent to the site by installing a 12-18" thick engineered Class II base section. In addition, at the request of the County, the applicant would utilize the improved section during construction and would wet the site continuously during construction activities. The road would be immediately paved after construction prior to operations of the plant to avoid damaging a new asphalt section.
5. During construction of the project, the project would be required to maintain daily dust suppression at the 2-mile section of McDonald Road using a water truck operating continuously while vehicles are using it.
6. The project will provide wheel shakers at both the exit of the construction site to minimize dust being tracked off the project site and onto the roadways.

3.3 Operational Emissions

Based on the projected traffic volumes estimated by the Project Traffic Engineer, the proposed project would generate as much as 104 regular employee and miscellaneous average daily trips (ADT) and as many as 30 ADT truck trips without correcting for passenger car equivalence (PCE) once fully operational (LLG Engineers, 2020). The first full year of operations is expected in 2024 which is used for the basis of this analysis.

As was noted earlier within the construction methodology section, CalEEMod include an assumption for roads within imperial county to be only 50% paved. Once construction is complete onsite, the project would provide asphalt over the engineered section identified earlier in this report. The roadways to and from the site would then be 100% paved. Based on this, the model was updated to reflect this reality.

Operational air quality emission sources would include area sources such as landscaping, consumer products and architectural coatings during maintenance, energy sources from electrical usage, mobile sources from vehicular traffic to include trucks and passenger vehicles, solid waste from trash generation, and water uses, which are calculated within CalEEMod. Additionally, the project would purchase and use two propane powered forklifts each with rated less than 50 HP. These units were also modeled within CalEEMod. Area Sources include landscaping and architectural coatings as part of regular maintenance. Energy sources would be from uses such as electricity and natural gas usage though Natural Gas usage onsite is not expected or being delivered to the site.

The project operations are both energy and water intensive and would consume 51,840 Mega Watt Hours (MWH) of electricity and 3,400 Acre Feet of water as disclosed by the project applicant. The water will be then pumped back into the Geothermal wells. CalEEMod was manually updated to include these inputs.

The project description indicates that the project will emit 5.41 lb/day of particulate emissions from mineral extraction from various processes identified in Section 1.3 of this report. These emissions would increase the PM_{10} emissions from operations calculated within the air quality modeling software and would be considered additive.

In addition to particulate matter emissions from mineral extraction from the geothermal brine, the extraction process will require the use of concentrated hydrochloric acid liquid. The hydrochloric acid would be injected into the brine to allow for mineral extraction. Some of the hydrochloric acid will evaporate and convert to an aerosol form otherwise known as Hydrogen Chloride (HCL). The project would utilize scrubbers to collect the aerosol however it is expected the Project would produce roughly 7,440 lbs per year of Hydrogen Chloride.

3.4 Manufacturing and Shipping and Receiving Operational Emissions

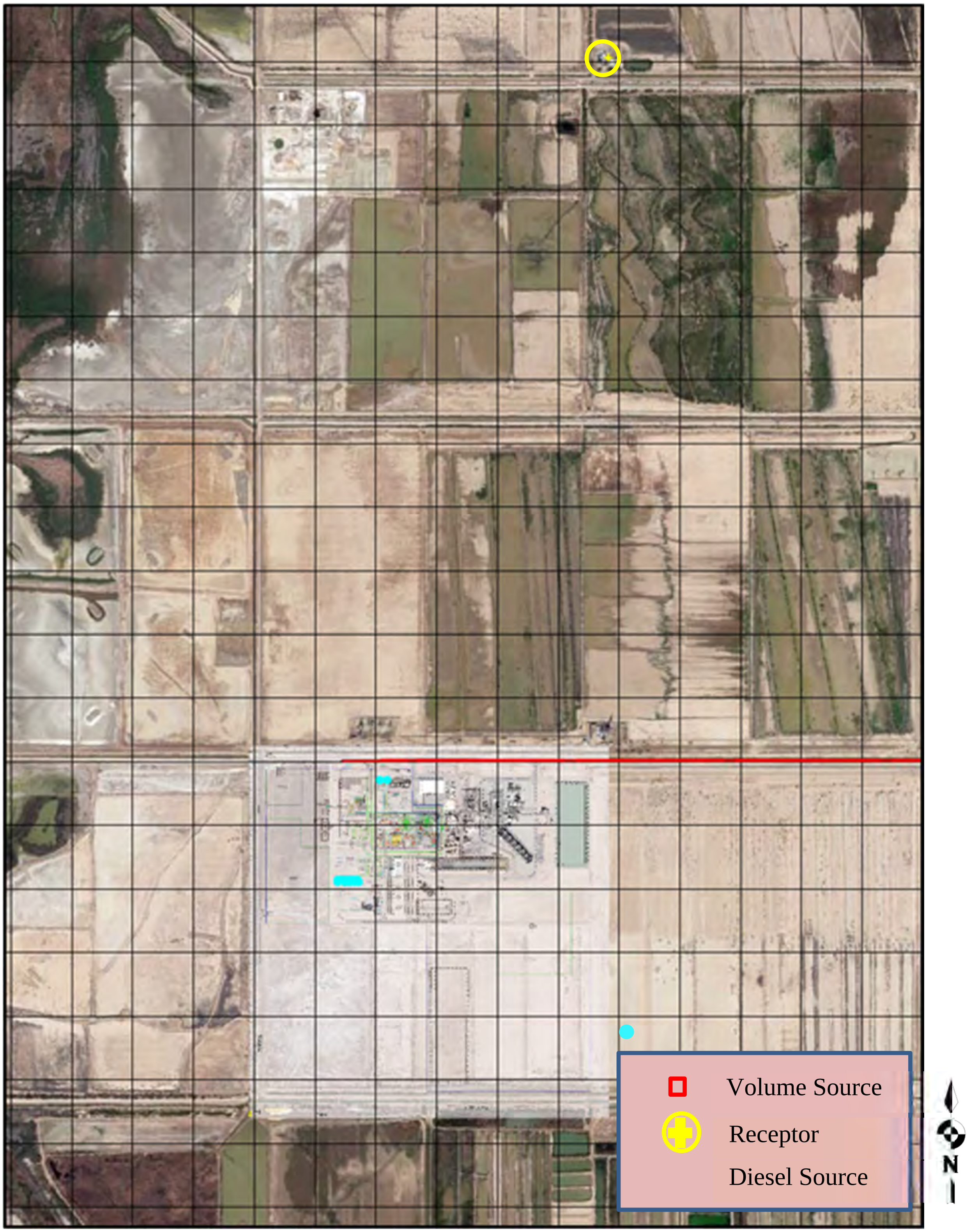
The proposed project was determined to generate 134 average daily trips (ADT) in total of which 30 trips (15 inbound and 15 outbound) would be from heavy-heavy duty trucks (HHD) or trucks over 26,000 lbs. CalEEMod includes mobile emissions reported within the EMFAC 2014 emission model in terms of both driving and idling emissions for each respective vehicle class from each scenario year and adjusted in units of grams per VMT. Similarly, evaporative, starting, and idling emissions were divided by the number of trips to derive emission factors in units of grams per trip. Evaporative emissions, starting and idling emissions are multiplied by the number of trips times the respective emission factor for each pollutant (CAPCOA, 2017). Based on CalEEMod, the following Emission Factors are used within this analysis. Table 3.2 on the following page shows that during truck movement PM_{10} exhaust would be generated at a rate of 0.00526 grams/VMT and starting and Idling events would generate 0.00653 grams per trip.

Table 3.2: Operational Truck Emission Rates

EMFAC2014 Acronyms for Each Vehicle Emission	EMFAC2014 Description of Each Vehicle	EMFAC2014 Emission Rate Unit	CalEEMod Emission Factor Unit	HHD Emissions
PM10_RUNEX	Running Exhaust	grams/VMT	grams/VMT	0.005256
PM10_STREX	Start Exhaust	grams/trip	grams/trip	0.000053
PM10_IDLEX	Idle Exhaust	grams/vehicle/day	grams/trip	0.006474
Running Exhaust (grams/VMT)				**0.00526**
Starting and Idling Exhaust (PM10_RUNEX + PM10_IDLEX) (grams/trip)				**0.00653**

Cancer risks would be calculated in a similar fashion to those explained within Section 3.1 of this report. Air dispersion modeling utilizing AERMOD Version 19191 is the preferred dispersion modeling for projects with a high number of sources and will be used within the analysis. A screenshot graphical representation of the modeling locations is shown on an aerial in Figure 3-A. It is assumed that 15 trucks or only the outbound trips would include startup and idling. These are identified as light blue dots. Since the scale of the site is so large relative to the identification marker size, the blue dots appear as a blue line. All truck movement is represented as volume sources (identified as red dots) though these sources also appear like a line and includes trucks on McDonald Road for roughly a 1.8-mile section east of English Road and terminating at the Project driveway. The black grid represents a receptor matrix used by AERMOD to calculate emission contours. Also, a yellow identifier represents the only sensitive receptor near the site.

Figure 3-B: AERMOD Modeling Sources and Receptor - Onsite Operations



The Project also has two onsite generators that will operate approximately 50 hours per year each. For purposes of analysis, the generators were assumed to operate as many as 80 hours per year which would be conservative. Since these onsite point sources operate on diesel, generator locations were also modeled. The exact locations of the generators are not known so they were selected on the north side of the project site closest to the residential receptor or closes to McDonald Road.

Table 3.3 is a breakdown of project PM_{10} diesel exhaust emissions generated onsite and near the sensitive residential receptors to the north across McDonald Road. These emissions also include the diesel emissions generated from the two onsite emergency diesel generators which were found to generate 0.00699 tons/year from CalEEMod outputs.

The daily emissions are then converted to a 24-hour (hr) emission rates, in grams/second, by dividing the daily emissions by 86,400 seconds or the number of seconds in a 24-hr day. These rates are then used as inputs to AERMOD as depicted in Figure 3-A above. This analysis assumes 365-day operations so in this case, the 24-hr exposure would be the same as an annual exposure. It should be noted that only HHD rates are assumed.

Table 3.3: Expected PM_{10} Truck Operations Emissions Calculation

Activity (In + Out)	Truck Path from project (Miles)	24-hr Daily Trips (In /Out)	Total 24-hr Daily VMT	Emission Rate*	24-hr Daily Emissions (Grams)	Emission Rate (Gram/Second)
McDonald Road East of the Project Site to English Road	1.85	30	55.5	0.00526 Gram/VMT	0.29170	3.38E-06
Onsite Truck Starting and Idling	N/A	15	N/A	0.00653 Gram/Trip	0.097905	1.13E-06
Emergency Generator Usage	N/A	N/A	N/A	.00699 Tons/Year	17.37	2.01E-04

3.5 Odor Impacts (Onsite)

Projects that involve offensive odors may be a nuisance to neighboring uses, including businesses, residences, sensitive receptors, and public areas. Odor impacts are most often the result of industrial type projects, livestock or farming operations, or can even be from restaurant or commercial baking operations. If a project has a potential to expose a substantial number of sensitive receptors to objectionable odors the project could be deemed to have a significant odor impact. The proposed project is located over 1 mile from a single sensitive receptor. Based on this, no significant objectionable odors would be expected from the operation.

4.0 FINDINGS

4.1 Construction Findings

Construction emissions in pounds per day from the construction operations and equipment identified in Section 3.2 above is shown in Table 4.1 below. The project construction model includes project design features listed below:

1. Diesel equipment required which does not satisfy SDM 1 shall be rated Tier 4 per EPA requirements. All modeling assumes the use of this equipment and is therefore a condition to the project.
2. Access to the site will be via HWY 111 and McDonald Rd. All equipment workers, vendors and haul trucks will be required to utilize these roadways.
3. Operational On-Road trips will not operate on unpaved dirt roads.
4. An agreement between County of Imperial Public Works and the applicant has been established requiring the applicant to improve a 2-mile section of the unpaved portion of McDonald Road adjacent to the site by installing a 12-18" thick engineered Class II base section. In addition, at the request of the County, the applicant would utilize the improved section during construction and would wet the site continuously during construction activities. The road would be immediately paved after construction prior to operations of the plant to avoid damaging a new asphalt section.
5. During construction of the project, the project would be required to maintain daily dust suppression at the 2-mile section of McDonald Road using a water truck operating continuously while vehicles are using it.
6. The project will provide wheel shakers at both the exit of the construction site to minimize dust being tracked off the project site and onto the roadways.

Based on the modeling results, the project would not exceed ICAPCD standards and would have a less than significant construction impact. As noted earlier, since PDFs have been assumed within this analysis, PDFs would not be optional and will be a condition to this project.

Table 4.1: Expected Construction Emissions Summary – Pounds per Day

Year	ROG	NO_x	CO	PM_{10} (Dust)	PM_{10} (Exhaust)	PM_{10} (Total)	$PM_{2.5}$ (Dust)	$PM_{2.5}$ (Exhaust)	$PM_{2.5}$ (Total)
2021	10.71	55.46	272.30	14.10	0.79	14.88	4.99	0.78	5.77
2022	30.31	42.61	182.21	6.99	0.46	7.45	1.90	0.46	2.36
2023	29.86	36.68	178.72	6.99	0.43	7.42	1.90	0.42	2.33
Significance Threshold (lb/day)	75	100	550	-	-	150	-	-	150
ICAPCD Impact?	No	No	No	-	-	No	-	-	No

Potential onsite odor generators would include short term construction odors from activities such as paving and possibly painting as well as exhaust from construction equipment. Odors created during short term construction activities would most likely be from placing asphalt which has a slight odor from the bitumen and solvents used within hot asphalt. Since the nearest sensitive receptor is located just over one mile from the site, a less than significant odor impact from construction is expected.

4.2 Construction Health Risks

Based upon the annual air quality modeling results attached to this report, worst-case unmitigated PM_{10} from exhaust emissions would cumulatively produce 0.0946 tons over the construction duration of 760-days or an average of 0.00131 grams/second. The average emission rate over the grading area is $8.72x10^{-9}$ $g/m^2/s$, which was calculated as follows:

$$\frac{0.00946\,\frac{grams}{second}}{37\ acres * 4{,}046\,\frac{meters^2}{acre}} = 8.72 * 10^{-9}\ \frac{\frac{grams}{meters^2}}{second}$$

Utilizing the AERMOD dispersion model, we find that the worst-case annual concentration at any of the residential receptors is 0.00048 $\mu g/m^3$ during construction. Utilizing the risk equation identified above in Section 3.1, the inhalation cancer risk for the closest residential receptor was found to be 0.17 per one million exposed which would be considered a less than significant impact.

There are known acute and chronic health risks associated with diesel exhaust which are considered non-cancer risks. These risks are calculated based on methods identified in Section 3.1 of this report. From this we find that the annual concentration of 0.00048 µg/m3 divided by the Chronic REL of 5 $\mu g/m^3$ yields a Health Hazard Index less than one. Therefore, no non-cancer risks are expected and all health risks are considered less than significant.

4.3 Operational Findings

Project Buildout is expected in 2023 and the first full year of operations are expected in 2024. The project traffic generation estimates roughly 134 trips per day and of that 30 trips would be from trucks (15 in and 15 out). Once a truck arrives onsite, the truck would drop off a trailer or pick one up. The truck would likely back up and connect to a trailer then drive out. For a worst-case analysis, it is assumed the trucks would stop the engine and then restart it each transfer. The Project air quality model was updated using these mix ratio projections and was run for both winter and summer scenarios.

The expected daily pollutant generation can be calculated utilizing the product of the average daily miles traveled and the expected emissions inventory calculated by EMFAC2014; CALEEMOD 2016.3.2 performs this calculation. The daily pollutants calculated for summer and winter are shown in Tables 4.2 and 4.3, respectively.

Table 4.2: Expected Daily Pollutant Generation

	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Summer Scenario						
Area Source Emission Estimates (Lb/Day)	3.03	0.00	0.01	0.00	0.00	0.00
Energy Source Emissions (Lb/Day)	0.00	0.00	0.00	0.00	0.00	0.00
Operational Vehicle Emissions (Lb/Day)	0.51	3.95	7.03	0.03	1.37	0.37
Offroad Equipment	0.24	1.42	1.79	0.00	0.07	0.07
Stationary Equipment (Lb/Day)	2.17	6.17	5.76	0.01	0.35	0.35
Total (Lb/Day)	**5.96**	**11.54**	**14.60**	**0.04**	**1.79**	**0.79**
ICAPCD Thresholds	55	55	550	150	150	150
Significant?	No	No	No	No	No	No
Daily pollutant generation assumes trip distances within CALLEEMOD 2016.3.2						

Table 4.3: Expected Daily Pollutant Generation

	ROG	NO_x	CO	SO_x	PM_{10}	$PM_{2.5}$
Summer Scenario						
Area Source Emission Estimates (Lb/Day)	3.03	0.00	0.01	0.00	0.00	0.00
Energy Source Emissions (Lb/Day)	0.00	0.00	0.00	0.00	0.00	0.00
Operational Vehicle Emissions (Lb/Day)	0.38	3.94	5.25	0.02	1.37	0.37
Offroad Equipment	0.24	1.42	1.79	0.00	0.07	0.07
Stationary Equipment (Lb/Day)	2.17	6.17	5.76	0.01	0.35	0.35
Total (Lb/Day)	**5.83**	**11.54**	**12.82**	**0.04**	**1.79**	**0.79**
ICAPCD Thresholds	55	55	550	150	150	150
Significant?	No	No	No	No	No	No
Daily pollutant generation assumes trip distances within CALLEEMOD 2016.3.2						

In addition to emissions estimated by CalEEMod, the project will also emit 5.41 lb/day of particulate emissions from mineral extraction as was identified in Section 1.3 of this report. Based on emission projections in Tables 4.2 and 4.3 above, this would increase the PM_{10} emissions from 1.79 to 7.2 lb/day. Therefore, the additional particulate emissions from mineral extraction would be less than significant. Finally, the mineral extraction process will require the use of concentrated liquid hydrochloric acid. Due to the offload operations, the project would produce 7,440 lb of hydrogen chloride. Under HCl aerosol emissions from the storage tank(s). Based on this, the project would not be required to report hydrogen chloride under Section 313 of the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) (US EPA, 2012).

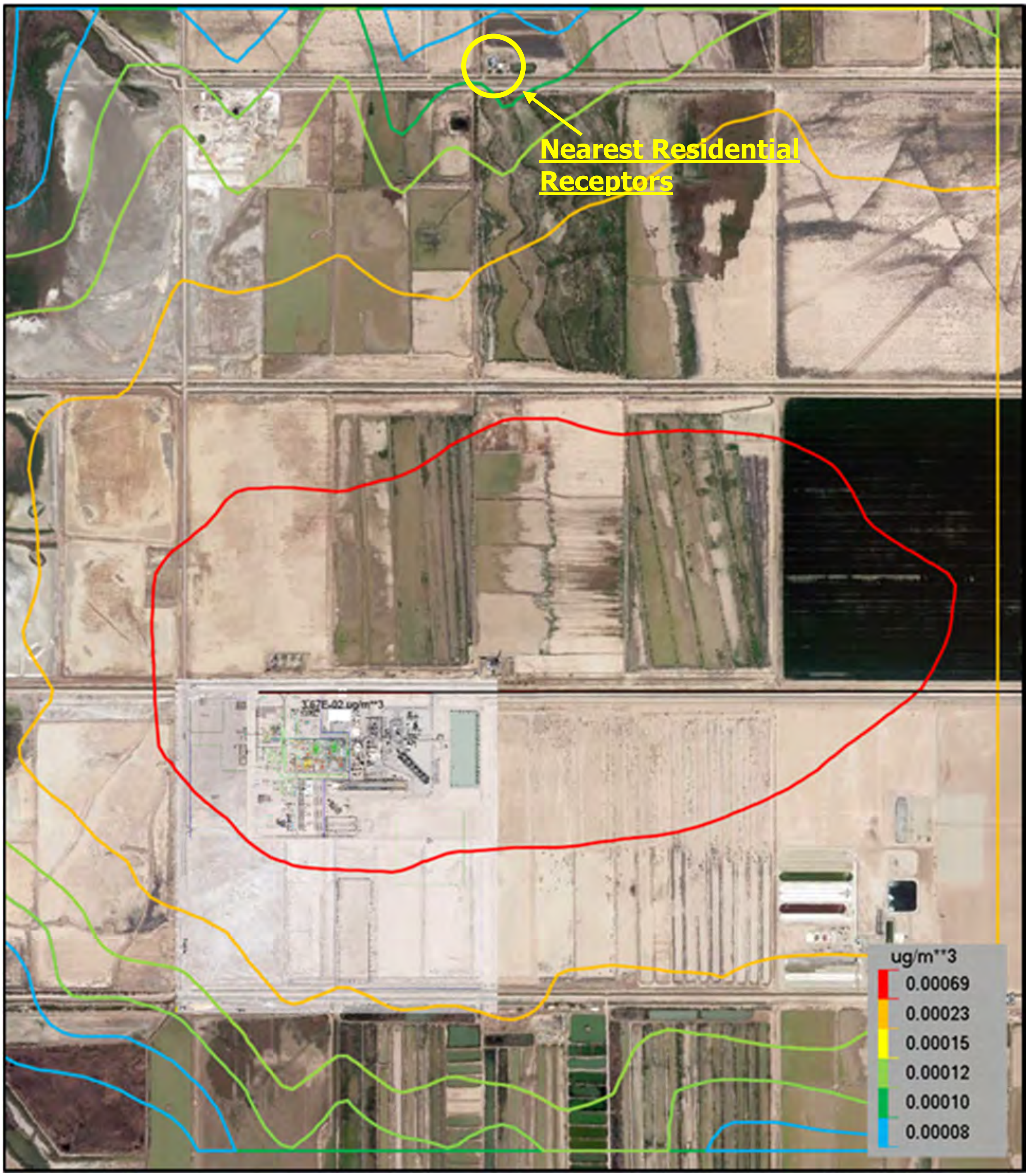
4.4 Operational Health Risks

The proposed project would manufacture process brine from the Geothermal plant and extract LI, Mn and Zn. The materials will then be sold offsite. The Traffic study indicates that 30 trips per day would be from trucks or 15 inbound and 15 outbound trips. All access will be via Project driveways along McDonald Road East of the project site.

Utilizing the AERMOD dispersion model, a visual representation of the dispersed emissions output was created and shown in Figure 4-A. Based on Figure 4-A and emission inputs shown in Table 3.4 above, we find that the annual concentration from the truck operations, including starting, idling and truck circulation on McDonald Road east of the Project driveway would produce a maximum of 0.00069 µg/m^3 PM_{10} exhaust onsite and approximately 0.00012 µg/m^3 offsite at the nearest residential receptor. McDonald Road and would not generate measurable emission concentrations at the nearest residential receptor located over one mile away. The AERMOD model outputs are shown in ***Attachment D*** to this report.

Similar to the construction health risk analysis shown above, cancer risks from operations can be established in Section 4.2 above. The primary difference however is the exposure duration is not just during construction but continuous through the lifecycle of the building. Based on the analysis, the inhalation cancer risk for a 70-year duration at the worst case location onsite (point of maximum exposure (PMI)) would have a cancer risk of 0.55 per one million exposed. Since this worst case concentration risk is less than 10 per one million exposed, significant health risks would not be expected. Since all emission concentrations beyond the PMI would be lower, all risks beyond the PMI would also be lower and would have a less than significant health risk impact associated to it. Calculations for the PMI risk are shown in ***Attachment E*** to this report.

Figure 4-A: PM10–Truck Operations Starting/Idling/Movement AERMOD Plot



4.5 Cumulative Impact Findings

Cumulative impacts would exist when either there are direct air quality impacts or when multiple construction projects occur within the same area simultaneously. To illustrate this, if a project were to produce air quality emissions simultaneous to a nearby construction project the addition of both project emissions to the environment could exceed significance thresholds. For this project, the construction emissions were found to be less than significant as shown in Table 4.1 above. If a nearby project was to be under construction at the same time, that project would need to produce an additive amount of emissions close to the project site such that emissions would exceed thresholds. Based on discussions with the project applicant, there are no cumulatively considerable construction projects within at least 1 mile of the site. Given this, a less than significant cumulative air quality impact would be expected during construction.

The proposed Project site is zoned industrial and the Project has been designed to be consistent with this zoning designation. The project would generate less than significant direct and cumulative air quality impacts. Given this, since the proposed project would not have any significant direct impacts and would not have any significant cumulative impacts, the project would not conflict with either the County's AQMP or SIP.

4.6 Conclusion of Findings

During construction, the proposed Project would not be expected to produce significant air quality impacts under the California Environmental Quality Act or exceed thresholds of significance established by the Imperial County Air Pollution Control District (ICAPCD).

The proposed Project would not generate significant operational impacts offsite either during construction or during post construction operations.

Finally, the project would not be expected to generate offensive objective odors during either the construction or operation of the project.

Per the requirements of ICAPCD, the project would be required to implement standard mitigation measures for both construction and operations and are identified below:

Standard Construction Site Design Measures:

1. *Use of alternative fueled or catalyst equipped diesel construction equipment, including all off-road and portable diesel powered equipment.*
2. *Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes as a maximum.*

3. *Limit, to the extent feasible, the hours of operation of heavy duty equipment and/or the amount of equipment in use.*
4. *Replace fossil fueled equipment with electrically driven equivalents (provided they are not run via a portable generator set).*

Standard Operations Site Design Measures:

1. *Provide on-site bicycle lockers and/or racks.*
2. *Provide on-site eating, refrigeration and food vending facilities to reduce lunchtime trips.*
3. *Provide shower and locker facilities to encourage employees to bike and/or walk to work.*
4. *Provide for paving a minimum of 100 feet from the property line for commercial driveways that access County paved roads as per County Standard Commercial Driveway Detail 410B (formerly SW-131A). It should be noted that the project would also pave McDonald Road from HWY 111 to English Road.*
5. *Measures which meet mandatory, prescriptive/performance measures as required per Title 24.*

The project will include a number of design features during construction as follows:

1. Diesel equipment required which does not satisfy SDM 1 shall be rated Tier 4 per EPA requirements. All modeling assumes the use of this equipment and is therefore a condition to the project.
2. Access to the site will be via HWY 111 and McDonald Rd. All equipment workers, vendors and haul trucks will be required to utilize these roadways.
3. Operational On-Road trips will not operate on unpaved dirt roads.
4. An agreement between County of Imperial Public Works and the applicant has been established requiring the applicant to improve a 2-mile section of the unpaved portion of McDonald Road adjacent to the site by installing a 12-18" thick engineered Class II base section. In addition, at the request of the County, the applicant would utilize the improved section during construction and would wet the site continuously during construction activities. The road would be immediately paved after construction prior to operations of the plant to avoid damaging a new asphalt section.
5. During construction of the project, the project would be required to maintain daily dust suppression at the 2-mile section of McDonald Road using a water truck operating continuously while vehicles are using it.
6. The project will provide wheel shakers at both the exit of the construction site to minimize dust being tracked off the project site and onto the roadways.

An operational health risk analysis was performed which referenced the nearest residential receptor approximately 1 mile from the project site. Based on that analysis, less than significant PM_{10} exhaust health risks would be expected from both onsite and offsite diesel truck operations from the project.

The proposed Project is consistent with the existing land use zoning designation which is designated as industrial. Also, since no direct or cumulative impacts are expected and the proposed project would be consistent with the AQMP and SIP. Given this, less than significant cumulative operational impacts would be expected.

5.0 REFERENCES

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6.0 CERTIFICATIONS

The contents of this report represent an accurate depiction of the air quality environment and impacts within and surrounding the proposed development. This report was prepared utilizing the latest emission rates and reduction methodologies. This report was prepared by Jeremy Louden; a County approved CEQA Consultant for Air Quality.

DRAFT

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Date June 17, 2021

ATTACHMENT A

CalEEMod

Hudson Ranch Minerals

Imperial County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	100.00	1000sqft	27.00	100,000.00	0
Other Asphalt Surfaces	10.00	Acre	10.00	435,600.00	0
Other Non-Asphalt Surfaces	15.00	Acre	15.00	653,400.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	12
Climate Zone	15			**Operational Year**	2024
Utility Company	Imperial Irrigation District				
CO2 Intensity (lb/MWhr)	593.76	**CH4 Intensity (lb/MWhr)**	0.014	**N2O Intensity (lb/MWhr)**	0.003

1.3 User Entered Comments & Non-Default Data

Project Characteristics - https://www.iid.com/energy/renewable-energy 2020 48.8% RPS since 2030. To meet 2030 60% requirement, IID will add 11.2% by 2030 (48.8+11.2=60) or 1.12% per year (1.12%*10 years = 11.2%. For 2024 the IID Renewable should be 53.3%

Land Use - 37 acre construction site and 15 acre laydown area

Construction Phase - Construction dates estimated by Project Enegineer

Off-road Equipment - Equipment List provided by project applicant

Off-road Equipment - Equipment List provided by project applicant

Off-road Equipment - Equipment List provided by project applicant

Off-road Equipment - Equipment List provided by project applicant

Off-road Equipment - Equipment List provided by project applicant
Off-road Equipment - Equipment List provided by project applicant

Trips and VMT -

On-road Fugitive Dust - Trips use 111 and McDonald all paved except 2 miles at McDonald. prior to const. this area will be improved with 12-18" base and would have dedicated water truck. The City wants to wait to pave McDonald till contruction is complete.

Demolition -

Grading -

Architectural Coating -

Vehicle Trips - Trip Gen for Operations per TS excludes PCE adjustments 134 ADT

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Road Dust - Roadways are paved

Woodstoves -

Area Coating -

Energy Use - Energy Use - Project would consume 51,840 MWH per year

Water And Wastewater - Project will use 3,400 afy of water from IID canals.

Construction Off-road Equipment Mitigation - T4 Equipment

Operational Off-Road Equipment - 2 forklifts less than 50HP will be used onsite

Fleet Mix - Truck Trips would be 22%. Remainder of vehicles would be Passenger Cars

Stationary Sources - Emergency Generators and Fire Pumps - 50 hours per year on average would be used 80 hours on average assumed

Table Name	Column Name	Default Value	New Value
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tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
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tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	11.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	20.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstructionPhase	NumDays	1,110.00	520.00
tblConstructionPhase	NumDays	75.00	116.00
tblConstructionPhase	NumDays	75.00	85.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	NT24E	5.02	518.40
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24NG	15.36	0.00
tblFleetMix	HHD	0.12	0.22
tblFleetMix	LDA	0.52	0.38
tblFleetMix	LDT1	0.03	0.15
tblFleetMix	LDT2	0.16	0.10
tblFleetMix	LHD1	0.01	0.00
tblFleetMix	LHD2	4.6900e-003	0.00
tblFleetMix	MCY	5.2480e-003	0.00
tblFleetMix	MDV	0.11	0.15
tblFleetMix	MH	6.0000e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	3.6150e-003	0.00
tblFleetMix	SBUS	7.2500e-004	0.00
tblFleetMix	UBUS	1.2560e-003	0.00

tblLandUse	LotAcreage	2.30	27.00
tblOffRoadEquipment	HorsePower	84.00	15.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	7.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	7.00
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tblOnRoadDust	HaulingPercentPave	50.00	100.00
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tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
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tblOnRoadDust	VendorPercentPave	50.00	100.00
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tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00

tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	365.00
tblOperationalOffRoadEquipment	OperFuelType	Diesel	CNG
tblOperationalOffRoadEquipment	OperHorsePower	89.00	50.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	2.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.014
tblProjectCharacteristics	CO2IntensityFactor	1270.9	593.76
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.003
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	RoadPercentPave	50	100
tblSolidWaste	SolidWasteGenerationRate	124.00	71.92
tblVehicleTrips	ST_TR	1.50	1.34
tblVehicleTrips	SU_TR	1.50	1.34
tblVehicleTrips	WD_TR	1.50	1.34
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	IndoorWaterUseRate	23,125,000.00	1,107,894,868.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	30.9792	281.4474	233.5338	0.5555	23.3444	11.5174	34.8618	8.9159	10.7013	19.6172	0.0000	54,306.5551	54,306.5551	13.0806	0.0000	54,633.5703
2022	41.4984	165.0358	162.7349	0.3638	6.9935	6.6560	13.6496	1.9036	6.2222	8.1258	0.0000	35,750.0601	35,750.0601	6.9035	0.0000	35,922.6468
2023	39.7848	144.0209	157.0512	0.3605	6.9935	5.6760	12.6695	1.9036	5.3070	7.2106	0.0000	35,416.9202	35,416.9202	6.7742	0.0000	35,586.2760
Maximum	**41.4984**	**281.4474**	**233.5338**	**0.5555**	**23.3444**	**11.5174**	**34.8618**	**8.9159**	**10.7013**	**19.6172**	**0.0000**	**54,306.5551**	**54,306.5551**	**13.0806**	**0.0000**	**54,633.5703**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	10.7130	55.4621	272.3014	0.5555	14.0954	0.7864	14.8818	4.9912	0.7814	5.7726	0.0000	54,306.5551	54,306.5551	13.0806	0.0000	54,633.5703
2022	30.3120	42.6052	182.2139	0.3638	6.9935	0.4601	7.4536	1.9036	0.4554	2.3590	0.0000	35,750.0601	35,750.0601	6.9035	0.0000	35,922.6467
2023	29.8649	36.6769	178.7233	0.3605	6.9935	0.4254	7.4189	1.9036	0.4222	2.3258	0.0000	35,416.9202	35,416.9202	6.7742	0.0000	35,586.2760
Maximum	**30.3120**	**55.4621**	**272.3014**	**0.5555**	**14.0954**	**0.7864**	**14.8818**	**4.9912**	**0.7814**	**5.7726**	**0.0000**	**54,306.5551**	**54,306.5551**	**13.0806**	**0.0000**	**54,633.5703**

	ROG	**NOx**	**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	**36.85**	**77.18**	**-14.44**	**0.00**	**24.78**	**92.99**	**51.37**	**30.85**	**92.54**	**70.08**	**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	3.0323	1.2000e-004	0.0127	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0274	0.0274	7.0000e-005		0.0291
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.5071	3.9493	7.0341	0.0257	1.3624	0.0102	1.3726	0.3642	9.5400e-003	0.3737		2,642.3363	2,642.3363	0.1236		2,645.4257
Offroad	0.2442	1.4249	1.7949	1.9100e-003		0.0716	0.0716		0.0659	0.0659		185.3588	185.3588	0.0600		186.8575
Stationary	2.1728	6.1676	5.7596	0.0104		0.3496	0.3496		0.3496	0.3496		1,111.5167	1,111.5167	0.1558		1,115.4126
Total	**5.9564**	**11.5419**	**14.6014**	**0.0381**	**1.3624**	**0.4314**	**1.7938**	**0.3642**	**0.4250**	**0.7892**		**3,939.2392**	**3,939.2392**	**0.3394**	**0.0000**	**3,947.7249**

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	lb/day										lb/day					
Area	3.0323	1.2000e-004	0.0127	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0274	0.0274	7.0000e-005		0.0291
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.5071	3.9493	7.0341	0.0257	1.3624	0.0102	1.3726	0.3642	9.5400e-003	0.3737		2,642.3363	2,642.3363	0.1236		2,645.4257
Offroad	0.2442	1.4249	1.7949	1.9100e-003		0.0716	0.0716		0.0659	0.0659		185.3588	185.3588	0.0600		186.8575
Stationary	2.1728	6.1676	5.7596	0.0104		0.3496	0.3496		0.3496	0.3496		1,111.5167	1,111.5167	0.1558		1,115.4126
Total	**5.9564**	**11.5419**	**14.6014**	**0.0381**	**1.3624**	**0.4314**	**1.7938**	**0.3642**	**0.4250**	**0.7892**		**3,939.2392**	**3,939.2392**	**0.3394**	**0.0000**	**3,947.7249**

	ROG	**NOx**	**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	3/1/2021	3/12/2021	5	10	
2	Grading	Grading	3/1/2021	5/7/2021	5	50	
3	Building Construction	Building Construction	4/12/2021	4/7/2023	5	520	
4	trenching	Trenching	4/19/2021	10/8/2021	5	125	
5	Paving	Paving	9/30/2022	3/10/2023	5	116	
6	Architectural Coating	Architectural Coating	12/5/2022	3/31/2023	5	85	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 225

Acres of Paving: 25

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 150,000; Non-Residential Outdoor: 50,000; Striped Parking Area: 65,340 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Graders	1	8.00	187	0.41
Grading	Off-Highway Trucks	7	8.00	402	0.38
Grading	Rollers	1	8.00	80	0.38
Grading	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Scrapers	4	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Aerial Lifts	7	8.00	63	0.31

Building Construction	Air Compressors	4	8.00	78	0.48
Building Construction	Bore/Drill Rigs	1	8.00	221	0.50
Building Construction	Cranes	7	7.00	231	0.29
Building Construction	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	7	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	15	0.74
Building Construction	Generator Sets	4	8.00	84	0.74
Building Construction	Graders	1	8.00	187	0.41
Building Construction	Off-Highway Trucks	1	8.00	402	0.38
Building Construction	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	13	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
trenching	Excavators	2	8.00	158	0.38
trenching	Off-Highway Trucks	3	8.00	402	0.38
trenching	Rollers	1	8.00	80	0.38
trenching	Skid Steer Loaders	1	8.00	65	0.37
trenching	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Graders	2	8.00	187	0.41
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Paving	Rubber Tired Dozers	2	8.00	247	0.40
Paving	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	68.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	16	40.00	0.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	50	499.00	195.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
trenching	10	25.00	0.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	10	25.00	0.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	100.00	0.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.5342	0.0000	1.5342	0.2323	0.0000	0.2323			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**1.5342**	**1.5513**	**3.0856**	**0.2323**	**1.4411**	**1.6734**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0339	1.4386	0.1925	5.2600e-003	0.1192	4.4600e-003	0.1237	0.0327	4.2700e-003	0.0370		551.6226	551.6226	0.0207		552.1411
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	0.1182	0.0786	0.9125	1.1500e-003	0.1164	7.2000e-004	0.1171	0.0309	6.7000e-004	0.0315		113.2627	113.2627	8.8800e-003		113.4846
Total	**0.1520**	**1.5172**	**1.1051**	**6.4100e-003**	**0.2356**	**5.1800e-003**	**0.2408**	**0.0636**	**4.9400e-003**	**0.0685**		**664.8853**	**664.8853**	**0.0296**		**665.6257**

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					0.6904	0.0000	0.6904	0.1046	0.0000	0.1046			0.0000			0.0000
Off-Road	0.4623	2.0032	23.2798	0.0388		0.0616	0.0616		0.0616	0.0616	0.0000	3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**0.4623**	**2.0032**	**23.2798**	**0.0388**	**0.6904**	**0.0616**	**0.7520**	**0.1046**	**0.0616**	**0.1662**	**0.0000**	**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0339	1.4386	0.1925	5.2600e-003	0.1192	4.4600e-003	0.1237	0.0327	4.2700e-003	0.0370		551.6226	551.6226	0.0207		552.1411
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	0.1182	0.0786	0.9125	1.1500e-003	0.1164	7.2000e-004	0.1171	0.0309	6.7000e-004	0.0315		113.2627	113.2627	8.8800e-003		113.4846
Total	**0.1520**	**1.5172**	**1.1051**	**6.4100e-003**	**0.2356**	**5.1800e-003**	**0.2408**	**0.0636**	**4.9400e-003**	**0.0685**		**664.8853**	**664.8853**	**0.0296**		**665.6257**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					16.8164	0.0000	16.8164	7.1358	0.0000	7.1358			0.0000			0.0000
Off-Road	10.8816	111.3419	67.2327	0.1825		4.4989	4.4989		4.1390	4.1390		17,672.6845	17,672.6845	5.7157		17,815.5771
Total	**10.8816**	**111.3419**	**67.2327**	**0.1825**	**16.8164**	**4.4989**	**21.3154**	**7.1358**	**4.1390**	**11.2748**		**17,672.6845**	**17,672.6845**	**5.7157**		**17,815.5771**

3.3 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3152	0.2095	2.4335	3.0600e-003	0.3104	1.9300e-003	0.3123	0.0823	1.7700e-003	0.0841		302.0339	302.0339	0.0237		302.6257
Total	**0.3152**	**0.2095**	**2.4335**	**3.0600e-003**	**0.3104**	**1.9300e-003**	**0.3123**	**0.0823**	**1.7700e-003**	**0.0841**		**302.0339**	**302.0339**	**0.0237**		**302.6257**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.5674	0.0000	7.5674	3.2111	0.0000	3.2111			0.0000			0.0000
Off-Road	2.2376	9.6964	83.8000	0.1825		0.2984	0.2984		0.2984	0.2984	0.0000	17,672.6845	17,672.6845	5.7157		17,815.5771
Total	**2.2376**	**9.6964**	**83.8000**	**0.1825**	**7.5674**	**0.2984**	**7.8657**	**3.2111**	**0.2984**	**3.5094**	**0.0000**	**17,672.6845**	**17,672.6845**	**5.7157**		**17,815.5771**

3.3 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3152	0.2095	2.4335	3.0600e-003	0.3104	1.9300e-003	0.3123	0.0823	1.7700e-003	0.0841		302.0339	302.0339	0.0237		302.6257
Total	**0.3152**	**0.2095**	**2.4335**	**3.0600e-003**	**0.3104**	**1.9300e-003**	**0.3123**	**0.0823**	**1.7700e-003**	**0.0841**		**302.0339**	**302.0339**	**0.0237**		**302.6257**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	11.6726	116.4001	98.5579	0.1875		5.6434	5.6434		5.2948	5.2948		17,991.5021	17,991.5021	4.6926		18,108.8174
Total	**11.6726**	**116.4001**	**98.5579**	**0.1875**		**5.6434**	**5.6434**		**5.2948**	**5.2948**		**17,991.5021**	**17,991.5021**	**4.6926**		**18,108.8174**

3.4 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.8786	22.0391	6.0238	0.0784	2.1520	0.0661	2.2180	0.6194	0.0632	0.6825		8,190.7506	8,190.7506	0.3356		8,199.1403
Worker	3.9314	2.6138	30.3573	0.0381	3.8717	0.0240	3.8957	1.0270	0.0221	1.0491		3,767.8725	3,767.8725	0.2953		3,775.2553
Total	**4.8100**	**24.6529**	**36.3811**	**0.1165**	**6.0237**	**0.0901**	**6.1138**	**1.6464**	**0.0853**	**1.7317**		**11,958.6231**	**11,958.6231**	**0.6309**		**11,974.3956**

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	2.3442	16.3249	111.9685	0.1875		0.2903	0.2903		0.2903	0.2903	0.0000	17,991.5021	17,991.5021	4.6926		18,108.8174
Total	**2.3442**	**16.3249**	**111.9685**	**0.1875**		**0.2903**	**0.2903**		**0.2903**	**0.2903**	**0.0000**	**17,991.5021**	**17,991.5021**	**4.6926**		**18,108.8174**

3.4 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.8786	22.0391	6.0238	0.0784	2.1520	0.0661	2.2180	0.6194	0.0632	0.6825		8,190.7506	8,190.7506	0.3356		8,199.1403
Worker	3.9314	2.6138	30.3573	0.0381	3.8717	0.0240	3.8957	1.0270	0.0221	1.0491		3,767.8725	3,767.8725	0.2953		3,775.2553
Total	**4.8100**	**24.6529**	**36.3811**	**0.1165**	**6.0237**	**0.0901**	**6.1138**	**1.6464**	**0.0853**	**1.7317**		**11,958.6231**	**11,958.6231**	**0.6309**		**11,974.3956**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	10.4253	101.4279	96.7562	0.1876		4.7514	4.7514		4.4613	4.4613		17,996.8031	17,996.8031	4.6779		18,113.7502
Total	**10.4253**	**101.4279**	**96.7562**	**0.1876**		**4.7514**	**4.7514**		**4.4613**	**4.4613**		**17,996.8031**	**17,996.8031**	**4.6779**		**18,113.7502**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.8140	20.5193	5.4649	0.0777	2.1519	0.0561	2.2080	0.6194	0.0536	0.6730		8,128.2740	8,128.2740	0.3165		8,136.1854
Worker	3.6686	2.3991	27.8083	0.0367	3.8717	0.0230	3.8947	1.0270	0.0212	1.0482		3,630.3242	3,630.3242	0.2696		3,637.0645
Total	**4.4826**	**22.9184**	**33.2732**	**0.1144**	**6.0237**	**0.0790**	**6.1027**	**1.6464**	**0.0748**	**1.7211**		**11,758.5982**	**11,758.5982**	**0.5861**		**11,773.2499**

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	2.3442	16.3249	111.9685	0.1876		0.2903	0.2903		0.2903	0.2903	0.0000	17,996.8031	17,996.8031	4.6779		18,113.7502
Total	**2.3442**	**16.3249**	**111.9685**	**0.1876**		**0.2903**	**0.2903**		**0.2903**	**0.2903**	**0.0000**	**17,996.8031**	**17,996.8031**	**4.6779**		**18,113.7502**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.8140	20.5193	5.4649	0.0777	2.1519	0.0561	2.2080	0.6194	0.0536	0.6730		8,128.2740	8,128.2740	0.3165		8,136.1854
Worker	3.6686	2.3991	27.8083	0.0367	3.8717	0.0230	3.8947	1.0270	0.0212	1.0482		3,630.3242	3,630.3242	0.2696		3,637.0645
Total	**4.4826**	**22.9184**	**33.2732**	**0.1144**	**6.0237**	**0.0790**	**6.1027**	**1.6464**	**0.0748**	**1.7211**		**11,758.5982**	**11,758.5982**	**0.5861**		**11,773.2499**

3.4 Building Construction - 2023

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	9.6198	91.8565	95.6120	0.1877		4.1186	4.1186		3.8677	3.8677		18,003.0426	18,003.0426	4.6608		18,119.5631
Total	**9.6198**	**91.8565**	**95.6120**	**0.1877**		**4.1186**	**4.1186**		**3.8677**	**3.8677**		**18,003.0426**	**18,003.0426**	**4.6608**		**18,119.5631**

3.4 Building Construction - 2023

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	0.6601	14.8248	4.7724	0.0761	2.1520	0.0224	2.1744	0.6194	0.0214	0.6408		7,961.0976	7,961.0976	0.2341		7,966.9490
Worker	3.4342	2.2121	25.5707	0.0353	3.8717	0.0221	3.8938	1.0270	0.0203	1.0473		3,492.5666	3,492.5666	0.2470		3,498.7411
Total	**4.0943**	**17.0369**	**30.3431**	**0.1114**	**6.0237**	**0.0445**	**6.0682**	**1.6464**	**0.0418**	**1.6881**		**11,453.6643**	**11,453.6643**	**0.4810**		**11,465.6901**

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	2.3442	16.3249	111.9685	0.1877		0.2903	0.2903		0.2903	0.2903	0.0000	18,003.0426	18,003.0426	4.6608		18,119.5631
Total	**2.3442**	**16.3249**	**111.9685**	**0.1877**		**0.2903**	**0.2903**		**0.2903**	**0.2903**	**0.0000**	**18,003.0426**	**18,003.0426**	**4.6608**		**18,119.5631**

3.4 Building Construction - 2023

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	0.6601	14.8248	4.7724	0.0761	2.1520	0.0224	2.1744	0.6194	0.0214	0.6408		7,961.0976	7,961.0976	0.2341		7,966.9490
Worker	3.4342	2.2121	25.5707	0.0353	3.8717	0.0221	3.8938	1.0270	0.0203	1.0473		3,492.5666	3,492.5666	0.2470		3,498.7411
Total	**4.0943**	**17.0369**	**30.3431**	**0.1114**	**6.0237**	**0.0445**	**6.0682**	**1.6464**	**0.0418**	**1.6881**		**11,453.6643**	**11,453.6643**	**0.4810**		**11,465.6901**

3.5 trenching - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1029	28.7121	27.4078	0.0640		1.2818	1.2818		1.1793	1.1793		6,192.9404	6,192.9404	2.0029		6,243.0135
Total	**3.1029**	**28.7121**	**27.4078**	**0.0640**		**1.2818**	**1.2818**		**1.1793**	**1.1793**		**6,192.9404**	**6,192.9404**	**2.0029**		**6,243.0135**

3.5 trenching - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1970	0.1310	1.5209	1.9100e-003	0.1940	1.2000e-003	0.1952	0.0515	1.1100e-003	0.0526		188.7712	188.7712	0.0148		189.1411
Total	**0.1970**	**0.1310**	**1.5209**	**1.9100e-003**	**0.1940**	**1.2000e-003**	**0.1952**	**0.0515**	**1.1100e-003**	**0.0526**		**188.7712**	**188.7712**	**0.0148**		**189.1411**

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	0.8090	4.4475	36.1974	0.0640		0.1045	0.1045		0.1045	0.1045	0.0000	6,192.940 4	6,192.940 4	2.0029		6,243.013 5
Total	**0.8090**	**4.4475**	**36.1974**	**0.0640**		**0.1045**	**0.1045**		**0.1045**	**0.1045**	**0.0000**	**6,192.940 4**	**6,192.940 4**	**2.0029**		**6,243.013 5**

3.5 trenching - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1970	0.1310	1.5209	1.9100e-003	0.1940	1.2000e-003	0.1952	0.0515	1.1100e-003	0.0526		188.7712	188.7712	0.0148		189.1411
Total	**0.1970**	**0.1310**	**1.5209**	**1.9100e-003**	**0.1940**	**1.2000e-003**	**0.1952**	**0.0515**	**1.1100e-003**	**0.0526**		**188.7712**	**188.7712**	**0.0148**		**189.1411**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5378	38.6801	23.9259	0.0496		1.7382	1.7382		1.5991	1.5991		4,803.8110	4,803.8110	1.5537		4,842.6522
Paving	0.2259					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.7636**	**38.6801**	**23.9259**	**0.0496**		**1.7382**	**1.7382**		**1.5991**	**1.5991**		**4,803.8110**	**4,803.8110**	**1.5537**		**4,842.6522**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1838	0.1202	1.3932	1.8400e-003	0.1940	1.1500e-003	0.1951	0.0515	1.0600e-003	0.0525		181.8800	181.8800	0.0135		182.2177
Total	**0.1838**	**0.1202**	**1.3932**	**1.8400e-003**	**0.1940**	**1.1500e-003**	**0.1951**	**0.0515**	**1.0600e-003**	**0.0525**		**181.8800**	**181.8800**	**0.0135**		**182.2177**

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	0.6074	2.6322	28.1738	0.0496		0.0810	0.0810		0.0810	0.0810	0.0000	4,803.8110	4,803.8110	1.5537		4,842.6522
Paving	0.2259					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8333**	**2.6322**	**28.1738**	**0.0496**		**0.0810**	**0.0810**		**0.0810**	**0.0810**	**0.0000**	**4,803.8110**	**4,803.8110**	**1.5537**		**4,842.6522**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1838	0.1202	1.3932	1.8400e-003	0.1940	1.1500e-003	0.1951	0.0515	1.0600e-003	0.0525		181.8800	181.8800	0.0135		182.2177
Total	**0.1838**	**0.1202**	**1.3932**	**1.8400e-003**	**0.1940**	**1.1500e-003**	**0.1951**	**0.0515**	**1.0600e-003**	**0.0525**		**181.8800**	**181.8800**	**0.0135**		**182.2177**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0897	33.2704	22.8795	0.0496		1.4365	1.4365		1.3216	1.3216		4,803.8739	4,803.8739	1.5537		4,842.7157
Paving	0.2259					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.3156**	**33.2704**	**22.8795**	**0.0496**		**1.4365**	**1.4365**		**1.3216**	**1.3216**		**4,803.8739**	**4,803.8739**	**1.5537**		**4,842.7157**

3.6 Paving - 2023

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	0.1721	0.1108	1.2811	1.7700e-003	0.1940	1.1100e-003	0.1951	0.0515	1.0200e-003	0.0525		174.9783	174.9783	0.0124		175.2876
Total	**0.1721**	**0.1108**	**1.2811**	**1.7700e-003**	**0.1940**	**1.1100e-003**	**0.1951**	**0.0515**	**1.0200e-003**	**0.0525**		**174.9783**	**174.9783**	**0.0124**		**175.2876**

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	0.6074	2.6322	28.1738	0.0496		0.0810	0.0810		0.0810	0.0810	0.0000	4,803.8739	4,803.8739	1.5537		4,842.7157
Paving	0.2259					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8333**	**2.6322**	**28.1738**	**0.0496**		**0.0810**	**0.0810**		**0.0810**	**0.0810**	**0.0000**	**4,803.8739**	**4,803.8739**	**1.5537**		**4,842.7157**

3.6 Paving - 2023

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	0.1721	0.1108	1.2811	1.7700e-003	0.1940	1.1100e-003	0.1951	0.0515	1.0200e-003	0.0525		174.9783	174.9783	0.0124		175.2876
Total	**0.1721**	**0.1108**	**1.2811**	**1.7700e-003**	**0.1940**	**1.1100e-003**	**0.1951**	**0.0515**	**1.0200e-003**	**0.0525**		**174.9783**	**174.9783**	**0.0124**		**175.2876**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	21.7033					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**21.9078**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.7352	0.4808	5.5728	7.3600e-003	0.7759	4.6100e-003	0.7805	0.2058	4.2400e-003	0.2101		727.5199	727.5199	0.0540		728.8706
Total	**0.7352**	**0.4808**	**5.5728**	**7.3600e-003**	**0.7759**	**4.6100e-003**	**0.7805**	**0.2058**	**4.2400e-003**	**0.2101**		**727.5199**	**727.5199**	**0.0540**		**728.8706**

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	21.7033					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**21.7330**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.7352	0.4808	5.5728	7.3600e-003	0.7759	4.6100e-003	0.7805	0.2058	4.2400e-003	0.2101		727.5199	727.5199	0.0540		728.8706
Total	**0.7352**	**0.4808**	**5.5728**	**7.3600e-003**	**0.7759**	**4.6100e-003**	**0.7805**	**0.2058**	**4.2400e-003**	**0.2101**		**727.5199**	**727.5199**	**0.0540**		**728.8706**

3.7 Architectural Coating - 2023

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	21.7033					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**21.8949**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.7 Architectural Coating - 2023

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	0.6882	0.4433	5.1244	7.0700e-003	0.7759	4.4200e-003	0.7803	0.2058	4.0700e-003	0.2099		699.9132	699.9132	0.0495		701.1505
Total	**0.6882**	**0.4433**	**5.1244**	**7.0700e-003**	**0.7759**	**4.4200e-003**	**0.7803**	**0.2058**	**4.0700e-003**	**0.2099**		**699.9132**	**699.9132**	**0.0495**		**701.1505**

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	21.7033					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**21.7330**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.7 Architectural Coating - 2023

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	0.6882	0.4433	5.1244	7.0700e-003	0.7759	4.4200e-003	0.7803	0.2058	4.0700e-003	0.2099		699.9132	699.9132	0.0495		701.1505
Total	**0.6882**	**0.4433**	**5.1244**	**7.0700e-003**	**0.7759**	**4.4200e-003**	**0.7803**	**0.2058**	**4.0700e-003**	**0.2099**		**699.9132**	**699.9132**	**0.0495**		**701.1505**

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	0.5071	3.9493	7.0341	0.0257	1.3624	0.0102	1.3726	0.3642	9.5400e-003	0.3737		2,642.3363	2,642.3363	0.1236		2,645.4257
Unmitigated	0.5071	3.9493	7.0341	0.0257	1.3624	0.0102	1.3726	0.3642	9.5400e-003	0.3737		2,642.3363	2,642.3363	0.1236		2,645.4257

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	134.00	134.00	134.00	631,595	631,595
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	134.00	134.00	134.00	631,595	631,595

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
General Heavy Industry	16.40	9.50	11.90	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	16.40	9.50	11.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.40	9.50	11.90	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
Other Non-Asphalt Surfaces	0.524989	0.030717	0.161165	0.112416	0.014580	0.004690	0.018794	0.121206	0.003615	0.001256	0.005248	0.000725	0.000600
General Heavy Industry	0.380000	0.150000	0.100000	0.150000	0.000000	0.000000	0.000000	0.220000	0.000000	0.000000	0.000000	0.000000	0.000000
Other Asphalt Surfaces	0.524989	0.030717	0.161165	0.112416	0.014580	0.004690	0.018794	0.121206	0.003615	0.001256	0.005248	0.000725	0.000600

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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Heavy Industry	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
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Heavy Industry	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
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.0323	1.2000e-004	0.0127	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0274	0.0274	7.0000e-005		0.0291
Unmitigated	3.0323	1.2000e-004	0.0127	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0274	0.0274	7.0000e-005		0.0291

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	0.5054					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.5257					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.1800e-003	1.2000e-004	0.0127	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0274	0.0274	7.0000e-005		0.0291
Total	**3.0323**	**1.2000e-004**	**0.0127**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**		**0.0274**	**0.0274**	**7.0000e-005**		**0.0291**

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	0.5054					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.5257					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.1800e-003	1.2000e-004	0.0127	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0274	0.0274	7.0000e-005		0.0291
Total	**3.0323**	**1.2000e-004**	**0.0127**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**		**0.0274**	**0.0274**	**7.0000e-005**		**0.0291**

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
Forklifts	2	8.00	365	50	0.20	CNG

UnMitigated/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
Equipment Type	lb/day										lb/day					
Forklifts	0.2442	1.4249	1.7949	1.9100e-003		0.0716	0.0716		0.0659	0.0659		185.3588	185.3588	0.0600		186.8575
Total	**0.2442**	**1.4249**	**1.7949**	**1.9100e-003**		**0.0716**	**0.0716**		**0.0659**	**0.0659**		**185.3588**	**185.3588**	**0.0600**		**186.8575**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	2	80	600	0.73	Diesel
Fire Pump	1	2	80	62	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/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
Equipment Type	lb/day										lb/day					
Emergency Generator - Diesel (600 - 750 HP)	1.9693	5.5041	5.0213	9.4600e-003		0.2897	0.2897		0.2897	0.2897		1,007.4170	1,007.4170	0.1412		1,010.9480
Fire Pump - Diesel (50 - 75 HP)	0.2035	0.6636	0.7384	9.8000e-004		0.0599	0.0599		0.0599	0.0599		104.0998	104.0998	0.0146		104.4646
Total	**2.1728**	**6.1676**	**5.7596**	**0.0104**		**0.3496**	**0.3496**		**0.3496**	**0.3496**		**1,111.5167**	**1,111.5167**	**0.1558**		**1,115.4126**

11.0 Vegetation

Hudson Ranch Minerals

Imperial County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	100.00	1000sqft	27.00	100,000.00	0
Other Asphalt Surfaces	10.00	Acre	10.00	435,600.00	0
Other Non-Asphalt Surfaces	15.00	Acre	15.00	653,400.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	12
Climate Zone	15			**Operational Year**	2024
Utility Company	Imperial Irrigation District				
CO2 Intensity (lb/MWhr)	593.76	**CH4 Intensity (lb/MWhr)**	0.014	**N2O Intensity (lb/MWhr)**	0.003

1.3 User Entered Comments & Non-Default Data

Project Characteristics - https://www.iid.com/energy/renewable-energy 2020 48.8% RPS since 2030. To meet 2030 60% requirement, IID will add 11.2% by 2030 (48.8+11.2=60) or 1.12% per year (1.12%*10 years = 11.2%. For 2024 the IID Renewable should be 53.3%

Land Use - 37 acre construction site and 15 acre laydown area

Construction Phase - Construction dates estimated by Project Enegineer

Off-road Equipment - Equipment List provided by project applicant

Off-road Equipment - Equipment List provided by project applicant

Off-road Equipment - Equipment List provided by project applicant

Off-road Equipment - Equipment List provided by project applicant

Off-road Equipment - Equipment List provided by project applicant
Off-road Equipment - Equipment List provided by project applicant

Trips and VMT -

On-road Fugitive Dust - Trips use 111 and McDonald all paved except 2 miles at McDonald. prior to const. this area will be improved with 12-18" base and would have dedicated water truck. The City wants to wait to pave McDonald till contruction is complete.

Demolition -

Grading -

Architectural Coating -

Vehicle Trips - Trip Gen for Operations per TS excludes PCE adjustments 134 ADT

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Road Dust - Roadways are paved

Woodstoves -

Area Coating -

Energy Use - Energy Use - Project would consume 51,840 MWH per year

Water And Wastewater - Project will use 3,400 afy of water from IID canals.

Construction Off-road Equipment Mitigation - T4 Equipment

Operational Off-Road Equipment - 2 forklifts less than 50HP will be used onsite

Fleet Mix - Truck Trips would be 22%. Remainder of vehicles would be Passenger Cars

Stationary Sources - Emergency Generators and Fire Pumps - 50 hours per year on average would be used 80 hours on average assumed

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	11.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	20.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	70.00	10.00
tblConstructionPhase	NumDays	110.00	50.00
tblConstructionPhase	NumDays	1,110.00	520.00
tblConstructionPhase	NumDays	75.00	116.00
tblConstructionPhase	NumDays	75.00	85.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	NT24E	5.02	518.40
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24NG	15.36	0.00
tblFleetMix	HHD	0.12	0.22
tblFleetMix	LDA	0.52	0.38
tblFleetMix	LDT1	0.03	0.15
tblFleetMix	LDT2	0.16	0.10
tblFleetMix	LHD1	0.01	0.00
tblFleetMix	LHD2	4.6900e-003	0.00
tblFleetMix	MCY	5.2480e-003	0.00
tblFleetMix	MDV	0.11	0.15
tblFleetMix	MH	6.0000e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	3.6150e-003	0.00
tblFleetMix	SBUS	7.2500e-004	0.00
tblFleetMix	UBUS	1.2560e-003	0.00

tblLandUse	LotAcreage	2.30	27.00
tblOffRoadEquipment	HorsePower	84.00	15.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	7.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	7.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	13.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00

tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	365.00
tblOperationalOffRoadEquipment	OperFuelType	Diesel	CNG
tblOperationalOffRoadEquipment	OperHorsePower	89.00	50.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	2.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.014
tblProjectCharacteristics	CO2IntensityFactor	1270.9	593.76
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.003
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	RoadPercentPave	50	100
tblSolidWaste	SolidWasteGenerationRate	124.00	71.92
tblVehicleTrips	ST_TR	1.50	1.34
tblVehicleTrips	SU_TR	1.50	1.34
tblVehicleTrips	WD_TR	1.50	1.34
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	IndoorWaterUseRate	23,125,000.00	1,107,894,868.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	30.2907	282.0794	225.0053	0.5461	23.3444	11.5191	34.8635	8.9159	10.7029	19.6188	0.0000	53,377.5249	53,377.5249	13.0491	0.0000	53,703.7525
2022	40.8037	165.5509	154.0058	0.3541	6.9935	6.6576	13.6511	1.9036	6.2237	8.1273	0.0000	34,775.0663	34,775.0663	6.8714	0.0000	34,946.8513
2023	39.1431	144.2257	148.8780	0.3511	6.9935	5.6765	12.6700	1.9036	5.3075	7.2111	0.0000	34,476.4725	34,476.4725	6.7385	0.0000	34,644.9361
Maximum	**40.8037**	**282.0794**	**225.0053**	**0.5461**	**23.3444**	**11.5191**	**34.8635**	**8.9159**	**10.7029**	**19.6188**	**0.0000**	**53,377.5249**	**53,377.5249**	**13.0491**	**0.0000**	**53,703.7525**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	10.0245	56.0941	263.7729	0.5461	14.0954	0.7881	14.8835	4.9912	0.7830	5.7742	0.0000	53,377.5249	53,377.5249	13.0491	0.0000	53,703.7524
2022	29.6174	43.1203	173.4849	0.3541	6.9935	0.4617	7.4552	1.9036	0.4569	2.3605	0.0000	34,775.0663	34,775.0663	6.8714	0.0000	34,946.8513
2023	29.2232	36.8817	170.5501	0.3511	6.9935	0.4259	7.4194	1.9036	0.4227	2.3263	0.0000	34,476.4725	34,476.4725	6.7385	0.0000	34,644.9361
Maximum	**29.6174**	**56.0941**	**263.7729**	**0.5461**	**14.0954**	**0.7881**	**14.8835**	**4.9912**	**0.7830**	**5.7742**	**0.0000**	**53,377.5249**	**53,377.5249**	**13.0491**	**0.0000**	**53,703.7524**

	ROG	NOx	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	**37.53**	**77.01**	**-15.14**	**0.00**	**24.78**	**92.98**	**51.36**	**30.85**	**92.52**	**70.07**	**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	3.0323	1.2000e-004	0.0127	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0274	0.0274	7.0000e-005		0.0291
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.3783	3.9437	5.2521	0.0235	1.3624	0.0103	1.3727	0.3642	9.6800e-003	0.3739		2,414.7629	2,414.7629	0.1177		2,417.7063
Offroad	0.2442	1.4249	1.7949	1.9100e-003		0.0716	0.0716		0.0659	0.0659		185.3588	185.3588	0.0600		186.8575
Stationary	2.1728	6.1676	5.7596	0.0104		0.3496	0.3496		0.3496	0.3496		1,111.5167	1,111.5167	0.1558		1,115.4126
Total	**5.8275**	**11.5363**	**12.8193**	**0.0358**	**1.3624**	**0.4315**	**1.7939**	**0.3642**	**0.4252**	**0.7894**		**3,711.6657**	**3,711.6657**	**0.3336**	**0.0000**	**3,720.0055**

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	lb/day										lb/day					
Area	3.0323	1.2000e-004	0.0127	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0274	0.0274	7.0000e-005		0.0291
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.3783	3.9437	5.2521	0.0235	1.3624	0.0103	1.3727	0.3642	9.6800e-003	0.3739		2,414.7629	2,414.7629	0.1177		2,417.7063
Offroad	0.2442	1.4249	1.7949	1.9100e-003		0.0716	0.0716		0.0659	0.0659		185.3588	185.3588	0.0600		186.8575
Stationary	2.1728	6.1676	5.7596	0.0104		0.3496	0.3496		0.3496	0.3496		1,111.5167	1,111.5167	0.1558		1,115.4126
Total	**5.8275**	**11.5363**	**12.8193**	**0.0358**	**1.3624**	**0.4315**	**1.7939**	**0.3642**	**0.4252**	**0.7894**		**3,711.6657**	**3,711.6657**	**0.3336**	**0.0000**	**3,720.0055**

	ROG	**NOx**	**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	3/1/2021	3/12/2021	5	10	
2	Grading	Grading	3/1/2021	5/7/2021	5	50	
3	Building Construction	Building Construction	4/12/2021	4/7/2023	5	520	
4	trenching	Trenching	4/19/2021	10/8/2021	5	125	
5	Paving	Paving	9/30/2022	3/10/2023	5	116	
6	Architectural Coating	Architectural Coating	12/5/2022	3/31/2023	5	85	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 225

Acres of Paving: 25

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 150,000; Non-Residential Outdoor: 50,000; Striped Parking Area: 65,340 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Graders	1	8.00	187	0.41
Grading	Off-Highway Trucks	7	8.00	402	0.38
Grading	Rollers	1	8.00	80	0.38
Grading	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Scrapers	4	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Aerial Lifts	7	8.00	63	0.31

Building Construction	Air Compressors	4	8.00	78	0.48
Building Construction	Bore/Drill Rigs	1	8.00	221	0.50
Building Construction	Cranes	7	7.00	231	0.29
Building Construction	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	7	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	15	0.74
Building Construction	Generator Sets	4	8.00	84	0.74
Building Construction	Graders	1	8.00	187	0.41
Building Construction	Off-Highway Trucks	1	8.00	402	0.38
Building Construction	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	13	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
trenching	Excavators	2	8.00	158	0.38
trenching	Off-Highway Trucks	3	8.00	402	0.38
trenching	Rollers	1	8.00	80	0.38
trenching	Skid Steer Loaders	1	8.00	65	0.37
trenching	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Graders	2	8.00	187	0.41
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Paving	Rubber Tired Dozers	2	8.00	247	0.40
Paving	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	68.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	16	40.00	0.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	50	499.00	195.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
trenching	10	25.00	0.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	10	25.00	0.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	100.00	0.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					1.5342	0.0000	1.5342	0.2323	0.0000	0.2323			0.0000			0.0000
Off-Road	3.1651	31.4407	21.5650	0.0388		1.5513	1.5513		1.4411	1.4411		3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**3.1651**	**31.4407**	**21.5650**	**0.0388**	**1.5342**	**1.5513**	**3.0856**	**0.2323**	**1.4411**	**1.6734**		**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0360	1.4756	0.2315	5.1100e-003	0.1192	4.5700e-003	0.1238	0.0327	4.3700e-003	0.0371		535.4143	535.4143	0.0233		535.9966
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	0.0991	0.0825	0.6648	9.6000e-004	0.1164	7.2000e-004	0.1171	0.0309	6.7000e-004	0.0315		94.8483	94.8483	7.0400e-003		95.0242
Total	**0.1350**	**1.5581**	**0.8963**	**6.0700e-003**	**0.2356**	**5.2900e-003**	**0.2409**	**0.0636**	**5.0400e-003**	**0.0686**		**630.2626**	**630.2626**	**0.0303**		**631.0208**

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					0.6904	0.0000	0.6904	0.1046	0.0000	0.1046			0.0000			0.0000
Off-Road	0.4623	2.0032	23.2798	0.0388		0.0616	0.0616		0.0616	0.0616	0.0000	3,747.9449	3,747.9449	1.0549		3,774.3174
Total	**0.4623**	**2.0032**	**23.2798**	**0.0388**	**0.6904**	**0.0616**	**0.7520**	**0.1046**	**0.0616**	**0.1662**	**0.0000**	**3,747.9449**	**3,747.9449**	**1.0549**		**3,774.3174**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0360	1.4756	0.2315	5.1100e-003	0.1192	4.5700e-003	0.1238	0.0327	4.3700e-003	0.0371		535.4143	535.4143	0.0233		535.9966
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	0.0991	0.0825	0.6648	9.6000e-004	0.1164	7.2000e-004	0.1171	0.0309	6.7000e-004	0.0315		94.8483	94.8483	7.0400e-003		95.0242
Total	**0.1350**	**1.5581**	**0.8963**	**6.0700e-003**	**0.2356**	**5.2900e-003**	**0.2409**	**0.0636**	**5.0400e-003**	**0.0686**		**630.2626**	**630.2626**	**0.0303**		**631.0208**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					16.8164	0.0000	16.8164	7.1358	0.0000	7.1358			0.0000			0.0000
Off-Road	10.8816	111.3419	67.2327	0.1825		4.4989	4.4989		4.1390	4.1390		17,672.6845	17,672.6845	5.7157		17,815.5771
Total	**10.8816**	**111.3419**	**67.2327**	**0.1825**	**16.8164**	**4.4989**	**21.3154**	**7.1358**	**4.1390**	**11.2748**		**17,672.6845**	**17,672.6845**	**5.7157**		**17,815.5771**

3.3 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2642	0.2200	1.7728	2.5500e-003	0.3104	1.9300e-003	0.3123	0.0823	1.7700e-003	0.0841		252.9288	252.9288	0.0188		253.3979
Total	**0.2642**	**0.2200**	**1.7728**	**2.5500e-003**	**0.3104**	**1.9300e-003**	**0.3123**	**0.0823**	**1.7700e-003**	**0.0841**		**252.9288**	**252.9288**	**0.0188**		**253.3979**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.5674	0.0000	7.5674	3.2111	0.0000	3.2111			0.0000			0.0000
Off-Road	2.2376	9.6964	83.8000	0.1825		0.2984	0.2984		0.2984	0.2984	0.0000	17,672.6845	17,672.6845	5.7157		17,815.5771
Total	**2.2376**	**9.6964**	**83.8000**	**0.1825**	**7.5674**	**0.2984**	**7.8657**	**3.2111**	**0.2984**	**3.5094**	**0.0000**	**17,672.6845**	**17,672.6845**	**5.7157**		**17,815.5771**

3.3 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2642	0.2200	1.7728	2.5500e-003	0.3104	1.9300e-003	0.3123	0.0823	1.7700e-003	0.0841		252.9288	252.9288	0.0188		253.3979
Total	**0.2642**	**0.2200**	**1.7728**	**2.5500e-003**	**0.3104**	**1.9300e-003**	**0.3123**	**0.0823**	**1.7700e-003**	**0.0841**		**252.9288**	**252.9288**	**0.0188**		**253.3979**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	11.6726	116.4001	98.5579	0.1875		5.6434	5.6434		5.2948	5.2948		17,991.5021	17,991.5021	4.6926		18,108.8174
Total	**11.6726**	**116.4001**	**98.5579**	**0.1875**		**5.6434**	**5.6434**		**5.2948**	**5.2948**		**17,991.5021**	**17,991.5021**	**4.6926**		**18,108.8174**

3.4 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.9085	22.5236	6.8103	0.0761	2.1520	0.0677	2.2197	0.6194	0.0648	0.6841		7,954.1018	7,954.1018	0.3733		7,963.4343
Worker	3.2959	2.7443	22.1159	0.0319	3.8717	0.0240	3.8957	1.0270	0.0221	1.0491		3,155.2868	3,155.2868	0.2341		3,161.1387
Total	**4.2044**	**25.2679**	**28.9262**	**0.1080**	**6.0237**	**0.0918**	**6.1154**	**1.6464**	**0.0869**	**1.7333**		**11,109.3886**	**11,109.3886**	**0.6074**		**11,124.5729**

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	2.3442	16.3249	111.9685	0.1875		0.2903	0.2903		0.2903	0.2903	0.0000	17,991.5021	17,991.5021	4.6926		18,108.8174
Total	**2.3442**	**16.3249**	**111.9685**	**0.1875**		**0.2903**	**0.2903**		**0.2903**	**0.2903**	**0.0000**	**17,991.5021**	**17,991.5021**	**4.6926**		**18,108.8174**

3.4 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.9085	22.5236	6.8103	0.0761	2.1520	0.0677	2.2197	0.6194	0.0648	0.6841		7,954.1018	7,954.1018	0.3733		7,963.4343
Worker	3.2959	2.7443	22.1159	0.0319	3.8717	0.0240	3.8957	1.0270	0.0221	1.0491		3,155.2868	3,155.2868	0.2341		3,161.1387
Total	**4.2044**	**25.2679**	**28.9262**	**0.1080**	**6.0237**	**0.0918**	**6.1154**	**1.6464**	**0.0869**	**1.7333**		**11,109.3886**	**11,109.3886**	**0.6074**		**11,124.5729**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	10.4253	101.4279	96.7562	0.1876		4.7514	4.7514		4.4613	4.4613		17,996.8031	17,996.8031	4.6779		18,113.7502
Total	**10.4253**	**101.4279**	**96.7562**	**0.1876**		**4.7514**	**4.7514**		**4.4613**	**4.4613**		**17,996.8031**	**17,996.8031**	**4.6779**		**18,113.7502**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.8435	20.8899	6.2158	0.0755	2.1519	0.0576	2.2096	0.6194	0.0551	0.6745		7,891.3544	7,891.3544	0.3531		7,900.1825
Worker	3.0896	2.5147	20.2274	0.0307	3.8717	0.0230	3.8947	1.0270	0.0212	1.0482		3,040.1014	3,040.1014	0.2147		3,045.4676
Total	**3.9330**	**23.4046**	**26.4431**	**0.1062**	**6.0237**	**0.0806**	**6.1042**	**1.6464**	**0.0763**	**1.7226**		**10,931.4558**	**10,931.4558**	**0.5678**		**10,945.6501**

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	2.3442	16.3249	111.9685	0.1876		0.2903	0.2903		0.2903	0.2903	0.0000	17,996.8031	17,996.8031	4.6779		18,113.7502
Total	**2.3442**	**16.3249**	**111.9685**	**0.1876**		**0.2903**	**0.2903**		**0.2903**	**0.2903**	**0.0000**	**17,996.8031**	**17,996.8031**	**4.6779**		**18,113.7502**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.8435	20.8899	6.2158	0.0755	2.1519	0.0576	2.2096	0.6194	0.0551	0.6745		7,891.3544	7,891.3544	0.3531		7,900.1825
Worker	3.0896	2.5147	20.2274	0.0307	3.8717	0.0230	3.8947	1.0270	0.0212	1.0482		3,040.1014	3,040.1014	0.2147		3,045.4676
Total	**3.9330**	**23.4046**	**26.4431**	**0.1062**	**6.0237**	**0.0806**	**6.1042**	**1.6464**	**0.0763**	**1.7226**		**10,931.4558**	**10,931.4558**	**0.5678**		**10,945.6501**

3.4 Building Construction - 2023

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	9.6198	91.8565	95.6120	0.1877		4.1186	4.1186		3.8677	3.8677		18,003.0426	18,003.0426	4.6608		18,119.5631
Total	**9.6198**	**91.8565**	**95.6120**	**0.1877**		**4.1186**	**4.1186**		**3.8677**	**3.8677**		**18,003.0426**	**18,003.0426**	**4.6608**		**18,119.5631**

3.4 Building Construction - 2023

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	0.6814	14.9012	5.3484	0.0740	2.1520	0.0230	2.1749	0.6194	0.0220	0.6413		7,730.6376	7,730.6376	0.2602		7,737.1420
Worker	2.9039	2.3148	18.5741	0.0295	3.8717	0.0221	3.8938	1.0270	0.0203	1.0473		2,924.8040	2,924.8040	0.1976		2,929.7428
Total	**3.5853**	**17.2160**	**23.9225**	**0.1035**	**6.0237**	**0.0451**	**6.0687**	**1.6464**	**0.0423**	**1.6887**		**10,655.4416**	**10,655.4416**	**0.4577**		**10,666.8848**

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	2.3442	16.3249	111.9685	0.1877		0.2903	0.2903		0.2903	0.2903	0.0000	18,003.0426	18,003.0426	4.6608		18,119.5631
Total	**2.3442**	**16.3249**	**111.9685**	**0.1877**		**0.2903**	**0.2903**		**0.2903**	**0.2903**	**0.0000**	**18,003.0426**	**18,003.0426**	**4.6608**		**18,119.5631**

3.4 Building Construction - 2023

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	0.6814	14.9012	5.3484	0.0740	2.1520	0.0230	2.1749	0.6194	0.0220	0.6413		7,730.6376	7,730.6376	0.2602		7,737.1420
Worker	2.9039	2.3148	18.5741	0.0295	3.8717	0.0221	3.8938	1.0270	0.0203	1.0473		2,924.8040	2,924.8040	0.1976		2,929.7428
Total	**3.5853**	**17.2160**	**23.9225**	**0.1035**	**6.0237**	**0.0451**	**6.0687**	**1.6464**	**0.0423**	**1.6887**		**10,655.4416**	**10,655.4416**	**0.4577**		**10,666.8848**

3.5 trenching - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.1029	28.7121	27.4078	0.0640		1.2818	1.2818		1.1793	1.1793		6,192.9404	6,192.9404	2.0029		6,243.0135
Total	**3.1029**	**28.7121**	**27.4078**	**0.0640**		**1.2818**	**1.2818**		**1.1793**	**1.1793**		**6,192.9404**	**6,192.9404**	**2.0029**		**6,243.0135**

3.5 trenching - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1651	0.1375	1.1080	1.6000e-003	0.1940	1.2000e-003	0.1952	0.0515	1.1100e-003	0.0526		158.0805	158.0805	0.0117		158.3737
Total	**0.1651**	**0.1375**	**1.1080**	**1.6000e-003**	**0.1940**	**1.2000e-003**	**0.1952**	**0.0515**	**1.1100e-003**	**0.0526**		**158.0805**	**158.0805**	**0.0117**		**158.3737**

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	0.8090	4.4475	36.1974	0.0640		0.1045	0.1045		0.1045	0.1045	0.0000	6,192.9404	6,192.9404	2.0029		6,243.0135
Total	**0.8090**	**4.4475**	**36.1974**	**0.0640**		**0.1045**	**0.1045**		**0.1045**	**0.1045**	**0.0000**	**6,192.9404**	**6,192.9404**	**2.0029**		**6,243.0135**

3.5 trenching - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1651	0.1375	1.1080	1.6000e-003	0.1940	1.2000e-003	0.1952	0.0515	1.1100e-003	0.0526		158.0805	158.0805	0.0117		158.3737
Total	**0.1651**	**0.1375**	**1.1080**	**1.6000e-003**	**0.1940**	**1.2000e-003**	**0.1952**	**0.0515**	**1.1100e-003**	**0.0526**		**158.0805**	**158.0805**	**0.0117**		**158.3737**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.5378	38.6801	23.9259	0.0496		1.7382	1.7382		1.5991	1.5991		4,803.8110	4,803.8110	1.5537		4,842.6522
Paving	0.2259					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.7636**	**38.6801**	**23.9259**	**0.0496**		**1.7382**	**1.7382**		**1.5991**	**1.5991**		**4,803.8110**	**4,803.8110**	**1.5537**		**4,842.6522**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1548	0.1260	1.0134	1.5400e-003	0.1940	1.1500e-003	0.1951	0.0515	1.0600e-003	0.0525		152.3097	152.3097	0.0108		152.5785
Total	**0.1548**	**0.1260**	**1.0134**	**1.5400e-003**	**0.1940**	**1.1500e-003**	**0.1951**	**0.0515**	**1.0600e-003**	**0.0525**		**152.3097**	**152.3097**	**0.0108**		**152.5785**

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	0.6074	2.6322	28.1738	0.0496		0.0810	0.0810		0.0810	0.0810	0.0000	4,803.8110	4,803.8110	1.5537		4,842.6522
Paving	0.2259					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8333**	**2.6322**	**28.1738**	**0.0496**		**0.0810**	**0.0810**		**0.0810**	**0.0810**	**0.0000**	**4,803.8110**	**4,803.8110**	**1.5537**		**4,842.6522**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1548	0.1260	1.0134	1.5400e-003	0.1940	1.1500e-003	0.1951	0.0515	1.0600e-003	0.0525		152.3097	152.3097	0.0108		152.5785
Total	**0.1548**	**0.1260**	**1.0134**	**1.5400e-003**	**0.1940**	**1.1500e-003**	**0.1951**	**0.0515**	**1.0600e-003**	**0.0525**		**152.3097**	**152.3097**	**0.0108**		**152.5785**

3.6 Paving - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	3.0897	33.2704	22.8795	0.0496		1.4365	1.4365		1.3216	1.3216		4,803.8739	4,803.8739	1.5537		4,842.7157
Paving	0.2259					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**3.3156**	**33.2704**	**22.8795**	**0.0496**		**1.4365**	**1.4365**		**1.3216**	**1.3216**		**4,803.8739**	**4,803.8739**	**1.5537**		**4,842.7157**

3.6 Paving - 2023

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	0.1455	0.1160	0.9306	1.4800e-003	0.1940	1.1100e-003	0.1951	0.0515	1.0200e-003	0.0525		146.5333	146.5333	9.9000e-003		146.7807
Total	**0.1455**	**0.1160**	**0.9306**	**1.4800e-003**	**0.1940**	**1.1100e-003**	**0.1951**	**0.0515**	**1.0200e-003**	**0.0525**		**146.5333**	**146.5333**	**9.9000e-003**		**146.7807**

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	0.6074	2.6322	28.1738	0.0496		0.0810	0.0810		0.0810	0.0810	0.0000	4,803.873 9	4,803.873 9	1.5537		4,842.715 7
Paving	0.2259					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**0.8333**	**2.6322**	**28.1738**	**0.0496**		**0.0810**	**0.0810**		**0.0810**	**0.0810**	**0.0000**	**4,803.873 9**	**4,803.873 9**	**1.5537**		**4,842.715 7**

3.6 Paving - 2023

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	0.1455	0.1160	0.9306	1.4800e-003	0.1940	1.1100e-003	0.1951	0.0515	1.0200e-003	0.0525		146.5333	146.5333	9.9000e-003		146.7807
Total	**0.1455**	**0.1160**	**0.9306**	**1.4800e-003**	**0.1940**	**1.1100e-003**	**0.1951**	**0.0515**	**1.0200e-003**	**0.0525**		**146.5333**	**146.5333**	**9.9000e-003**		**146.7807**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	21.7033					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**21.9078**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.6192	0.5039	4.0536	6.1500e-003	0.7759	4.6100e-003	0.7805	0.2058	4.2400e-003	0.2101		609.2388	609.2388	0.0430		610.3142
Total	**0.6192**	**0.5039**	**4.0536**	**6.1500e-003**	**0.7759**	**4.6100e-003**	**0.7805**	**0.2058**	**4.2400e-003**	**0.2101**		**609.2388**	**609.2388**	**0.0430**		**610.3142**

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	21.7033					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**21.7330**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.6192	0.5039	4.0536	6.1500e-003	0.7759	4.6100e-003	0.7805	0.2058	4.2400e-003	0.2101		609.2388	609.2388	0.0430		610.3142
Total	**0.6192**	**0.5039**	**4.0536**	**6.1500e-003**	**0.7759**	**4.6100e-003**	**0.7805**	**0.2058**	**4.2400e-003**	**0.2101**		**609.2388**	**609.2388**	**0.0430**		**610.3142**

3.7 Architectural Coating - 2023

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	21.7033					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**21.8949**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.7 Architectural Coating - 2023

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	0.5820	0.4639	3.7223	5.9100e-003	0.7759	4.4200e-003	0.7803	0.2058	4.0700e-003	0.2099		586.1331	586.1331	0.0396		587.1228
Total	**0.5820**	**0.4639**	**3.7223**	**5.9100e-003**	**0.7759**	**4.4200e-003**	**0.7803**	**0.2058**	**4.0700e-003**	**0.2099**		**586.1331**	**586.1331**	**0.0396**		**587.1228**

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	21.7033					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0297	0.1288	1.8324	2.9700e-003		3.9600e-003	3.9600e-003		3.9600e-003	3.9600e-003	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**21.7330**	**0.1288**	**1.8324**	**2.9700e-003**		**3.9600e-003**	**3.9600e-003**		**3.9600e-003**	**3.9600e-003**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.7 Architectural Coating - 2023

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	0.5820	0.4639	3.7223	5.9100e-003	0.7759	4.4200e-003	0.7803	0.2058	4.0700e-003	0.2099		586.1331	586.1331	0.0396		587.1228
Total	**0.5820**	**0.4639**	**3.7223**	**5.9100e-003**	**0.7759**	**4.4200e-003**	**0.7803**	**0.2058**	**4.0700e-003**	**0.2099**		**586.1331**	**586.1331**	**0.0396**		**587.1228**

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	0.3783	3.9437	5.2521	0.0235	1.3624	0.0103	1.3727	0.3642	9.6800e-003	0.3739		2,414.7629	2,414.7629	0.1177		2,417.7063
Unmitigated	0.3783	3.9437	5.2521	0.0235	1.3624	0.0103	1.3727	0.3642	9.6800e-003	0.3739		2,414.7629	2,414.7629	0.1177		2,417.7063

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	134.00	134.00	134.00	631,595	631,595
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	134.00	134.00	134.00	631,595	631,595

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
General Heavy Industry	16.40	9.50	11.90	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	16.40	9.50	11.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.40	9.50	11.90	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
Other Non-Asphalt Surfaces	0.524989	0.030717	0.161165	0.112416	0.014580	0.004690	0.018794	0.121206	0.003615	0.001256	0.005248	0.000725	0.000600
General Heavy Industry	0.380000	0.150000	0.100000	0.150000	0.000000	0.000000	0.000000	0.220000	0.000000	0.000000	0.000000	0.000000	0.000000
Other Asphalt Surfaces	0.524989	0.030717	0.161165	0.112416	0.014580	0.004690	0.018794	0.121206	0.003615	0.001256	0.005248	0.000725	0.000600

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	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Heavy Industry	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
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
General Heavy Industry	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
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.0323	1.2000e-004	0.0127	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0274	0.0274	7.0000e-005		0.0291
Unmitigated	3.0323	1.2000e-004	0.0127	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0274	0.0274	7.0000e-005		0.0291

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	0.5054					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.5257					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.1800e-003	1.2000e-004	0.0127	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0274	0.0274	7.0000e-005		0.0291
Total	**3.0323**	**1.2000e-004**	**0.0127**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**		**0.0274**	**0.0274**	**7.0000e-005**		**0.0291**

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	0.5054					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	2.5257					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	1.1800e-003	1.2000e-004	0.0127	0.0000		5.0000e-005	5.0000e-005		5.0000e-005	5.0000e-005		0.0274	0.0274	7.0000e-005		0.0291
Total	**3.0323**	**1.2000e-004**	**0.0127**	**0.0000**		**5.0000e-005**	**5.0000e-005**		**5.0000e-005**	**5.0000e-005**		**0.0274**	**0.0274**	**7.0000e-005**		**0.0291**

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
Forklifts	2	8.00	365	50	0.20	CNG

UnMitigated/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
Equipment Type	lb/day										lb/day					
Forklifts	0.2442	1.4249	1.7949	1.9100e-003		0.0716	0.0716		0.0659	0.0659		185.3588	185.3588	0.0600		186.8575
Total	**0.2442**	**1.4249**	**1.7949**	**1.9100e-003**		**0.0716**	**0.0716**		**0.0659**	**0.0659**		**185.3588**	**185.3588**	**0.0600**		**186.8575**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	2	80	600	0.73	Diesel
Fire Pump	1	2	80	62	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/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
Equipment Type	lb/day										lb/day					
Emergency Generator - Diesel (600 - 750 HP)	1.9693	5.5041	5.0213	9.4600e-003		0.2897	0.2897		0.2897	0.2897		1,007.4170	1,007.4170	0.1412		1,010.9480
Fire Pump - Diesel (50 - 75 HP)	0.2035	0.6636	0.7384	9.8000e-004		0.0599	0.0599		0.0599	0.0599		104.0998	104.0998	0.0146		104.4646
Total	**2.1728**	**6.1676**	**5.7596**	**0.0104**		**0.3496**	**0.3496**		**0.3496**	**0.3496**		**1,111.5167**	**1,111.5167**	**0.1558**		**1,115.4126**

11.0 Vegetation

Hudson Ranch Minerals

Imperial County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	100.00	1000sqft	27.00	100,000.00	0
Other Asphalt Surfaces	10.00	Acre	10.00	435,600.00	0
Other Non-Asphalt Surfaces	15.00	Acre	15.00	653,400.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	12
Climate Zone	15			**Operational Year**	2024
Utility Company	Imperial Irrigation District				
CO2 Intensity (lb/MWhr)	593.76	**CH4 Intensity (lb/MWhr)**	0.014	**N2O Intensity (lb/MWhr)**	0.003

1.3 User Entered Comments & Non-Default Data

Project Characteristics - https://www.iid.com/energy/renewable-energy 2020 48.8% RPS since 2030. To meet 2030 60% requirement, IID will add 11.2% by 2030 (48.8+11.2=60) or 1.12% per year (1.12%*10 years = 11.2%. For 2024 the IID Renewable should be 53.3%

Land Use - 37 acre construction site and 15 acre laydown area

Construction Phase - Construction dates estimated by Project Enegineer

Off-road Equipment - Equipment List provided by project applicant

Off-road Equipment - Equipment List provided by project applicant

Off-road Equipment - Equipment List provided by project applicant

Off-road Equipment - Equipment List provided by project applicant

Off-road Equipment - Equipment List provided by project applicant
Off-road Equipment - Equipment List provided by project applicant

Trips and VMT -

On-road Fugitive Dust - Trips use 111 and McDonald all paved except 2 miles at McDonald. prior to const. this area will be improved with 12-18" base and would have dedicated water truck. The City wants to wait to pave McDonald till contruction is complete.

Demolition -

Grading -

Architectural Coating -

Vehicle Trips - Trip Gen for Operations per TS excludes PCE adjustments 134 ADT

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Road Dust - Roadways are paved

Woodstoves -

Area Coating -

Energy Use - Energy Use - Project would consume 51,840 MWH per year

Water And Wastewater - Project will use 3,400 afy of water from IID canals.

Construction Off-road Equipment Mitigation - T4 Equipment

Operational Off-Road Equipment - 2 forklifts less than 50HP will be used onsite

Fleet Mix - Truck Trips would be 22%. Remainder of vehicles would be Passenger Cars

Stationary Sources - Emergency Generators and Fire Pumps - 50 hours per year on average would be used 80 hours on average assumed

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	11.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	20.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	70.00	10.00
tblConstructionPhase	NumDays	110.00	50.00
tblConstructionPhase	NumDays	1,110.00	520.00
tblConstructionPhase	NumDays	75.00	116.00
tblConstructionPhase	NumDays	75.00	85.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	NT24E	5.02	518.40
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24NG	15.36	0.00
tblFleetMix	HHD	0.12	0.22
tblFleetMix	LDA	0.52	0.38
tblFleetMix	LDT1	0.03	0.15
tblFleetMix	LDT2	0.16	0.10
tblFleetMix	LHD1	0.01	0.00
tblFleetMix	LHD2	4.6900e-003	0.00
tblFleetMix	MCY	5.2480e-003	0.00
tblFleetMix	MDV	0.11	0.15
tblFleetMix	MH	6.0000e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	3.6150e-003	0.00
tblFleetMix	SBUS	7.2500e-004	0.00
tblFleetMix	UBUS	1.2560e-003	0.00

tblLandUse	LotAcreage	2.30	27.00
tblOffRoadEquipment	HorsePower	84.00	15.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	7.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	7.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	13.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00

tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	365.00
tblOperationalOffRoadEquipment	OperFuelType	Diesel	CNG
tblOperationalOffRoadEquipment	OperHorsePower	89.00	50.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	2.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.014
tblProjectCharacteristics	CO2IntensityFactor	1270.9	593.76
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.003
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	RoadPercentPave	50	100
tblSolidWaste	SolidWasteGenerationRate	124.00	71.92
tblVehicleTrips	ST_TR	1.50	1.34
tblVehicleTrips	SU_TR	1.50	1.34
tblVehicleTrips	WD_TR	1.50	1.34
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	IndoorWaterUseRate	23,125,000.00	1,107,894,868.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	2.0102	18.2276	15.9194	0.0374	1.0174	0.7452	1.7627	0.3406	0.6957	1.0363	0.0000	3,329.2781	3,329.2781	0.7059	0.0000	3,346.9263
2022	2.2233	17.5456	17.1288	0.0405	0.7919	0.6863	1.4782	0.2165	0.6434	0.8599	0.0000	3,613.7094	3,613.7094	0.6658	0.0000	3,630.3535
2023	1.2800	4.7132	5.0332	0.0119	0.2393	0.1841	0.4234	0.0652	0.1723	0.2375	0.0000	1,061.1026	1,061.1026	0.1998	0.0000	1,066.0982
Maximum	**2.2233**	**18.2276**	**17.1288**	**0.0405**	**1.0174**	**0.7452**	**1.7627**	**0.3406**	**0.6957**	**1.0363**	**0.0000**	**3,613.7094**	**3,613.7094**	**0.7059**	**0.0000**	**3,630.3535**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.7511	4.5156	18.1655	0.0374	0.7820	0.0507	0.8326	0.2418	0.0502	0.2920	0.0000	3,329.2754	3,329.2754	0.7059	0.0000	3,346.9236
2022	1.0743	5.2798	19.2467	0.0405	0.7919	0.0509	0.8428	0.2165	0.0503	0.2668	0.0000	3,613.7067	3,613.7067	0.6658	0.0000	3,630.3508
2023	0.9580	1.2655	5.7387	0.0119	0.2393	0.0141	0.2533	0.0652	0.0139	0.0791	0.0000	1,061.1018	1,061.1018	0.1998	0.0000	1,066.0974
Maximum	**1.0743**	**5.2798**	**19.2467**	**0.0405**	**0.7919**	**0.0509**	**0.8428**	**0.2418**	**0.0503**	**0.2920**	**0.0000**	**3,613.7067**	**3,613.7067**	**0.7059**	**0.0000**	**3,630.3508**

	ROG	NOx	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	**49.52**	**72.68**	**-13.31**	**0.00**	**11.49**	**92.84**	**47.36**	**15.87**	**92.43**	**70.10**	**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)
2	**1-28-2021**	**4-27-2021**	3.7013	0.5684
3	**4-28-2021**	**7-27-2021**	6.6029	1.7903
4	**7-28-2021**	**10-27-2021**	6.0142	1.7271
5	**10-28-2021**	**1-27-2022**	4.9995	1.5612
6	**1-28-2022**	**4-27-2022**	4.4746	1.4794
7	**4-28-2022**	**7-27-2022**	4.5258	1.4973
8	**7-28-2022**	**10-27-2022**	5.0021	1.5506
9	**10-28-2022**	**1-27-2023**	6.2269	2.0141
10	**1-28-2023**	**4-27-2023**	4.1560	1.5589
		Highest	6.6029	2.0141

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	0.5533	1.0000e-005	1.1500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2300e-003	2.2300e-003	1.0000e-005	0.0000	2.3800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	13,961.8083	13,961.8083	0.3292	0.0705	13,991.0600
Mobile	0.0762	0.7252	1.0493	4.4600e-003	0.2462	1.8600e-003	0.2481	0.0659	1.7400e-003	0.0676	0.0000	415.5387	415.5387	0.0195	0.0000	416.0257
Offroad	0.0446	0.2600	0.3276	3.5000e-004		0.0131	0.0131		0.0120	0.0120	0.0000	30.6882	30.6882	9.9300e-003	0.0000	30.9364
Stationary	0.0435	0.1234	0.1152	2.1000e-004		6.9900e-003	6.9900e-003		6.9900e-003	6.9900e-003	0.0000	20.1670	20.1670	2.8300e-003	0.0000	20.2377
Waste						0.0000	0.0000		0.0000	0.0000	14.5991	0.0000	14.5991	0.8628	0.0000	36.1687
Water						0.0000	0.0000		0.0000	0.0000	351.4839	379.5442	731.0281	36.1097	0.8543	1,888.3629
Total	**0.7175**	**1.1086**	**1.4932**	**5.0200e-003**	**0.2462**	**0.0219**	**0.2682**	**0.0659**	**0.0208**	**0.0866**	**366.0830**	**14,807.7486**	**15,173.8317**	**37.3340**	**0.9249**	**16,382.7938**

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	0.5533	1.0000e-005	1.1500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2300e-003	2.2300e-003	1.0000e-005	0.0000	2.3800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	13,961.8083	13,961.8083	0.3292	0.0705	13,991.0600
Mobile	0.0762	0.7252	1.0493	4.4600e-003	0.2462	1.8600e-003	0.2481	0.0659	1.7400e-003	0.0676	0.0000	415.5387	415.5387	0.0195	0.0000	416.0257
Offroad	0.0446	0.2600	0.3276	3.5000e-004		0.0131	0.0131		0.0120	0.0120	0.0000	30.6882	30.6882	9.9300e-003	0.0000	30.9364
Stationary	0.0435	0.1234	0.1152	2.1000e-004		6.9900e-003	6.9900e-003		6.9900e-003	6.9900e-003	0.0000	20.1670	20.1670	2.8300e-003	0.0000	20.2377
Waste						0.0000	0.0000		0.0000	0.0000	14.5991	0.0000	14.5991	0.8628	0.0000	36.1687
Water						0.0000	0.0000		0.0000	0.0000	351.4839	379.5442	731.0281	36.1097	0.8543	1,888.3629
Total	**0.7175**	**1.1086**	**1.4932**	**5.0200e-003**	**0.2462**	**0.0219**	**0.2682**	**0.0659**	**0.0208**	**0.0866**	**366.0830**	**14,807.7486**	**15,173.8317**	**37.3340**	**0.9249**	**16,382.7938**

	ROG	NOx	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	3/1/2021	3/12/2021	5	10	
2	Grading	Grading	3/1/2021	5/7/2021	5	50	
3	Building Construction	Building Construction	4/12/2021	4/7/2023	5	520	
4	trenching	Trenching	4/19/2021	10/8/2021	5	125	
5	Paving	Paving	9/30/2022	3/10/2023	5	116	
6	Architectural Coating	Architectural Coating	12/5/2022	3/31/2023	5	85	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 225

Acres of Paving: 25

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 150,000; Non-Residential Outdoor: 50,000; Striped Parking Area: 65,340 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Graders	1	8.00	187	0.41
Grading	Off-Highway Trucks	7	8.00	402	0.38
Grading	Rollers	1	8.00	80	0.38
Grading	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Scrapers	4	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Aerial Lifts	7	8.00	63	0.31

Building Construction	Air Compressors	4	8.00	78	0.48
Building Construction	Bore/Drill Rigs	1	8.00	221	0.50
Building Construction	Cranes	7	7.00	231	0.29
Building Construction	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	7	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	15	0.74
Building Construction	Generator Sets	4	8.00	84	0.74
Building Construction	Graders	1	8.00	187	0.41
Building Construction	Off-Highway Trucks	1	8.00	402	0.38
Building Construction	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	13	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
trenching	Excavators	2	8.00	158	0.38
trenching	Off-Highway Trucks	3	8.00	402	0.38
trenching	Rollers	1	8.00	80	0.38
trenching	Skid Steer Loaders	1	8.00	65	0.37
trenching	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Graders	2	8.00	187	0.41
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Paving	Rubber Tired Dozers	2	8.00	247	0.40
Paving	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	68.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	16	40.00	0.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	50	499.00	195.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
trenching	10	25.00	0.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	10	25.00	0.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	100.00	0.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.6700e-003	0.0000	7.6700e-003	1.1600e-003	0.0000	1.1600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0158	0.1572	0.1078	1.9000e-004		7.7600e-003	7.7600e-003		7.2100e-003	7.2100e-003	0.0000	17.0004	17.0004	4.7800e-003	0.0000	17.1200
Total	**0.0158**	**0.1572**	**0.1078**	**1.9000e-004**	**7.6700e-003**	**7.7600e-003**	**0.0154**	**1.1600e-003**	**7.2100e-003**	**8.3700e-003**	**0.0000**	**17.0004**	**17.0004**	**4.7800e-003**	**0.0000**	**17.1200**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7000e-004	7.4400e-003	1.0400e-003	3.0000e-005	5.9000e-004	2.0000e-005	6.1000e-004	1.6000e-004	2.0000e-005	1.8000e-004	0.0000	2.4712	2.4712	1.0000e-004	0.0000	2.4737
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-004	4.1000e-004	3.6800e-003	1.0000e-005	5.8000e-004	0.0000	5.8000e-004	1.5000e-004	0.0000	1.6000e-004	0.0000	0.4646	0.4646	3.0000e-005	0.0000	0.4654
Total	**6.7000e-004**	**7.8500e-003**	**4.7200e-003**	**4.0000e-005**	**1.1700e-003**	**2.0000e-005**	**1.1900e-003**	**3.1000e-004**	**2.0000e-005**	**3.4000e-004**	**0.0000**	**2.9358**	**2.9358**	**1.3000e-004**	**0.0000**	**2.9392**

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					3.4500e-003	0.0000	3.4500e-003	5.2000e-004	0.0000	5.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.3100e-003	0.0100	0.1164	1.9000e-004		3.1000e-004	3.1000e-004		3.1000e-004	3.1000e-004	0.0000	17.0004	17.0004	4.7800e-003	0.0000	17.1200
Total	**2.3100e-003**	**0.0100**	**0.1164**	**1.9000e-004**	**3.4500e-003**	**3.1000e-004**	**3.7600e-003**	**5.2000e-004**	**3.1000e-004**	**8.3000e-004**	**0.0000**	**17.0004**	**17.0004**	**4.7800e-003**	**0.0000**	**17.1200**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7000e-004	7.4400e-003	1.0400e-003	3.0000e-005	5.9000e-004	2.0000e-005	6.1000e-004	1.6000e-004	2.0000e-005	1.8000e-004	0.0000	2.4712	2.4712	1.0000e-004	0.0000	2.4737
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-004	4.1000e-004	3.6800e-003	1.0000e-005	5.8000e-004	0.0000	5.8000e-004	1.5000e-004	0.0000	1.6000e-004	0.0000	0.4646	0.4646	3.0000e-005	0.0000	0.4654
Total	**6.7000e-004**	**7.8500e-003**	**4.7200e-003**	**4.0000e-005**	**1.1700e-003**	**2.0000e-005**	**1.1900e-003**	**3.1000e-004**	**2.0000e-005**	**3.4000e-004**	**0.0000**	**2.9358**	**2.9358**	**1.3000e-004**	**0.0000**	**2.9392**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4204	0.0000	0.4204	0.1784	0.0000	0.1784	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2720	2.7836	1.6808	4.5600e-003		0.1125	0.1125		0.1035	0.1035	0.0000	400.8097	400.8097	0.1296	0.0000	404.0505
Total	**0.2720**	**2.7836**	**1.6808**	**4.5600e-003**	**0.4204**	**0.1125**	**0.5329**	**0.1784**	**0.1035**	**0.2819**	**0.0000**	**400.8097**	**400.8097**	**0.1296**	**0.0000**	**404.0505**

3.3 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.7200e-003	5.4200e-003	0.0490	7.0000e-005	7.7000e-003	5.0000e-005	7.7500e-003	2.0400e-003	4.0000e-005	2.0900e-003	0.0000	6.1942	6.1942	4.6000e-004	0.0000	6.2058
Total	**6.7200e-003**	**5.4200e-003**	**0.0490**	**7.0000e-005**	**7.7000e-003**	**5.0000e-005**	**7.7500e-003**	**2.0400e-003**	**4.0000e-005**	**2.0900e-003**	**0.0000**	**6.1942**	**6.1942**	**4.6000e-004**	**0.0000**	**6.2058**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1892	0.0000	0.1892	0.0803	0.0000	0.0803	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0559	0.2424	2.0950	4.5600e-003		7.4600e-003	7.4600e-003		7.4600e-003	7.4600e-003	0.0000	400.8093	400.8093	0.1296	0.0000	404.0500
Total	**0.0559**	**0.2424**	**2.0950**	**4.5600e-003**	**0.1892**	**7.4600e-003**	**0.1966**	**0.0803**	**7.4600e-003**	**0.0877**	**0.0000**	**400.8093**	**400.8093**	**0.1296**	**0.0000**	**404.0500**

3.3 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.7200e-003	5.4200e-003	0.0490	7.0000e-005	7.7000e-003	5.0000e-005	7.7500e-003	2.0400e-003	4.0000e-005	2.0900e-003	0.0000	6.1942	6.1942	4.6000e-004	0.0000	6.2058
Total	**6.7200e-003**	**5.4200e-003**	**0.0490**	**7.0000e-005**	**7.7000e-003**	**5.0000e-005**	**7.7500e-003**	**2.0400e-003**	**4.0000e-005**	**2.0900e-003**	**0.0000**	**6.1942**	**6.1942**	**4.6000e-004**	**0.0000**	**6.2058**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1089	11.0580	9.3630	0.0178		0.5361	0.5361		0.5030	0.5030	0.0000	1,550.5535	1,550.5535	0.4044	0.0000	1,560.6641
Total	**1.1089**	**11.0580**	**9.3630**	**0.0178**		**0.5361**	**0.5361**		**0.5030**	**0.5030**	**0.0000**	**1,550.5535**	**1,550.5535**	**0.4044**	**0.0000**	**1,560.6641**

3.4 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0833	2.1556	0.6006	7.3500e-003	0.2032	6.3400e-003	0.2096	0.0586	6.0700e-003	0.0646	0.0000	697.3340	697.3340	0.0303	0.0000	698.0903
Worker	0.3184	0.2570	2.3239	3.2700e-003	0.3652	2.2800e-003	0.3675	0.0969	2.1000e-003	0.0990	0.0000	293.6381	293.6381	0.0220	0.0000	294.1870
Total	**0.4017**	**2.4126**	**2.9245**	**0.0106**	**0.5684**	**8.6200e-003**	**0.5771**	**0.1555**	**8.1700e-003**	**0.1636**	**0.0000**	**990.9721**	**990.9721**	**0.0522**	**0.0000**	**992.2773**

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	0.2227	1.5509	10.6370	0.0178		0.0276	0.0276		0.0276	0.0276	0.0000	1,550.5517	1,550.5517	0.4044	0.0000	1,560.6622
Total	**0.2227**	**1.5509**	**10.6370**	**0.0178**		**0.0276**	**0.0276**		**0.0276**	**0.0276**	**0.0000**	**1,550.5517**	**1,550.5517**	**0.4044**	**0.0000**	**1,560.6622**

3.4 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0833	2.1556	0.6006	7.3500e-003	0.2032	6.3400e-003	0.2096	0.0586	6.0700e-003	0.0646	0.0000	697.3340	697.3340	0.0303	0.0000	698.0903
Worker	0.3184	0.2570	2.3239	3.2700e-003	0.3652	2.2800e-003	0.3675	0.0969	2.1000e-003	0.0990	0.0000	293.6381	293.6381	0.0220	0.0000	294.1870
Total	**0.4017**	**2.4126**	**2.9245**	**0.0106**	**0.5684**	**8.6200e-003**	**0.5771**	**0.1555**	**8.1700e-003**	**0.1636**	**0.0000**	**990.9721**	**990.9721**	**0.0522**	**0.0000**	**992.2773**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.3553	13.1856	12.5783	0.0244		0.6177	0.6177		0.5800	0.5800	0.0000	2,122.4353	2,122.4353	0.5517	0.0000	2,136.2273
Total	**1.3553**	**13.1856**	**12.5783**	**0.0244**		**0.6177**	**0.6177**		**0.5800**	**0.5800**	**0.0000**	**2,122.4353**	**2,122.4353**	**0.5517**	**0.0000**	**2,136.2273**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1057	2.7378	0.7476	9.9800e-003	0.2781	7.3700e-003	0.2855	0.0801	7.0500e-003	0.0872	0.0000	946.8650	946.8650	0.0391	0.0000	947.8423
Worker	0.4076	0.3225	2.9132	4.3100e-003	0.4997	2.9900e-003	0.5027	0.1326	2.7500e-003	0.1354	0.0000	387.1519	387.1519	0.0275	0.0000	387.8404
Total	**0.5133**	**3.0604**	**3.6608**	**0.0143**	**0.7778**	**0.0104**	**0.7882**	**0.2127**	**9.8000e-003**	**0.2225**	**0.0000**	**1,334.0169**	**1,334.0169**	**0.0666**	**0.0000**	**1,335.6827**

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	0.3047	2.1222	14.5559	0.0244		0.0377	0.0377		0.0377	0.0377	0.0000	2,122.4327	2,122.4327	0.5517	0.0000	2,136.2248
Total	**0.3047**	**2.1222**	**14.5559**	**0.0244**		**0.0377**	**0.0377**		**0.0377**	**0.0377**	**0.0000**	**2,122.4327**	**2,122.4327**	**0.5517**	**0.0000**	**2,136.2248**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1057	2.7378	0.7476	9.9800e-003	0.2781	7.3700e-003	0.2855	0.0801	7.0500e-003	0.0872	0.0000	946.8650	946.8650	0.0391	0.0000	947.8423
Worker	0.4076	0.3225	2.9132	4.3100e-003	0.4997	2.9900e-003	0.5027	0.1326	2.7500e-003	0.1354	0.0000	387.1519	387.1519	0.0275	0.0000	387.8404
Total	**0.5133**	**3.0604**	**3.6608**	**0.0143**	**0.7778**	**0.0104**	**0.7882**	**0.2127**	**9.8000e-003**	**0.2225**	**0.0000**	**1,334.0169**	**1,334.0169**	**0.0666**	**0.0000**	**1,335.6827**

3.4 Building Construction - 2023

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	0.3367	3.2150	3.3464	6.5700e-003		0.1442	0.1442		0.1354	0.1354	0.0000	571.6230	571.6230	0.1480	0.0000	575.3227
Total	**0.3367**	**3.2150**	**3.3464**	**6.5700e-003**		**0.1442**	**0.1442**		**0.1354**	**0.1354**	**0.0000**	**571.6230**	**571.6230**	**0.1480**	**0.0000**	**575.3227**

3.4 Building Construction - 2023

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	0.0230	0.5263	0.1745	2.6300e-003	0.0749	7.9000e-004	0.0757	0.0216	7.6000e-004	0.0223	0.0000	249.7032	249.7032	7.7700e-003	0.0000	249.8975
Worker	0.1030	0.0800	0.7214	1.1200e-003	0.1345	7.7000e-004	0.1353	0.0357	7.1000e-004	0.0364	0.0000	100.2791	100.2791	6.8200e-003	0.0000	100.4496
Total	**0.1259**	**0.6063**	**0.8959**	**3.7500e-003**	**0.2094**	**1.5600e-003**	**0.2110**	**0.0573**	**1.4700e-003**	**0.0588**	**0.0000**	**349.9824**	**349.9824**	**0.0146**	**0.0000**	**350.3471**

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	0.0821	0.5714	3.9189	6.5700e-003		0.0102	0.0102		0.0102	0.0102	0.0000	571.6223	571.6223	0.1480	0.0000	575.3220
Total	**0.0821**	**0.5714**	**3.9189**	**6.5700e-003**		**0.0102**	**0.0102**		**0.0102**	**0.0102**	**0.0000**	**571.6223**	**571.6223**	**0.1480**	**0.0000**	**575.3220**

3.4 Building Construction - 2023

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	0.0230	0.5263	0.1745	2.6300e-003	0.0749	7.9000e-004	0.0757	0.0216	7.6000e-004	0.0223	0.0000	249.7032	249.7032	7.7700e-003	0.0000	249.8975
Worker	0.1030	0.0800	0.7214	1.1200e-003	0.1345	7.7000e-004	0.1353	0.0357	7.1000e-004	0.0364	0.0000	100.2791	100.2791	6.8200e-003	0.0000	100.4496
Total	**0.1259**	**0.6063**	**0.8959**	**3.7500e-003**	**0.2094**	**1.5600e-003**	**0.2110**	**0.0573**	**1.4700e-003**	**0.0588**	**0.0000**	**349.9824**	**349.9824**	**0.0146**	**0.0000**	**350.3471**

3.5 trenching - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1939	1.7945	1.7130	4.0000e-003		0.0801	0.0801		0.0737	0.0737	0.0000	351.1338	351.1338	0.1136	0.0000	353.9729
Total	**0.1939**	**1.7945**	**1.7130**	**4.0000e-003**		**0.0801**	**0.0801**		**0.0737**	**0.0737**	**0.0000**	**351.1338**	**351.1338**	**0.1136**	**0.0000**	**353.9729**

3.5 trenching - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0105	8.4700e-003	0.0766	1.1000e-004	0.0120	8.0000e-005	0.0121	3.1900e-003	7.0000e-005	3.2600e-003	0.0000	9.6785	9.6785	7.2000e-004	0.0000	9.6966
Total	**0.0105**	**8.4700e-003**	**0.0766**	**1.1000e-004**	**0.0120**	**8.0000e-005**	**0.0121**	**3.1900e-003**	**7.0000e-005**	**3.2600e-003**	**0.0000**	**9.6785**	**9.6785**	**7.2000e-004**	**0.0000**	**9.6966**

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	0.0506	0.2780	2.2623	4.0000e-003		6.5300e-003	6.5300e-003		6.5300e-003	6.5300e-003	0.0000	351.1334	351.1334	0.1136	0.0000	353.9725
Total	**0.0506**	**0.2780**	**2.2623**	**4.0000e-003**		**6.5300e-003**	**6.5300e-003**		**6.5300e-003**	**6.5300e-003**	**0.0000**	**351.1334**	**351.1334**	**0.1136**	**0.0000**	**353.9725**

3.5 trenching - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0105	8.4700e-003	0.0766	1.1000e-004	0.0120	8.0000e-005	0.0121	3.1900e-003	7.0000e-005	3.2600e-003	0.0000	9.6785	9.6785	7.2000e-004	0.0000	9.6966
Total	**0.0105**	**8.4700e-003**	**0.0766**	**1.1000e-004**	**0.0120**	**8.0000e-005**	**0.0121**	**3.1900e-003**	**7.0000e-005**	**3.2600e-003**	**0.0000**	**9.6785**	**9.6785**	**7.2000e-004**	**0.0000**	**9.6966**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1168	1.2764	0.7896	1.6400e-003		0.0574	0.0574		0.0528	0.0528	0.0000	143.8122	143.8122	0.0465	0.0000	144.9750
Paving	7.4500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1242**	**1.2764**	**0.7896**	**1.6400e-003**		**0.0574**	**0.0574**		**0.0528**	**0.0528**	**0.0000**	**143.8122**	**143.8122**	**0.0465**	**0.0000**	**144.9750**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.1800e-003	4.1000e-003	0.0371	5.0000e-005	6.3600e-003	4.0000e-005	6.3900e-003	1.6900e-003	3.0000e-005	1.7200e-003	0.0000	4.9237	4.9237	3.5000e-004	0.0000	4.9325
Total	**5.1800e-003**	**4.1000e-003**	**0.0371**	**5.0000e-005**	**6.3600e-003**	**4.0000e-005**	**6.3900e-003**	**1.6900e-003**	**3.0000e-005**	**1.7200e-003**	**0.0000**	**4.9237**	**4.9237**	**3.5000e-004**	**0.0000**	**4.9325**

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	0.0201	0.0869	0.9297	1.6400e-003		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003	0.0000	143.8120	143.8120	0.0465	0.0000	144.9748
Paving	7.4500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0275**	**0.0869**	**0.9297**	**1.6400e-003**		**2.6700e-003**	**2.6700e-003**		**2.6700e-003**	**2.6700e-003**	**0.0000**	**143.8120**	**143.8120**	**0.0465**	**0.0000**	**144.9748**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.1800e-003	4.1000e-003	0.0371	5.0000e-005	6.3600e-003	4.0000e-005	6.3900e-003	1.6900e-003	3.0000e-005	1.7200e-003	0.0000	4.9237	4.9237	3.5000e-004	0.0000	4.9325
Total	**5.1800e-003**	**4.1000e-003**	**0.0371**	**5.0000e-005**	**6.3600e-003**	**4.0000e-005**	**6.3900e-003**	**1.6900e-003**	**3.0000e-005**	**1.7200e-003**	**0.0000**	**4.9237**	**4.9237**	**3.5000e-004**	**0.0000**	**4.9325**

3.6 Paving - 2023

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	0.0772	0.8318	0.5720	1.2400e-003		0.0359	0.0359		0.0330	0.0330	0.0000	108.9500	108.9500	0.0352	0.0000	109.8309
Paving	5.6500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0829**	**0.8318**	**0.5720**	**1.2400e-003**		**0.0359**	**0.0359**		**0.0330**	**0.0330**	**0.0000**	**108.9500**	**108.9500**	**0.0352**	**0.0000**	**109.8309**

3.6 Paving - 2023

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	3.6800e-003	2.8600e-003	0.0258	4.0000e-005	4.8100e-003	3.0000e-005	4.8400e-003	1.2800e-003	3.0000e-005	1.3000e-003	0.0000	3.5886	3.5886	2.4000e-004	0.0000	3.5947
Total	**3.6800e-003**	**2.8600e-003**	**0.0258**	**4.0000e-005**	**4.8100e-003**	**3.0000e-005**	**4.8400e-003**	**1.2800e-003**	**3.0000e-005**	**1.3000e-003**	**0.0000**	**3.5886**	**3.5886**	**2.4000e-004**	**0.0000**	**3.5947**

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	0.0152	0.0658	0.7043	1.2400e-003		2.0200e-003	2.0200e-003		2.0200e-003	2.0200e-003	0.0000	108.9499	108.9499	0.0352	0.0000	109.8308
Paving	5.6500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0208**	**0.0658**	**0.7043**	**1.2400e-003**		**2.0200e-003**	**2.0200e-003**		**2.0200e-003**	**2.0200e-003**	**0.0000**	**108.9499**	**108.9499**	**0.0352**	**0.0000**	**109.8308**

3.6 Paving - 2023

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	3.6800e-003	2.8600e-003	0.0258	4.0000e-005	4.8100e-003	3.0000e-005	4.8400e-003	1.2800e-003	3.0000e-005	1.3000e-003	0.0000	3.5886	3.5886	2.4000e-004	0.0000	3.5947
Total	**3.6800e-003**	**2.8600e-003**	**0.0258**	**4.0000e-005**	**4.8100e-003**	**3.0000e-005**	**4.8400e-003**	**1.2800e-003**	**3.0000e-005**	**1.3000e-003**	**0.0000**	**3.5886**	**3.5886**	**2.4000e-004**	**0.0000**	**3.5947**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2170					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0500e-003	0.0141	0.0181	3.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total	**0.2191**	**0.0141**	**0.0181**	**3.0000e-005**		**8.2000e-004**	**8.2000e-004**		**8.2000e-004**	**8.2000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.7000e-004**	**0.0000**	**2.5574**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2800e-003	4.9700e-003	0.0449	7.0000e-005	7.7000e-003	5.0000e-005	7.7500e-003	2.0400e-003	4.0000e-005	2.0900e-003	0.0000	5.9681	5.9681	4.2000e-004	0.0000	5.9787
Total	**6.2800e-003**	**4.9700e-003**	**0.0449**	**7.0000e-005**	**7.7000e-003**	**5.0000e-005**	**7.7500e-003**	**2.0400e-003**	**4.0000e-005**	**2.0900e-003**	**0.0000**	**5.9681**	**5.9681**	**4.2000e-004**	**0.0000**	**5.9787**

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	0.2170					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0000e-004	1.2900e-003	0.0183	3.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total	**0.2173**	**1.2900e-003**	**0.0183**	**3.0000e-005**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**	**0.0000**	**2.5533**	**2.5533**	**1.7000e-004**	**0.0000**	**2.5574**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2800e-003	4.9700e-003	0.0449	7.0000e-005	7.7000e-003	5.0000e-005	7.7500e-003	2.0400e-003	4.0000e-005	2.0900e-003	0.0000	5.9681	5.9681	4.2000e-004	0.0000	5.9787
Total	**6.2800e-003**	**4.9700e-003**	**0.0449**	**7.0000e-005**	**7.7000e-003**	**5.0000e-005**	**7.7500e-003**	**2.0400e-003**	**4.0000e-005**	**2.0900e-003**	**0.0000**	**5.9681**	**5.9681**	**4.2000e-004**	**0.0000**	**5.9787**

3.7 Architectural Coating - 2023

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	0.7054					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.2300e-003	0.0424	0.0589	1.0000e-004		2.3000e-003	2.3000e-003		2.3000e-003	2.3000e-003	0.0000	8.2981	8.2981	5.0000e-004	0.0000	8.3105
Total	**0.7116**	**0.0424**	**0.0589**	**1.0000e-004**		**2.3000e-003**	**2.3000e-003**		**2.3000e-003**	**2.3000e-003**	**0.0000**	**8.2981**	**8.2981**	**5.0000e-004**	**0.0000**	**8.3105**

3.7 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0192	0.0149	0.1342	2.1000e-004	0.0250	1.4000e-004	0.0252	6.6400e-003	1.3000e-004	6.7800e-003	0.0000	18.6606	18.6606	1.2700e-003	0.0000	18.6923
Total	**0.0192**	**0.0149**	**0.1342**	**2.1000e-004**	**0.0250**	**1.4000e-004**	**0.0252**	**6.6400e-003**	**1.3000e-004**	**6.7800e-003**	**0.0000**	**18.6606**	**18.6606**	**1.2700e-003**	**0.0000**	**18.6923**

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	0.7054					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.7000e-004	4.1800e-003	0.0596	1.0000e-004		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004	0.0000	8.2981	8.2981	5.0000e-004	0.0000	8.3105
Total	**0.7063**	**4.1800e-003**	**0.0596**	**1.0000e-004**		**1.3000e-004**	**1.3000e-004**		**1.3000e-004**	**1.3000e-004**	**0.0000**	**8.2981**	**8.2981**	**5.0000e-004**	**0.0000**	**8.3105**

3.7 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0192	0.0149	0.1342	2.1000e-004	0.0250	1.4000e-004	0.0252	6.6400e-003	1.3000e-004	6.7800e-003	0.0000	18.6606	18.6606	1.2700e-003	0.0000	18.6923
Total	**0.0192**	**0.0149**	**0.1342**	**2.1000e-004**	**0.0250**	**1.4000e-004**	**0.0252**	**6.6400e-003**	**1.3000e-004**	**6.7800e-003**	**0.0000**	**18.6606**	**18.6606**	**1.2700e-003**	**0.0000**	**18.6923**

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	0.0762	0.7252	1.0493	4.4600e-003	0.2462	1.8600e-003	0.2481	0.0659	1.7400e-003	0.0676	0.0000	415.5387	415.5387	0.0195	0.0000	416.0257
Unmitigated	0.0762	0.7252	1.0493	4.4600e-003	0.2462	1.8600e-003	0.2481	0.0659	1.7400e-003	0.0676	0.0000	415.5387	415.5387	0.0195	0.0000	416.0257

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	134.00	134.00	134.00	631,595	631,595
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	134.00	134.00	134.00	631,595	631,595

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
General Heavy Industry	16.40	9.50	11.90	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	16.40	9.50	11.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.40	9.50	11.90	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
Other Non-Asphalt Surfaces	0.524989	0.030717	0.161165	0.112416	0.014580	0.004690	0.018794	0.121206	0.003615	0.001256	0.005248	0.000725	0.000600
General Heavy Industry	0.380000	0.150000	0.100000	0.150000	0.000000	0.000000	0.000000	0.220000	0.000000	0.000000	0.000000	0.000000	0.000000
Other Asphalt Surfaces	0.524989	0.030717	0.161165	0.112416	0.014580	0.004690	0.018794	0.121206	0.003615	0.001256	0.005248	0.000725	0.000600

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	13,961.8083	13,961.8083	0.3292	0.0705	13,991.0600
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	13,961.8083	13,961.8083	0.3292	0.0705	13,991.0600
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	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
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	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
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	5.184e +007	13,961.8083	0.3292	0.0705	13,991.0600
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**13,961.8083**	**0.3292**	**0.0705**	**13,991.0600**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	5.184e +007	13,961.8083	0.3292	0.0705	13,991.0600
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**13,961.8083**	**0.3292**	**0.0705**	**13,991.0600**

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	0.5533	1.0000e-005	1.1500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2300e-003	2.2300e-003	1.0000e-005	0.0000	2.3800e-003
Unmitigated	0.5533	1.0000e-005	1.1500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2300e-003	2.2300e-003	1.0000e-005	0.0000	2.3800e-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	0.0922					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4609					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1000e-004	1.0000e-005	1.1500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2300e-003	2.2300e-003	1.0000e-005	0.0000	2.3800e-003
Total	**0.5533**	**1.0000e-005**	**1.1500e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.2300e-003**	**2.2300e-003**	**1.0000e-005**	**0.0000**	**2.3800e-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	0.0922					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4609					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1000e-004	1.0000e-005	1.1500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2300e-003	2.2300e-003	1.0000e-005	0.0000	2.3800e-003
Total	**0.5533**	**1.0000e-005**	**1.1500e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.2300e-003**	**2.2300e-003**	**1.0000e-005**	**0.0000**	**2.3800e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	731.0281	36.1097	0.8543	1,888.3629
Unmitigated	731.0281	36.1097	0.8543	1,888.3629

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	1107.89 / 0	731.0281	36.1097	0.8543	1,888.3629
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**731.0281**	**36.1097**	**0.8543**	**1,888.3629**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	1107.89 / 0	731.0281	36.1097	0.8543	1,888.3629
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**731.0281**	**36.1097**	**0.8543**	**1,888.3629**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	14.5991	0.8628	0.0000	36.1687
Unmitigated	14.5991	0.8628	0.0000	36.1687

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	71.92	14.5991	0.8628	0.0000	36.1687
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**14.5991**	**0.8628**	**0.0000**	**36.1687**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	71.92	14.5991	0.8628	0.0000	36.1687
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**14.5991**	**0.8628**	**0.0000**	**36.1687**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Forklifts	2	8.00	365	50	0.20	CNG

UnMitigated/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
Equipment Type	tons/yr										MT/yr					
Forklifts	0.0446	0.2600	0.3276	3.5000e-004		0.0131	0.0131		0.0120	0.0120	0.0000	30.6882	30.6882	9.9300e-003	0.0000	30.9364
Total	**0.0446**	**0.2600**	**0.3276**	**3.5000e-004**		**0.0131**	**0.0131**		**0.0120**	**0.0120**	**0.0000**	**30.6882**	**30.6882**	**9.9300e-003**	**0.0000**	**30.9364**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	2	80	600	0.73	Diesel
Fire Pump	1	2	80	62	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/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
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (600 - 750 HP)	0.0394	0.1101	0.1004	1.9000e-004		5.7900e-003	5.7900e-003		5.7900e-003	5.7900e-003	0.0000	18.2783	18.2783	2.5600e-003	0.0000	18.3423
Fire Pump - Diesel (50 - 75 HP)	4.0700e-003	0.0133	0.0148	2.0000e-005		1.2000e-003	1.2000e-003		1.2000e-003	1.2000e-003	0.0000	1.8888	1.8888	2.6000e-004	0.0000	1.8954
Total	**0.0435**	**0.1234**	**0.1152**	**2.1000e-004**		**6.9900e-003**	**6.9900e-003**		**6.9900e-003**	**6.9900e-003**	**0.0000**	**20.1670**	**20.1670**	**2.8200e-003**	**0.0000**	**20.2377**

11.0 Vegetation

ATTACHMENT B

AERMOD for Onsite Construction PM_{10} - DPM

```
1                      AERMOD PRIME - (DATED  19191)

                        AERMODPrMSPx VERSION
              (C) COPYRIGHT 1998-2017, Trinity Consultants

 Run Began on  3/17/2021 at  9:21:33

** BREEZE AERMOD
** Trinity Consultants
** VERSION  9.0

CO STARTING
CO TITLEONE  Construction PM10
CO MODELOPT  DFAULT  CONC  NODRYDPLT  NOWETDPLT
CO RUNORNOT  RUN
CO AVERTIME  ANNUAL
CO POLLUTID  PM10
CO FINISHED

SO STARTING
SO ELEVUNIT  METERS
SO LOCATION  5VOEK000  AREAPOLY  632396.9  3674961.3  0
** SRCDESCR  Plant NW
SO LOCATION  5VOEK001  AREAPOLY  632941.7  3674667.5  0
** SRCDESCR  Plant SE
SO SRCPARAM  5VOEK000  6.95E-09  3  9  1
SO SRCPARAM  5VOEK001  1.77E-09  3  5  1
SO AREAVERT  5VOEK000  632396.9 3674961.3  632389.4 3674597.6  632753.1 3674591.6  632754.2 3674750.2
SO AREAVERT  5VOEK000  632820.4 3674755.7  632816.7 3674882.5  632741.4 3674882.5  632741.4 3674967
SO AREAVERT  5VOEK000  632396.9 3674961.3
SO AREAVERT  5VOEK001  632941.7 3674667.5  632945.3 3674469  633125.4 3674472.7  633127.3 3674665.6
SO AREAVERT  5VOEK001  632941.7 3674667.5
SO SRCGROUP  ALL
SO FINISHED

RE STARTING
RE ELEVUNIT  METERS
RE DISCCART  633209.4  3676664.9  0  0
** SENSITIV
** RCPDESCR  Residential Receptor 1
RE FINISHED

ME STARTING
ME SURFFILE  "C:\USERS\RYAN~1.DES\ONEDRIVE\LDNONE~1\COUNTY~4\20-30H~1\AERMOD\722810\722810.SFC"
** SURFFILE  "C:\USERS\RYAN~1.DES\ONEDRIVE\LDNONE~1\COUNTY~4\20-30H~1\AERMOD\722810\722810.SFC"
ME PROFFILE  "C:\USERS\RYAN~1.DES\ONEDRIVE\LDNONE~1\COUNTY~4\20-30H~1\AERMOD\722810\722810.PFL"
** PROFFILE  "C:\USERS\RYAN~1.DES\ONEDRIVE\LDNONE~1\COUNTY~4\20-30H~1\AERMOD\722810\722810.PFL"
ME SURFDATA  23199 2009
ME UAIRDATA  3190 2009
ME PROFBASE  0  METERS
ME FINISHED

OU STARTING
OU FILEFORM  FIX
OU PLOTFILE  ANNUAL  ALL  ALL`ANNUAL.plt  10000
OU FINISHED

** ********************************************************************************
** It is recommended that the user not edit any data below this line
** ********************************************************************************


** AMPTYPE
** AMPDATUM  -1
** AMPZONE  -1
** AMPHEMISPHERE

** PROJECTIONWKT
PROJCS["UTM_6326_Zone11",GEOGCS["WGS_84",DATUM["World_Geodetic_System_1984",SPHEROID["WGS_1984",6378137,298.2572235
```

```
63],TOWGS84[0,0,0,0,0,0,0]],PRIMEM["Greenwich",0],UNIT["Degree",0.0174532925199433]],PROJECTION["Universal_Transver
se_Mercator"],PARAMETER["Zone",11],UNIT["Meter",1,AUTHORITY["EPSG","9001"]]]
** PROJECTION  UTM
** DATUM  WGE
** UNITS  METER
** ZONE  11
** HEMISPHERE  N
** ORIGINLON  0
** ORIGINLAT  0
** PARALLEL1  0
** PARALLEL2  0
** AZIMUTH  0
** SCALEFACT  0
** FALSEEAST  0
** FALSENORTH  0

** POSTFMT  UNFORM
** TEMPLATE UserDefined
** AERMODEXE  AERMOD_BREEZE_19191_64.EXE
** AERMAPEXE  AERMAP_EPA_18081_64.EXE


 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************

↑ *** AERMOD - VERSION  19191 ***   ***  Construction PM10                                               ***
    03/17/21
 *** AERMET - VERSION  14134 ***   ***                                                                   ***
   09:21:33

   PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

                                            ***     MODEL SETUP OPTIONS SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses RURAL Dispersion Only.

 **Model Uses Regulatory DEFAULT Options:
         1. Stack-tip Downwash.
         2. Model Accounts for ELEVated Terrain Effects.
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
         5. No Exponential Decay.

 **Other Options Specified:
         CCVR_Sub - Meteorological data includes CCVR substitutions
         TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  PM10

 **Model Calculates ANNUAL Averages Only

 **This Run Includes:      2 Source(s);       1 Source Group(s); and       1 Receptor(s)

                with:      0 POINT(s), including
                           0 POINTCAP(s) and      0 POINTHOR(s)
```

```
                and:      0 VOLUME source(s)
                and:      2 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 RLINE/RLINEXT source(s)
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with      0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  14134

 **Output Options Selected:
         Model Outputs Tables of ANNUAL Averages by Receptor
         Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                m for Missing Hours
                                                                b for Both Calm and Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     0.00 ;  Decay Coef. =    0.000     ;  Rot. Angle
=     0.0
                 Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =
0.10000E+07
                 Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      3.5 MB of RAM.

 **Input Runstream File:          aermod.inp

 **Output Print File:             aermod.out


↑ *** AERMOD - VERSION  19191 ***   ***  Construction PM10                                               ***
     03/17/21
 *** AERMET - VERSION  14134 ***   ***                                                                   ***
   09:21:33

   PAGE   2
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL


                                                *** AREAPOLY SOURCE DATA ***

              NUMBER EMISSION RATE   LOCATION OF AREA  BASE     RELEASE  NUMBER      INIT.   URBAN  EMISSION RATE
   SOURCE      PART.  (GRAMS/SEC       X         Y      ELEV.    HEIGHT  OF VERTS.     SZ     SOURCE  SCALAR VARY
     ID        CATS.   /METER**2)   (METERS) (METERS) (METERS) (METERS)            (METERS)              BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - -

 5VOEK000         0   0.69500E-08  632396.9 3674961.3     0.0     3.00       9         1.00     NO
 5VOEK001         0   0.17700E-08  632941.7 3674667.5     0.0     3.00       5         1.00     NO
↑ *** AERMOD - VERSION  19191 ***   ***  Construction PM10                                               ***
     03/17/21
 *** AERMET - VERSION  14134 ***   ***                                                                   ***
   09:21:33

   PAGE   3
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL


                                           *** SOURCE IDs DEFINING SOURCE GROUPS ***

 SRCGROUP ID                                          SOURCE IDs
 -----------                                          ----------


  ALL        5VOEK000    , 5VOEK001    ,
↑ *** AERMOD - VERSION  19191 ***   ***  Construction PM10                                               ***
```

```
    03/17/21
 *** AERMET - VERSION  14134 ***   ***                                                                       ***
   09:21:33

   PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

                                                        *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                                           (1=YES; 0=NO)

            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1

                NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA
FILE.



                                              *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                                                        (METERS/SEC)

                                                              1.54,   3.09,   5.14,   8.23,  10.80,
↑ *** AERMOD - VERSION  19191 ***   ***  Construction PM10                                                    ***
    03/17/21
 *** AERMET - VERSION  14134 ***   ***                                                                       ***
   09:21:33

   PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

                                                *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

   Surface file:   C:\USERS\RYAN~1.DES\ONEDRIVE\LDNONE~1\COUNTY~4\20-30H~1\AERMOD\722810\722810.SFC   Met Version:
14134
   Profile file:   C:\USERS\RYAN~1.DES\ONEDRIVE\LDNONE~1\COUNTY~4\20-30H~1\AERMOD\722810\722810.PFL
   Surface format: FREE

   Profile format: FREE

   Surface station no.:    23199                 Upper air station no.:     3190
                  Name: UNKNOWN                                   Name: UNKNOWN
                  Year:   2009                                    Year:   2009

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS   WD     HT  REF TA
  HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - -
 09 01 01   1 01   -9.9  0.094 -9.000 -9.000 -999.   69.      7.6  0.02   0.78   1.00    2.86  251.   10.0  280.4
 2.0
 09 01 01   1 02   -9.9  0.094 -9.000 -9.000 -999.   69.      7.6  0.02   0.78   1.00    2.86  268.   10.0  279.9
 2.0
 09 01 01   1 03  -10.0  0.094 -9.000 -9.000 -999.   69.      7.6  0.02   0.78   1.00    2.86  264.   10.0  279.2
 2.0
 09 01 01   1 04   -6.8  0.078 -9.000 -9.000 -999.   52.      6.3  0.02   0.78   1.00    2.36  283.   10.0  279.2
 2.0
```

```
 09 01 01   1 05   -6.8  0.078 -9.000 -9.000 -999.   52.      6.3  0.02   0.78   1.00    2.36  213.   10.0  280.4
 2.0
 09 01 01   1 06 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.06   0.78   1.00    0.00    0.   10.0  277.5
 2.0
 09 01 01   1 07   -6.8  0.078 -9.000 -9.000 -999.   52.      6.3  0.02   0.78   1.00    2.36  265.   10.0  279.2
 2.0
 09 01 01   1 08   -9.3  0.152 -9.000 -9.000 -999.  142.     34.3  0.02   0.78   0.47    2.86  223.   10.0  282.0
 2.0
 09 01 01   1 09   33.3  0.160  0.392  0.016   65.  154.    -11.2  0.04   0.78   0.29    1.76  317.   10.0  285.4
 2.0
 09 01 01   1 10   75.5 -9.000 -9.000 -9.000  132. -999. -99999.0  0.06   0.78   0.23    0.00    0.   10.0  288.8
 2.0
 09 01 01   1 11  103.9 -9.000 -9.000 -9.000  208. -999. -99999.0  0.06   0.78   0.21    0.00    0.   10.0  291.4
 2.0
 09 01 01   1 12  116.7  0.201  0.961  0.010  276.  216.     -6.3  0.08   0.78   0.20    1.76   26.   10.0  293.1
 2.0
 09 01 01   1 13  113.3 -9.000 -9.000 -9.000  376. -999. -99999.0  0.06   0.78   0.20    0.00    0.   10.0  293.8
 2.0
 09 01 01   1 14   94.7 -9.000 -9.000 -9.000  445. -999. -99999.0  0.06   0.78   0.21    0.00    0.   10.0  295.4
 2.0
 09 01 01   1 15   60.5 -9.000 -9.000 -9.000  482. -999. -99999.0  0.06   0.78   0.25    0.00    0.   10.0  295.4
 2.0
 09 01 01   1 16   14.2  0.120  0.581  0.007  499.  100.    -10.9  0.02   0.78   0.35    1.50  284.   10.0  294.1
 2.0
 09 01 01   1 17 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.06   0.78   0.65    0.00    0.   10.0  292.1
 2.0
 09 01 01   1 18 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.06   0.78   1.00    0.00    0.   10.0  289.1
 2.0
 09 01 01   1 19  -21.3  0.190 -9.000 -9.000 -999.  200.     29.3  0.08   0.78   1.00    3.10   24.   10.0  285.1
 2.0
 09 01 01   1 20   -7.6  0.087 -9.000 -9.000 -999.   68.      8.0  0.08   0.78   1.00    2.10   17.   10.0  284.1
 2.0
 09 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.06   0.78   1.00    0.00    0.   10.0  284.1
 2.0
 09 01 01   1 22   -8.2  0.086 -9.000 -9.000 -999.   60.      6.9  0.02   0.78   1.00    2.60  252.   10.0  282.1
 2.0
 09 01 01   1 23   -8.2  0.086 -9.000 -9.000 -999.   60.      6.9  0.02   0.78   1.00    2.60  270.   10.0  281.1
 2.0
 09 01 01   1 24   -8.2  0.086 -9.000 -9.000 -999.   60.      6.9  0.02   0.78   1.00    2.60  280.   10.0  280.1
 2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 09 01 01 01   10.0 1  251.    2.86   280.4   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
↑ *** AERMOD - VERSION  19191 ***   ***  Construction PM10                                                  ***
    03/17/21
 *** AERMET - VERSION  14134 ***   ***                                                                    ***
   09:21:33

   PAGE   6
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

                  *** THE ANNUAL AVERAGE CONCENTRATION    VALUES AVERAGED OVER   5 YEARS FOR SOURCE GROUP: ALL
 ***
                                 INCLUDING SOURCE(S):     5VOEK000    , 5VOEK001    ,

                                            *** SENSITIVE DISCRETE RECEPTOR POINTS ***

                                       ** CONC OF PM10     IN MICROGRAMS/M**3                         **

       X-COORD (M)   Y-COORD (M)        CONC                       X-COORD (M)   Y-COORD (M)        CONC
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - -
         633209.40    3676664.90        0.00048

↑ *** AERMOD - VERSION  19191 ***   ***  Construction PM10                                                  ***
```

```
     03/17/21
 *** AERMET - VERSION  14134 ***   ***                                                                      ***
   09:21:33

   PAGE   7
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

                                   *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER   5 YEARS ***


                                    ** CONC OF PM10     IN MICROGRAMS/M**3                          **


NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE
GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- -

ALL       1ST HIGHEST VALUE IS       0.00048 AT (  633209.40,  3676664.90,     0.00,     0.00,    0.00)  SR

          2ND HIGHEST VALUE IS       0.00000 AT (       0.00,        0.00,     0.00,     0.00,    0.00)
          3RD HIGHEST VALUE IS       0.00000 AT (       0.00,        0.00,     0.00,     0.00,    0.00)
          4TH HIGHEST VALUE IS       0.00000 AT (       0.00,        0.00,     0.00,     0.00,    0.00)
          5TH HIGHEST VALUE IS       0.00000 AT (       0.00,        0.00,     0.00,     0.00,    0.00)
          6TH HIGHEST VALUE IS       0.00000 AT (       0.00,        0.00,     0.00,     0.00,    0.00)
          7TH HIGHEST VALUE IS       0.00000 AT (       0.00,        0.00,     0.00,     0.00,    0.00)
          8TH HIGHEST VALUE IS       0.00000 AT (       0.00,        0.00,     0.00,     0.00,    0.00)
          9TH HIGHEST VALUE IS       0.00000 AT (       0.00,        0.00,     0.00,     0.00,    0.00)
         10TH HIGHEST VALUE IS       0.00000 AT (       0.00,        0.00,     0.00,     0.00,    0.00)


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION  19191 ***   ***  Construction PM10                                                  ***
     03/17/21
 *** AERMET - VERSION  14134 ***   ***                                                                      ***
   09:21:33

   PAGE   8
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            1 Warning Message(s)
 A Total of        14777 Informational Message(s)

 A Total of        51336 Hours Were Processed

 A Total of         7189 Calm Hours Identified

 A Total of         7588 Missing Hours Identified ( 14.78 Percent)

 CAUTION!:  Number of Missing Hours Exceeds 10 Percent of Total!
            Data May Not Be Acceptable for Regulatory Applications.
            See Section 5.3.2 of "Meteorological Monitoring Guidance
            for Regulatory Modeling Applications" (EPA-454/R-99-005).


    ******** FATAL ERROR MESSAGES ********
               ***  NONE  ***


    ********   WARNING MESSAGES   ********
```

```
MX W481   51337         MAIN: Data Remaining After End of Year. Number of Hours=         7512

   ************************************
   *** AERMOD Finishes Successfully ***
   ************************************
```

ATTACHMENT C

Construction Health Risk Calculations

Air Quality Health Risk Calculations (Worst-Case)
Hudson Ranch Tier IV Design Feature

From CalEE Annual Output	Emission per day (Ton/Total Construction Duration)	**0.0946**
	Construction Start	**3/1/2021**
	Construction Complete	**3/31/2023**
	Days	**760**
	Construction Emission per day (lb/day)	**0.248947368**
	Annual Duration (Days)	**365**
	Annualized Emission Rate (Grams/Second)	**0.001305245**
	Project Site Size (Acres)	**37**
	Project Site Size (meters^2)	**149733.6876**
	Length of Smalles Side (meters)	**386.9543741**
Used as an input to AERMOD	Emission Rate over Grading Area(g/s-m^2)	**8.72E-09**
From AERMOD	Concentration Annual (Ug/M^3)	**0.00048**

	Days	Days to years				
Duration	760	2.082191781				
Age (Years)	3rd Trimester (0.25)	0-2	2-9	2-16	16-30	16-70
Cair (annual) - From F15	0.00048	0.00048	0.00048	0.00048	0.00048	0.00048
Breathing Rate per agegroup BR/BW (Page 5-25)	361	1090	861	745	335	290
A (Default is 1)	1	1	1	1	1	1
Exposure Frequency = EF (days/365days)	0.96	0.96	0.96	0.96	0.96	0.96
10^-6 Microgram to Milligram / liters to m3	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001
Dose-inh	0.00000017	0.00000050	0.00000040	0.00000034	0.00000015	0.00000013
Construction Days	760	2.082191781				
potency factor for Diesel	1.1	1.1	1.1	1.1	1.1	1.1
Age Sensitivity Factor	10	10	3	3	1	1
ED	0.25	2.082191781	2.082191781	2.082191781	2.082191781	2.082191781
AT	70	70	70	70	70	70
FAH	0.85	0.85	0.72	0.72	0.73	0.73
Risk for Each Age Group	5.55486E-09	1.39693E-07	2.80404E-08	2.42626E-08	3.68719E-09	3.1919E-09
Risk per million Exposed	0.005554862	0.139692557	0.028040435	0.02426263	0.00368719	0.003191896
Cancer Risk Per Million 9-years	0.17					
Cancer Risk Per Million 30-years	0.17					
Cancer Risk Per Million 70-years	**0.17**					

ATTACHMENT D

AERMOD Onsite and Offsite Truck Operations

```
1                      AERMOD PRIME - (DATED  19191)

                     AERMODPrMSPx VERSION
             (C) COPYRIGHT 1998-2017, Trinity Consultants

 Run Began on  3/16/2021 at 18:39:47

** BREEZE AERMOD
** Trinity Consultants
** VERSION  9.0

CO STARTING
CO TITLEONE  Diesle PM (Trucks)
CO MODELOPT  DFAULT  CONC  NODRYDPLT  NOWETDPLT
CO RUNORNOT  RUN
CO AVERTIME  ANNUAL
CO POLLUTID  PM10
CO FINISHED

SO STARTING
SO ELEVUNIT  METERS
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SO SRCPARAM  DNOVX0BF  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0BG  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0BH  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0BI  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0BJ  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0BK  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0BL  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0BM  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0BN  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0BO  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0BP  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0BQ  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0BR  5.70946E-09  3  2.325581  2.790698
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SO SRCPARAM  DNOVX0BT  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0BU  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0BV  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0BW  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0BX  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0BY  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0BZ  5.70946E-09  3  2.325581  2.790698
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SO SRCPARAM  DNOVX0C4  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0C5  5.70946E-09  3  2.325581  2.790698
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SO SRCPARAM  DNOVX0CC  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0CD  5.70946E-09  3  2.325581  2.790698
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SO SRCPARAM  DNOVX0CF  5.70946E-09  3  2.325581  2.790698
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SO SRCPARAM  DNOVX0CR  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0CS  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0CT  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0CU  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0CV  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0CW  5.70946E-09  3  2.325581  2.790698
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SO SRCPARAM  DNOVX0CY  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0CZ  5.70946E-09  3  2.325581  2.790698
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SO SRCPARAM  DNOVX0DF  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0DG  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0DH  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0DI  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0DJ  5.70946E-09  3  2.325581  2.790698
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SO SRCPARAM  DNOVX0DM  5.70946E-09  3  2.325581  2.790698
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SO SRCPARAM  DNOVX0DO  5.70946E-09  3  2.325581  2.790698
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SO SRCPARAM  DNOVX0DV  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0DW  5.70946E-09  3  2.325581  2.790698
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SO SRCPARAM  DNOVX0FJ  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0FK  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0FL  5.70946E-09  3  2.325581  2.790698
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SO SRCPARAM  DNOVX0FP  5.70946E-09  3  2.325581  2.790698
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SO SRCPARAM  DNOVX0GO  5.70946E-09  3  2.325581  2.790698
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SO SRCPARAM  DNOVX0GQ  5.70946E-09  3  2.325581  2.790698
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SO SRCPARAM  DNOVX0GU  5.70946E-09  3  2.325581  2.790698
SO SRCPARAM  DNOVX0GV  5.70946E-09  3  2.325581  2.790698
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SO SRCPARAM  VDB5H001  1.005E-04  3  325  0.001  0.1
SO SRCGROUP  ALL
SO FINISHED

RE STARTING
RE ELEVUNIT  METERS
RE GRIDCART DNOVX0H2 STA
** GRDDESCR  Receptor Grid
RE GRIDCART DNOVX0H2 XYINC  631636.2  21  145.3  3676809.5  21  -152.2
RE GRIDCART DNOVX0H2 ELEV  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 ELEV  2  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 ELEV  3  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 ELEV  4  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 ELEV  5  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 ELEV  6  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 ELEV  7  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
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RE GRIDCART DNOVX0H2 ELEV  8  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 ELEV  9  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 ELEV  10  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 ELEV  11  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 ELEV  12  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 ELEV  13  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 ELEV  14  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 ELEV  15  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 ELEV  16  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 ELEV  17  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 ELEV  18  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 ELEV  19  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 ELEV  20  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 ELEV  21  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 HILL  1  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 HILL  2  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 HILL  3  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 HILL  4  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 HILL  5  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 HILL  6  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 HILL  7  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 HILL  8  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 HILL  9  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 HILL  10  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 HILL  11  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 HILL  12  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 HILL  13  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 HILL  14  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 HILL  15  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 HILL  16  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 HILL  17  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 HILL  18  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 HILL  19  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 HILL  20  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 HILL  21  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0  0
RE GRIDCART DNOVX0H2 END
RE DISCCART  633209.4  3676664.9  0  0
** SENSITIV
** RCPDESCR  Residential Receptor 1
RE FINISHED

ME STARTING
ME SURFFILE  "C:\Users\RYAN~1.DES\OneDrive\LDNONE~1\COUNTY~4\20-30H~1\AERMOD\722810\722810.SFC"
** SURFFILE  "C:\Users\RYAN~1.DES\OneDrive\LDNONE~1\COUNTY~4\20-30H~1\AERMOD\722810\722810.SFC"
ME PROFFILE  "C:\Users\RYAN~1.DES\OneDrive\LDNONE~1\COUNTY~4\20-30H~1\AERMOD\722810\722810.PFL"
** PROFFILE  "C:\Users\RYAN~1.DES\OneDrive\LDNONE~1\COUNTY~4\20-30H~1\AERMOD\722810\722810.PFL"
ME SURFDATA  23199 2009
ME UAIRDATA  3190 2009
ME PROFBASE  0  METERS
ME STARTEND  2013  1  1  1  2013  12  31  24
ME FINISHED

OU STARTING
OU FILEFORM  FIX
OU PLOTFILE  ANNUAL  ALL  ALL`ANNUAL.plt  10000
OU FINISHED

** ****************************************************************************
** It is recommended that the user not edit any data below this line
** ****************************************************************************


** TAG NAM  DNOVX00L
** TAG PRM  0  2  F  F  1  255,0,0,0
** TAG CRD    632573.1,3674985.4,0,635532.3,3674990.2,0

** AMPTYPE
** AMPDATUM  -1
** AMPZONE  -1
```

```
** AMPHEMISPHERE

** PROJECTIONWKT
PROJCS["UTM_6326_Zone11",GEOGCS["WGS_84",DATUM["World_Geodetic_System_1984",SPHEROID["WGS_1984",6378137,298.2572235
63],TOWGS84[0,0,0,0,0,0,0]],PRIMEM["Greenwich",0],UNIT["Degree",0.0174532925199433]],PROJECTION["Universal_Transver
se_Mercator"],PARAMETER["Zone",11],UNIT["Meter",1,AUTHORITY["EPSG","9001"]]]
** PROJECTION  UTM
** DATUM  WGE
** UNITS  METER
** ZONE  11
** HEMISPHERE  N
** ORIGINLON  0
** ORIGINLAT  0
** PARALLEL1  0
** PARALLEL2  0
** AZIMUTH  0
** SCALEFACT  0
** FALSEEAST  0
** FALSENORTH  0

** POSTFMT  UNFORM
** TEMPLATE USERDEFINED
** AERMODEXE  AERMOD_BREEZE_19191_64.EXE
** AERMAPEXE  AERMAP_EPA_18081_64.EXE


 ***********************************
 *** SETUP Finishes Successfully ***
 ***********************************

↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                                 ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                                      ***
   18:39:47

   PAGE   1
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

                                            ***     MODEL SETUP OPTIONS SUMMARY       ***
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - -

 **Model Is Setup For Calculation of Average CONCentration Values.

   --  DEPOSITION LOGIC  --
 **NO GAS DEPOSITION Data Provided.
 **NO PARTICLE DEPOSITION Data Provided.
 **Model Uses NO DRY DEPLETION.  DRYDPLT  =  F
 **Model Uses NO WET DEPLETION.  WETDPLT  =  F

 **Model Uses RURAL Dispersion Only.

 **Model Uses Regulatory DEFAULT Options:
         1. Stack-tip Downwash.
         2. Model Accounts for ELEVated Terrain Effects.
         3. Use Calms Processing Routine.
         4. Use Missing Data Processing Routine.
         5. No Exponential Decay.

 **Other Options Specified:
         CCVR_Sub - Meteorological data includes CCVR substitutions
         TEMP_Sub - Meteorological data includes TEMP substitutions

 **Model Assumes No FLAGPOLE Receptor Heights.

 **The User Specified a Pollutant Type of:  PM10

 **Model Calculates ANNUAL Averages Only
```

```
 **This Run Includes:    609 Source(s);       1 Source Group(s); and     442 Receptor(s)

               with:     17 POINT(s), including
                          0 POINTCAP(s) and      0 POINTHOR(s)
                and:    592 VOLUME source(s)
                and:      0 AREA type source(s)
                and:      0 LINE source(s)
                and:      0 RLINE/RLINEXT source(s)
                and:      0 OPENPIT source(s)
                and:      0 BUOYANT LINE source(s) with      0 line(s)


 **Model Set To Continue RUNning After the Setup Testing.

 **The AERMET Input Meteorological Data Version Date:  14134

 **Output Options Selected:
          Model Outputs Tables of ANNUAL Averages by Receptor
          Model Outputs External File(s) of High Values for Plotting (PLOTFILE Keyword)

 **NOTE:  The Following Flags May Appear Following CONC Values:  c for Calm Hours
                                                                 m for Missing Hours
                                                                 b for Both Calm and Missing Hours

 **Misc. Inputs:  Base Elev. for Pot. Temp. Profile (m MSL) =     0.00 ;  Decay Coef. =    0.000     ;  Rot. Angle
=     0.0
                  Emission Units = GRAMS/SEC                                ;  Emission Rate Unit Factor =
0.10000E+07
                  Output Units   = MICROGRAMS/M**3

 **Approximate Storage Requirements of Model =      3.8 MB of RAM.

 **Input Runstream File:          aermod.inp

 **Output Print File:             aermod.out


🡅 *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                         ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                               ***
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   PAGE   2
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL


                                                   *** POINT SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE     STACK   STACK    STACK     STACK    BLDG   URBAN
CAP/  EMIS RATE
   SOURCE       PART.  (GRAMS/SEC)     X        Y      ELEV.    HEIGHT  TEMP.   EXIT VEL. DIAMETER  EXISTS SOURCE
HOR   SCALAR
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (DEG.K)  (M/SEC)  (METERS)
    VARY BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - -

 DNOVX000         0   0.75540E-07  632611.6 3674699.7     0.0     3.00   325.00     0.00     0.10    NO      NO
NO
 DNOVX001         0   0.75540E-07  632604.6 3674699.7     0.0     3.00   325.00     0.00     0.10    NO      NO
NO
 DNOVX002         0   0.75540E-07  632592.7 3674699.7     0.0     3.00   325.00     0.00     0.10    NO      NO
NO
 DNOVX003         0   0.75540E-07  632584.9 3674699.7     0.0     3.00   325.00     0.00     0.10    NO      NO
NO
 DNOVX004         0   0.75540E-07  632573.7 3674699.7     0.0     3.00   325.00     0.00     0.10    NO      NO
NO
 DNOVX005         0   0.75540E-07  632563.8 3674699.7     0.0     3.00   325.00     0.00     0.10    NO      NO
NO
```

```
 DNOVX006         0   0.75540E-07  632599.0 3674699.7     0.0     3.00   325.00     0.00     0.10    NO      NO
NO
 DNOVX007         0   0.75540E-07  632579.6 3674699.7     0.0     3.00   325.00     0.00     0.10    NO      NO
NO
 DNOVX008         0   0.75540E-07  632568.6 3674699.7     0.0     3.00   325.00     0.00     0.10    NO      NO
NO
 DNOVX009         0   0.75540E-07  632608.4 3674699.7     0.0     3.00   325.00     0.00     0.10    NO      NO
NO
 DNOVX00A         0   0.75540E-07  632612.6 3674693.7     0.0     3.00   325.00     0.00     0.10    NO      NO
NO
 DNOVX00B         0   0.75540E-07  632603.2 3674693.7     0.0     3.00   325.00     0.00     0.10    NO      NO
NO
 DNOVX00C         0   0.75540E-07  632591.7 3674693.7     0.0     3.00   325.00     0.00     0.10    NO      NO
NO
 DNOVX00D         0   0.75540E-07  632581.2 3674693.7     0.0     3.00   325.00     0.00     0.10    NO      NO
NO
 DNOVX00E         0   0.75540E-07  632563.9 3674693.7     0.0     3.00   325.00     0.00     0.10    NO      NO
NO
 VDB5H000         0   0.10050E-03  632664.1 3674938.2     0.0     3.00   325.00     0.00     0.10    NO      NO
NO
 VDB5H001         0   0.10050E-03  632680.7 3674938.2     0.0     3.00   325.00     0.00     0.10    NO      NO
NO
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                                     ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                                         ***
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   PAGE   3
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL


                                                    *** VOLUME SOURCE DATA ***

              NUMBER EMISSION RATE                    BASE    RELEASE    INIT.    INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X         Y      ELEV.   HEIGHT      SY       SZ     SOURCE  SCALAR VARY
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)               BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - -

 DNOVX00M         0   0.57095E-08  632575.6 3674985.4     0.0     3.00     2.33     2.79     NO
 DNOVX00N         0   0.57095E-08  632580.6 3674985.4     0.0     3.00     2.33     2.79     NO
 DNOVX00O         0   0.57095E-08  632585.6 3674985.4     0.0     3.00     2.33     2.79     NO
 DNOVX00P         0   0.57095E-08  632590.6 3674985.4     0.0     3.00     2.33     2.79     NO
 DNOVX00Q         0   0.57095E-08  632595.6 3674985.4     0.0     3.00     2.33     2.79     NO
 DNOVX00R         0   0.57095E-08  632600.6 3674985.4     0.0     3.00     2.33     2.79     NO
 DNOVX00S         0   0.57095E-08  632605.6 3674985.5     0.0     3.00     2.33     2.79     NO
 DNOVX00T         0   0.57095E-08  632610.6 3674985.5     0.0     3.00     2.33     2.79     NO
 DNOVX00U         0   0.57095E-08  632615.6 3674985.5     0.0     3.00     2.33     2.79     NO
 DNOVX00V         0   0.57095E-08  632620.6 3674985.5     0.0     3.00     2.33     2.79     NO
 DNOVX00W         0   0.57095E-08  632625.6 3674985.5     0.0     3.00     2.33     2.79     NO
 DNOVX00X         0   0.57095E-08  632630.6 3674985.5     0.0     3.00     2.33     2.79     NO
 DNOVX00Y         0   0.57095E-08  632635.6 3674985.5     0.0     3.00     2.33     2.79     NO
 DNOVX00Z         0   0.57095E-08  632640.6 3674985.5     0.0     3.00     2.33     2.79     NO
 DNOVX010         0   0.57095E-08  632645.6 3674985.5     0.0     3.00     2.33     2.79     NO
 DNOVX011         0   0.57095E-08  632650.6 3674985.5     0.0     3.00     2.33     2.79     NO
 DNOVX012         0   0.57095E-08  632655.6 3674985.5     0.0     3.00     2.33     2.79     NO
 DNOVX013         0   0.57095E-08  632660.6 3674985.5     0.0     3.00     2.33     2.79     NO
 DNOVX014         0   0.57095E-08  632665.6 3674985.6     0.0     3.00     2.33     2.79     NO
 DNOVX015         0   0.57095E-08  632670.6 3674985.6     0.0     3.00     2.33     2.79     NO
 DNOVX016         0   0.57095E-08  632675.6 3674985.6     0.0     3.00     2.33     2.79     NO
 DNOVX017         0   0.57095E-08  632680.6 3674985.6     0.0     3.00     2.33     2.79     NO
 DNOVX018         0   0.57095E-08  632685.6 3674985.6     0.0     3.00     2.33     2.79     NO
 DNOVX019         0   0.57095E-08  632690.6 3674985.6     0.0     3.00     2.33     2.79     NO
 DNOVX01A         0   0.57095E-08  632695.6 3674985.6     0.0     3.00     2.33     2.79     NO
 DNOVX01B         0   0.57095E-08  632700.6 3674985.6     0.0     3.00     2.33     2.79     NO
 DNOVX01C         0   0.57095E-08  632705.6 3674985.6     0.0     3.00     2.33     2.79     NO
 DNOVX01D         0   0.57095E-08  632710.6 3674985.6     0.0     3.00     2.33     2.79     NO
 DNOVX01E         0   0.57095E-08  632715.6 3674985.6     0.0     3.00     2.33     2.79     NO
 DNOVX01F         0   0.57095E-08  632720.6 3674985.6     0.0     3.00     2.33     2.79     NO
```

```
 DNOVX01G         0   0.57095E-08  632725.6 3674985.6     0.0     3.00     2.33     2.79     NO
 DNOVX01H         0   0.57095E-08  632730.6 3674985.7     0.0     3.00     2.33     2.79     NO
 DNOVX01I         0   0.57095E-08  632735.6 3674985.7     0.0     3.00     2.33     2.79     NO
 DNOVX01J         0   0.57095E-08  632740.6 3674985.7     0.0     3.00     2.33     2.79     NO
 DNOVX01K         0   0.57095E-08  632745.6 3674985.7     0.0     3.00     2.33     2.79     NO
 DNOVX01L         0   0.57095E-08  632750.6 3674985.7     0.0     3.00     2.33     2.79     NO
 DNOVX01M         0   0.57095E-08  632755.6 3674985.7     0.0     3.00     2.33     2.79     NO
 DNOVX01N         0   0.57095E-08  632760.6 3674985.7     0.0     3.00     2.33     2.79     NO
 DNOVX01O         0   0.57095E-08  632765.6 3674985.7     0.0     3.00     2.33     2.79     NO
 DNOVX01P         0   0.57095E-08  632770.6 3674985.7     0.0     3.00     2.33     2.79     NO
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                                  ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                                      ***
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   PAGE   4
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL


                                                  *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE    RELEASE    INIT.    INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY       SZ     SOURCE  SCALAR VARY
     ID         CATS.              (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)              BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - -

 DNOVX01Q         0   0.57095E-08  632775.6 3674985.7     0.0     3.00     2.33     2.79     NO
 DNOVX01R         0   0.57095E-08  632780.6 3674985.7     0.0     3.00     2.33     2.79     NO
 DNOVX01S         0   0.57095E-08  632785.6 3674985.7     0.0     3.00     2.33     2.79     NO
 DNOVX01T         0   0.57095E-08  632790.6 3674985.8     0.0     3.00     2.33     2.79     NO
 DNOVX01U         0   0.57095E-08  632795.6 3674985.8     0.0     3.00     2.33     2.79     NO
 DNOVX01V         0   0.57095E-08  632800.6 3674985.8     0.0     3.00     2.33     2.79     NO
 DNOVX01W         0   0.57095E-08  632805.6 3674985.8     0.0     3.00     2.33     2.79     NO
 DNOVX01X         0   0.57095E-08  632810.6 3674985.8     0.0     3.00     2.33     2.79     NO
 DNOVX01Y         0   0.57095E-08  632815.6 3674985.8     0.0     3.00     2.33     2.79     NO
 DNOVX01Z         0   0.57095E-08  632820.6 3674985.8     0.0     3.00     2.33     2.79     NO
 DNOVX020         0   0.57095E-08  632825.6 3674985.8     0.0     3.00     2.33     2.79     NO
 DNOVX021         0   0.57095E-08  632830.6 3674985.8     0.0     3.00     2.33     2.79     NO
 DNOVX022         0   0.57095E-08  632835.6 3674985.8     0.0     3.00     2.33     2.79     NO
 DNOVX023         0   0.57095E-08  632840.6 3674985.8     0.0     3.00     2.33     2.79     NO
 DNOVX024         0   0.57095E-08  632845.6 3674985.8     0.0     3.00     2.33     2.79     NO
 DNOVX025         0   0.57095E-08  632850.6 3674985.9     0.0     3.00     2.33     2.79     NO
 DNOVX026         0   0.57095E-08  632855.6 3674985.9     0.0     3.00     2.33     2.79     NO
 DNOVX027         0   0.57095E-08  632860.6 3674985.9     0.0     3.00     2.33     2.79     NO
 DNOVX028         0   0.57095E-08  632865.6 3674985.9     0.0     3.00     2.33     2.79     NO
 DNOVX029         0   0.57095E-08  632870.6 3674985.9     0.0     3.00     2.33     2.79     NO
 DNOVX02A         0   0.57095E-08  632875.6 3674985.9     0.0     3.00     2.33     2.79     NO
 DNOVX02B         0   0.57095E-08  632880.6 3674985.9     0.0     3.00     2.33     2.79     NO
 DNOVX02C         0   0.57095E-08  632885.6 3674985.9     0.0     3.00     2.33     2.79     NO
 DNOVX02D         0   0.57095E-08  632890.6 3674985.9     0.0     3.00     2.33     2.79     NO
 DNOVX02E         0   0.57095E-08  632895.6 3674985.9     0.0     3.00     2.33     2.79     NO
 DNOVX02F         0   0.57095E-08  632900.6 3674985.9     0.0     3.00     2.33     2.79     NO
 DNOVX02G         0   0.57095E-08  632905.6 3674985.9     0.0     3.00     2.33     2.79     NO
 DNOVX02H         0   0.57095E-08  632910.6 3674985.9     0.0     3.00     2.33     2.79     NO
 DNOVX02I         0   0.57095E-08  632915.6 3674986.0     0.0     3.00     2.33     2.79     NO
 DNOVX02J         0   0.57095E-08  632920.6 3674986.0     0.0     3.00     2.33     2.79     NO
 DNOVX02K         0   0.57095E-08  632925.6 3674986.0     0.0     3.00     2.33     2.79     NO
 DNOVX02L         0   0.57095E-08  632930.6 3674986.0     0.0     3.00     2.33     2.79     NO
 DNOVX02M         0   0.57095E-08  632935.6 3674986.0     0.0     3.00     2.33     2.79     NO
 DNOVX02N         0   0.57095E-08  632940.6 3674986.0     0.0     3.00     2.33     2.79     NO
 DNOVX02O         0   0.57095E-08  632945.6 3674986.0     0.0     3.00     2.33     2.79     NO
 DNOVX02P         0   0.57095E-08  632950.6 3674986.0     0.0     3.00     2.33     2.79     NO
 DNOVX02Q         0   0.57095E-08  632955.6 3674986.0     0.0     3.00     2.33     2.79     NO
 DNOVX02R         0   0.57095E-08  632960.6 3674986.0     0.0     3.00     2.33     2.79     NO
 DNOVX02S         0   0.57095E-08  632965.6 3674986.0     0.0     3.00     2.33     2.79     NO
 DNOVX02T         0   0.57095E-08  632970.6 3674986.0     0.0     3.00     2.33     2.79     NO
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                                  ***
     03/16/21
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 *** AERMET - VERSION  14134 ***   ***                                                                     ***
   18:39:47

   PAGE   5
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL


                                                  *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE    RELEASE    INIT.    INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY       SZ     SOURCE  SCALAR VARY
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)              BY
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 DNOVX02U        0   0.57095E-08  632975.6 3674986.1     0.0     3.00     2.33     2.79     NO
 DNOVX02V        0   0.57095E-08  632980.6 3674986.1     0.0     3.00     2.33     2.79     NO
 DNOVX02W        0   0.57095E-08  632985.6 3674986.1     0.0     3.00     2.33     2.79     NO
 DNOVX02X        0   0.57095E-08  632990.6 3674986.1     0.0     3.00     2.33     2.79     NO
 DNOVX02Y        0   0.57095E-08  632995.6 3674986.1     0.0     3.00     2.33     2.79     NO
 DNOVX02Z        0   0.57095E-08  633000.6 3674986.1     0.0     3.00     2.33     2.79     NO
 DNOVX030        0   0.57095E-08  633005.6 3674986.1     0.0     3.00     2.33     2.79     NO
 DNOVX031        0   0.57095E-08  633010.6 3674986.1     0.0     3.00     2.33     2.79     NO
 DNOVX032        0   0.57095E-08  633015.6 3674986.1     0.0     3.00     2.33     2.79     NO
 DNOVX033        0   0.57095E-08  633020.6 3674986.1     0.0     3.00     2.33     2.79     NO
 DNOVX034        0   0.57095E-08  633025.6 3674986.1     0.0     3.00     2.33     2.79     NO
 DNOVX035        0   0.57095E-08  633030.6 3674986.1     0.0     3.00     2.33     2.79     NO
 DNOVX036        0   0.57095E-08  633035.6 3674986.2     0.0     3.00     2.33     2.79     NO
 DNOVX037        0   0.57095E-08  633040.6 3674986.2     0.0     3.00     2.33     2.79     NO
 DNOVX038        0   0.57095E-08  633045.6 3674986.2     0.0     3.00     2.33     2.79     NO
 DNOVX039        0   0.57095E-08  633050.6 3674986.2     0.0     3.00     2.33     2.79     NO
 DNOVX03A        0   0.57095E-08  633055.6 3674986.2     0.0     3.00     2.33     2.79     NO
 DNOVX03B        0   0.57095E-08  633060.6 3674986.2     0.0     3.00     2.33     2.79     NO
 DNOVX03C        0   0.57095E-08  633065.6 3674986.2     0.0     3.00     2.33     2.79     NO
 DNOVX03D        0   0.57095E-08  633070.6 3674986.2     0.0     3.00     2.33     2.79     NO
 DNOVX03E        0   0.57095E-08  633075.6 3674986.2     0.0     3.00     2.33     2.79     NO
 DNOVX03F        0   0.57095E-08  633080.6 3674986.2     0.0     3.00     2.33     2.79     NO
 DNOVX03G        0   0.57095E-08  633085.6 3674986.2     0.0     3.00     2.33     2.79     NO
 DNOVX03H        0   0.57095E-08  633090.6 3674986.2     0.0     3.00     2.33     2.79     NO
 DNOVX03I        0   0.57095E-08  633095.6 3674986.2     0.0     3.00     2.33     2.79     NO
 DNOVX03J        0   0.57095E-08  633100.6 3674986.3     0.0     3.00     2.33     2.79     NO
 DNOVX03K        0   0.57095E-08  633105.6 3674986.3     0.0     3.00     2.33     2.79     NO
 DNOVX03L        0   0.57095E-08  633110.6 3674986.3     0.0     3.00     2.33     2.79     NO
 DNOVX03M        0   0.57095E-08  633115.6 3674986.3     0.0     3.00     2.33     2.79     NO
 DNOVX03N        0   0.57095E-08  633120.6 3674986.3     0.0     3.00     2.33     2.79     NO
 DNOVX03O        0   0.57095E-08  633125.6 3674986.3     0.0     3.00     2.33     2.79     NO
 DNOVX03P        0   0.57095E-08  633130.6 3674986.3     0.0     3.00     2.33     2.79     NO
 DNOVX03Q        0   0.57095E-08  633135.6 3674986.3     0.0     3.00     2.33     2.79     NO
 DNOVX03R        0   0.57095E-08  633140.6 3674986.3     0.0     3.00     2.33     2.79     NO
 DNOVX03S        0   0.57095E-08  633145.6 3674986.3     0.0     3.00     2.33     2.79     NO
 DNOVX03T        0   0.57095E-08  633150.6 3674986.3     0.0     3.00     2.33     2.79     NO
 DNOVX03U        0   0.57095E-08  633155.6 3674986.3     0.0     3.00     2.33     2.79     NO
 DNOVX03V        0   0.57095E-08  633160.6 3674986.4     0.0     3.00     2.33     2.79     NO
 DNOVX03W        0   0.57095E-08  633165.6 3674986.4     0.0     3.00     2.33     2.79     NO
 DNOVX03X        0   0.57095E-08  633170.6 3674986.4     0.0     3.00     2.33     2.79     NO
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                                ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                                     ***
   18:39:47

   PAGE   6
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL


                                                  *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE    RELEASE    INIT.    INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY       SZ     SOURCE  SCALAR VARY
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)              BY
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 DNOVX03Y         0   0.57095E-08  633175.6 3674986.4     0.0     3.00     2.33     2.79     NO
 DNOVX03Z         0   0.57095E-08  633180.6 3674986.4     0.0     3.00     2.33     2.79     NO
 DNOVX040         0   0.57095E-08  633185.6 3674986.4     0.0     3.00     2.33     2.79     NO
 DNOVX041         0   0.57095E-08  633190.6 3674986.4     0.0     3.00     2.33     2.79     NO
 DNOVX042         0   0.57095E-08  633195.6 3674986.4     0.0     3.00     2.33     2.79     NO
 DNOVX043         0   0.57095E-08  633200.6 3674986.4     0.0     3.00     2.33     2.79     NO
 DNOVX044         0   0.57095E-08  633205.6 3674986.4     0.0     3.00     2.33     2.79     NO
 DNOVX045         0   0.57095E-08  633210.6 3674986.4     0.0     3.00     2.33     2.79     NO
 DNOVX046         0   0.57095E-08  633215.6 3674986.4     0.0     3.00     2.33     2.79     NO
 DNOVX047         0   0.57095E-08  633220.6 3674986.5     0.0     3.00     2.33     2.79     NO
 DNOVX048         0   0.57095E-08  633225.6 3674986.5     0.0     3.00     2.33     2.79     NO
 DNOVX049         0   0.57095E-08  633230.6 3674986.5     0.0     3.00     2.33     2.79     NO
 DNOVX04A         0   0.57095E-08  633235.6 3674986.5     0.0     3.00     2.33     2.79     NO
 DNOVX04B         0   0.57095E-08  633240.6 3674986.5     0.0     3.00     2.33     2.79     NO
 DNOVX04C         0   0.57095E-08  633245.6 3674986.5     0.0     3.00     2.33     2.79     NO
 DNOVX04D         0   0.57095E-08  633250.6 3674986.5     0.0     3.00     2.33     2.79     NO
 DNOVX04E         0   0.57095E-08  633255.6 3674986.5     0.0     3.00     2.33     2.79     NO
 DNOVX04F         0   0.57095E-08  633260.6 3674986.5     0.0     3.00     2.33     2.79     NO
 DNOVX04G         0   0.57095E-08  633265.6 3674986.5     0.0     3.00     2.33     2.79     NO
 DNOVX04H         0   0.57095E-08  633270.6 3674986.5     0.0     3.00     2.33     2.79     NO
 DNOVX04I         0   0.57095E-08  633275.6 3674986.5     0.0     3.00     2.33     2.79     NO
 DNOVX04J         0   0.57095E-08  633280.6 3674986.5     0.0     3.00     2.33     2.79     NO
 DNOVX04K         0   0.57095E-08  633285.6 3674986.6     0.0     3.00     2.33     2.79     NO
 DNOVX04L         0   0.57095E-08  633290.6 3674986.6     0.0     3.00     2.33     2.79     NO
 DNOVX04M         0   0.57095E-08  633295.6 3674986.6     0.0     3.00     2.33     2.79     NO
 DNOVX04N         0   0.57095E-08  633300.6 3674986.6     0.0     3.00     2.33     2.79     NO
 DNOVX04O         0   0.57095E-08  633305.6 3674986.6     0.0     3.00     2.33     2.79     NO
 DNOVX04P         0   0.57095E-08  633310.6 3674986.6     0.0     3.00     2.33     2.79     NO
 DNOVX04Q         0   0.57095E-08  633315.6 3674986.6     0.0     3.00     2.33     2.79     NO
 DNOVX04R         0   0.57095E-08  633320.6 3674986.6     0.0     3.00     2.33     2.79     NO
 DNOVX04S         0   0.57095E-08  633325.6 3674986.6     0.0     3.00     2.33     2.79     NO
 DNOVX04T         0   0.57095E-08  633330.6 3674986.6     0.0     3.00     2.33     2.79     NO
 DNOVX04U         0   0.57095E-08  633335.6 3674986.6     0.0     3.00     2.33     2.79     NO
 DNOVX04V         0   0.57095E-08  633340.6 3674986.6     0.0     3.00     2.33     2.79     NO
 DNOVX04W         0   0.57095E-08  633345.6 3674986.7     0.0     3.00     2.33     2.79     NO
 DNOVX04X         0   0.57095E-08  633350.6 3674986.7     0.0     3.00     2.33     2.79     NO
 DNOVX04Y         0   0.57095E-08  633355.6 3674986.7     0.0     3.00     2.33     2.79     NO
 DNOVX04Z         0   0.57095E-08  633360.6 3674986.7     0.0     3.00     2.33     2.79     NO
 DNOVX050         0   0.57095E-08  633365.6 3674986.7     0.0     3.00     2.33     2.79     NO
 DNOVX051         0   0.57095E-08  633370.6 3674986.7     0.0     3.00     2.33     2.79     NO
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                                ***
    03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                                     ***
  18:39:47

  PAGE   7
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL


                                                    *** VOLUME SOURCE DATA ***

              NUMBER EMISSION RATE                   BASE    RELEASE    INIT.    INIT.   URBAN  EMISSION RATE
   SOURCE      PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT     SY       SZ     SOURCE  SCALAR VARY
     ID        CATS.               (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)              BY
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 DNOVX052         0   0.57095E-08  633375.6 3674986.7     0.0     3.00     2.33     2.79     NO
 DNOVX053         0   0.57095E-08  633380.6 3674986.7     0.0     3.00     2.33     2.79     NO
 DNOVX054         0   0.57095E-08  633385.6 3674986.7     0.0     3.00     2.33     2.79     NO
 DNOVX055         0   0.57095E-08  633390.6 3674986.7     0.0     3.00     2.33     2.79     NO
 DNOVX056         0   0.57095E-08  633395.6 3674986.7     0.0     3.00     2.33     2.79     NO
 DNOVX057         0   0.57095E-08  633400.6 3674986.7     0.0     3.00     2.33     2.79     NO
 DNOVX058         0   0.57095E-08  633405.6 3674986.8     0.0     3.00     2.33     2.79     NO
 DNOVX059         0   0.57095E-08  633410.6 3674986.8     0.0     3.00     2.33     2.79     NO
 DNOVX05A         0   0.57095E-08  633415.6 3674986.8     0.0     3.00     2.33     2.79     NO
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 DNOVX05B         0   0.57095E-08  633420.6 3674986.8     0.0     3.00     2.33     2.79     NO
 DNOVX05C         0   0.57095E-08  633425.6 3674986.8     0.0     3.00     2.33     2.79     NO
 DNOVX05D         0   0.57095E-08  633430.6 3674986.8     0.0     3.00     2.33     2.79     NO
 DNOVX05E         0   0.57095E-08  633435.6 3674986.8     0.0     3.00     2.33     2.79     NO
 DNOVX05F         0   0.57095E-08  633440.6 3674986.8     0.0     3.00     2.33     2.79     NO
 DNOVX05G         0   0.57095E-08  633445.6 3674986.8     0.0     3.00     2.33     2.79     NO
 DNOVX05H         0   0.57095E-08  633450.6 3674986.8     0.0     3.00     2.33     2.79     NO
 DNOVX05I         0   0.57095E-08  633455.6 3674986.8     0.0     3.00     2.33     2.79     NO
 DNOVX05J         0   0.57095E-08  633460.6 3674986.8     0.0     3.00     2.33     2.79     NO
 DNOVX05K         0   0.57095E-08  633465.6 3674986.8     0.0     3.00     2.33     2.79     NO
 DNOVX05L         0   0.57095E-08  633470.6 3674986.9     0.0     3.00     2.33     2.79     NO
 DNOVX05M         0   0.57095E-08  633475.6 3674986.9     0.0     3.00     2.33     2.79     NO
 DNOVX05N         0   0.57095E-08  633480.6 3674986.9     0.0     3.00     2.33     2.79     NO
 DNOVX05O         0   0.57095E-08  633485.6 3674986.9     0.0     3.00     2.33     2.79     NO
 DNOVX05P         0   0.57095E-08  633490.6 3674986.9     0.0     3.00     2.33     2.79     NO
 DNOVX05Q         0   0.57095E-08  633495.6 3674986.9     0.0     3.00     2.33     2.79     NO
 DNOVX05R         0   0.57095E-08  633500.6 3674986.9     0.0     3.00     2.33     2.79     NO
 DNOVX05S         0   0.57095E-08  633505.6 3674986.9     0.0     3.00     2.33     2.79     NO
 DNOVX05T         0   0.57095E-08  633510.6 3674986.9     0.0     3.00     2.33     2.79     NO
 DNOVX05U         0   0.57095E-08  633515.6 3674986.9     0.0     3.00     2.33     2.79     NO
 DNOVX05V         0   0.57095E-08  633520.6 3674986.9     0.0     3.00     2.33     2.79     NO
 DNOVX05W         0   0.57095E-08  633525.6 3674986.9     0.0     3.00     2.33     2.79     NO
 DNOVX05X         0   0.57095E-08  633530.6 3674987.0     0.0     3.00     2.33     2.79     NO
 DNOVX05Y         0   0.57095E-08  633535.6 3674987.0     0.0     3.00     2.33     2.79     NO
 DNOVX05Z         0   0.57095E-08  633540.6 3674987.0     0.0     3.00     2.33     2.79     NO
 DNOVX060         0   0.57095E-08  633545.6 3674987.0     0.0     3.00     2.33     2.79     NO
 DNOVX061         0   0.57095E-08  633550.6 3674987.0     0.0     3.00     2.33     2.79     NO
 DNOVX062         0   0.57095E-08  633555.6 3674987.0     0.0     3.00     2.33     2.79     NO
 DNOVX063         0   0.57095E-08  633560.6 3674987.0     0.0     3.00     2.33     2.79     NO
 DNOVX064         0   0.57095E-08  633565.6 3674987.0     0.0     3.00     2.33     2.79     NO
 DNOVX065         0   0.57095E-08  633570.6 3674987.0     0.0     3.00     2.33     2.79     NO
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                                 ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                                     ***
   18:39:47

   PAGE   8
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL


                                                      *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE    RELEASE    INIT.    INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X         Y     ELEV.   HEIGHT      SY       SZ     SOURCE  SCALAR VARY
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)              BY
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 DNOVX066         0   0.57095E-08  633575.6 3674987.0     0.0     3.00     2.33     2.79     NO
 DNOVX067         0   0.57095E-08  633580.6 3674987.0     0.0     3.00     2.33     2.79     NO
 DNOVX068         0   0.57095E-08  633585.6 3674987.0     0.0     3.00     2.33     2.79     NO
 DNOVX069         0   0.57095E-08  633590.6 3674987.1     0.0     3.00     2.33     2.79     NO
 DNOVX06A         0   0.57095E-08  633595.6 3674987.1     0.0     3.00     2.33     2.79     NO
 DNOVX06B         0   0.57095E-08  633600.6 3674987.1     0.0     3.00     2.33     2.79     NO
 DNOVX06C         0   0.57095E-08  633605.6 3674987.1     0.0     3.00     2.33     2.79     NO
 DNOVX06D         0   0.57095E-08  633610.6 3674987.1     0.0     3.00     2.33     2.79     NO
 DNOVX06E         0   0.57095E-08  633615.6 3674987.1     0.0     3.00     2.33     2.79     NO
 DNOVX06F         0   0.57095E-08  633620.6 3674987.1     0.0     3.00     2.33     2.79     NO
 DNOVX06G         0   0.57095E-08  633625.6 3674987.1     0.0     3.00     2.33     2.79     NO
 DNOVX06H         0   0.57095E-08  633630.6 3674987.1     0.0     3.00     2.33     2.79     NO
 DNOVX06I         0   0.57095E-08  633635.6 3674987.1     0.0     3.00     2.33     2.79     NO
 DNOVX06J         0   0.57095E-08  633640.6 3674987.1     0.0     3.00     2.33     2.79     NO
 DNOVX06K         0   0.57095E-08  633645.6 3674987.1     0.0     3.00     2.33     2.79     NO
 DNOVX06L         0   0.57095E-08  633650.6 3674987.1     0.0     3.00     2.33     2.79     NO
 DNOVX06M         0   0.57095E-08  633655.6 3674987.2     0.0     3.00     2.33     2.79     NO
 DNOVX06N         0   0.57095E-08  633660.6 3674987.2     0.0     3.00     2.33     2.79     NO
 DNOVX06O         0   0.57095E-08  633665.6 3674987.2     0.0     3.00     2.33     2.79     NO
 DNOVX06P         0   0.57095E-08  633670.6 3674987.2     0.0     3.00     2.33     2.79     NO
 DNOVX06Q         0   0.57095E-08  633675.6 3674987.2     0.0     3.00     2.33     2.79     NO
```

```
 DNOVX06R         0   0.57095E-08  633680.6 3674987.2     0.0     3.00     2.33     2.79     NO
 DNOVX06S         0   0.57095E-08  633685.6 3674987.2     0.0     3.00     2.33     2.79     NO
 DNOVX06T         0   0.57095E-08  633690.6 3674987.2     0.0     3.00     2.33     2.79     NO
 DNOVX06U         0   0.57095E-08  633695.6 3674987.2     0.0     3.00     2.33     2.79     NO
 DNOVX06V         0   0.57095E-08  633700.6 3674987.2     0.0     3.00     2.33     2.79     NO
 DNOVX06W         0   0.57095E-08  633705.6 3674987.2     0.0     3.00     2.33     2.79     NO
 DNOVX06X         0   0.57095E-08  633710.6 3674987.2     0.0     3.00     2.33     2.79     NO
 DNOVX06Y         0   0.57095E-08  633715.6 3674987.3     0.0     3.00     2.33     2.79     NO
 DNOVX06Z         0   0.57095E-08  633720.6 3674987.3     0.0     3.00     2.33     2.79     NO
 DNOVX070         0   0.57095E-08  633725.6 3674987.3     0.0     3.00     2.33     2.79     NO
 DNOVX071         0   0.57095E-08  633730.6 3674987.3     0.0     3.00     2.33     2.79     NO
 DNOVX072         0   0.57095E-08  633735.6 3674987.3     0.0     3.00     2.33     2.79     NO
 DNOVX073         0   0.57095E-08  633740.6 3674987.3     0.0     3.00     2.33     2.79     NO
 DNOVX074         0   0.57095E-08  633745.6 3674987.3     0.0     3.00     2.33     2.79     NO
 DNOVX075         0   0.57095E-08  633750.6 3674987.3     0.0     3.00     2.33     2.79     NO
 DNOVX076         0   0.57095E-08  633755.6 3674987.3     0.0     3.00     2.33     2.79     NO
 DNOVX077         0   0.57095E-08  633760.6 3674987.3     0.0     3.00     2.33     2.79     NO
 DNOVX078         0   0.57095E-08  633765.6 3674987.3     0.0     3.00     2.33     2.79     NO
 DNOVX079         0   0.57095E-08  633770.6 3674987.3     0.0     3.00     2.33     2.79     NO
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                               ***
    03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                                   ***
   18:39:47

   PAGE   9
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL


                                                  *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE     RELEASE    INIT.    INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)      X        Y     ELEV.    HEIGHT      SY       SZ     SOURCE  SCALAR VARY
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)              BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - -

 DNOVX07A         0   0.57095E-08  633775.6 3674987.4     0.0     3.00     2.33     2.79     NO
 DNOVX07B         0   0.57095E-08  633780.6 3674987.4     0.0     3.00     2.33     2.79     NO
 DNOVX07C         0   0.57095E-08  633785.6 3674987.4     0.0     3.00     2.33     2.79     NO
 DNOVX07D         0   0.57095E-08  633790.6 3674987.4     0.0     3.00     2.33     2.79     NO
 DNOVX07E         0   0.57095E-08  633795.6 3674987.4     0.0     3.00     2.33     2.79     NO
 DNOVX07F         0   0.57095E-08  633800.6 3674987.4     0.0     3.00     2.33     2.79     NO
 DNOVX07G         0   0.57095E-08  633805.6 3674987.4     0.0     3.00     2.33     2.79     NO
 DNOVX07H         0   0.57095E-08  633810.6 3674987.4     0.0     3.00     2.33     2.79     NO
 DNOVX07I         0   0.57095E-08  633815.6 3674987.4     0.0     3.00     2.33     2.79     NO
 DNOVX07J         0   0.57095E-08  633820.6 3674987.4     0.0     3.00     2.33     2.79     NO
 DNOVX07K         0   0.57095E-08  633825.6 3674987.4     0.0     3.00     2.33     2.79     NO
 DNOVX07L         0   0.57095E-08  633830.6 3674987.4     0.0     3.00     2.33     2.79     NO
 DNOVX07M         0   0.57095E-08  633835.6 3674987.4     0.0     3.00     2.33     2.79     NO
 DNOVX07N         0   0.57095E-08  633840.6 3674987.5     0.0     3.00     2.33     2.79     NO
 DNOVX07O         0   0.57095E-08  633845.6 3674987.5     0.0     3.00     2.33     2.79     NO
 DNOVX07P         0   0.57095E-08  633850.6 3674987.5     0.0     3.00     2.33     2.79     NO
 DNOVX07Q         0   0.57095E-08  633855.6 3674987.5     0.0     3.00     2.33     2.79     NO
 DNOVX07R         0   0.57095E-08  633860.6 3674987.5     0.0     3.00     2.33     2.79     NO
 DNOVX07S         0   0.57095E-08  633865.6 3674987.5     0.0     3.00     2.33     2.79     NO
 DNOVX07T         0   0.57095E-08  633870.6 3674987.5     0.0     3.00     2.33     2.79     NO
 DNOVX07U         0   0.57095E-08  633875.6 3674987.5     0.0     3.00     2.33     2.79     NO
 DNOVX07V         0   0.57095E-08  633880.6 3674987.5     0.0     3.00     2.33     2.79     NO
 DNOVX07W         0   0.57095E-08  633885.6 3674987.5     0.0     3.00     2.33     2.79     NO
 DNOVX07X         0   0.57095E-08  633890.6 3674987.5     0.0     3.00     2.33     2.79     NO
 DNOVX07Y         0   0.57095E-08  633895.6 3674987.5     0.0     3.00     2.33     2.79     NO
 DNOVX07Z         0   0.57095E-08  633900.6 3674987.6     0.0     3.00     2.33     2.79     NO
 DNOVX080         0   0.57095E-08  633905.6 3674987.6     0.0     3.00     2.33     2.79     NO
 DNOVX081         0   0.57095E-08  633910.6 3674987.6     0.0     3.00     2.33     2.79     NO
 DNOVX082         0   0.57095E-08  633915.6 3674987.6     0.0     3.00     2.33     2.79     NO
 DNOVX083         0   0.57095E-08  633920.6 3674987.6     0.0     3.00     2.33     2.79     NO
 DNOVX084         0   0.57095E-08  633925.6 3674987.6     0.0     3.00     2.33     2.79     NO
 DNOVX085         0   0.57095E-08  633930.6 3674987.6     0.0     3.00     2.33     2.79     NO
 DNOVX086         0   0.57095E-08  633935.6 3674987.6     0.0     3.00     2.33     2.79     NO
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 DNOVX087         0   0.57095E-08  633940.6 3674987.6     0.0     3.00     2.33     2.79     NO
 DNOVX088         0   0.57095E-08  633945.6 3674987.6     0.0     3.00     2.33     2.79     NO
 DNOVX089         0   0.57095E-08  633950.6 3674987.6     0.0     3.00     2.33     2.79     NO
 DNOVX08A         0   0.57095E-08  633955.6 3674987.6     0.0     3.00     2.33     2.79     NO
 DNOVX08B         0   0.57095E-08  633960.6 3674987.7     0.0     3.00     2.33     2.79     NO
 DNOVX08C         0   0.57095E-08  633965.6 3674987.7     0.0     3.00     2.33     2.79     NO
 DNOVX08D         0   0.57095E-08  633970.6 3674987.7     0.0     3.00     2.33     2.79     NO
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                                ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                                     ***
   18:39:47

   PAGE  10
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL


                                                              *** VOLUME SOURCE DATA ***

              NUMBER EMISSION RATE                    BASE    RELEASE    INIT.    INIT.   URBAN  EMISSION RATE
   SOURCE      PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY       SZ     SOURCE  SCALAR VARY
     ID        CATS.               (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)               BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - -

 DNOVX08E         0   0.57095E-08  633975.6 3674987.7     0.0     3.00     2.33     2.79     NO
 DNOVX08F         0   0.57095E-08  633980.6 3674987.7     0.0     3.00     2.33     2.79     NO
 DNOVX08G         0   0.57095E-08  633985.6 3674987.7     0.0     3.00     2.33     2.79     NO
 DNOVX08H         0   0.57095E-08  633990.6 3674987.7     0.0     3.00     2.33     2.79     NO
 DNOVX08I         0   0.57095E-08  633995.6 3674987.7     0.0     3.00     2.33     2.79     NO
 DNOVX08J         0   0.57095E-08  634000.6 3674987.7     0.0     3.00     2.33     2.79     NO
 DNOVX08K         0   0.57095E-08  634005.6 3674987.7     0.0     3.00     2.33     2.79     NO
 DNOVX08L         0   0.57095E-08  634010.6 3674987.7     0.0     3.00     2.33     2.79     NO
 DNOVX08M         0   0.57095E-08  634015.6 3674987.7     0.0     3.00     2.33     2.79     NO
 DNOVX08N         0   0.57095E-08  634020.6 3674987.7     0.0     3.00     2.33     2.79     NO
 DNOVX08O         0   0.57095E-08  634025.6 3674987.8     0.0     3.00     2.33     2.79     NO
 DNOVX08P         0   0.57095E-08  634030.6 3674987.8     0.0     3.00     2.33     2.79     NO
 DNOVX08Q         0   0.57095E-08  634035.6 3674987.8     0.0     3.00     2.33     2.79     NO
 DNOVX08R         0   0.57095E-08  634040.6 3674987.8     0.0     3.00     2.33     2.79     NO
 DNOVX08S         0   0.57095E-08  634045.6 3674987.8     0.0     3.00     2.33     2.79     NO
 DNOVX08T         0   0.57095E-08  634050.6 3674987.8     0.0     3.00     2.33     2.79     NO
 DNOVX08U         0   0.57095E-08  634055.6 3674987.8     0.0     3.00     2.33     2.79     NO
 DNOVX08V         0   0.57095E-08  634060.6 3674987.8     0.0     3.00     2.33     2.79     NO
 DNOVX08W         0   0.57095E-08  634065.6 3674987.8     0.0     3.00     2.33     2.79     NO
 DNOVX08X         0   0.57095E-08  634070.6 3674987.8     0.0     3.00     2.33     2.79     NO
 DNOVX08Y         0   0.57095E-08  634075.6 3674987.8     0.0     3.00     2.33     2.79     NO
 DNOVX08Z         0   0.57095E-08  634080.6 3674987.8     0.0     3.00     2.33     2.79     NO
 DNOVX090         0   0.57095E-08  634085.6 3674987.9     0.0     3.00     2.33     2.79     NO
 DNOVX091         0   0.57095E-08  634090.6 3674987.9     0.0     3.00     2.33     2.79     NO
 DNOVX092         0   0.57095E-08  634095.6 3674987.9     0.0     3.00     2.33     2.79     NO
 DNOVX093         0   0.57095E-08  634100.6 3674987.9     0.0     3.00     2.33     2.79     NO
 DNOVX094         0   0.57095E-08  634105.6 3674987.9     0.0     3.00     2.33     2.79     NO
 DNOVX095         0   0.57095E-08  634110.6 3674987.9     0.0     3.00     2.33     2.79     NO
 DNOVX096         0   0.57095E-08  634115.6 3674987.9     0.0     3.00     2.33     2.79     NO
 DNOVX097         0   0.57095E-08  634120.6 3674987.9     0.0     3.00     2.33     2.79     NO
 DNOVX098         0   0.57095E-08  634125.6 3674987.9     0.0     3.00     2.33     2.79     NO
 DNOVX099         0   0.57095E-08  634130.6 3674987.9     0.0     3.00     2.33     2.79     NO
 DNOVX09A         0   0.57095E-08  634135.6 3674987.9     0.0     3.00     2.33     2.79     NO
 DNOVX09B         0   0.57095E-08  634140.6 3674987.9     0.0     3.00     2.33     2.79     NO
 DNOVX09C         0   0.57095E-08  634145.6 3674988.0     0.0     3.00     2.33     2.79     NO
 DNOVX09D         0   0.57095E-08  634150.6 3674988.0     0.0     3.00     2.33     2.79     NO
 DNOVX09E         0   0.57095E-08  634155.6 3674988.0     0.0     3.00     2.33     2.79     NO
 DNOVX09F         0   0.57095E-08  634160.6 3674988.0     0.0     3.00     2.33     2.79     NO
 DNOVX09G         0   0.57095E-08  634165.6 3674988.0     0.0     3.00     2.33     2.79     NO
 DNOVX09H         0   0.57095E-08  634170.6 3674988.0     0.0     3.00     2.33     2.79     NO
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                                ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                                     ***
   18:39:47
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  PAGE  11
*** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL


                                                         *** VOLUME SOURCE DATA ***

            NUMBER EMISSION RATE                    BASE    RELEASE    INIT.    INIT.   URBAN  EMISSION RATE
  SOURCE     PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY       SZ     SOURCE  SCALAR VARY
    ID       CATS.              (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)              BY
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
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DNOVX09I         0   0.57095E-08  634175.6 3674988.0     0.0     3.00     2.33     2.79     NO
DNOVX09J         0   0.57095E-08  634180.6 3674988.0     0.0     3.00     2.33     2.79     NO
DNOVX09K         0   0.57095E-08  634185.6 3674988.0     0.0     3.00     2.33     2.79     NO
DNOVX09L         0   0.57095E-08  634190.6 3674988.0     0.0     3.00     2.33     2.79     NO
DNOVX09M         0   0.57095E-08  634195.6 3674988.0     0.0     3.00     2.33     2.79     NO
DNOVX09N         0   0.57095E-08  634200.6 3674988.0     0.0     3.00     2.33     2.79     NO
DNOVX09O         0   0.57095E-08  634205.6 3674988.0     0.0     3.00     2.33     2.79     NO
DNOVX09P         0   0.57095E-08  634210.6 3674988.1     0.0     3.00     2.33     2.79     NO
DNOVX09Q         0   0.57095E-08  634215.6 3674988.1     0.0     3.00     2.33     2.79     NO
DNOVX09R         0   0.57095E-08  634220.6 3674988.1     0.0     3.00     2.33     2.79     NO
DNOVX09S         0   0.57095E-08  634225.6 3674988.1     0.0     3.00     2.33     2.79     NO
DNOVX09T         0   0.57095E-08  634230.6 3674988.1     0.0     3.00     2.33     2.79     NO
DNOVX09U         0   0.57095E-08  634235.6 3674988.1     0.0     3.00     2.33     2.79     NO
DNOVX09V         0   0.57095E-08  634240.6 3674988.1     0.0     3.00     2.33     2.79     NO
DNOVX09W         0   0.57095E-08  634245.6 3674988.1     0.0     3.00     2.33     2.79     NO
DNOVX09X         0   0.57095E-08  634250.6 3674988.1     0.0     3.00     2.33     2.79     NO
DNOVX09Y         0   0.57095E-08  634255.6 3674988.1     0.0     3.00     2.33     2.79     NO
DNOVX09Z         0   0.57095E-08  634260.6 3674988.1     0.0     3.00     2.33     2.79     NO
DNOVX0A0         0   0.57095E-08  634265.6 3674988.1     0.0     3.00     2.33     2.79     NO
DNOVX0A1         0   0.57095E-08  634270.6 3674988.2     0.0     3.00     2.33     2.79     NO
DNOVX0A2         0   0.57095E-08  634275.6 3674988.2     0.0     3.00     2.33     2.79     NO
DNOVX0A3         0   0.57095E-08  634280.6 3674988.2     0.0     3.00     2.33     2.79     NO
DNOVX0A4         0   0.57095E-08  634285.6 3674988.2     0.0     3.00     2.33     2.79     NO
DNOVX0A5         0   0.57095E-08  634290.6 3674988.2     0.0     3.00     2.33     2.79     NO
DNOVX0A6         0   0.57095E-08  634295.6 3674988.2     0.0     3.00     2.33     2.79     NO
DNOVX0A7         0   0.57095E-08  634300.6 3674988.2     0.0     3.00     2.33     2.79     NO
DNOVX0A8         0   0.57095E-08  634305.6 3674988.2     0.0     3.00     2.33     2.79     NO
DNOVX0A9         0   0.57095E-08  634310.6 3674988.2     0.0     3.00     2.33     2.79     NO
DNOVX0AA         0   0.57095E-08  634315.6 3674988.2     0.0     3.00     2.33     2.79     NO
DNOVX0AB         0   0.57095E-08  634320.6 3674988.2     0.0     3.00     2.33     2.79     NO
DNOVX0AC         0   0.57095E-08  634325.6 3674988.2     0.0     3.00     2.33     2.79     NO
DNOVX0AD         0   0.57095E-08  634330.6 3674988.3     0.0     3.00     2.33     2.79     NO
DNOVX0AE         0   0.57095E-08  634335.6 3674988.3     0.0     3.00     2.33     2.79     NO
DNOVX0AF         0   0.57095E-08  634340.6 3674988.3     0.0     3.00     2.33     2.79     NO
DNOVX0AG         0   0.57095E-08  634345.6 3674988.3     0.0     3.00     2.33     2.79     NO
DNOVX0AH         0   0.57095E-08  634350.6 3674988.3     0.0     3.00     2.33     2.79     NO
DNOVX0AI         0   0.57095E-08  634355.6 3674988.3     0.0     3.00     2.33     2.79     NO
DNOVX0AJ         0   0.57095E-08  634360.6 3674988.3     0.0     3.00     2.33     2.79     NO
DNOVX0AK         0   0.57095E-08  634365.6 3674988.3     0.0     3.00     2.33     2.79     NO
DNOVX0AL         0   0.57095E-08  634370.6 3674988.3     0.0     3.00     2.33     2.79     NO
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                               ***
    03/16/21
*** AERMET - VERSION  14134 ***   ***                                                                     ***
  18:39:47

  PAGE  12
*** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL


                                                         *** VOLUME SOURCE DATA ***

            NUMBER EMISSION RATE                    BASE    RELEASE    INIT.    INIT.   URBAN  EMISSION RATE
  SOURCE     PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY       SZ     SOURCE  SCALAR VARY
    ID       CATS.              (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)              BY
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - -
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 DNOVX0AM        0   0.57095E-08  634375.6 3674988.3     0.0     3.00     2.33     2.79     NO
 DNOVX0AN        0   0.57095E-08  634380.6 3674988.3     0.0     3.00     2.33     2.79     NO
 DNOVX0AO        0   0.57095E-08  634385.6 3674988.3     0.0     3.00     2.33     2.79     NO
 DNOVX0AP        0   0.57095E-08  634390.6 3674988.3     0.0     3.00     2.33     2.79     NO
 DNOVX0AQ        0   0.57095E-08  634395.6 3674988.4     0.0     3.00     2.33     2.79     NO
 DNOVX0AR        0   0.57095E-08  634400.6 3674988.4     0.0     3.00     2.33     2.79     NO
 DNOVX0AS        0   0.57095E-08  634405.6 3674988.4     0.0     3.00     2.33     2.79     NO
 DNOVX0AT        0   0.57095E-08  634410.6 3674988.4     0.0     3.00     2.33     2.79     NO
 DNOVX0AU        0   0.57095E-08  634415.6 3674988.4     0.0     3.00     2.33     2.79     NO
 DNOVX0AV        0   0.57095E-08  634420.6 3674988.4     0.0     3.00     2.33     2.79     NO
 DNOVX0AW        0   0.57095E-08  634425.6 3674988.4     0.0     3.00     2.33     2.79     NO
 DNOVX0AX        0   0.57095E-08  634430.6 3674988.4     0.0     3.00     2.33     2.79     NO
 DNOVX0AY        0   0.57095E-08  634435.6 3674988.4     0.0     3.00     2.33     2.79     NO
 DNOVX0AZ        0   0.57095E-08  634440.6 3674988.4     0.0     3.00     2.33     2.79     NO
 DNOVX0B0        0   0.57095E-08  634445.6 3674988.4     0.0     3.00     2.33     2.79     NO
 DNOVX0B1        0   0.57095E-08  634450.6 3674988.4     0.0     3.00     2.33     2.79     NO
 DNOVX0B2        0   0.57095E-08  634455.6 3674988.5     0.0     3.00     2.33     2.79     NO
 DNOVX0B3        0   0.57095E-08  634460.6 3674988.5     0.0     3.00     2.33     2.79     NO
 DNOVX0B4        0   0.57095E-08  634465.6 3674988.5     0.0     3.00     2.33     2.79     NO
 DNOVX0B5        0   0.57095E-08  634470.6 3674988.5     0.0     3.00     2.33     2.79     NO
 DNOVX0B6        0   0.57095E-08  634475.6 3674988.5     0.0     3.00     2.33     2.79     NO
 DNOVX0B7        0   0.57095E-08  634480.6 3674988.5     0.0     3.00     2.33     2.79     NO
 DNOVX0B8        0   0.57095E-08  634485.6 3674988.5     0.0     3.00     2.33     2.79     NO
 DNOVX0B9        0   0.57095E-08  634490.6 3674988.5     0.0     3.00     2.33     2.79     NO
 DNOVX0BA        0   0.57095E-08  634495.6 3674988.5     0.0     3.00     2.33     2.79     NO
 DNOVX0BB        0   0.57095E-08  634500.6 3674988.5     0.0     3.00     2.33     2.79     NO
 DNOVX0BC        0   0.57095E-08  634505.6 3674988.5     0.0     3.00     2.33     2.79     NO
 DNOVX0BD        0   0.57095E-08  634510.6 3674988.5     0.0     3.00     2.33     2.79     NO
 DNOVX0BE        0   0.57095E-08  634515.6 3674988.6     0.0     3.00     2.33     2.79     NO
 DNOVX0BF        0   0.57095E-08  634520.6 3674988.6     0.0     3.00     2.33     2.79     NO
 DNOVX0BG        0   0.57095E-08  634525.6 3674988.6     0.0     3.00     2.33     2.79     NO
 DNOVX0BH        0   0.57095E-08  634530.6 3674988.6     0.0     3.00     2.33     2.79     NO
 DNOVX0BI        0   0.57095E-08  634535.6 3674988.6     0.0     3.00     2.33     2.79     NO
 DNOVX0BJ        0   0.57095E-08  634540.6 3674988.6     0.0     3.00     2.33     2.79     NO
 DNOVX0BK        0   0.57095E-08  634545.6 3674988.6     0.0     3.00     2.33     2.79     NO
 DNOVX0BL        0   0.57095E-08  634550.6 3674988.6     0.0     3.00     2.33     2.79     NO
 DNOVX0BM        0   0.57095E-08  634555.6 3674988.6     0.0     3.00     2.33     2.79     NO
 DNOVX0BN        0   0.57095E-08  634560.6 3674988.6     0.0     3.00     2.33     2.79     NO
 DNOVX0BO        0   0.57095E-08  634565.6 3674988.6     0.0     3.00     2.33     2.79     NO
 DNOVX0BP        0   0.57095E-08  634570.6 3674988.6     0.0     3.00     2.33     2.79     NO
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                          ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                              ***
   18:39:47

   PAGE  13
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL


                                        *** VOLUME SOURCE DATA ***

              NUMBER EMISSION RATE                    BASE    RELEASE    INIT.    INIT.   URBAN  EMISSION RATE
   SOURCE      PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY       SZ     SOURCE  SCALAR VARY
     ID        CATS.               (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)              BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - -

 DNOVX0BQ        0   0.57095E-08  634575.6 3674988.6     0.0     3.00     2.33     2.79     NO
 DNOVX0BR        0   0.57095E-08  634580.6 3674988.7     0.0     3.00     2.33     2.79     NO
 DNOVX0BS        0   0.57095E-08  634585.6 3674988.7     0.0     3.00     2.33     2.79     NO
 DNOVX0BT        0   0.57095E-08  634590.6 3674988.7     0.0     3.00     2.33     2.79     NO
 DNOVX0BU        0   0.57095E-08  634595.6 3674988.7     0.0     3.00     2.33     2.79     NO
 DNOVX0BV        0   0.57095E-08  634600.6 3674988.7     0.0     3.00     2.33     2.79     NO
 DNOVX0BW        0   0.57095E-08  634605.6 3674988.7     0.0     3.00     2.33     2.79     NO
 DNOVX0BX        0   0.57095E-08  634610.6 3674988.7     0.0     3.00     2.33     2.79     NO
 DNOVX0BY        0   0.57095E-08  634615.6 3674988.7     0.0     3.00     2.33     2.79     NO
 DNOVX0BZ        0   0.57095E-08  634620.6 3674988.7     0.0     3.00     2.33     2.79     NO
 DNOVX0C0        0   0.57095E-08  634625.6 3674988.7     0.0     3.00     2.33     2.79     NO
 DNOVX0C1        0   0.57095E-08  634630.6 3674988.7     0.0     3.00     2.33     2.79     NO
```

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 DNOVX0C2         0   0.57095E-08  634635.6 3674988.7     0.0     3.00     2.33     2.79     NO
 DNOVX0C3         0   0.57095E-08  634640.6 3674988.8     0.0     3.00     2.33     2.79     NO
 DNOVX0C4         0   0.57095E-08  634645.6 3674988.8     0.0     3.00     2.33     2.79     NO
 DNOVX0C5         0   0.57095E-08  634650.6 3674988.8     0.0     3.00     2.33     2.79     NO
 DNOVX0C6         0   0.57095E-08  634655.6 3674988.8     0.0     3.00     2.33     2.79     NO
 DNOVX0C7         0   0.57095E-08  634660.6 3674988.8     0.0     3.00     2.33     2.79     NO
 DNOVX0C8         0   0.57095E-08  634665.6 3674988.8     0.0     3.00     2.33     2.79     NO
 DNOVX0C9         0   0.57095E-08  634670.6 3674988.8     0.0     3.00     2.33     2.79     NO
 DNOVX0CA         0   0.57095E-08  634675.6 3674988.8     0.0     3.00     2.33     2.79     NO
 DNOVX0CB         0   0.57095E-08  634680.6 3674988.8     0.0     3.00     2.33     2.79     NO
 DNOVX0CC         0   0.57095E-08  634685.6 3674988.8     0.0     3.00     2.33     2.79     NO
 DNOVX0CD         0   0.57095E-08  634690.6 3674988.8     0.0     3.00     2.33     2.79     NO
 DNOVX0CE         0   0.57095E-08  634695.6 3674988.8     0.0     3.00     2.33     2.79     NO
 DNOVX0CF         0   0.57095E-08  634700.6 3674988.9     0.0     3.00     2.33     2.79     NO
 DNOVX0CG         0   0.57095E-08  634705.6 3674988.9     0.0     3.00     2.33     2.79     NO
 DNOVX0CH         0   0.57095E-08  634710.6 3674988.9     0.0     3.00     2.33     2.79     NO
 DNOVX0CI         0   0.57095E-08  634715.6 3674988.9     0.0     3.00     2.33     2.79     NO
 DNOVX0CJ         0   0.57095E-08  634720.6 3674988.9     0.0     3.00     2.33     2.79     NO
 DNOVX0CK         0   0.57095E-08  634725.6 3674988.9     0.0     3.00     2.33     2.79     NO
 DNOVX0CL         0   0.57095E-08  634730.6 3674988.9     0.0     3.00     2.33     2.79     NO
 DNOVX0CM         0   0.57095E-08  634735.6 3674988.9     0.0     3.00     2.33     2.79     NO
 DNOVX0CN         0   0.57095E-08  634740.6 3674988.9     0.0     3.00     2.33     2.79     NO
 DNOVX0CO         0   0.57095E-08  634745.6 3674988.9     0.0     3.00     2.33     2.79     NO
 DNOVX0CP         0   0.57095E-08  634750.6 3674988.9     0.0     3.00     2.33     2.79     NO
 DNOVX0CQ         0   0.57095E-08  634755.6 3674988.9     0.0     3.00     2.33     2.79     NO
 DNOVX0CR         0   0.57095E-08  634760.6 3674988.9     0.0     3.00     2.33     2.79     NO
 DNOVX0CS         0   0.57095E-08  634765.6 3674989.0     0.0     3.00     2.33     2.79     NO
 DNOVX0CT         0   0.57095E-08  634770.6 3674989.0     0.0     3.00     2.33     2.79     NO
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                      ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                          ***
   18:39:47

   PAGE  14
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL


                                                  *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE    RELEASE    INIT.    INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X         Y     ELEV.   HEIGHT      SY       SZ     SOURCE  SCALAR VARY
     ID         CATS.              (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)              BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - -

 DNOVX0CU         0   0.57095E-08  634775.6 3674989.0     0.0     3.00     2.33     2.79     NO
 DNOVX0CV         0   0.57095E-08  634780.6 3674989.0     0.0     3.00     2.33     2.79     NO
 DNOVX0CW         0   0.57095E-08  634785.6 3674989.0     0.0     3.00     2.33     2.79     NO
 DNOVX0CX         0   0.57095E-08  634790.6 3674989.0     0.0     3.00     2.33     2.79     NO
 DNOVX0CY         0   0.57095E-08  634795.6 3674989.0     0.0     3.00     2.33     2.79     NO
 DNOVX0CZ         0   0.57095E-08  634800.6 3674989.0     0.0     3.00     2.33     2.79     NO
 DNOVX0D0         0   0.57095E-08  634805.6 3674989.0     0.0     3.00     2.33     2.79     NO
 DNOVX0D1         0   0.57095E-08  634810.6 3674989.0     0.0     3.00     2.33     2.79     NO
 DNOVX0D2         0   0.57095E-08  634815.6 3674989.0     0.0     3.00     2.33     2.79     NO
 DNOVX0D3         0   0.57095E-08  634820.6 3674989.0     0.0     3.00     2.33     2.79     NO
 DNOVX0D4         0   0.57095E-08  634825.6 3674989.1     0.0     3.00     2.33     2.79     NO
 DNOVX0D5         0   0.57095E-08  634830.6 3674989.1     0.0     3.00     2.33     2.79     NO
 DNOVX0D6         0   0.57095E-08  634835.6 3674989.1     0.0     3.00     2.33     2.79     NO
 DNOVX0D7         0   0.57095E-08  634840.6 3674989.1     0.0     3.00     2.33     2.79     NO
 DNOVX0D8         0   0.57095E-08  634845.6 3674989.1     0.0     3.00     2.33     2.79     NO
 DNOVX0D9         0   0.57095E-08  634850.6 3674989.1     0.0     3.00     2.33     2.79     NO
 DNOVX0DA         0   0.57095E-08  634855.6 3674989.1     0.0     3.00     2.33     2.79     NO
 DNOVX0DB         0   0.57095E-08  634860.6 3674989.1     0.0     3.00     2.33     2.79     NO
 DNOVX0DC         0   0.57095E-08  634865.6 3674989.1     0.0     3.00     2.33     2.79     NO
 DNOVX0DD         0   0.57095E-08  634870.6 3674989.1     0.0     3.00     2.33     2.79     NO
 DNOVX0DE         0   0.57095E-08  634875.6 3674989.1     0.0     3.00     2.33     2.79     NO
 DNOVX0DF         0   0.57095E-08  634880.6 3674989.1     0.0     3.00     2.33     2.79     NO
 DNOVX0DG         0   0.57095E-08  634885.6 3674989.2     0.0     3.00     2.33     2.79     NO
 DNOVX0DH         0   0.57095E-08  634890.6 3674989.2     0.0     3.00     2.33     2.79     NO
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 DNOVX0DI         0   0.57095E-08  634895.6 3674989.2     0.0     3.00     2.33     2.79     NO
 DNOVX0DJ         0   0.57095E-08  634900.6 3674989.2     0.0     3.00     2.33     2.79     NO
 DNOVX0DK         0   0.57095E-08  634905.6 3674989.2     0.0     3.00     2.33     2.79     NO
 DNOVX0DL         0   0.57095E-08  634910.6 3674989.2     0.0     3.00     2.33     2.79     NO
 DNOVX0DM         0   0.57095E-08  634915.6 3674989.2     0.0     3.00     2.33     2.79     NO
 DNOVX0DN         0   0.57095E-08  634920.6 3674989.2     0.0     3.00     2.33     2.79     NO
 DNOVX0DO         0   0.57095E-08  634925.6 3674989.2     0.0     3.00     2.33     2.79     NO
 DNOVX0DP         0   0.57095E-08  634930.6 3674989.2     0.0     3.00     2.33     2.79     NO
 DNOVX0DQ         0   0.57095E-08  634935.6 3674989.2     0.0     3.00     2.33     2.79     NO
 DNOVX0DR         0   0.57095E-08  634940.6 3674989.2     0.0     3.00     2.33     2.79     NO
 DNOVX0DS         0   0.57095E-08  634945.6 3674989.2     0.0     3.00     2.33     2.79     NO
 DNOVX0DT         0   0.57095E-08  634950.6 3674989.3     0.0     3.00     2.33     2.79     NO
 DNOVX0DU         0   0.57095E-08  634955.6 3674989.3     0.0     3.00     2.33     2.79     NO
 DNOVX0DV         0   0.57095E-08  634960.6 3674989.3     0.0     3.00     2.33     2.79     NO
 DNOVX0DW         0   0.57095E-08  634965.6 3674989.3     0.0     3.00     2.33     2.79     NO
 DNOVX0DX         0   0.57095E-08  634970.6 3674989.3     0.0     3.00     2.33     2.79     NO
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                      ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                            ***
   18:39:47

   PAGE  15
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL


                                                *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE    RELEASE    INIT.    INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X         Y     ELEV.   HEIGHT      SY       SZ     SOURCE  SCALAR VARY
     ID         CATS.               (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)              BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - -

 DNOVX0DY         0   0.57095E-08  634975.6 3674989.3     0.0     3.00     2.33     2.79     NO
 DNOVX0DZ         0   0.57095E-08  634980.6 3674989.3     0.0     3.00     2.33     2.79     NO
 DNOVX0E0         0   0.57095E-08  634985.6 3674989.3     0.0     3.00     2.33     2.79     NO
 DNOVX0E1         0   0.57095E-08  634990.6 3674989.3     0.0     3.00     2.33     2.79     NO
 DNOVX0E2         0   0.57095E-08  634995.6 3674989.3     0.0     3.00     2.33     2.79     NO
 DNOVX0E3         0   0.57095E-08  635000.6 3674989.3     0.0     3.00     2.33     2.79     NO
 DNOVX0E4         0   0.57095E-08  635005.6 3674989.3     0.0     3.00     2.33     2.79     NO
 DNOVX0E5         0   0.57095E-08  635010.6 3674989.4     0.0     3.00     2.33     2.79     NO
 DNOVX0E6         0   0.57095E-08  635015.6 3674989.4     0.0     3.00     2.33     2.79     NO
 DNOVX0E7         0   0.57095E-08  635020.6 3674989.4     0.0     3.00     2.33     2.79     NO
 DNOVX0E8         0   0.57095E-08  635025.6 3674989.4     0.0     3.00     2.33     2.79     NO
 DNOVX0E9         0   0.57095E-08  635030.6 3674989.4     0.0     3.00     2.33     2.79     NO
 DNOVX0EA         0   0.57095E-08  635035.6 3674989.4     0.0     3.00     2.33     2.79     NO
 DNOVX0EB         0   0.57095E-08  635040.6 3674989.4     0.0     3.00     2.33     2.79     NO
 DNOVX0EC         0   0.57095E-08  635045.6 3674989.4     0.0     3.00     2.33     2.79     NO
 DNOVX0ED         0   0.57095E-08  635050.6 3674989.4     0.0     3.00     2.33     2.79     NO
 DNOVX0EE         0   0.57095E-08  635055.6 3674989.4     0.0     3.00     2.33     2.79     NO
 DNOVX0EF         0   0.57095E-08  635060.6 3674989.4     0.0     3.00     2.33     2.79     NO
 DNOVX0EG         0   0.57095E-08  635065.6 3674989.4     0.0     3.00     2.33     2.79     NO
 DNOVX0EH         0   0.57095E-08  635070.6 3674989.5     0.0     3.00     2.33     2.79     NO
 DNOVX0EI         0   0.57095E-08  635075.6 3674989.5     0.0     3.00     2.33     2.79     NO
 DNOVX0EJ         0   0.57095E-08  635080.6 3674989.5     0.0     3.00     2.33     2.79     NO
 DNOVX0EK         0   0.57095E-08  635085.6 3674989.5     0.0     3.00     2.33     2.79     NO
 DNOVX0EL         0   0.57095E-08  635090.6 3674989.5     0.0     3.00     2.33     2.79     NO
 DNOVX0EM         0   0.57095E-08  635095.6 3674989.5     0.0     3.00     2.33     2.79     NO
 DNOVX0EN         0   0.57095E-08  635100.6 3674989.5     0.0     3.00     2.33     2.79     NO
 DNOVX0EO         0   0.57095E-08  635105.6 3674989.5     0.0     3.00     2.33     2.79     NO
 DNOVX0EP         0   0.57095E-08  635110.6 3674989.5     0.0     3.00     2.33     2.79     NO
 DNOVX0EQ         0   0.57095E-08  635115.6 3674989.5     0.0     3.00     2.33     2.79     NO
 DNOVX0ER         0   0.57095E-08  635120.6 3674989.5     0.0     3.00     2.33     2.79     NO
 DNOVX0ES         0   0.57095E-08  635125.6 3674989.5     0.0     3.00     2.33     2.79     NO
 DNOVX0ET         0   0.57095E-08  635130.6 3674989.5     0.0     3.00     2.33     2.79     NO
 DNOVX0EU         0   0.57095E-08  635135.6 3674989.6     0.0     3.00     2.33     2.79     NO
 DNOVX0EV         0   0.57095E-08  635140.6 3674989.6     0.0     3.00     2.33     2.79     NO
 DNOVX0EW         0   0.57095E-08  635145.6 3674989.6     0.0     3.00     2.33     2.79     NO
 DNOVX0EX         0   0.57095E-08  635150.6 3674989.6     0.0     3.00     2.33     2.79     NO
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 DNOVX0EY        0   0.57095E-08  635155.6 3674989.6     0.0     3.00     2.33     2.79     NO
 DNOVX0EZ        0   0.57095E-08  635160.6 3674989.6     0.0     3.00     2.33     2.79     NO
 DNOVX0F0        0   0.57095E-08  635165.6 3674989.6     0.0     3.00     2.33     2.79     NO
 DNOVX0F1        0   0.57095E-08  635170.6 3674989.6     0.0     3.00     2.33     2.79     NO
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                          ***
    03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                              ***
   18:39:47

   PAGE  16
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL


                                                  *** VOLUME SOURCE DATA ***

               NUMBER EMISSION RATE                    BASE    RELEASE    INIT.    INIT.   URBAN  EMISSION RATE
   SOURCE       PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY       SZ     SOURCE  SCALAR VARY
     ID         CATS.              (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)              BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - -

 DNOVX0F2        0   0.57095E-08  635175.6 3674989.6     0.0     3.00     2.33     2.79     NO
 DNOVX0F3        0   0.57095E-08  635180.6 3674989.6     0.0     3.00     2.33     2.79     NO
 DNOVX0F4        0   0.57095E-08  635185.6 3674989.6     0.0     3.00     2.33     2.79     NO
 DNOVX0F5        0   0.57095E-08  635190.6 3674989.6     0.0     3.00     2.33     2.79     NO
 DNOVX0F6        0   0.57095E-08  635195.6 3674989.7     0.0     3.00     2.33     2.79     NO
 DNOVX0F7        0   0.57095E-08  635200.6 3674989.7     0.0     3.00     2.33     2.79     NO
 DNOVX0F8        0   0.57095E-08  635205.6 3674989.7     0.0     3.00     2.33     2.79     NO
 DNOVX0F9        0   0.57095E-08  635210.6 3674989.7     0.0     3.00     2.33     2.79     NO
 DNOVX0FA        0   0.57095E-08  635215.6 3674989.7     0.0     3.00     2.33     2.79     NO
 DNOVX0FB        0   0.57095E-08  635220.6 3674989.7     0.0     3.00     2.33     2.79     NO
 DNOVX0FC        0   0.57095E-08  635225.6 3674989.7     0.0     3.00     2.33     2.79     NO
 DNOVX0FD        0   0.57095E-08  635230.6 3674989.7     0.0     3.00     2.33     2.79     NO
 DNOVX0FE        0   0.57095E-08  635235.6 3674989.7     0.0     3.00     2.33     2.79     NO
 DNOVX0FF        0   0.57095E-08  635240.6 3674989.7     0.0     3.00     2.33     2.79     NO
 DNOVX0FG        0   0.57095E-08  635245.6 3674989.7     0.0     3.00     2.33     2.79     NO
 DNOVX0FH        0   0.57095E-08  635250.6 3674989.7     0.0     3.00     2.33     2.79     NO
 DNOVX0FI        0   0.57095E-08  635255.6 3674989.8     0.0     3.00     2.33     2.79     NO
 DNOVX0FJ        0   0.57095E-08  635260.6 3674989.8     0.0     3.00     2.33     2.79     NO
 DNOVX0FK        0   0.57095E-08  635265.6 3674989.8     0.0     3.00     2.33     2.79     NO
 DNOVX0FL        0   0.57095E-08  635270.6 3674989.8     0.0     3.00     2.33     2.79     NO
 DNOVX0FM        0   0.57095E-08  635275.6 3674989.8     0.0     3.00     2.33     2.79     NO
 DNOVX0FN        0   0.57095E-08  635280.6 3674989.8     0.0     3.00     2.33     2.79     NO
 DNOVX0FO        0   0.57095E-08  635285.6 3674989.8     0.0     3.00     2.33     2.79     NO
 DNOVX0FP        0   0.57095E-08  635290.6 3674989.8     0.0     3.00     2.33     2.79     NO
 DNOVX0FQ        0   0.57095E-08  635295.6 3674989.8     0.0     3.00     2.33     2.79     NO
 DNOVX0FR        0   0.57095E-08  635300.6 3674989.8     0.0     3.00     2.33     2.79     NO
 DNOVX0FS        0   0.57095E-08  635305.6 3674989.8     0.0     3.00     2.33     2.79     NO
 DNOVX0FT        0   0.57095E-08  635310.6 3674989.8     0.0     3.00     2.33     2.79     NO
 DNOVX0FU        0   0.57095E-08  635315.6 3674989.8     0.0     3.00     2.33     2.79     NO
 DNOVX0FV        0   0.57095E-08  635320.6 3674989.9     0.0     3.00     2.33     2.79     NO
 DNOVX0FW        0   0.57095E-08  635325.6 3674989.9     0.0     3.00     2.33     2.79     NO
 DNOVX0FX        0   0.57095E-08  635330.6 3674989.9     0.0     3.00     2.33     2.79     NO
 DNOVX0FY        0   0.57095E-08  635335.6 3674989.9     0.0     3.00     2.33     2.79     NO
 DNOVX0FZ        0   0.57095E-08  635340.6 3674989.9     0.0     3.00     2.33     2.79     NO
 DNOVX0G0        0   0.57095E-08  635345.6 3674989.9     0.0     3.00     2.33     2.79     NO
 DNOVX0G1        0   0.57095E-08  635350.6 3674989.9     0.0     3.00     2.33     2.79     NO
 DNOVX0G2        0   0.57095E-08  635355.6 3674989.9     0.0     3.00     2.33     2.79     NO
 DNOVX0G3        0   0.57095E-08  635360.6 3674989.9     0.0     3.00     2.33     2.79     NO
 DNOVX0G4        0   0.57095E-08  635365.6 3674989.9     0.0     3.00     2.33     2.79     NO
 DNOVX0G5        0   0.57095E-08  635370.6 3674989.9     0.0     3.00     2.33     2.79     NO
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                          ***
    03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                              ***
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   PAGE  17
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL
```

```
                                                   *** VOLUME SOURCE DATA ***

              NUMBER EMISSION RATE                    BASE    RELEASE    INIT.    INIT.   URBAN  EMISSION RATE
   SOURCE      PART.  (GRAMS/SEC)     X        Y      ELEV.   HEIGHT      SY       SZ     SOURCE  SCALAR VARY
     ID        CATS.              (METERS) (METERS) (METERS) (METERS) (METERS) (METERS)              BY
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - -

 DNOVX0G6         0   0.57095E-08  635375.6 3674989.9     0.0     3.00     2.33     2.79     NO
 DNOVX0G7         0   0.57095E-08  635380.6 3674990.0     0.0     3.00     2.33     2.79     NO
 DNOVX0G8         0   0.57095E-08  635385.6 3674990.0     0.0     3.00     2.33     2.79     NO
 DNOVX0G9         0   0.57095E-08  635390.6 3674990.0     0.0     3.00     2.33     2.79     NO
 DNOVX0GA         0   0.57095E-08  635395.6 3674990.0     0.0     3.00     2.33     2.79     NO
 DNOVX0GB         0   0.57095E-08  635400.6 3674990.0     0.0     3.00     2.33     2.79     NO
 DNOVX0GC         0   0.57095E-08  635405.6 3674990.0     0.0     3.00     2.33     2.79     NO
 DNOVX0GD         0   0.57095E-08  635410.6 3674990.0     0.0     3.00     2.33     2.79     NO
 DNOVX0GE         0   0.57095E-08  635415.6 3674990.0     0.0     3.00     2.33     2.79     NO
 DNOVX0GF         0   0.57095E-08  635420.6 3674990.0     0.0     3.00     2.33     2.79     NO
 DNOVX0GG         0   0.57095E-08  635425.6 3674990.0     0.0     3.00     2.33     2.79     NO
 DNOVX0GH         0   0.57095E-08  635430.6 3674990.0     0.0     3.00     2.33     2.79     NO
 DNOVX0GI         0   0.57095E-08  635435.6 3674990.0     0.0     3.00     2.33     2.79     NO
 DNOVX0GJ         0   0.57095E-08  635440.6 3674990.1     0.0     3.00     2.33     2.79     NO
 DNOVX0GK         0   0.57095E-08  635445.6 3674990.1     0.0     3.00     2.33     2.79     NO
 DNOVX0GL         0   0.57095E-08  635450.6 3674990.1     0.0     3.00     2.33     2.79     NO
 DNOVX0GM         0   0.57095E-08  635455.6 3674990.1     0.0     3.00     2.33     2.79     NO
 DNOVX0GN         0   0.57095E-08  635460.6 3674990.1     0.0     3.00     2.33     2.79     NO
 DNOVX0GO         0   0.57095E-08  635465.6 3674990.1     0.0     3.00     2.33     2.79     NO
 DNOVX0GP         0   0.57095E-08  635470.6 3674990.1     0.0     3.00     2.33     2.79     NO
 DNOVX0GQ         0   0.57095E-08  635475.6 3674990.1     0.0     3.00     2.33     2.79     NO
 DNOVX0GR         0   0.57095E-08  635480.6 3674990.1     0.0     3.00     2.33     2.79     NO
 DNOVX0GS         0   0.57095E-08  635485.6 3674990.1     0.0     3.00     2.33     2.79     NO
 DNOVX0GT         0   0.57095E-08  635490.6 3674990.1     0.0     3.00     2.33     2.79     NO
 DNOVX0GU         0   0.57095E-08  635495.6 3674990.1     0.0     3.00     2.33     2.79     NO
 DNOVX0GV         0   0.57095E-08  635500.6 3674990.1     0.0     3.00     2.33     2.79     NO
 DNOVX0GW         0   0.57095E-08  635505.6 3674990.2     0.0     3.00     2.33     2.79     NO
 DNOVX0GX         0   0.57095E-08  635510.6 3674990.2     0.0     3.00     2.33     2.79     NO
 DNOVX0GY         0   0.57095E-08  635515.6 3674990.2     0.0     3.00     2.33     2.79     NO
 DNOVX0GZ         0   0.57095E-08  635520.6 3674990.2     0.0     3.00     2.33     2.79     NO
 DNOVX0H0         0   0.57095E-08  635525.6 3674990.2     0.0     3.00     2.33     2.79     NO
 DNOVX0H1         0   0.57095E-08  635530.6 3674990.2     0.0     3.00     2.33     2.79     NO
 *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                                 ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                                     ***
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   PAGE  18
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL


                                              *** SOURCE IDs DEFINING SOURCE GROUPS ***

 SRCGROUP ID                                             SOURCE IDs
 -----------                                             ----------


  ALL        DNOVX000    , DNOVX001    , DNOVX002    , DNOVX003    , DNOVX004    , DNOVX005    , DNOVX006    ,
DNOVX007    ,

             DNOVX008    , DNOVX009    , DNOVX00A    , DNOVX00B    , DNOVX00C    , DNOVX00D    , DNOVX00E    ,
DNOVX00M    ,

             DNOVX00N    , DNOVX00O    , DNOVX00P    , DNOVX00Q    , DNOVX00R    , DNOVX00S    , DNOVX00T    ,
DNOVX00U    ,

             DNOVX00V    , DNOVX00W    , DNOVX00X    , DNOVX00Y    , DNOVX00Z    , DNOVX010    , DNOVX011    ,
DNOVX012    ,

             DNOVX013    , DNOVX014    , DNOVX015    , DNOVX016    , DNOVX017    , DNOVX018    , DNOVX019    ,
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DNOVX01A    ,

             DNOVX01B    , DNOVX01C    , DNOVX01D    , DNOVX01E    , DNOVX01F    , DNOVX01G    , DNOVX01H    ,
DNOVX01I    ,

             DNOVX01J    , DNOVX01K    , DNOVX01L    , DNOVX01M    , DNOVX01N    , DNOVX01O    , DNOVX01P    ,
DNOVX01Q    ,

             DNOVX01R    , DNOVX01S    , DNOVX01T    , DNOVX01U    , DNOVX01V    , DNOVX01W    , DNOVX01X    ,
DNOVX01Y    ,

             DNOVX01Z    , DNOVX020    , DNOVX021    , DNOVX022    , DNOVX023    , DNOVX024    , DNOVX025    ,
DNOVX026    ,

             DNOVX027    , DNOVX028    , DNOVX029    , DNOVX02A    , DNOVX02B    , DNOVX02C    , DNOVX02D    ,
DNOVX02E    ,

             DNOVX02F    , DNOVX02G    , DNOVX02H    , DNOVX02I    , DNOVX02J    , DNOVX02K    , DNOVX02L    ,
DNOVX02M    ,

             DNOVX02N    , DNOVX02O    , DNOVX02P    , DNOVX02Q    , DNOVX02R    , DNOVX02S    , DNOVX02T    ,
DNOVX02U    ,

             DNOVX02V    , DNOVX02W    , DNOVX02X    , DNOVX02Y    , DNOVX02Z    , DNOVX030    , DNOVX031    ,
DNOVX032    ,

             DNOVX033    , DNOVX034    , DNOVX035    , DNOVX036    , DNOVX037    , DNOVX038    , DNOVX039    ,
DNOVX03A    ,

             DNOVX03B    , DNOVX03C    , DNOVX03D    , DNOVX03E    , DNOVX03F    , DNOVX03G    , DNOVX03H    ,
DNOVX03I    ,

             DNOVX03J    , DNOVX03K    , DNOVX03L    , DNOVX03M    , DNOVX03N    , DNOVX03O    , DNOVX03P    ,
DNOVX03Q    ,

             DNOVX03R    , DNOVX03S    , DNOVX03T    , DNOVX03U    , DNOVX03V    , DNOVX03W    , DNOVX03X    ,
DNOVX03Y    ,

             DNOVX03Z    , DNOVX040    , DNOVX041    , DNOVX042    , DNOVX043    , DNOVX044    , DNOVX045    ,
DNOVX046    ,

             DNOVX047    , DNOVX048    , DNOVX049    , DNOVX04A    , DNOVX04B    , DNOVX04C    , DNOVX04D    ,
DNOVX04E    ,

             DNOVX04F    , DNOVX04G    , DNOVX04H    , DNOVX04I    , DNOVX04J    , DNOVX04K    , DNOVX04L    ,
DNOVX04M    ,
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 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL


                                             *** SOURCE IDs DEFINING SOURCE GROUPS ***

 SRCGROUP ID                                             SOURCE IDs
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             DNOVX04N    , DNOVX04O    , DNOVX04P    , DNOVX04Q    , DNOVX04R    , DNOVX04S    , DNOVX04T    ,
DNOVX04U    ,

             DNOVX04V    , DNOVX04W    , DNOVX04X    , DNOVX04Y    , DNOVX04Z    , DNOVX050    , DNOVX051    ,
DNOVX052    ,

             DNOVX053    , DNOVX054    , DNOVX055    , DNOVX056    , DNOVX057    , DNOVX058    , DNOVX059    ,
DNOVX05A    ,
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             DNOVX05B    , DNOVX05C    , DNOVX05D    , DNOVX05E    , DNOVX05F    , DNOVX05G    , DNOVX05H    ,
DNOVX05I    ,
             DNOVX05J    , DNOVX05K    , DNOVX05L    , DNOVX05M    , DNOVX05N    , DNOVX05O    , DNOVX05P    ,
DNOVX05Q    ,
             DNOVX05R    , DNOVX05S    , DNOVX05T    , DNOVX05U    , DNOVX05V    , DNOVX05W    , DNOVX05X    ,
DNOVX05Y    ,
             DNOVX05Z    , DNOVX060    , DNOVX061    , DNOVX062    , DNOVX063    , DNOVX064    , DNOVX065    ,
DNOVX066    ,
             DNOVX067    , DNOVX068    , DNOVX069    , DNOVX06A    , DNOVX06B    , DNOVX06C    , DNOVX06D    ,
DNOVX06E    ,
             DNOVX06F    , DNOVX06G    , DNOVX06H    , DNOVX06I    , DNOVX06J    , DNOVX06K    , DNOVX06L    ,
DNOVX06M    ,
             DNOVX06N    , DNOVX06O    , DNOVX06P    , DNOVX06Q    , DNOVX06R    , DNOVX06S    , DNOVX06T    ,
DNOVX06U    ,
             DNOVX06V    , DNOVX06W    , DNOVX06X    , DNOVX06Y    , DNOVX06Z    , DNOVX070    , DNOVX071    ,
DNOVX072    ,
             DNOVX073    , DNOVX074    , DNOVX075    , DNOVX076    , DNOVX077    , DNOVX078    , DNOVX079    ,
DNOVX07A    ,
             DNOVX07B    , DNOVX07C    , DNOVX07D    , DNOVX07E    , DNOVX07F    , DNOVX07G    , DNOVX07H    ,
DNOVX07I    ,
             DNOVX07J    , DNOVX07K    , DNOVX07L    , DNOVX07M    , DNOVX07N    , DNOVX07O    , DNOVX07P    ,
DNOVX07Q    ,
             DNOVX07R    , DNOVX07S    , DNOVX07T    , DNOVX07U    , DNOVX07V    , DNOVX07W    , DNOVX07X    ,
DNOVX07Y    ,
             DNOVX07Z    , DNOVX080    , DNOVX081    , DNOVX082    , DNOVX083    , DNOVX084    , DNOVX085    ,
DNOVX086    ,
             DNOVX087    , DNOVX088    , DNOVX089    , DNOVX08A    , DNOVX08B    , DNOVX08C    , DNOVX08D    ,
DNOVX08E    ,
             DNOVX08F    , DNOVX08G    , DNOVX08H    , DNOVX08I    , DNOVX08J    , DNOVX08K    , DNOVX08L    ,
DNOVX08M    ,
             DNOVX08N    , DNOVX08O    , DNOVX08P    , DNOVX08Q    , DNOVX08R    , DNOVX08S    , DNOVX08T    ,
DNOVX08U    ,
             DNOVX08V    , DNOVX08W    , DNOVX08X    , DNOVX08Y    , DNOVX08Z    , DNOVX090    , DNOVX091    ,
DNOVX092    ,
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                                 ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                                      ***
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   PAGE  20
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL


                                                     *** SOURCE IDs DEFINING SOURCE GROUPS ***

 SRCGROUP ID                                             SOURCE IDs
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             DNOVX093    , DNOVX094    , DNOVX095    , DNOVX096    , DNOVX097    , DNOVX098    , DNOVX099    ,
DNOVX09A    ,
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             DNOVX09B    , DNOVX09C    , DNOVX09D    , DNOVX09E    , DNOVX09F    , DNOVX09G    , DNOVX09H    ,
DNOVX09I    ,
             DNOVX09J    , DNOVX09K    , DNOVX09L    , DNOVX09M    , DNOVX09N    , DNOVX09O    , DNOVX09P    ,
DNOVX09Q    ,
             DNOVX09R    , DNOVX09S    , DNOVX09T    , DNOVX09U    , DNOVX09V    , DNOVX09W    , DNOVX09X    ,
DNOVX09Y    ,
             DNOVX09Z    , DNOVX0A0    , DNOVX0A1    , DNOVX0A2    , DNOVX0A3    , DNOVX0A4    , DNOVX0A5    ,
DNOVX0A6    ,
             DNOVX0A7    , DNOVX0A8    , DNOVX0A9    , DNOVX0AA    , DNOVX0AB    , DNOVX0AC    , DNOVX0AD    ,
DNOVX0AE    ,
             DNOVX0AF    , DNOVX0AG    , DNOVX0AH    , DNOVX0AI    , DNOVX0AJ    , DNOVX0AK    , DNOVX0AL    ,
DNOVX0AM    ,
             DNOVX0AN    , DNOVX0AO    , DNOVX0AP    , DNOVX0AQ    , DNOVX0AR    , DNOVX0AS    , DNOVX0AT    ,
DNOVX0AU    ,
             DNOVX0AV    , DNOVX0AW    , DNOVX0AX    , DNOVX0AY    , DNOVX0AZ    , DNOVX0B0    , DNOVX0B1    ,
DNOVX0B2    ,
             DNOVX0B3    , DNOVX0B4    , DNOVX0B5    , DNOVX0B6    , DNOVX0B7    , DNOVX0B8    , DNOVX0B9    ,
DNOVX0BA    ,
             DNOVX0BB    , DNOVX0BC    , DNOVX0BD    , DNOVX0BE    , DNOVX0BF    , DNOVX0BG    , DNOVX0BH    ,
DNOVX0BI    ,
             DNOVX0BJ    , DNOVX0BK    , DNOVX0BL    , DNOVX0BM    , DNOVX0BN    , DNOVX0BO    , DNOVX0BP    ,
DNOVX0BQ    ,
             DNOVX0BR    , DNOVX0BS    , DNOVX0BT    , DNOVX0BU    , DNOVX0BV    , DNOVX0BW    , DNOVX0BX    ,
DNOVX0BY    ,
             DNOVX0BZ    , DNOVX0C0    , DNOVX0C1    , DNOVX0C2    , DNOVX0C3    , DNOVX0C4    , DNOVX0C5    ,
DNOVX0C6    ,
             DNOVX0C7    , DNOVX0C8    , DNOVX0C9    , DNOVX0CA    , DNOVX0CB    , DNOVX0CC    , DNOVX0CD    ,
DNOVX0CE    ,
             DNOVX0CF    , DNOVX0CG    , DNOVX0CH    , DNOVX0CI    , DNOVX0CJ    , DNOVX0CK    , DNOVX0CL    ,
DNOVX0CM    ,
             DNOVX0CN    , DNOVX0CO    , DNOVX0CP    , DNOVX0CQ    , DNOVX0CR    , DNOVX0CS    , DNOVX0CT    ,
DNOVX0CU    ,
             DNOVX0CV    , DNOVX0CW    , DNOVX0CX    , DNOVX0CY    , DNOVX0CZ    , DNOVX0D0    , DNOVX0D1    ,
DNOVX0D2    ,
             DNOVX0D3    , DNOVX0D4    , DNOVX0D5    , DNOVX0D6    , DNOVX0D7    , DNOVX0D8    , DNOVX0D9    ,
DNOVX0DA    ,
             DNOVX0DB    , DNOVX0DC    , DNOVX0DD    , DNOVX0DE    , DNOVX0DF    , DNOVX0DG    , DNOVX0DH    ,
DNOVX0DI    ,
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                                 ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                                      ***
   18:39:47

   PAGE  21
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL


                                            *** SOURCE IDs DEFINING SOURCE GROUPS ***

 SRCGROUP ID                                          SOURCE IDs
 -----------                                          ----------
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```
             DNOVX0DJ    , DNOVX0DK    , DNOVX0DL    , DNOVX0DM    , DNOVX0DN    , DNOVX0DO    , DNOVX0DP    ,
DNOVX0DQ    ,
             DNOVX0DR    , DNOVX0DS    , DNOVX0DT    , DNOVX0DU    , DNOVX0DV    , DNOVX0DW    , DNOVX0DX    ,
DNOVX0DY    ,
             DNOVX0DZ    , DNOVX0E0    , DNOVX0E1    , DNOVX0E2    , DNOVX0E3    , DNOVX0E4    , DNOVX0E5    ,
DNOVX0E6    ,
             DNOVX0E7    , DNOVX0E8    , DNOVX0E9    , DNOVX0EA    , DNOVX0EB    , DNOVX0EC    , DNOVX0ED    ,
DNOVX0EE    ,
             DNOVX0EF    , DNOVX0EG    , DNOVX0EH    , DNOVX0EI    , DNOVX0EJ    , DNOVX0EK    , DNOVX0EL    ,
DNOVX0EM    ,
             DNOVX0EN    , DNOVX0EO    , DNOVX0EP    , DNOVX0EQ    , DNOVX0ER    , DNOVX0ES    , DNOVX0ET    ,
DNOVX0EU    ,
             DNOVX0EV    , DNOVX0EW    , DNOVX0EX    , DNOVX0EY    , DNOVX0EZ    , DNOVX0F0    , DNOVX0F1    ,
DNOVX0F2    ,
             DNOVX0F3    , DNOVX0F4    , DNOVX0F5    , DNOVX0F6    , DNOVX0F7    , DNOVX0F8    , DNOVX0F9    ,
DNOVX0FA    ,
             DNOVX0FB    , DNOVX0FC    , DNOVX0FD    , DNOVX0FE    , DNOVX0FF    , DNOVX0FG    , DNOVX0FH    ,
DNOVX0FI    ,
             DNOVX0FJ    , DNOVX0FK    , DNOVX0FL    , DNOVX0FM    , DNOVX0FN    , DNOVX0FO    , DNOVX0FP    ,
DNOVX0FQ    ,
             DNOVX0FR    , DNOVX0FS    , DNOVX0FT    , DNOVX0FU    , DNOVX0FV    , DNOVX0FW    , DNOVX0FX    ,
DNOVX0FY    ,
             DNOVX0FZ    , DNOVX0G0    , DNOVX0G1    , DNOVX0G2    , DNOVX0G3    , DNOVX0G4    , DNOVX0G5    ,
DNOVX0G6    ,
             DNOVX0G7    , DNOVX0G8    , DNOVX0G9    , DNOVX0GA    , DNOVX0GB    , DNOVX0GC    , DNOVX0GD    ,
DNOVX0GE    ,
             DNOVX0GF    , DNOVX0GG    , DNOVX0GH    , DNOVX0GI    , DNOVX0GJ    , DNOVX0GK    , DNOVX0GL    ,
DNOVX0GM    ,
             DNOVX0GN    , DNOVX0GO    , DNOVX0GP    , DNOVX0GQ    , DNOVX0GR    , DNOVX0GS    , DNOVX0GT    ,
DNOVX0GU    ,
             DNOVX0GV    , DNOVX0GW    , DNOVX0GX    , DNOVX0GY    , DNOVX0GZ    , DNOVX0H0    , DNOVX0H1    ,
VDB5H000    ,
             VDB5H001    ,
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                                 ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                                      ***
   18:39:47

   PAGE  22
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

                                        *** GRIDDED RECEPTOR NETWORK SUMMARY ***

                                  *** NETWORK ID: DNOVX0H2 ;  NETWORK TYPE: GRIDCART ***

                                          *** X-COORDINATES OF GRID ***
                                                   (METERS)

       631636.2,  631781.5,  631926.8,  632072.1,  632217.4,  632362.7,  632508.0,  632653.3,  632798.6,  632943.9,
       633089.2,  633234.5,  633379.8,  633525.1,  633670.4,  633815.7,  633961.0,  634106.3,  634251.6,  634396.9,
       634542.2,
```

```
                                          *** Y-COORDINATES OF GRID ***
                                                    (METERS)

      3676809.5, 3676657.3, 3676505.1, 3676352.9, 3676200.7, 3676048.5, 3675896.3, 3675744.1, 3675591.9, 3675439.7,
      3675287.5, 3675135.3, 3674983.1, 3674830.9, 3674678.7, 3674526.5, 3674374.3, 3674222.1, 3674069.9, 3673917.7,
      3673765.5,
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                                  ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                                       ***
   18:39:47

   PAGE  23
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

                                  *** NETWORK ID: DNOVX0H2 ;  NETWORK TYPE: GRIDCART ***

                                               * ELEVATION HEIGHTS IN METERS *

    Y-COORD  |                                               X-COORD (METERS)
    (METERS) |     631636.20    631781.50    631926.80    632072.10    632217.40    632362.70    632508.00
632653.30    632798.60
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - -

  3673765.50 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3673917.70 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674069.90 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674222.10 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674374.30 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674526.50 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674678.70 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674830.90 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674983.10 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675135.30 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675287.50 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675439.70 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675591.90 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675744.10 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675896.30 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3676048.50 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3676200.70 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3676352.90 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3676505.10 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3676657.30 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3676809.50 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                                  ***
     03/16/21
```

```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

                                   *** NETWORK ID: DNOVX0H2 ;  NETWORK TYPE: GRIDCART ***

                                                 * ELEVATION HEIGHTS IN METERS *

    Y-COORD  |                                            X-COORD (METERS)
    (METERS) |     632943.90    633089.20    633234.50    633379.80    633525.10    633670.40    633815.70
633961.00    634106.30
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - -

  3673765.50 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3673917.70 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674069.90 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674222.10 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674374.30 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674526.50 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674678.70 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674830.90 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674983.10 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675135.30 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675287.50 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675439.70 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675591.90 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675744.10 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675896.30 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3676048.50 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3676200.70 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3676352.90 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3676505.10 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3676657.30 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3676809.50 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                                   ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                                       ***
   18:39:47

   PAGE  25
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

                                   *** NETWORK ID: DNOVX0H2 ;  NETWORK TYPE: GRIDCART ***

                                                 * ELEVATION HEIGHTS IN METERS *
```

```
    Y-COORD  |                                                 X-COORD (METERS)
    (METERS) |     634251.60    634396.90    634542.20
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - -

  3673765.50 |          0.00         0.00         0.00
  3673917.70 |          0.00         0.00         0.00
  3674069.90 |          0.00         0.00         0.00
  3674222.10 |          0.00         0.00         0.00
  3674374.30 |          0.00         0.00         0.00
  3674526.50 |          0.00         0.00         0.00
  3674678.70 |          0.00         0.00         0.00
  3674830.90 |          0.00         0.00         0.00
  3674983.10 |          0.00         0.00         0.00
  3675135.30 |          0.00         0.00         0.00
  3675287.50 |          0.00         0.00         0.00
  3675439.70 |          0.00         0.00         0.00
  3675591.90 |          0.00         0.00         0.00
  3675744.10 |          0.00         0.00         0.00
  3675896.30 |          0.00         0.00         0.00
  3676048.50 |          0.00         0.00         0.00
  3676200.70 |          0.00         0.00         0.00
  3676352.90 |          0.00         0.00         0.00
  3676505.10 |          0.00         0.00         0.00
  3676657.30 |          0.00         0.00         0.00
  3676809.50 |          0.00         0.00         0.00
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                                  ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                                       ***
   18:39:47

   PAGE  26
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

                                   *** NETWORK ID: DNOVX0H2 ;  NETWORK TYPE: GRIDCART ***

                                                * HILL HEIGHT SCALES IN METERS *

    Y-COORD  |                                                 X-COORD (METERS)
    (METERS) |     631636.20    631781.50    631926.80    632072.10    632217.40    632362.70    632508.00
632653.30    632798.60
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - -

  3673765.50 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3673917.70 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674069.90 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674222.10 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674374.30 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674526.50 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674678.70 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674830.90 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674983.10 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675135.30 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675287.50 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675439.70 |          0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
```

```
  3675591.90 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675744.10 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675896.30 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3676048.50 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3676200.70 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3676352.90 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3676505.10 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3676657.30 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3676809.50 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                        ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                             ***
   18:39:47

   PAGE  27
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

                                 *** NETWORK ID: DNOVX0H2 ;  NETWORK TYPE: GRIDCART ***

                                               * HILL HEIGHT SCALES IN METERS *

    Y-COORD  |                                            X-COORD (METERS)
    (METERS) |     632943.90    633089.20    633234.50    633379.80    633525.10    633670.40    633815.70
633961.00    634106.30
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - -

  3673765.50 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3673917.70 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674069.90 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674222.10 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674374.30 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674526.50 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674678.70 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674830.90 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3674983.10 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675135.30 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675287.50 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675439.70 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675591.90 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675744.10 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3675896.30 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3676048.50 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00         0.00
  3676200.70 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
```

```
0.00        0.00
  3676352.90 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00        0.00
  3676505.10 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00        0.00
  3676657.30 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00        0.00
  3676809.50 |         0.00         0.00         0.00         0.00         0.00         0.00         0.00
0.00        0.00
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                   ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                         ***
   18:39:47

   PAGE  28
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

                                  *** NETWORK ID: DNOVX0H2 ;  NETWORK TYPE: GRIDCART ***

                                                * HILL HEIGHT SCALES IN METERS *

    Y-COORD  |                                               X-COORD (METERS)
    (METERS) |     634251.60    634396.90    634542.20
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - -

  3673765.50 |         0.00         0.00         0.00
  3673917.70 |         0.00         0.00         0.00
  3674069.90 |         0.00         0.00         0.00
  3674222.10 |         0.00         0.00         0.00
  3674374.30 |         0.00         0.00         0.00
  3674526.50 |         0.00         0.00         0.00
  3674678.70 |         0.00         0.00         0.00
  3674830.90 |         0.00         0.00         0.00
  3674983.10 |         0.00         0.00         0.00
  3675135.30 |         0.00         0.00         0.00
  3675287.50 |         0.00         0.00         0.00
  3675439.70 |         0.00         0.00         0.00
  3675591.90 |         0.00         0.00         0.00
  3675744.10 |         0.00         0.00         0.00
  3675896.30 |         0.00         0.00         0.00
  3676048.50 |         0.00         0.00         0.00
  3676200.70 |         0.00         0.00         0.00
  3676352.90 |         0.00         0.00         0.00
  3676505.10 |         0.00         0.00         0.00
  3676657.30 |         0.00         0.00         0.00
  3676809.50 |         0.00         0.00         0.00
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                   ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                         ***
   18:39:47

   PAGE  29
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

                        * SOURCE-RECEPTOR COMBINATIONS FOR WHICH CALCULATIONS MAY NOT BE PERFORMED *
                          LESS THAN 1.0 METER; WITHIN OPENPIT; OR BEYOND 80KM FOR FASTAREA/FASTALL


                              SOURCE          - - RECEPTOR LOCATION - -         DISTANCE
                                ID            XR (METERS)   YR (METERS)         (METERS)
                            - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

                             DNOVX011           632653.3     3674983.1           -1.39
                             DNOVX012           632653.3     3674983.1           -1.68
                             DNOVX01U           632798.6     3674983.1           -0.96
                             DNOVX01V           632798.6     3674983.1           -1.64
                             DNOVX02N           632943.9     3674983.1           -0.61
                             DNOVX02O           632943.9     3674983.1           -1.64
```

```
                             DNOVX03G           633089.2     3674983.1            -0.25
                             DNOVX03H           633089.2     3674983.1            -1.60
                             DNOVX049           633234.5     3674983.1             0.17
                             DNOVX04A           633234.5     3674983.1            -1.43
                             DNOVX052           633379.8     3674983.1             0.53
                             DNOVX053           633379.8     3674983.1            -1.31
                             DNOVX05V           633525.1     3674983.1             0.89
                             DNOVX05W           633525.1     3674983.1            -1.17
                             DNOVX06P           633670.4     3674983.1            -0.90
                             DNOVX07I           633815.7     3674983.1            -0.70
                             DNOVX08B           633961.0     3674983.1            -0.38
                             DNOVX094           634106.3     3674983.1            -0.15
                             DNOVX09X           634251.6     3674983.1             0.10
                             DNOVX0AQ           634396.9     3674983.1             0.46
                             DNOVX0BJ           634542.2     3674983.1             0.73
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                    ***
   18:39:47

   PAGE  30
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

                                         *** METEOROLOGICAL DAYS SELECTED FOR PROCESSING ***
                                                        (1=YES; 0=NO)

            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1 1 1  1 1 1 1 1 1 1 1
1 1
            1 1 1 1 1 1 1 1 1 1  1 1 1 1 1

                        METEOROLOGICAL DATA PROCESSED BETWEEN START DATE: 2013   1  1  1
                                                            AND END DATE: 2013  12 31 24

                 NOTE:  METEOROLOGICAL DATA ACTUALLY PROCESSED WILL ALSO DEPEND ON WHAT IS INCLUDED IN THE DATA
FILE.


                                   *** UPPER BOUND OF FIRST THROUGH FIFTH WIND SPEED CATEGORIES ***
                                                          (METERS/SEC)

                                                 1.54,   3.09,   5.14,   8.23,  10.80,
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                    ***
   18:39:47

   PAGE  31
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

                                     *** UP TO THE FIRST 24 HOURS OF METEOROLOGICAL DATA ***

   Surface file:   C:\Users\RYAN~1.DES\OneDrive\LDNONE~1\COUNTY~4\20-30H~1\AERMOD\722810\722810.SFC   Met Version:
14134
   Profile file:   C:\Users\RYAN~1.DES\OneDrive\LDNONE~1\COUNTY~4\20-30H~1\AERMOD\722810\722810.PFL
   Surface format: FREE
```

```
   Profile format: FREE

   Surface station no.:    23199                 Upper air station no.:     3190
                  Name: UNKNOWN                                Name: UNKNOWN
                  Year:   2009                                 Year:   2009

 First 24 hours of scalar data
 YR MO DY JDY HR     H0     U*     W*  DT/DZ ZICNV ZIMCH  M-O LEN    Z0  BOWEN ALBEDO  REF WS   WD     HT  REF TA
  HT
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - -
 09 01 01   1 01   -9.9  0.094 -9.000 -9.000 -999.   69.      7.6  0.02   0.78   1.00    2.86  251.   10.0  280.4
 2.0
 09 01 01   1 02   -9.9  0.094 -9.000 -9.000 -999.   69.      7.6  0.02   0.78   1.00    2.86  268.   10.0  279.9
 2.0
 09 01 01   1 03  -10.0  0.094 -9.000 -9.000 -999.   69.      7.6  0.02   0.78   1.00    2.86  264.   10.0  279.2
 2.0
 09 01 01   1 04   -6.8  0.078 -9.000 -9.000 -999.   52.      6.3  0.02   0.78   1.00    2.36  283.   10.0  279.2
 2.0
 09 01 01   1 05   -6.8  0.078 -9.000 -9.000 -999.   52.      6.3  0.02   0.78   1.00    2.36  213.   10.0  280.4
 2.0
 09 01 01   1 06 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.06   0.78   1.00    0.00    0.   10.0  277.5
 2.0
 09 01 01   1 07   -6.8  0.078 -9.000 -9.000 -999.   52.      6.3  0.02   0.78   1.00    2.36  265.   10.0  279.2
 2.0
 09 01 01   1 08   -9.3  0.152 -9.000 -9.000 -999.  142.     34.3  0.02   0.78   0.47    2.86  223.   10.0  282.0
 2.0
 09 01 01   1 09   33.3  0.160  0.392  0.016   65.  154.    -11.2  0.04   0.78   0.29    1.76  317.   10.0  285.4
 2.0
 09 01 01   1 10   75.5 -9.000 -9.000 -9.000  132. -999. -99999.0  0.06   0.78   0.23    0.00    0.   10.0  288.8
 2.0
 09 01 01   1 11  103.9 -9.000 -9.000 -9.000  208. -999. -99999.0  0.06   0.78   0.21    0.00    0.   10.0  291.4
 2.0
 09 01 01   1 12  116.7  0.201  0.961  0.010  276.  216.     -6.3  0.08   0.78   0.20    1.76   26.   10.0  293.1
 2.0
 09 01 01   1 13  113.3 -9.000 -9.000 -9.000  376. -999. -99999.0  0.06   0.78   0.20    0.00    0.   10.0  293.8
 2.0
 09 01 01   1 14   94.7 -9.000 -9.000 -9.000  445. -999. -99999.0  0.06   0.78   0.21    0.00    0.   10.0  295.4
 2.0
 09 01 01   1 15   60.5 -9.000 -9.000 -9.000  482. -999. -99999.0  0.06   0.78   0.25    0.00    0.   10.0  295.4
 2.0
 09 01 01   1 16   14.2  0.120  0.581  0.007  499.  100.    -10.9  0.02   0.78   0.35    1.50  284.   10.0  294.1
 2.0
 09 01 01   1 17 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.06   0.78   0.65    0.00    0.   10.0  292.1
 2.0
 09 01 01   1 18 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.06   0.78   1.00    0.00    0.   10.0  289.1
 2.0
 09 01 01   1 19  -21.3  0.190 -9.000 -9.000 -999.  200.     29.3  0.08   0.78   1.00    3.10   24.   10.0  285.1
 2.0
 09 01 01   1 20   -7.6  0.087 -9.000 -9.000 -999.   68.      8.0  0.08   0.78   1.00    2.10   17.   10.0  284.1
 2.0
 09 01 01   1 21 -999.0 -9.000 -9.000 -9.000 -999. -999. -99999.0  0.06   0.78   1.00    0.00    0.   10.0  284.1
 2.0
 09 01 01   1 22   -8.2  0.086 -9.000 -9.000 -999.   60.      6.9  0.02   0.78   1.00    2.60  252.   10.0  282.1
 2.0
 09 01 01   1 23   -8.2  0.086 -9.000 -9.000 -999.   60.      6.9  0.02   0.78   1.00    2.60  270.   10.0  281.1
 2.0
 09 01 01   1 24   -8.2  0.086 -9.000 -9.000 -999.   60.      6.9  0.02   0.78   1.00    2.60  280.   10.0  280.1
 2.0


 First hour of profile data
 YR MO DY HR HEIGHT F  WDIR    WSPD AMB_TMP sigmaA  sigmaW  sigmaV
 09 01 01 01   10.0 1  251.    2.86   280.4   99.0  -99.00  -99.00

 F indicates top of profile (=1) or below (=0)
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                              ***
    03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                                  ***
```

```
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

                  *** THE ANNUAL AVERAGE CONCENTRATION    VALUES AVERAGED OVER   1 YEARS FOR SOURCE GROUP: ALL
 ***
                                 INCLUDING SOURCE(S):     DNOVX000    , DNOVX001    , DNOVX002    , DNOVX003    ,
DNOVX004    ,
                 DNOVX005    , DNOVX006    , DNOVX007    , DNOVX008    , DNOVX009    , DNOVX00A    , DNOVX00B    ,
DNOVX00C    ,
                 DNOVX00D    , DNOVX00E    , DNOVX00M    , DNOVX00N    , DNOVX00O    , DNOVX00P    , DNOVX00Q    ,
DNOVX00R    ,
                 DNOVX00S    , DNOVX00T    , DNOVX00U    , DNOVX00V    , DNOVX00W    , DNOVX00X    , DNOVX00Y    ,
 . . .      ,

                                  *** NETWORK ID: DNOVX0H2 ;  NETWORK TYPE: GRIDCART ***

                                       ** CONC OF PM10     IN MICROGRAMS/M**3                          **

    Y-COORD  |                                            X-COORD (METERS)
    (METERS) |     631636.20    631781.50    631926.80    632072.10    632217.40    632362.70    632508.00
632653.30    632798.60
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - -

  3673765.50 |       0.00006      0.00006      0.00006      0.00006      0.00006      0.00007      0.00010
0.00012      0.00010
  3673917.70 |       0.00005      0.00007      0.00007      0.00007      0.00008      0.00009      0.00011
0.00015      0.00012
  3674069.90 |       0.00005      0.00007      0.00009      0.00010      0.00010      0.00011      0.00014
0.00019      0.00016
  3674222.10 |       0.00007      0.00007      0.00009      0.00013      0.00013      0.00014      0.00018
0.00027      0.00024
  3674374.30 |       0.00008      0.00010      0.00011      0.00013      0.00019      0.00020      0.00025
0.00040      0.00039
  3674526.50 |       0.00009      0.00011      0.00014      0.00017      0.00022      0.00034      0.00039
0.00067      0.00071
  3674678.70 |       0.00012      0.00015      0.00018      0.00023      0.00032      0.00046      0.00081
0.00164      0.00153
  3674830.90 |       0.00012      0.00016      0.00023      0.00033      0.00050      0.00081      0.00170
0.00542      0.00506
  3674983.10 |       0.00009      0.00012      0.00017      0.00025      0.00043      0.00091      0.00300
0.03162      0.03669
  3675135.30 |       0.00012      0.00016      0.00022      0.00032      0.00048      0.00091      0.00244
0.00405      0.00565
  3675287.50 |       0.00012      0.00015      0.00019      0.00028      0.00047      0.00090      0.00114
0.00158      0.00158
  3675439.70 |       0.00011      0.00014      0.00019      0.00030      0.00048      0.00054      0.00081
0.00088      0.00086
  3675591.90 |       0.00011      0.00014      0.00021      0.00030      0.00034      0.00038      0.00060
0.00057      0.00053
  3675744.10 |       0.00011      0.00016      0.00021      0.00024      0.00024      0.00032      0.00043
0.00040      0.00038
  3675896.30 |       0.00013      0.00016      0.00017      0.00018      0.00019      0.00028      0.00031
0.00031      0.00031
  3676048.50 |       0.00012      0.00013      0.00014      0.00014      0.00017      0.00024      0.00023
0.00024      0.00026
  3676200.70 |       0.00011      0.00011      0.00011      0.00012      0.00016      0.00021      0.00017
0.00020      0.00022
  3676352.90 |       0.00009      0.00009      0.00009      0.00011      0.00014      0.00018      0.00014
0.00016      0.00019
  3676505.10 |       0.00008      0.00008      0.00008      0.00011      0.00013      0.00015      0.00012
0.00014      0.00017
  3676657.30 |       0.00007      0.00007      0.00008      0.00010      0.00012      0.00012      0.00010
0.00012      0.00015
  3676809.50 |       0.00006      0.00006      0.00008      0.00009      0.00011      0.00010      0.00008
0.00010      0.00013
```

```
    03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                                      ***
   18:39:47

   PAGE  33
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

                  *** THE ANNUAL AVERAGE CONCENTRATION    VALUES AVERAGED OVER   1 YEARS FOR SOURCE GROUP: ALL
 ***
                                 INCLUDING SOURCE(S):     DNOVX000    , DNOVX001    , DNOVX002    , DNOVX003    ,
DNOVX004    ,
                 DNOVX005    , DNOVX006    , DNOVX007    , DNOVX008    , DNOVX009    , DNOVX00A    , DNOVX00B    ,
DNOVX00C    ,
                 DNOVX00D    , DNOVX00E    , DNOVX00M    , DNOVX00N    , DNOVX00O    , DNOVX00P    , DNOVX00Q    ,
DNOVX00R    ,
                 DNOVX00S    , DNOVX00T    , DNOVX00U    , DNOVX00V    , DNOVX00W    , DNOVX00X    , DNOVX00Y    ,
 . . .      ,

                                   *** NETWORK ID: DNOVX0H2 ;  NETWORK TYPE: GRIDCART ***

                                        ** CONC OF PM10     IN MICROGRAMS/M**3                         **

    Y-COORD  |                                                X-COORD (METERS)
    (METERS) |     632943.90    633089.20    633234.50    633379.80    633525.10    633670.40    633815.70
633961.00    634106.30
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - -

  3673765.50 |       0.00011      0.00012      0.00010      0.00013      0.00013      0.00012      0.00009
0.00009      0.00009
  3673917.70 |       0.00015      0.00014      0.00014      0.00016      0.00015      0.00012      0.00011
0.00011      0.00012
  3674069.90 |       0.00020      0.00017      0.00021      0.00021      0.00016      0.00014      0.00015
0.00016      0.00016
  3674222.10 |       0.00027      0.00028      0.00029      0.00022      0.00020      0.00022      0.00023
0.00020      0.00017
  3674374.30 |       0.00037      0.00044      0.00033      0.00030      0.00033      0.00030      0.00026
0.00028      0.00031
  3674526.50 |       0.00074      0.00056      0.00054      0.00052      0.00046      0.00051      0.00052
0.00048      0.00043
  3674678.70 |       0.00122      0.00116      0.00104      0.00110      0.00098      0.00084      0.00072
0.00064      0.00057
  3674830.90 |       0.00461      0.00356      0.00259      0.00196      0.00153      0.00122      0.00100
0.00083      0.00070
  3674983.10 |       0.01359      0.00671      0.00401      0.00270      0.00197      0.00153      0.00122
0.00101      0.00086
  3675135.30 |       0.00602      0.00508      0.00353      0.00264      0.00211      0.00171      0.00140
0.00115      0.00096
  3675287.50 |       0.00262      0.00230      0.00241      0.00208      0.00170      0.00136      0.00113
0.00099      0.00088
  3675439.70 |       0.00111      0.00148      0.00126      0.00130      0.00131      0.00116      0.00103
0.00088      0.00075
  3675591.90 |       0.00057      0.00080      0.00095      0.00082      0.00081      0.00087      0.00083
0.00075      0.00069
  3675744.10 |       0.00039      0.00050      0.00063      0.00066      0.00058      0.00057      0.00059
0.00062      0.00058
  3675896.30 |       0.00031      0.00031      0.00039      0.00051      0.00049      0.00044      0.00042
0.00043      0.00046
  3676048.50 |       0.00023      0.00022      0.00029      0.00033      0.00041      0.00038      0.00034
0.00033      0.00033
  3676200.70 |       0.00017      0.00019      0.00020      0.00024      0.00029      0.00034      0.00030
0.00028      0.00027
  3676352.90 |       0.00014      0.00017      0.00015      0.00020      0.00020      0.00025      0.00028
0.00025      0.00023
  3676505.10 |       0.00011      0.00014      0.00012      0.00015      0.00017      0.00018      0.00023
0.00024      0.00021
  3676657.30 |       0.00010      0.00011      0.00011      0.00011      0.00014      0.00014      0.00017
0.00020      0.00020
  3676809.50 |       0.00009      0.00009      0.00010      0.00009      0.00011      0.00013      0.00013
```

```
0.00015      0.00018
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                             ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                                 ***
   18:39:47

   PAGE  34
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

                  *** THE ANNUAL AVERAGE CONCENTRATION    VALUES AVERAGED OVER   1 YEARS FOR SOURCE GROUP: ALL
 ***
                                 INCLUDING SOURCE(S):     DNOVX000    , DNOVX001    , DNOVX002    , DNOVX003    ,
DNOVX004    ,
                 DNOVX005    , DNOVX006    , DNOVX007    , DNOVX008    , DNOVX009    , DNOVX00A    , DNOVX00B    ,
DNOVX00C    ,
                 DNOVX00D    , DNOVX00E    , DNOVX00M    , DNOVX00N    , DNOVX00O    , DNOVX00P    , DNOVX00Q    ,
DNOVX00R    ,
                 DNOVX00S    , DNOVX00T    , DNOVX00U    , DNOVX00V    , DNOVX00W    , DNOVX00X    , DNOVX00Y    ,
 . . .      ,

                                   *** NETWORK ID: DNOVX0H2 ;  NETWORK TYPE: GRIDCART ***

                                        ** CONC OF PM10     IN MICROGRAMS/M**3                          **

    Y-COORD  |                                              X-COORD (METERS)
    (METERS) |     634251.60    634396.90    634542.20
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - -

  3673765.50 |       0.00009      0.00010      0.00010
  3673917.70 |       0.00013      0.00012      0.00011
  3674069.90 |       0.00014      0.00012      0.00012
  3674222.10 |       0.00018      0.00020      0.00021
  3674374.30 |       0.00031      0.00029      0.00027
  3674526.50 |       0.00039      0.00035      0.00032
  3674678.70 |       0.00051      0.00046      0.00042
  3674830.90 |       0.00060      0.00052      0.00046
  3674983.10 |       0.00074      0.00065      0.00058
  3675135.30 |       0.00081      0.00070      0.00061
  3675287.50 |       0.00079      0.00071      0.00063
  3675439.70 |       0.00065      0.00058      0.00053
  3675591.90 |       0.00062      0.00055      0.00048
  3675744.10 |       0.00053      0.00050      0.00047
  3675896.30 |       0.00046      0.00043      0.00040
  3676048.50 |       0.00035      0.00037      0.00035
  3676200.70 |       0.00027      0.00027      0.00029
  3676352.90 |       0.00023      0.00022      0.00022
  3676505.10 |       0.00019      0.00019      0.00019
  3676657.30 |       0.00018      0.00017      0.00016
  3676809.50 |       0.00018      0.00015      0.00014
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                             ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                                 ***
   18:39:47

   PAGE  35
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

                  *** THE ANNUAL AVERAGE CONCENTRATION    VALUES AVERAGED OVER   1 YEARS FOR SOURCE GROUP: ALL
 ***
                                 INCLUDING SOURCE(S):     DNOVX000    , DNOVX001    , DNOVX002    , DNOVX003    ,
DNOVX004    ,
                 DNOVX005    , DNOVX006    , DNOVX007    , DNOVX008    , DNOVX009    , DNOVX00A    , DNOVX00B    ,
DNOVX00C    ,
                 DNOVX00D    , DNOVX00E    , DNOVX00M    , DNOVX00N    , DNOVX00O    , DNOVX00P    , DNOVX00Q    ,
DNOVX00R    ,
                 DNOVX00S    , DNOVX00T    , DNOVX00U    , DNOVX00V    , DNOVX00W    , DNOVX00X    , DNOVX00Y    ,
 . . .      ,
```

```
                                             *** SENSITIVE DISCRETE RECEPTOR POINTS ***

                                        ** CONC OF PM10     IN MICROGRAMS/M**3                          **

       X-COORD (M)   Y-COORD (M)        CONC                       X-COORD (M)   Y-COORD (M)        CONC
 - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - -
         633209.40    3676664.90        0.00012

↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                                  ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                                       ***
   18:39:47

   PAGE  36
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

                                   *** THE SUMMARY OF MAXIMUM ANNUAL RESULTS AVERAGED OVER   1 YEARS ***


                                    ** CONC OF PM10     IN MICROGRAMS/M**3                          **


NETWORK
GROUP ID                       AVERAGE CONC                RECEPTOR  (XR, YR, ZELEV, ZHILL, ZFLAG)  OF TYPE
GRID-ID
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- -

ALL       1ST HIGHEST VALUE IS       0.03669 AT (  632798.60,  3674983.10,     0.00,     0.00,    0.00)  GC
DNOVX0H2
          2ND HIGHEST VALUE IS       0.03162 AT (  632653.30,  3674983.10,     0.00,     0.00,    0.00)  GC
DNOVX0H2
          3RD HIGHEST VALUE IS       0.01359 AT (  632943.90,  3674983.10,     0.00,     0.00,    0.00)  GC
DNOVX0H2
          4TH HIGHEST VALUE IS       0.00671 AT (  633089.20,  3674983.10,     0.00,     0.00,    0.00)  GC
DNOVX0H2
          5TH HIGHEST VALUE IS       0.00602 AT (  632943.90,  3675135.30,     0.00,     0.00,    0.00)  GC
DNOVX0H2
          6TH HIGHEST VALUE IS       0.00565 AT (  632798.60,  3675135.30,     0.00,     0.00,    0.00)  GC
DNOVX0H2
          7TH HIGHEST VALUE IS       0.00542 AT (  632653.30,  3674830.90,     0.00,     0.00,    0.00)  GC
DNOVX0H2
          8TH HIGHEST VALUE IS       0.00508 AT (  633089.20,  3675135.30,     0.00,     0.00,    0.00)  GC
DNOVX0H2
          9TH HIGHEST VALUE IS       0.00506 AT (  632798.60,  3674830.90,     0.00,     0.00,    0.00)  GC
DNOVX0H2
         10TH HIGHEST VALUE IS       0.00461 AT (  632943.90,  3674830.90,     0.00,     0.00,    0.00)  GC
DNOVX0H2


 *** RECEPTOR TYPES:  GC = GRIDCART
                      GP = GRIDPOLR
                      DC = DISCCART
                      DP = DISCPOLR
↑ *** AERMOD - VERSION  19191 ***   ***  Diesle PM (Trucks)                                                  ***
     03/16/21
 *** AERMET - VERSION  14134 ***   ***                                                                       ***
   18:39:47

   PAGE  37
 *** MODELOPTs:    RegDFAULT  CONC  ELEV  NODRYDPLT  NOWETDPLT  RURAL

 *** Message Summary : AERMOD Model Execution ***

  --------- Summary of Total Messages --------

 A Total of            0 Fatal Error Message(s)
 A Total of            0 Warning Message(s)
```

```
A Total of        10676 Informational Message(s)

A Total of         8760 Hours Were Processed

A Total of         1048 Calm Hours Identified

A Total of         1088 Missing Hours Identified ( 12.42 Percent)

CAUTION!:  Number of Missing Hours Exceeds 10 Percent of Total!
           Data May Not Be Acceptable for Regulatory Applications.
           See Section 5.3.2 of "Meteorological Monitoring Guidance
           for Regulatory Modeling Applications" (EPA-454/R-99-005).


   ******** FATAL ERROR MESSAGES ********
              ***  NONE  ***


   ********   WARNING MESSAGES   ********
              ***  NONE  ***


   ************************************
   *** AERMOD Finishes Successfully ***
   ************************************
```

ATTACHMENT E

Onsite and Offsite Truck Operations Health Risk Analysis

Air Quality Health Risk Calculations
Hudson Ranch - Point of Maximum Maximum
Annual Concentration (µg/m3) **0.00069**

Based on Risk Assessment Guidelines - Guidance Manual for Preparation of Health Risk Assessments - February 2015
Unit Risk Factors
(https://oehha.ca.gov/media/CPFs042909.pdf)

Duration (Years)	70					
Age of Person Exposed (Years)	3rd Trimester (0.25)	0-2	2-9	2-16	16-30	16-70
Cair (annual)	0.00069	0.00069	0.00069	0.00069	0.00069	0.00069
Breathing Rate per agegroup BR/BW	361	1090	861	745	335	290
A (Default is 1)	1	1	1	1	1	1
Exposure Frequency = EF (days/365days)	0.96	0.96	0.96	0.96	0.96	0.96
10^-6 Microgram to Milligram / liters to m3	0.000001	0.000001	0.000001	0.000001	0.000001	0.000001
Dose-inh	0.00000024	0.00000072	0.00000057	0.00000049	0.00000022	0.00000019
Exposure Duration (years)	70					
potency factor for Diesel	1.1	1.1	1.1	1.1	1.1	1.1
Age Sensitivity Factor	10	10	3	3	1	1
ED	0.25	2	7	14	14	54
AT	70	70	70	70	70	70
FAH	0.85	0.85	0.72	0.72	0.73	0.73
Risk for Each Age Group	7.98511E-09	1.92881E-07	1.3551E-07	2.34505E-07	3.56378E-08	1.18995E-07
per million	0.0080	0.1929	0.1355	0.2345	0.0356	0.1190
Cancer Risk Per Million 9-years	0.336					
Cancer Risk Per Million 30-years	0.471					
Cancer Risk Per Million 70-years	0.554					

APPENDIX C – BIOLOGICAL TECHNICAL REPORT (BTR) FOR THE ENERGY SOURCE MINERAL PROJECT IMPERIAL COUNTY

BIOLOGICAL TECHNICAL REPORT FOR THE ENERGY SOURCE MINERAL PROJECT
IMPERIAL COUNTY, CALIFORNIA

Prepared for:

COUNTY OF IMPERIAL
801 Main Street
El Centro, California 92243

Prepared by:

CHAMBERS GROUP, INC.
5 Hutton Centre Drive, Suite 750
Santa Ana, California 92707
(949) 261-5414

December 2020

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SECTION 1.0 – INTRODUCTION

Chambers Group, Inc. (Chambers Group) was retained by the County of Imperial to conduct a literature review and reconnaissance-level survey for the development of a commercial lithium hydroxide production plant for the Energy Source Mineral Project (Project). The survey identified vegetation communities, potential for the occurrence of sensitive species, or habitats that could support sensitive wildlife species. Information contained in this Biological Technical Report is in accordance with accepted scientific and technical standards that are consistent with the requirements of United States Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW).

1.1 PROJECT BACKGROUND

The Project's plant facilities would be built on an approximately 37-acre area that would be subdivided out of the existing 65.12 acres, an additional 15 acres of the Project site located on the northwestern parcel APN 020-100-025, and approximately 40 acres of the Project site located on the southeast parcel APN 020-100-046, for a total of approximately 92 acres. The Project would consist of the following activities:

- Construction and operation of a plant to extract lithium, manganese, zinc, and other commercially viable substances from geothermal brine and process the extracted substances to produce commercial quantities of lithium and, to the extent possible, manganese and zinc products and other products
- Construction and operation of brine supply and return pipelines and other associated interconnection facilities with the HR1 power plant
- Construction of a primary access road from McDonald Road (approximately 500 feet west of the HR 1 entrance) and an emergency access entrance only from Davis Road
- Paving of McDonald Road from State Route (Highway) 111 to English Road (approximately 3 miles)
- Construction of a power interconnection line from the Imperial Irrigation District (IID) and HR1 switchyard located at the northeast corner of the Hudson Ranch Power I (HR1) site
- Construction of associated facilities between HR1 and the Project site to facilitate the movement of brine and other services
- Construction of a laydown yard that will also support temporary offices during construction as well as serve as a truck management yard during operations
- Construction of offices, repair facilities, shipping and receiving facilities, and other infrastructure components.

1.2 PROJECT LOCATION

The Project site is located at 477 West McDonald Road, Calipatria, California, which is approximately 3.8 miles southwest of the community of Niland on three parcels privately owned by HR1 in Imperial County, California. The Project is located within the U.S. Geological Survey (USGS) *Niland*, California 7.5-minute topographic quadrangle. The Project site is partially on the existing HR1 site, while the remainder of the land has been used for laydown areas, storage areas, and stormwater management. The Project site is surrounded by open, vacant land. To the west of the Project site is IID-owned vacant marsh land adjoining the Salton Sea. To the north of the Project site is vacant land that is mostly used for duck hunting clubs and the location of the production and injection wells for HR1. To the south is vacant land that has never been in any production and is also the site of numerous “mud-pots.” The elevation at the Project site is approximately 225 feet below mean sea level (bmsl). Maps of the Project location and Project vicinity are provided in Figure 1.

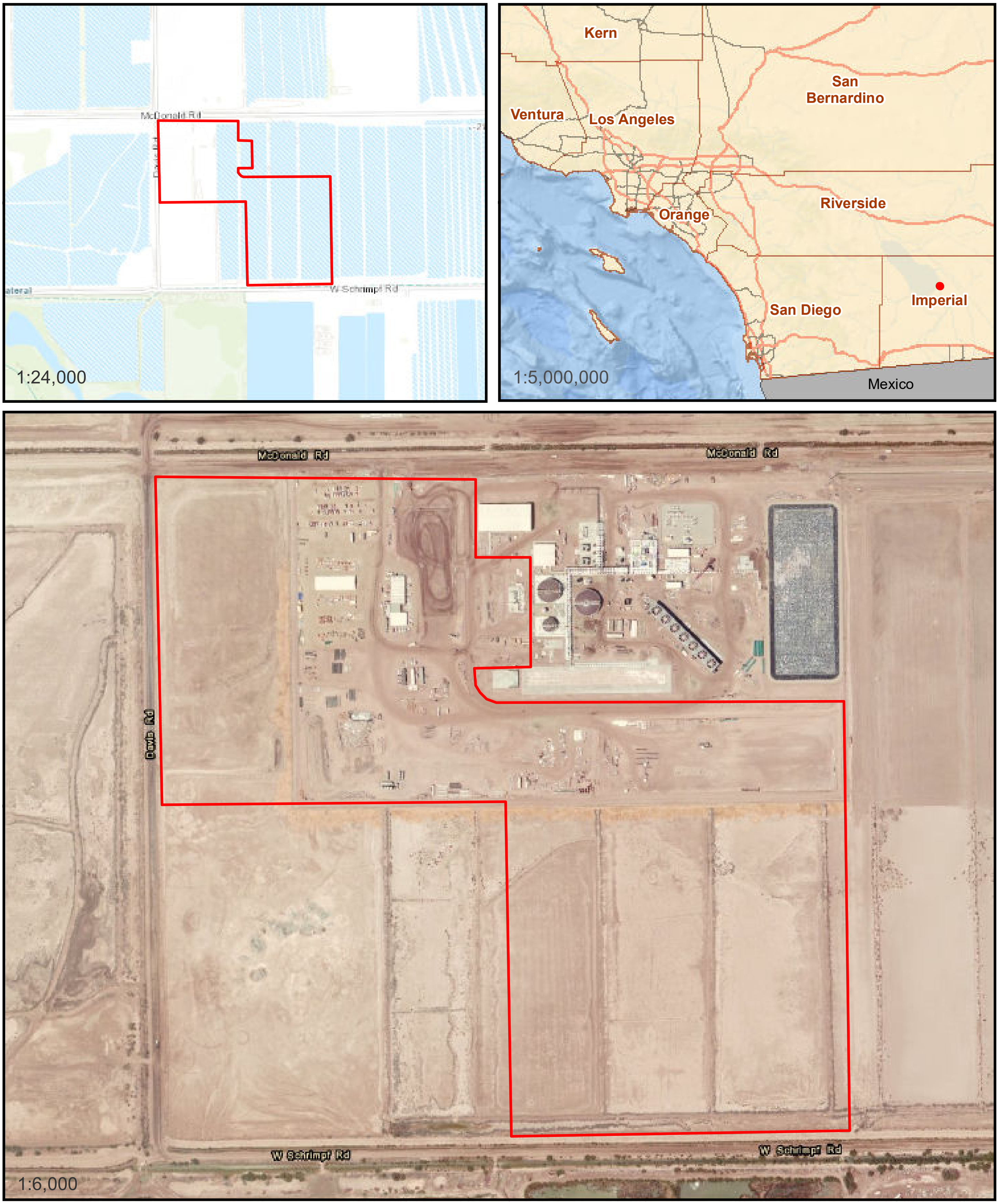

Figure 1

Energy Source Mineral Project
Project Location & Vicinity

Name: 21268 BIO Fig 1 Project Location and Vicinity.Mxd
Print Date: 11/9/2020, Author: pcarlos

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SECTION 2.0 – METHODOLOGY

2.1 LITERATURE REVIEW

Prior to performing the field survey, existing documentation relevant to the Project site was reviewed. The most recent records of the California Natural Diversity Database (CNDDB) managed by CDFW (CDFW 2020), the USFWS Critical Habitat Mapper (USFWS 2020), and the California Native Plant Society's Electronic Inventory (CNPSEI) of Rare and Endangered Vascular Plants of California (CNPS 2020) were reviewed for the following quadrangles containing and surrounding the Project site: *Niland*, *Obsidian Butte, Westmorland West, Westmorland East, West, Iris, Iris Wash, Wister,* and *Frink*, California USGS 7.5-minute quadrangles. These databases contain records of reported occurrences of federally or state listed endangered or threatened species, California Species of Concern (SSC), or otherwise sensitive species or habitats that may occur within or in the immediate vicinity of the Project site.

2.2 SOILS

Before conducting the survey, soil maps for Imperial County were referenced online to determine the soil types found within the Project site. Soils were determined in accordance with categories set forth by the U.S. Department of Agriculture (USDA) Soil Conservation Service and by referencing the USDA Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA 2020).

2.3 JURISDICTIONAL WATERS

A general assessment of jurisdictional waters regulated by the United States Army Corps of Engineers (USACE), California Regional Water Quality Control Board (RWQCB), and CDFW was conducted for the Project area. Pursuant to Section 404 of the Clean Water Act, USACE regulates the discharge of dredged and/or fill material into waters of the United States. The State of California (State) regulates discharge of material into waters of the State pursuant to Section 401 of the Clean Water Act and the California Porter-Cologne Water Quality Control Act (California Water Code, Division 7, §13000 et seq.). Pursuant to Division 2, Chapter 6, Sections 1600-1602 of the California Fish and Game Code, CDFW regulates all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake which supports fish or wildlife. The assessment was conducted by a desktop survey through the USGS National Hydrography Dataset for hydrological connectivity.

2.4 BIOLOGICAL RECONNAISSANCE-LEVEL SURVEY

Chambers Group Biologists Heather Franklin and Jessica Calvillo conducted the general reconnaissance survey within the Project site to identify the potential for occurrence of sensitive species, vegetation communities, or habitats that could support sensitive wildlife species. The survey was conducted on foot throughout the Project site between 0930 and 1230 hours on October 30, 2020. Weather conditions during the survey included temperatures ranging from 64 to 79 degrees Fahrenheit, with zero percent cloud cover and no precipitation. Photographs of the Project site were recorded to document existing conditions (Appendix A).

2.4.1 Vegetation

All plant species observed within the Project site were recorded. Vegetation communities within the Project site were identified, qualitatively described, and mapped onto a high-resolution imagery aerial photograph. Plant communities were determined in accordance with the *Manual of California Vegetation*, *Second Edition* (Sawyer et al. 2009). Plant nomenclature follows that of *The Jepson Manual* (Baldwin et al. 2012). A comprehensive list of the plant species observed during the survey is provided in Appendix B.

2.4.2 Wildlife

All wildlife and wildlife signs observed and detected, including tracks, scat, carcasses, burrows, excavations, and vocalizations, were recorded. Additional survey time was spent in those habitats most likely to be utilized by wildlife (native vegetation, wildlife trails, etc.) or in habitats with the potential to support state and/or federally listed or otherwise sensitive species. Notes were made on the general habitat types, species observed, and the conditions of the Project site. A comprehensive list of the wildlife species observed during the survey is provided in Appendix C.

SECTION 3.0 – RESULTS

3.1 NATURAL COMMUNITY CONSERVATION PLAN & HABITAT CONSERVATION PLAN

The Project is located within the designated boundaries of the Desert Renewable Energy Community Conservation Plan & Habitat Conservation Plan (NCCP/HCP). However, the Project is not located within or adjacent to an Area of Critical Environmental Concern.

3.2 SOILS

According to the results from the USDA NRCS Web Soil Survey (USDA 2020), the Project Site is located in the Imperial Valley Area, CA683 part of the soil map. One soil type is known to occur within and/or adjacent to the site and is described below.

Imperial Silty Clay complex occurs throughout the Project site. The parent material is clayey alluvium derived from mixed or clayey lacustrine deposits. The available water capacity is classified as moderate (approximately 8.3 inches) with a depth to the water table of more than 80 inches (USDA 2020).

3.3 JURISDICTIONAL WATERS

No jurisdictional water features or wetlands were observed within the Project site. The Project site was uncultivated farmland and portions of the site was previously used for duck ponds for a hunting club (historically flooded seasonally to attract waterfowl for hunting but was abandoned in 2010); and were historically mapped as freshwater ponds (Figure 2). However, according to historic aerials, the area has not been flooded since 2009 and has been void of water for the past 11 years. In addition, the Project site is mostly void of any vegetation, with sparse vegetation occurring throughout the southern portion. One man-made ditch is located in the northwest section of the Project site. The ditch comes off Davis Road, flows east, and empties into a small man-made detention area. The area appears to have been created to facilitate flow from Davis Road during rain events; however, the detention area does not connect to other drainages or canals. In addition, one culvert is located near the southwest section of the site. The culvert appears to direct flow into the site from the south; however, it appears to have been altered to stop flow, as no water was observed flowing into the area during the survey. The IID “N” drain with flowing water is located approximately 40 feet south of the Project site boundary on the north side of Schrimpf Road and is not connected to any water features on the Project Site. The culvert can be avoided during work activities with the use of best management practices (BMPs) including straw wattle and silt fencing. No impacts near the IID “N” drain are anticipated. No construction activities will occur within IID canals, drains, or ditches. Therefore, no impacts to waters of the United States and waters of the State are anticipated to occur as a result of this Project.

3.4 VEGETATION COMMUNITIES

Two vegetation communities, Ruderal and Bare Ground, were observed within the Project site. A map showing the vegetation communities observed within the Project site is provided in Figure 2, and the communities are described in the following subsections.

3.4.1 Ruderal

Areas classified as Ruderal tend to be dominated by pioneering species that readily colonize disturbed ground and that are typically found in temporary, often frequently disturbed habitats (Barbour et al. 1999). The soils in ruderal areas are typically characterized as compacted or frequently disturbed. Often, Ruderal areas are dominated by species of the Tamarix, Brassica, Malva, Salsola, Eremocarpus, Amaranthus, and Atriplex genera.

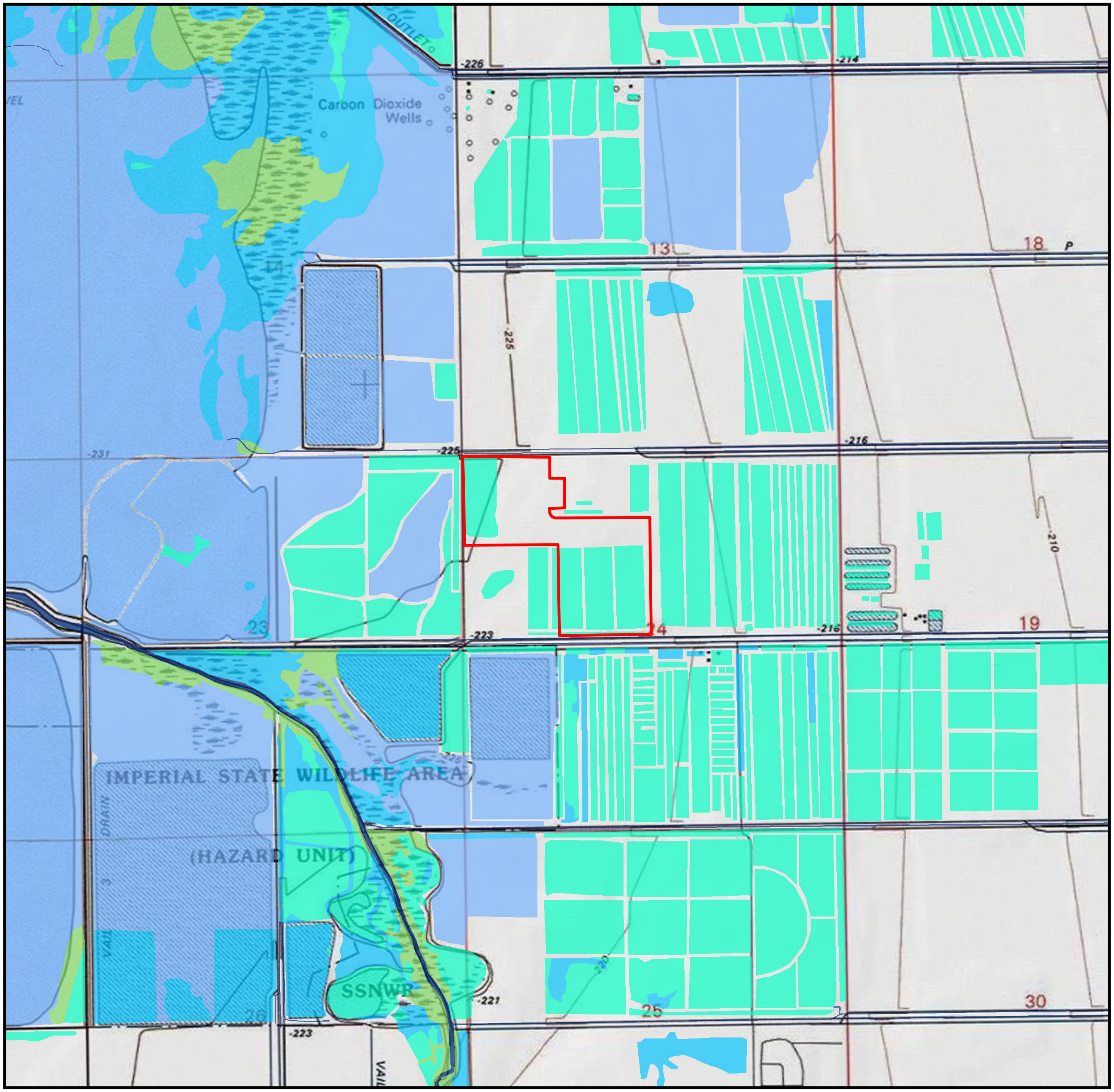
Ruderal vegetation occurs in the disturbed southern portion of the Project site that was previously used as a duck hunting club. Vegetation found on site typical of this vegetation included scattered iodine bush (*Allenrolfea occidentalis*) with a few scattered Mediterranean tamarisk (*Tamarix ramosissima).*

3.4.2 **Bare Ground**

Bare Ground (BG) areas are generally devoid of vegetation but do not contain any form of pavement. BG has higher water permeability and higher fossorial rodent habitat potential. BG is present throughout the entire Project site with large, uninterrupted expanses in the eastern portion of the Project site. Scattered, dead Mediterranean tamarisk seedlings were the only vegetation observed in these areas.

Figure 2

Energy Source Mineral Project
NWI Mapped Waters



☐ Project Location

NWI Mapped Waters

- 🟦 Freshwater Emergent Wetland
- 🟩 Freshwater Forested/Shrub Wetland
- 🟩 Freshwater Pond
- 🟦 Lake
- 🟦 Riverine

N

0 750 1,500 3,000
Feet

Name: 21268 BIO Fig 2 NWI Mapped Waters.Mxd
Print Date: 11/19/2020, Author: pcarlos

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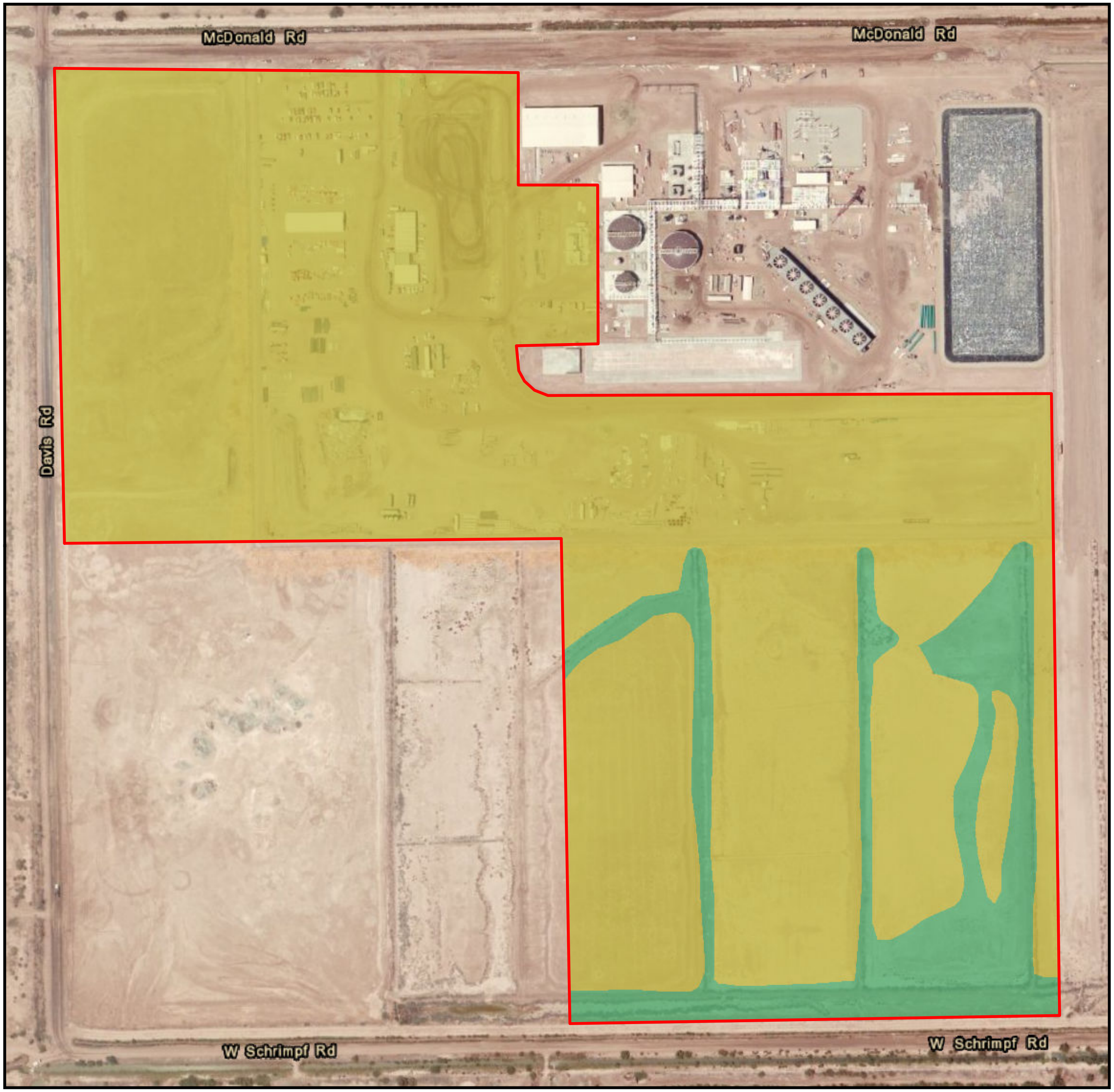
Figure 3
Energy Source Mineral Project Vegetation Communities



Name: 21268 BIO Fig 3 Vegetation Communities.Mxd
Print Date: 12/14/2020, Author: pcarlos

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3.5 SENSITIVE SPECIES

The following information is a list of abbreviations used to help determine the significance of biological sensitive resources potentially occurring on the Project site.

Rare Plant Rank (RPR)

List 1A = Plants presumed extinct in California.
List 1B = Plants rare and endangered in California and throughout their range.
List 2 = Plants rare, threatened, or endangered in California but more common elsewhere in their range.
List 3 = Plants about which we need more information; a review list.
List 4 = Plants of limited distribution; a watch list.

RPR Extensions

0.1 = Seriously endangered in California (greater than 80 percent of occurrences threatened/high degree and immediacy of threat).
0.2 = Fairly endangered in California (20-80 percent occurrences threatened).
0.3 = Not very endangered in California (less than 20 percent of occurrences threatened).

Federal

FE = Federally listed; Endangered
FT = Federally listed; Threatened

State

ST = State listed; Threatened
SE = State listed; Endangered
RARE = State-listed; Rare (Listed "Rare" animals have been re-designated as Threatened, but Rare plants have retained the Rare designation.)
SSC = State Species of Special Concern

The following information was used to determine the significance of biological resources potentially occurring within the Project site. The criteria used to evaluate the potential for sensitive species to occur on the Project site are outlined in Table 1.

Table 1: Criteria for Evaluating Sensitive Species Potential for Occurrence (PFO)

PFO	CRITERIA
Absent:	Species is restricted to habitats or environmental conditions that do not occur within the Project site. Additionally, if the survey was conducted within the blooming period of the species and appropriate habitat was observed in the surrounding area but the species was not observed within the Project impact area, it was considered absent.
Low:	Historical records for this species do not exist within the immediate vicinity (approximately 5 miles) of the Project site, and/or habitats or environmental conditions needed to support the species are of poor quality.
Moderate:	Either a historical record exists of the species within the immediate vicinity of the Project site (approximately 3 miles) and marginal habitat exists on the Project site, or the habitat requirements or environmental conditions associated with the species occur within the Project site, but no historical records exist within 5 miles of the Project site.
High:	Both a historical record exists of the species within the Project site or its immediate vicinity (approximately 1 mile), and the habitat requirements and environmental conditions associated with the species occur within the Project site.
Present:	Species was detected within the Project site at the time of the survey.

* PFO: Potential for Occurrence

3.5.1 Sensitive Plants

Factors used to determine the potential for occurrence included the quality of habitat, elevation, and the results of the reconnaissance survey. In addition, the location of prior CNDDB records of occurrence were used as additional data; but since the CNDDB is a positive-sighting database, this data was used only in support of the analysis from the previously identified factors.

Current database searches (CDFW 2020; CNPSEI 2020) resulted in a list of seven federally and/or state listed threatened and endangered or rare sensitive plant species that may potentially occur within the Project site (Figure 4). After the literature review and the reconnaissance-level survey, it was determined that all seven of these species are considered Absent from the Project site due to lack of suitable habitat.

The following seven plant species are considered **Absent** from the Project site due to lack of suitable habitat:

- Harwood's milk-vetch (*Astragalus insularis* var. *harwoodii*) - CRPR 2B.2
- gravel milk-vetch (*Astragalus sabulonum*) – CRPR 2B.2
- Munz's cholla (*Cylindropuntia munzii*) – CRPR 1B.3
- glandular ditaxis (*Ditaxis claryana*) – CRPR 2B.2
- Orocopia sage (*Salvia greatae*) – CRPR 1B.3
- chaparral sand-verbena (*Abronia villosa var aurita*) – CRPR 1B.2
- Abram's spurge (*Chamaesyce abramisiana*) --CRPR 2

3.5.2 Sensitive Wildlife

A current database search (CDFW 2020) resulted in a list of 27 federally and/or state listed endangered or threatened, Species of Concern, or otherwise sensitive wildlife species that may potentially occur within the Project site (Figure 4). After a literature review and the assessment of the various habitat types within the Project site, it was determined that 26 sensitive wildlife species were considered absent from the Project site, and one species was present within the Project site. Factors used to determine potential for occurrence included the quality of habitat and the location of prior CNDDB records of occurrence.

The following 26 wildlife species are considered **absent** from the Project site due to lack of suitable habitat present on the Project site:

- American badger (*Taxidea taxus*)- SSC
- black skimmer (*Rynchops niger*) – SSC
- California black rail (*Laterallus jamaicensis coturniculus*) – **ST**
- Couch's spadefoot (*Scaphiopus couchii*) – SSC
- Crissal thrasher (*Toxostoma crissale*) – SSC
- desert pupfish (*Cyprinodon macularius*) – **FE, SE**
- desert tortoise (*Gopherus agassizii*)- **FT, ST**
- flat-tailed horned lizard (*Phrynosoma mcallii*) -- SSC
- gull-billed tern (*Gelochelidon nilotica*) – SSC
- Le Conte's thrasher (*Toxostoma lecontei*) – SSC
- loggerhead shrike (*Lanius ludovicianus*) – SSC
- lowland leopard frog (*Lithobates yavapaiensis*) – SSC
- mountain plover (*Charadrius montanus*) – SSC
- pallid bat (*Antrozous pallidus*)- SSC
- pocketed free-tailed bat (*Nyctinomops femorosaccus*)- SSC
- short-eared owl (*Asio flammeus*) – SSC
- razorback sucker (*Xyrauchen texanus*) – **FE, SE**
- Sonoran Desert toad (*Incilius alvarius*) – SSC
- southwestern willow flycatcher (*Empidonax traillii extimus*)- **FE**, **SE**
- western snowy plover (*Charadrius alexandrinus nivosus*) – **FE**, SSC
- western mastiff bat (*Eumops perotis californicus*) - SSC
- western yellow bat (*Lasiurus xanthinus*) – SSC
- yellow warbler (*Setophaga petechia*) – SSC
- yellow-breasted chat (*Icteria virens*) – SSC
- Yuma hispid cotton rat (*Sigmodon hispidus eremicus*) – SSC
- Yuma Ridgway's rail (*Rallus obsoletus yumanensis*) – **FE, ST**

One species, the burrowing owl (*Athene cunicularia*; SSC), was **present** within and directly adjacent to the Project site during the survey. In addition, this species has been recorded to nest within and surrounding the Project site.

Burrowing owl- SSC

The burrowing owl (BUOW) is a California Species of Special Concern. The burrowing owl breeds in open plains from western Canada and the western United States, Mexico through Central America, and into South America to Argentina (Klute et al. 2003). This species inhabits dry, open, native or non-native grasslands, deserts, and other arid environments with low-growing and low-density vegetation (Ehrlich et al. 1988). It may occupy golf courses, cemeteries, road rights-of way, airstrips, abandoned buildings, irrigation ditches, and vacant lots with holes or cracks suitable for use as burrows (TLMA 2006). Burrowing owls typically use burrows made by mammals such as

California ground squirrels (*Otospermophilus beecheyi*), foxes, or badgers (Trulio 1997). When burrows are scarce, the burrowing owl may use man-made structures such as openings beneath cement or asphalt pavement, pipes, culverts, and nest boxes (TLMA 2006). Ten artificial burrows are located within 150 feet of the southwest Project boundary. During the survey, several burrowing owls were observed utilizing these artificial burrows (Figure 5). In addition, one owl was observed foraging within the Project site, northeast of the artificial burrows (Figure 5).

3.6 GENERAL PLANTS

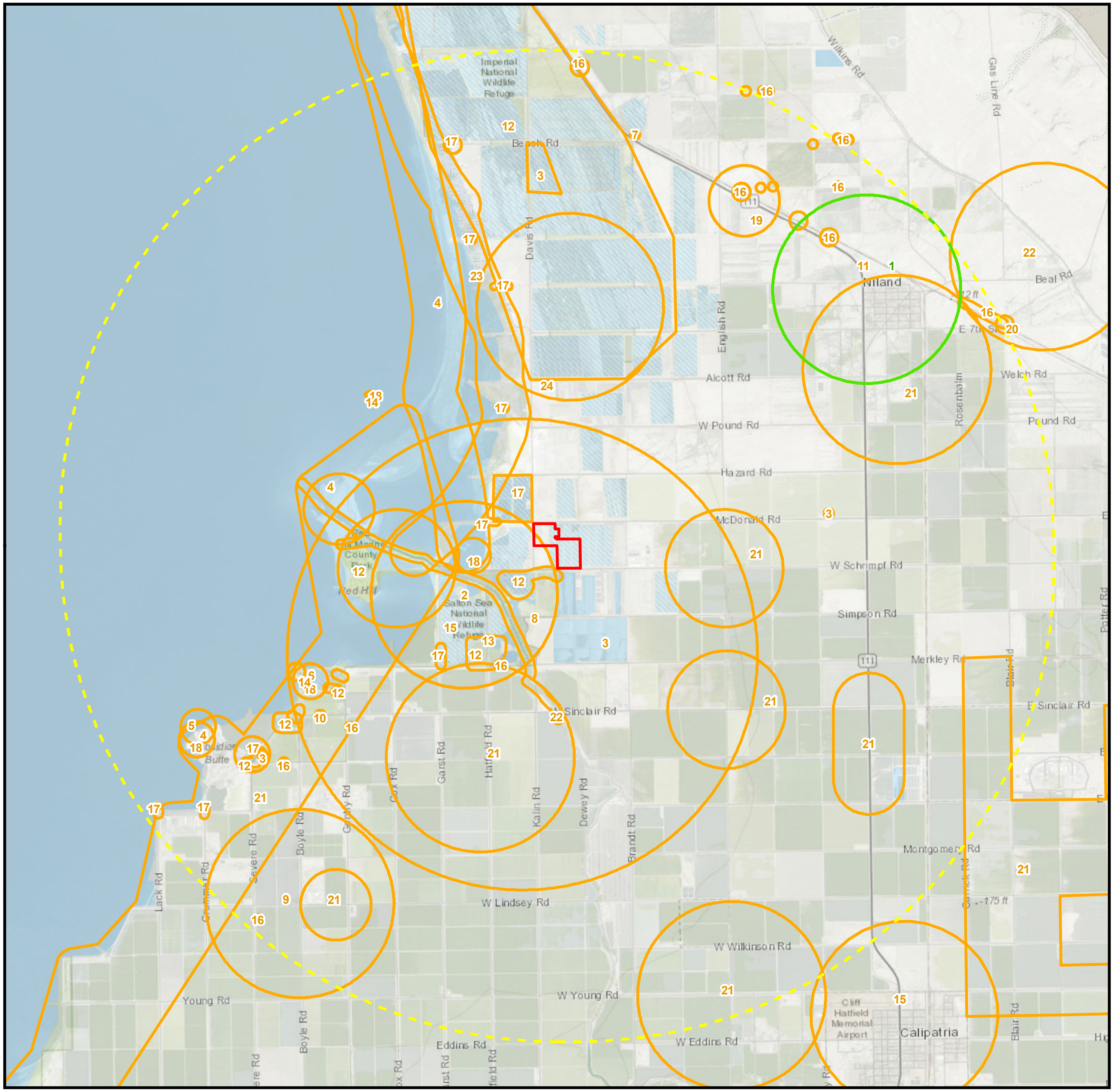
No sensitive plant species were observed during the survey effort. A complete list of plants observed is provided in Appendix B.

3.7 GENERAL WILDLIFE

A total of 12 wildlife species were observed during the survey. Wildlife species observed or detected during the site survey were characteristic of the existing Project site conditions. A complete list of wildlife observed is provided in Appendix C.

Figure 4

Energy Source Mineral Project
CNDDB Occurrences



🟥 Project Location

▭ 5 Mile Buffer

CNDDB Occurrences

🟩 **Plants**

1. gravel milk-vetch

🟧 **Animals**

2. American badger
3. California black rail
4. California brown pelican
5. California gull
6. Caspian tern
7. Couch's spadefoot
8. Crissal thrasher
9. Gila woodpecker
10. Le Conte's thrasher
11. Sonoran Desert toad
12. Yuma Ridgway's rail
13. Yuma hispid cotton rat
14. black skimmer
15. black-tailed gnatcatcher
16. burrowing owl
17. desert pupfish
18. gull-billed tern
19. lowland leopard frog
20. merlin
21. mountain plover
22. razorback sucker
23. western snowy plover
24. yellow warbler

N

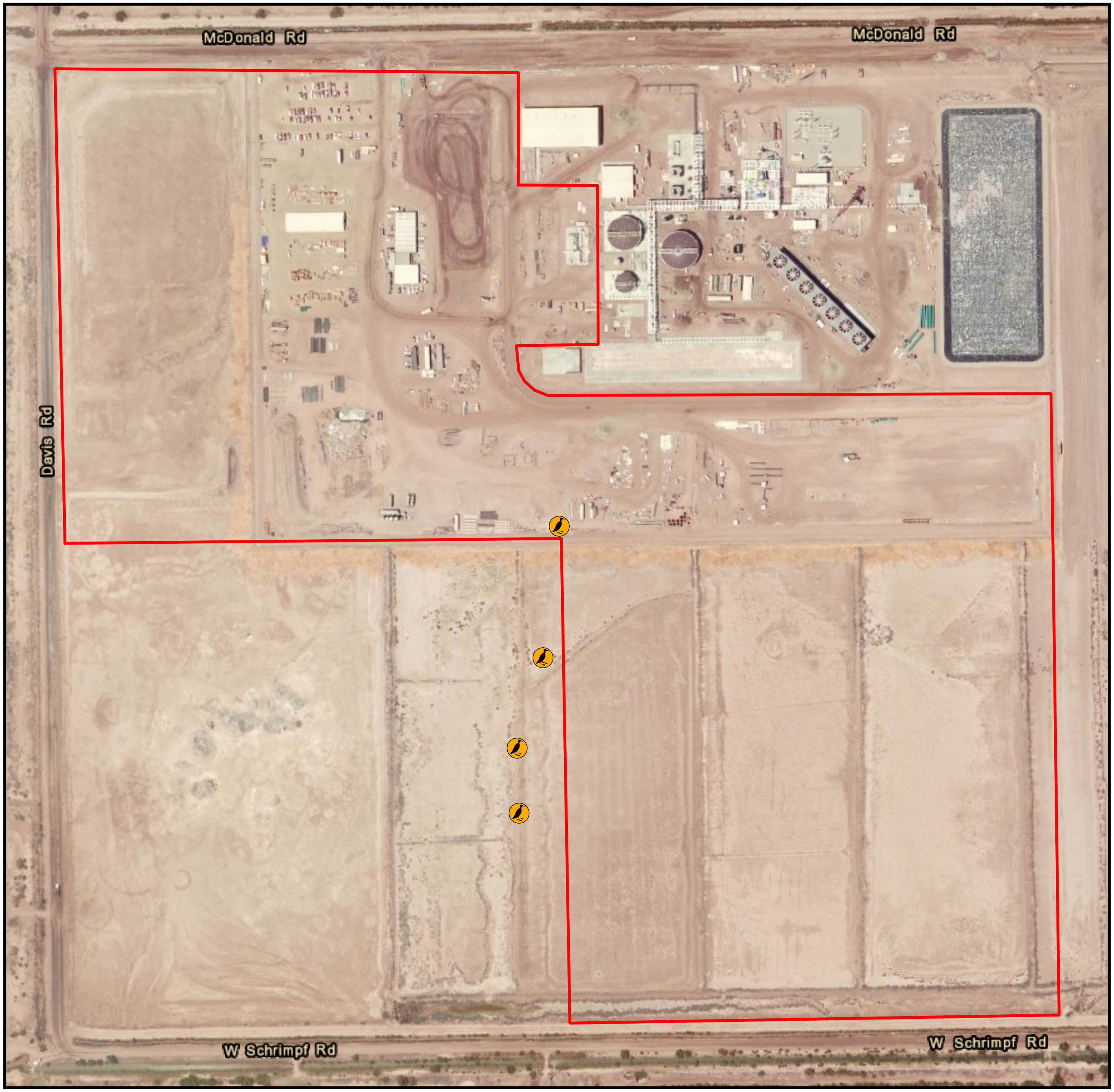
0 0.75 1.5 3

Miles

Name: 21268 BIO Fig 4 CNDDB Occurrences.Mxd
Print Date: 11/20/2020, Author: pcarlos

CHAMBERS GROUP

Figure 5
Energy Source Mineral Project
Burrowing Owl Occurrences



🟥 Project Location

Species Occurrences

● Burrowing Owl

Name: 21268 BIO Fig 5 Burrowing Owl Occurrences.Mxd
Print Date: 11/20/2020, Author: pcarlos

SECTION 4.0 – CONCLUSIONS AND RECOMMENDATIONS

4.1 SENSITIVE PLANTS

After the literature review, the assessment of the various habitat types in the Project site, and the reconnaissance survey were conducted, it was determined that no rare plant species have a potential to occur within the Project site.

4.2 SENSITIVE WILDLIFE

Of the 27 sensitive wildlife species identified in the literature review, it was determined that 26 sensitive wildlife species were considered absent from the Project site, and one was present within the Project site.

Approximately 10 artificial burrowing owl burrows are located within 130 feet west of the Project boundary. These burrows were installed as mitigation for other projects within the surrounding area. Several burrowing owl were observed utilizing the artificial burrows during the survey. In addition, one individual was observed foraging within the southwest portion of the Project site. The artificial burrows are outside the Project boundary and will be avoided during construction activities.

In order to minimize potential impacts to burrowing owl, the following mitigation measures outlined in the 2010 Hudson Ranch II Environmental Impact Report (EIR; County of Imperial 2012) should be implemented prior to and during construction activities:

- MM BIO 1.1-1: Occupied burrows on site will be avoided during nesting season (February 1 – August 31).
- MM BIO 1.1-2: A preconstruction survey will be conducted within 30 days of ground-breaking activities.
- MM BIO 1.1-3: If burrowing owls are found within the Project site, a Burrowing Owl Mitigation Plan must be prepared by a qualified biologist and approved by CDFW.
- MM BIO 1.1-4: No construction will occur within 250 feet of the artificial burrows or other active or occupied burrows unless active or occupied burrows are sheltered with hay bales and monitored by a qualified biologist; if this is done, work may occur within 20 feet of active or occupied burrows. If qualified biologists observe BUOW agitation, work in the vicinity will stop. Additional shelter materials can be added until BUOW remain calm during construction activities.
- MM BIO 1.1-5: If passive relocation is required, it will be done from September 1 to January 31 and will follow the CDFW Staff Report on Burrowing Owl Mitigation Guidelines (CDFW 2012)

4.3 JURISDICTIONAL WATERS

No jurisdictional water features or wetlands were observed within the Project site. No impacts to jurisdictional waters/wetlands are anticipated; therefore, a USACE 404 permit, State 401 certification, or State Streambed Alteration Agreement will not be required for Project authorization.

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APPENDIX A – SITE PHOTOGRAPHS

APPENDIX A – SITE PHOTOGRAPHS

Photo 1.

Overview of the Project site from the eastern boundary, facing northwest.

Photo 2.

Overview of the Project site from the northwest section of the site near the Davis Road and McDonald Road intersection, facing southeast.

Photo 3.

Overview of the Project site from the southwestern corner, adjacent to Schrimpf Road, facing northeast.

Photo 4.

Photo showing the iodine bush scrub occurring throughout the southern portion of the Project site. Photo is facing northeast.

Photo 5.

Man-made ditch created off Davis Road in the northwest section of the Project site. The ditch flows from the road into a man-made detention area where it terminates. Photo facing east.

Photo 6.

Small, man-made detention area at the east of the man-made ditch. Photo facing north.

Photo 7.

Culvert located at the southern boundary, parallel to Schrimpf Road, facing west.

Photo 8.

Overview within the Project site with the existing Hudson Ranch I in the background, facing northwest.

Photo 9.

Photo showing berms located in the southern portion of the Project site. This area provides suitable habitat for burrowing owl. Photo is facing north.

Photo 10.

Artificial pipe burrows and surrounding habitat located 130 feet west of the western Project boundary (outside the Project site). Photo is facing south.

	Photo 11. Artificial burrows, showing occupied burrow, located 130 feet outside the southwestern Project boundary. Photo is facing south.

APPENDIX B – PLANT SPECIES LIST

APPENDIX B – PLANT SPECIES LIST

Scientific Name	Common Name
ANGIOSPERMS (EUDICOTS)	
CHENOPODIACEAE	**GOOSEFOOT FAMILY**
Allenrolfea occidentalis	iodine bush
TAMARICACEAE	**TAMARISK FAMILY**
*Tamarix ramosissima**	Mediterranean tamarisk

*Non-Native Species

APPENDIX C – WILDLIFE SPECIES LIST

APPENDIX C – WILDLIFE SPECIES LIST

Scientific Name	Common Name
CLASS REPTILIA	**REPTILES**
PHRYNOSOMATIDAE	**ZEBRA-TAILED, EARLESS, FRINGE-TOED, SPINY, TREE, SIDE-BLOTCHED, AND HORNED LIZARDS**
Sceloporus occidentalis	western fence lizard
CLASS AVES	**BIRDS**
ARDEIDAE	**HERONS, BITTERNS**
Egretta thula	snowy egret
Ardea herodias	great blue heron
CATHARTIDAE	**NEW WORLD VULTURES**
Cathartes aura	turkey vulture
ACCIPITRIDAE	**HAWKS, KITES, EAGLES**
Buteo jamaicensis	red-tailed hawk
COLUMBIDAE	**PIGEONS & DOVES**
Streptopelia decaocto	Eurasian collared-dove
Zenaida macroura	mourning dove
STRIGIDAE	**TRUE OWLS**
Athene cunicularia	burrowing owl
TYRANNIDAE	**TYRANT FLYCATCHERS**
Sayornis nigricans	black phoebe
MIMIDAE	**MOCKINGBIRDS, THRASHERS**
Mimus polyglottos	northern mockingbird
ICTERIDAE	**BLACKBIRDS**
Quiscalus mexicanus	great-tailed grackle
FRINGILLIDAE	**FINCHES**
Haemorhous mexicanus	house finch

APPENDIX D – ARCHAEOLOGICAL AND PALEONTOLOGICAL ASSESSMENT REPORT FOR THE ENERGY SOURCE MINERAL, LLC PROJECT

ARCHAEOLOGICAL AND PALEONTOLOGICAL ASSESSMENT REPORT FOR THE ENERGY SOURCE MINERAL, LLC PROJECT, CALIPATRIA, IMPERIAL COUNTY, CALIFORNIA

Prepared for:

COUNTY OF IMPERIAL
Planning and Development Services
801 Main Street
El Centro, CA 92243

Prepared by:

CHAMBERS GROUP, INC.
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(858) 541-2800

January 2021

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NATIONAL ARCHAEOLOGICAL DATABASE INFORMATION

Authors: Sandra Pentney, Kellie Kandybowicz, Niranjala Kottachchi, Eduvijes Davis-Mullens

Firm: Chambers Group, Inc.

Client/Project Proponent: Energy Source Mineral, LLC.

Report Date: January 2021

Report Title: Archaeological and Paleontological Assessment Report for the Energy Source Minerals, LLC Project, Calipatria, Imperial County, California

Type of Study: Cultural Resources Phase 1 Pedestrian Survey

New Sites: 2

Updated Sites: None

USGS Quad: *Niland* 7.5-minute quadrangle

Acreage: 92

Permit Numbers: N/A

Key Words: County of Imperial, City of Calipatria, Positive Survey, CEQA, Intensive Pedestrian Survey, *Niland* USGS Quadrangle

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SECTION 1.0 – INTRODUCTION

Chambers Group, Inc. (Chambers Group) has been contracted by Energy Source Mineral, LLC., within the City of Calipatria, Imperial County (County), California, to complete an archaeological assessment as well as a paleontological assessment, including a literature review and pedestrian survey, for the proposed Energy Source Mineral, LLC Project (Project). The proposed Project includes the construction and operation of a commercial lithium hydroxide production plant within the Salton Sea geothermal field in Imperial County, California.

The purpose of this investigation is to assess the potential for significant archaeological and paleontological deposits and/or materials within the Project site and to determine if the current Project has the potential to adversely affect any significant cultural or paleontological materials. Chambers Group completed an archaeological and paleontological literature review, records search, and intensive pedestrian survey of the 92-acre proposed area. This report outlines the archaeological and paleontological findings and results of both efforts.

The following studies have been conducted in accordance with the California Environmental Quality Act (CEQA). This report includes appropriate mitigation measures to ensure less than significant impacts to any cultural and paleontological resources potentially affected during construction.

1.1 PROJECT DESCRIPTION

The Project consists of the development of a commercial lithium hydroxide production facility (ATLiS Plant). The facility will process geothermal brine from the neighboring Hudson Ranch Power I Geothermal Plant (HR1) to produce lithium hydroxide, as well as zinc and manganese products. The HR1 power plant exists within the northeast corner of the 65.12-acre parcel, west of the proposed construction area located in Calipatria, Imperial County, California. The Project will consist of the following activities:

- Construction and operation of a plant to extract lithium, manganese, zinc, and other commercially viable substances from geothermal brine and process the extracted substances to produce commercial quantities of lithium and, to the extent possible, manganese and zinc products and other products
- Construction and operation of brine supply and return pipelines and other associated interconnection facilities with the HR1 power plant
- Construction of a primary access road from McDonald Road (approximately 500 feet west of the HR1 entrance) and an emergency access entrance only from Davis Road
- Paving of McDonald Road from State Route (Highway) 111 to English Road (approximately 3 miles)
- Construction of a power interconnection line from the Imperial Irrigation District (IID) and HR1 switchyard located at the northeast corner of the Hudson Ranch Power I (HR1) site
- Construction of associated facilities between HR1 and the Project site to facilitate the movement of brine and other services

- Construction of a laydown yard that will also support temporary offices during construction as well as serve as a truck management yard during operations
- Construction of offices, repair facilities, shipping and receiving facilities, and other infrastructure components

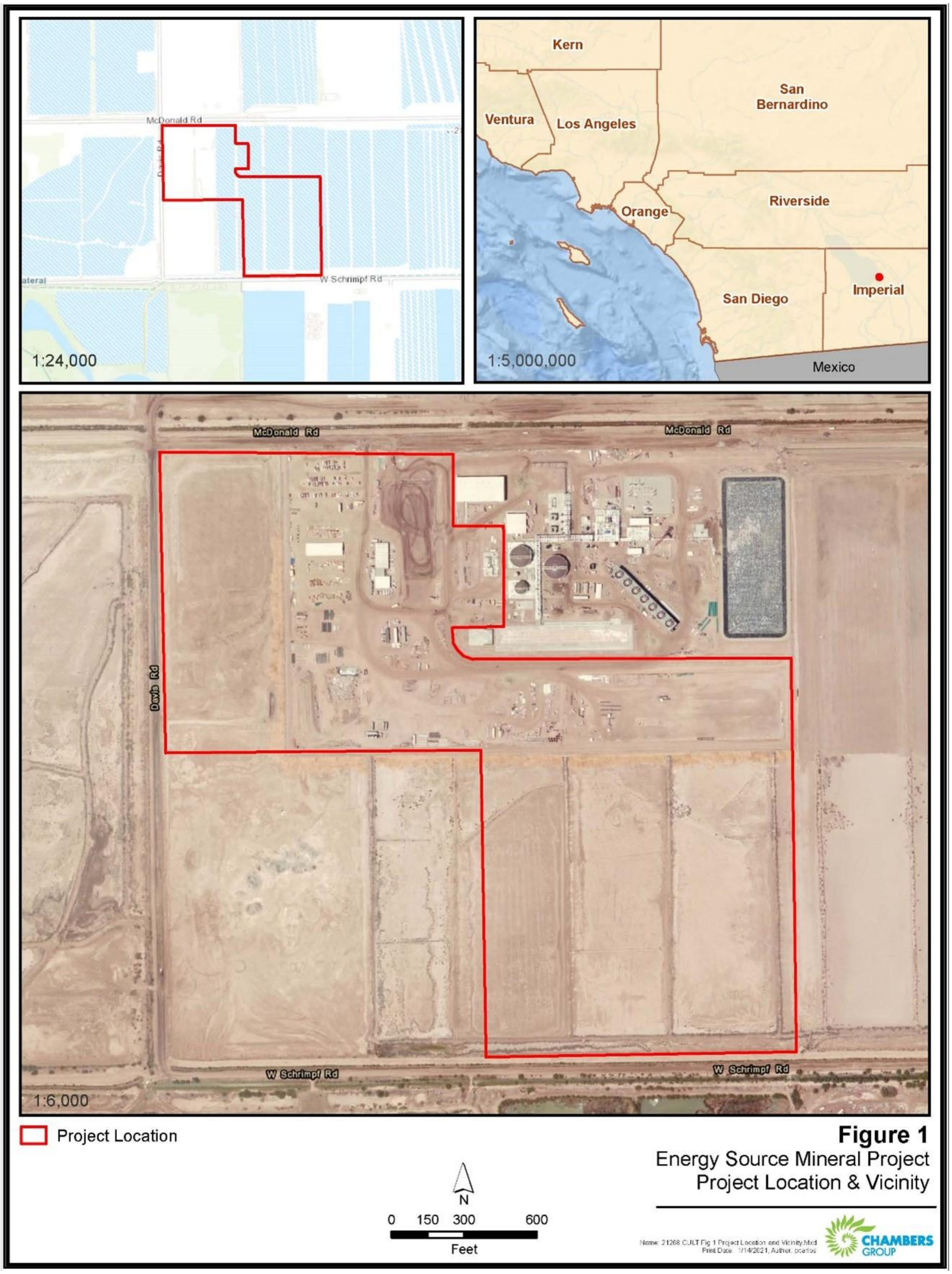
1.2 PROJECT LOCATION

The Project site is located in Calipatria, Imperial County, California, which is approximately 3.8 miles southwest of the community of Niland (Figure 1). The Project plant and facilities will be located at 477 West McDonald Road on three parcels (APNs 020-100-025, 020-100-044, 020-100-046) privately owned by Hudson Ranch Power I (HR1) LLC. The Project site is bounded by McDonald Street to the north, Davis Road to the west, Schrimpf Lane to the south, and a vacant field to the east. Currently, the HR1 power plant exists within the northeast corner of the 65.12-acre parcel. The plant facilities will be built on an approximately 37-acre area that is being subdivided out of the existing 65.12 acres, with an additional 15 acres on the northwestern side of a second adjacent parcel and approximately 40 acres on the southeast end of a third parcel, for a total of approximately 92 acres. These three partial parcels will be merged to form the new parcel for the Project.

The Project site is surrounded by open, vacant land. To the west of the Project site is IID-owned vacant marsh land adjoining the Salton Sea. To the north of the Project site is vacant land that is mostly used for duck hunting clubs and the location of the production and injection wells for HR1. To the south is vacant land that has never been in any production. To the east are open, fallow, possibly temporarily inundated fields.

The Project site is situated in the lower Colorado Desert approximately 2.25 miles east of the Salton Sea, 3.03 miles from Highway 111, 15 miles north/northwest of Brawley, and 52 miles from the Colorado River in a location geologically known as the Salton Trough. The Salton Trough is an area bordered on the east by the San Andreas Fault and to the south by the Gulf of California. Specifically, the Project site is located on the United States Geological Survey (USGS) *Niland* 7.5-minute quadrangle, Section 24, Township 11 South, Range 13 East. The elevation at the Project site is approximately 225 feet below mean sea level (bmsl).

Figure 1: Project Location and Vicinity Map



1.3 REGULATORY FRAMEWORK

1.3.1 California Environmental Quality Act

Work for this Project was conducted in compliance with CEQA. The regulatory framework as it pertains to cultural resources under CEQA is detailed below.

1.3.2 Paleontological Resources

CEQA requires that public agencies and private interests identify the potential environmental consequences of their projects on any object or site of significance to the scientific annals of California (Division I, California Public Resources Code [PRC] Section 5020.1 [b]). Appendix G in Section 15023 provides an Environmental Checklist of questions (PRC 15023, Appendix G, Section VII, Part f) that includes the following: "Would the project directly or indirectly destroy a unique paleontological resource or site or unique geological feature?" CEQA does not define "a unique paleontological resource or site." However, the Society of Vertebrate Paleontology (SVP) has provided guidance specifically designed to support state and federal environmental review. The SVP broadly defines significant paleontological resources as follows (SVP 2010, page 11): "Fossils and fossiliferous deposits consisting of identifiable vertebrate fossils, large or small, uncommon invertebrate, plant, and trace fossils, and other data that provide taphonomic, taxonomic, phylogenetic, paleoecologic, stratigraphic, and/or biochronologic information. Paleontological resources are considered to be older than recorded human history and/or older than middle Holocene (i.e., older than about 5,000 radiocarbon years)."

Significant paleontological resources are determined to be fossils or assemblages of fossils that are unique, unusual, rare, diagnostically important, or are common but have the potential to provide valuable scientific information for evaluating evolutionary patterns and processes, or which could improve our understanding of paleochronology, paleoecology, paleophylogeography, or depositional histories. New or unique specimens can provide new insights into evolutionary history; however, additional specimens of even well represented lineages can be equally important for studying evolutionary pattern and process, evolutionary rates, and paleophylogeography. Even unidentifiable material can provide useful data for dating geologic units if radiometric dating is possible. As such, common fossils (especially vertebrates) may be scientifically important and therefore considered significant.

1.3.3 Cultural Resources

Under the provisions of CEQA, including the CEQA Statutes (PRC §§ 21083.2 and 21084.1), the CEQA Guidelines (Title 14 California Code of Regulations [CCR], § 15064.5), and PRC § 5024.1 (Title 14 CCR § 4850 et seq.), properties expected to be directly or indirectly affected by a proposed project must be evaluated for California Register of Historical Resources (CRHR) eligibility (PRC § 5024.1).

The purpose of the CRHR is to maintain listings of the state's historical resources and to indicate which properties are to be protected, to the extent prudent and feasible, from material impairment and substantial adverse change. The term *historical resources* includes a resource listed in or determined to be eligible for listing in the CRHR; a resource included in a local register of historical resources; and any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant (CCR § 15064.5[a]). The criteria for listing properties in the CRHR were expressly developed in accordance with previously established criteria developed for listing in the National Register of Historic Places (NRHP). The California Office of Historic Preservation (OHP 1995:2) regards "any physical evidence of human activities over 45 years old" as meriting recordation and evaluation.

California Public Resources Code

Section 5097.5 of the PRC states:

> "No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor."

As used in this PRC section, "public lands" means lands owned by, or under the jurisdiction of, the state or any city, county, district, authority, or public corporation, or any agency thereof. Consequently, public agencies are required to comply with PRC 5097.5 for their own activities, including construction and maintenance, as well as for permit actions (e.g., encroachment permits) undertaken by others.

California Register of Historic Resources

A cultural resource is considered "historically significant" under CEQA if the resource meets one or more of the criteria for listing on the CRHR. The CRHR was designed to be used by state and local agencies, private groups, and citizens to identify existing cultural resources within the state and to indicate which of those resources should be protected, to the extent prudent and feasible, from substantial adverse change. The following criteria have been established for inclusion in the CRHR. A resource is considered significant if it:

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

In addition to meeting one or more of the above criteria, historical resources eligible for listing in the California Register must retain enough of their historic character or appearance to be able to convey the reasons for their significance. Such integrity is evaluated in regard to the retention of location, design, setting, materials, workmanship, feeling, and association.

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

- An archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

  - Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;

  - Has a special and particular quality, such as being the oldest of its type or the best available example of its type; or

  - Is directly associated with a scientifically recognized important prehistoric or historic event or person.

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

Impacts that adversely alter the significance of a resource listed in or eligible for listing in the CRHR are considered a significant effect on the environment. Impacts to historical resources from a proposed project are thus considered significant if the project (1) physically destroys or damages all or part of a resource; (2) changes the character of the use of the resource or physical feature within the setting of the resource, which contributes to its significance; or (3) introduces visual, atmospheric, or audible elements that diminish the integrity of significant features of the resource.

Imperial County

Section III(B) of the Imperial County Conservation and Open Space Element describes the cultural resources, goals, and objectives to protect such resources (County of Imperial 2016). The planning goals and objectives are described below.

Goal 3 of the goals and objectives section of the Imperial County Conservation and Open Space Element addresses the preservation of cultural resources. Goal 3 states that the County will "preserve the spiritual and cultural heritage of the diverse communities of Imperial County" (County of Imperial 2016). Three objectives are enumerated to assist in implementation of the goal:

- **Objective 3.1:** Project and preserve sites of archaeological, ecological, historical, and scientific value, and/or cultural significance.

- **Objective 3.2:** Develop management strategies to preserve the memory of important historic periods, including Spanish, Mexican, and early American settlements of Imperial County.

- **Objective 3.3:** Engage all local Native American Tribes in the protection of tribal cultural resources, including prehistoric trails and burials sites.

SECTION 2.0 – SETTINGS

2.1 ENVIRONMENTAL SETTING

As noted in Section 1.0, the proposed Project is located within the mid-region of the lower Colorado Desert physiography. Calipatria is approximately 10 miles north of Brawley, Imperial County, California. The average annual temperature in Brawley is 72.3 °F (22.4 °C). Virtually no rainfall occurs during the year; about 2.4 inches of precipitation falls annually. The difference in precipitation between the driest month and the wettest month is 0.39 inch. The average temperatures vary during the year by 69.6 °F (20.9 °C). The warmest month of the year is July, with an average temperature of 91.6 °F (33.1 °C). In January, the average temperature is 54.0 °F (12.2 °C) (Climate-Data 2021).

2.1.1 Habitats / Vegetation Communities

Two vegetation communities, Ruderal and Bare Ground, were observed within the Project site. Areas classified as Ruderal tend to be dominated by pioneering species that readily colonize disturbed ground and that are typically found in temporary, often frequently disturbed habitats (Barbour et al. 1999). The soils in ruderal areas are typically characterized as compacted or frequently disturbed. Often, Ruderal areas are dominated by species of the Tamarix, Brassica, Malva, Salsola, Eremocarpus, Amaranthus, and Atriplex genera. Ruderal vegetation occurs in the disturbed southern portion of the Project site that was previously used as a duck hunting club. Vegetation found on site typical of this vegetation included scattered iodine bush (*Allenrolfea occidentalis*) with a few scattered Mediterranean tamarisk (*Tamarix ramosissima*). Bare Ground (BG) areas are generally devoid of vegetation but do not contain any form of pavement. BG has higher water permeability and higher fossorial rodent habitat potential. BG is present throughout the entire Project site with large, uninterrupted expanses in the eastern portion of the Project site. Scattered, dead Mediterranean tamarisk seedlings were the only vegetation observed in these areas.

2.1.2 Geological and Paleontological

The survey area is located within the Imperial Valley and is within a large geologic structure referred to as the Salton Trough, a graben or rift valley extending approximately 1,000 miles in length. This graben was created when the San Andreas Fault system and the East Pacific Rise split Baja California from mainland Mexico approximately 5 million years ago. The southern portion of this rift valley is now known as the Gulf of California, while the northern part is known as the Salton Trough. Plate tectonic activity has continued to open this rift with the Salton Trough as the hinge point. The North American Plate is to the east and the Pacific Plate to the west. The Colorado River may have begun depositing huge loads of silt in the upper trough as early as 5.5 million years ago (Alles 2004).

By some time in the Pliocene Epoch (2 to 4 million years ago), the river had created a delta of sufficient height to form a dam isolating the Imperial Valley and Coachella Valley portions of the Salton Trough from the Gulf of California (Waters 1980). This silt dam continues to keep seawater out of the Salton Trough, which is more than 200 feet below sea level. A series of very high freshwater lake stands that occurred during the late Pleistocene have been documented in the Salton Trough, suggesting that the Colorado River began flowing into the Salton Trough on an occasional basis from that time. Ranging in elevation up to 170 feet above sea level, these Pleistocene freshwater lake shorelines date to between 25,000 and 45,000 years ago (Waters 1980). The height of these Pleistocene lake stands reflects the elevation of the natural silt dam which separates the Gulf from the Salton Trough. These Pleistocene lake stands have been called Lake Cahuilla to refer to both the Pleistocene and Holocene lakes (Waters 1980).

Site-Specific Geology and Soils

After review of U.S. Department of Agriculture (USDA) Soil Conservation Service and by referencing the USDA Natural Resources Conservation Service (NRCS) Web Soil Survey (USDA 2020), it was determined that the survey area is located within the Imperial Valley Area (CA683) and the soils are characterized as Imperial Silty Clay complex. The parent material is clayey alluvium derived from mixed or clayey lacustrine deposits. The available water capacity is classified as moderate (approximately 8.3 inches) with a depth to the water table of more than 80 inches (USDA 2020).

Paleontological Significance

Lake Cahuilla was a former freshwater lake that periodically occupied a major portion of the Salton Trough during late Pleistocene to Holocene time (approximately 37,000 to 240 years ago), depositing sediments that underlie the entire Project site (mapped as Quaternary lake deposits by Jennings [1967]). Generally, Lake Cahuilla sediments consist of an interbedded sequence of both freshwater lacustrine (lake) and fluvial (river/stream) deposits. The Lake Cahuilla Beds have yielded well-preserved subfossil remains of freshwater clams and snails (Stearns 1901) and sparse remains of freshwater fish (Hubbs and Miller 1948). The paleontological resources of the Lake Cahuilla Beds are considered significant because of the paleoclimatic and palaeoecological information they can provide (Jefferson 2006), and these deposits are therefore assigned a high paleontological potential (SVP 2010).

2.2 CULTURAL SETTING

2.2.1 Prehistory

The Project site is located in the mid-section of the lower Colorado Desert, in which Lake Cahuilla is situated. In addition to paleontological potential, the archaeological deposition found around the shoreline of Lake Cahuilla radiocarbon dates as old as 1440 Before present (B.P.) or 650 Anno Domini (A.D.) (Waters 1983; Hubbs et al. 1962) and shows demonstrable evidence of cultural activity in the area. Due to Lake Cahuilla previously creating a massive freshwater oasis, seasonal occupations are evident in archaeological deposition, which includes pottery, ground and chipped stone artifacts, and archaeological features such as rock fish traps (Waters 1983; Phukan et al. 2019). In regard to the ethnographic landscape, the Cahuilla, Kumeyaay, and Cocopa settled in various locations, including the northern portion of basin, southern portion of basin, and the delta, respectively (Phukan et al. 2019). Only the Cocopa used fishing nets as means of subsistence methods, while Kumeyaay and Cahuilla constructed the stone fish trap features, which can be difficult to identify as such during pedestrian transect survey. Moreover, evidence from middens and human coprolites suggest subsistence on either razorback suckers or bonytail chubs, demonstrating environmental importance of this area (Phukan et al. 2019). Cultural resources found in the area are associated with Lake Cahuilla due to temporal context and functional use of landscape, which yield high archaeological significance of how people adapted to the changing environment around the lake.

Archaeological studies have been limited in the Salton Sea desert region. This paucity of archaeological investigation has resulted in undefined and imperfect archaeological classification schemas and typologies. Therefore, the prehistoric time periods used by archaeologists to describe the southern Imperial County desert region borrow heavily from those chronologies established for San Diego County prehistory, with some minor Colorado Desert-specific clarifications. The three general time periods accepted in the region are the San Dieguito Complex, the Archaic period, and the Late Prehistoric period. These periods are briefly described below.

The earliest recognized occupation of the region, dating to 10,000 to 8,000 years before present (B.P.), is known as the San Dieguito complex (Rogers 1939, 1945). Assemblages from this occupation generally consist of flaked stone tools. Evidence of milling activities is rare for sites dating to this period. It is generally agreed that the San Dieguito complex shows characteristics of the Western Pluvial Lakes Tradition (WPLT), which was widespread in California during the early Holocene. The WPLT assemblage generally includes scrapers, choppers, and bifacial knives. Archaeologists theorize this toolkit composition likely reflects a generalized hunting and gathering society (Moratto 1984; Moratto et al. 1994; Schaeffer and Laylander 2007).

The following period, the Archaic (8,500 to 1,300 B.P.), is traditionally seen as encompassing both coastal and inland adaptations, with the coastal Archaic represented by the shell middens of the La Jolla complex and the inland Archaic represented by the Pauma complex (True 1980). Coastal settlement is also thought to have been significantly affected by the stabilization of sea levels around 4,000 years ago that led to a general decline in the productivity of coastal ecosystems. Artifacts associated with this period include milling stones, unshaped manos, flaked cobble tools, Pinto-like and Elko projectile points, and flexed inhumations (Schaefer and Laylander 2007). Colorado Desert rock art studies have led researchers to suggest Archaic Period origins for many petroglyph and pictograph styles and elements common in later times (Whitley 2005). More recently, several important late Archaic period sites have been documented in the northern Coachella Valley, consisting of deeply buried middens with clay-lined features and living surfaces, cremations, hearths and rock shelters. Faunal assemblages show a high percentage of lagomorphs (rabbits and hares). The larger sites suggest a more sustained settlement type than previously known for the Archaic period in this area (Schaefer and Laylander 2007).

The Late Prehistoric period (1,300 to 200 B.P.) is marked by the appearance of small projectile points indicating the use of the bow and arrow, the common use of ceramics, and the general replacement of inhumations with cremations, all characteristic of the San Luis Rey complex as defined by Meighan (1954). The San Luis Rey complex is divided temporally into San Luis Rey I and San Luis Rey II, with the latter distinguished mainly by the addition of ceramics. Along the coast of northern San Diego County, deposits containing significant amounts of Donax shell are now often assigned to the Late Prehistoric, based on a well-documented increase in the use of this resource at this time (e.g., Byrd and Reddy 1999). The inception of the San Luis Rey complex is suggested by True (1966; True et al. 1974) to mark the arrival of Takic speakers from regions farther inland. Waugh (1986) is in general agreement with True but suggests that the migration was probably sporadic and took place over a considerable period. Titus (1987) cites burials showing physical differences between pre- and post-1,300 B.P. remains to further support this contention. However, some researchers have suggested that these Shoshonean groups may have arrived considerably earlier, perhaps as early as 4,000 years ago. Vellanoweth and Altschul (2002:102-105) provide an excellent summary of the various avenues of thought on the Shoshonean Incursion.

2.2.2 Ethnography

The Project site was occupied by the Cahuilla, Kumeyaay, Kamia, and the Colorado River Indian Tribes (CRIT). The closest reservation is the Torres-Martinez Indian Reservation, currently home to the desert Cahuilla Indians, and is on the northwest side of the Salton Sea, roughly 41 miles from the Project site. Following is a brief ethnographic and archaeological summary of the Cahuilla, Kumeyaay, Kamia, and Colorado River Indian Tribes (CRIT).

Cahuilla

The Project site currently falls within the ethnographic territory of the Cahuilla, whose ancestors may have entered this region of Southern California approximately 3,000 years ago (Moratto 1984: 559-560). The Cahuilla ancestral territory is located near the geographic center of Southern California and varied greatly topographically and environmentally, ranging from forested mountains to desert areas. Natural boundaries such as the lower Colorado Desert provided the Cahuilla separate territory from the neighboring Mojave, Ipai, and Tipai. In turn, mountains, hills, and plains separated the Cahuilla from the adjacent Luiseño, Gabrielino, and the Serrano (Bean 1978: 575).

The Cahuilla relied heavily on the exploitation and seasonal availability of faunal and floral resources through a pattern of residential mobility that emphasized hunting and gathering. Important floral species used in food, for manufacturing of products, and/or for medicinal uses primarily included acorns, mesquite and screw beans, piñon nuts, and various cacti bulbs (Bean 1978:578). Coiled-ware baskets were common and used for a variety of tasks including food preparation, storage, and transportation (Bean 1978:579).

Networks of trails linked villages and functioned as hunting, trading, and social conduits. Trade occurred between the Cahuilla and tribes such as the Gabrielino as far west as Santa Catalina and the Pima as far east as the Gila River. Both goods and technologies were frequently exchanged between the Cahuilla and nearby Serrano, Gabrielino, and Luiseño cultural groups (Bean 1978:575-582).

The Cahuilla are believed to have first come into contact with Europeans prior to the Juan Bautista de Anza expedition in 1774; however, little direct contact was established between the Cahuilla and the Spanish except for those baptized at the Missions San Gabriel, San Luis Rey, and San Diego (Bean 1978:583-584). Following the establishment of several *asistencias* near the traditional Cahuilla territories, many Spanish cultural forms — especially agriculture and language — were adopted by the Cahuilla people (Bean 1978:583-584; Lech 2012:17-30).

Through the Rancho and American periods, the Cahuilla continued to retain their political autonomy and lands despite more frequent interactions with European-American immigrants. In 1863, a large number of the population was killed by a sweeping smallpox epidemic that affected many of the tribal groups in Southern California. The first reservations established in Imperial County ca. 1865 saw many of the Cahuilla remaining on their traditional lands. After 1891, however, all aspects of the Cahuilla economic, political, and social life were closely monitored by the federal government; a combination of missionaries and government schools drastically altered the Cahuilla culture (Bean 1978:583-584).

Kumeyaay

In addition to the Cahuilla, Native American people occupying the region also included the Kumeyaay. The Kumeyaay or Tipai-Ipai were formerly known as the Kamia or Diegueños, the former Spanish name applied to the Mission Indians living along the San Diego River, and are referred to as the Kumiai in Mexico. Today, members of the tribe prefer to be called Kumeyaay (Luomala 1978). The territory of the Kumeyaay extended north from Todos Santos Bay near Ensenada, Mexico to the mouth of the San Luis Rey River in north San Diego County, and east to the Sand Hills in central Imperial Valley near the current Project site. The Kumeyaay occupied the southern and eastern desert portions of the territory, while the Ipai inhabited the northern coastal region (Luomala 1978).

The primary source of subsistence for the of Kumeyaay was vegetal food. Seasonal travel followed the ripening of plants from the lowlands to higher elevations of the mountain slopes. Buds, blossoms, potherbs, wild seeds, cactus fruits, and wild plums were among the diet of Kumeyaay. The Kumeyaay practiced limited agriculture within the floodplain areas of their territory. Melons, maize, beans, and cowpeas were planted. Women sometimes transplanted wild onion and tobacco plants to convenient locations and sowed wild tobacco seeds. Deer, rodents, and birds provided meat as a secondary source of sustenance. Families also gathered acorns and piñon nuts at the higher altitudes. Village locations were selected for seasonal use and were occupied by exogamous, patrilineal clans. Three or four clans would winter together and then disperse into smaller bands during the spring and summer (Luomala 1978).

Kumeyaay structures varied with the seasons. Summer shelter consisted of a wind break, tree, or a cave fronted with rocks. Winter dwellings had slightly sunken floors with dome-shaped structures made of brush thatch covered with grass and earth (Gifford 1931; Luomala 1978).

Upon death, the Kumeyaay cremated the body of the deceased. Ashes were placed in a ceramic urn and buried or hidden in a cluster of rocks. The family customarily held a mourning ceremony one year after the death of a family member. During this ceremony, the clothes of the deceased individual were burned to ensure that the spirit would not return for his or her possessions (Gifford 1931; Luomala 1978).

It is estimated that the pre-contact Kumeyaay population living in this region ranged from approximately 3,000 (Kroeber 1925) to 9,000 (Luomala 1978). Beginning in 1775, the semi-nomadic life of the Kumeyaay began to change as a result of contact with European-Americans, particularly from the influence of the Spanish missions. Through successive Spanish, Mexican, and Anglo-American control, the Kumeyaay people were forced to adopt a sedentary lifestyle and accept Christianity (Luomala 1978). As of 1968, Kumeyaay population was somewhere between approximately 1,322 (Shipek 1972 in Luomala 1978) and 1,522 (Luomala 1978), and by 1990 an estimated 1,200 Kumeyaay lived on reservation lands while 2,000 lived elsewhere (Pritzker 2000).

Trade was a very important feature of Kumeyaay subsistence, coastal groups traded salt, dried seafood, dried greens, and abalone shells to inland and desert groups for products such as acorns, agave, mesquite beans, and gourds (Almstedt 1982:10; Cuero 1970:33; Luomala 1978:602). Travel and trade were accomplished by means of an extensive network of trails. Kumeyaay living in the mountains of eastern San Diego County frequently used these trails to travel down to the Kamia settlement of *Xatopet* on the east/west portion of the Alamo River to trade and socialize in winter (Castetter and Bell 1951; Gifford 1918:168; Spier 1923:300; Woods 1982).

Kamia

The Kamia lived to the east of the Project site in an area that included Mexicali and bordered the Salton Sea. The traditional territory of the Kamia included the southern Imperial Valley from the latitude of the southern half of the Salton Sea to well below what is the United States–Mexico international border (Forbes 1965; Luomala 1978:593). The Kamia tribe of Indigenous Peoples of the Americas live at the northern border of Baja California in Mexico and the southern border of California in the United States. Their main settlements were along the New and Alamo Rivers (Gifford 1931). Their Kumeyaay language belongs to the Yuman–Cochimí language family.

Subsistence of the Kamia consisted of hunting and gathering and floodplain horticulture (Barker 1976; Gifford 1931). In normal years, the Colorado River would overflow its banks in the spring and early summer and fill rivers such as the New and Alamo. When the floodwaters receded, the Kamia would plant in the mud. A dam was maintained at *Xatopet* on the east/west portion of the Alamo River to control water flow and allow farming in years when water flow was insufficient (Castetter and Bell 1951:43). Gifford (1931:22) and Castetter and Bell (1951:43) suggested these were recent adaptations and not traditional life ways. Bean and Lawton (1973); Lawton and Bean (1968), and Shipek (1988) argue that irrigation was indigenous.

The Kamia's major food staple was mesquite and screwbean, called by the Kamia *anxi* and *iyix*, respectively (Gifford 1931:23), along with the seeds of the ironwood (*Olneya tesota*), also known as*Palo fierro* in Spanish and palo verde were also used. Neither palo verde nor ironwood was considered a particularly desirable food resource (Castetter and Bell 1951:195-196). Acorns were also an important seasonal food, were gathered in the mountains to the west of Kamia territory in October and acquired through trade from the southern Kumeyaay (Gifford 1931).

Hunting contributed to the diet in a minor way in terms of overall caloric intake but provided valuable protein and skin and bone for clothing, blankets, and tools. Small game, primarily rabbits, was most frequently taken, using bow and arrow or rabbit stick (*macana*). Sometimes fires were set along sloughs to drive rabbits out. Individuals with bow and arrow also hunted deer and mountain sheep. Fish were also taken in sloughs with bow and arrow and by hand, hooks, basketry scoops, and seine nets (Gifford 1931:24).

Colorado River Indian Tribes

The population of the CRIT reservation comprises of people from the Mojave, Chemehuevi, Hopi, and Navajo. While the Hopi and Navajo whom were forced into the reservation from further east, both the Mojave and Chemehuevi have been in this region since the tribe split off from the Southern Paiute in the area of current-day Las Vegas (Bean and Vane 2002). Although the origins of the Chemehuevi are of the Southern Paiute, their culture has been heavily influenced by the Mojave (Deur and Confer 2012), testifying to the close relationship between the two tribes. Relationships between the Chemehuevi and the Mojave have not always been peaceful; however, the Mojave retained the rights to travel through the newly established Chemehuevi territory (Bean and Vane 2002).

The subsistence pattern of the Chemehuevi was agriculturally based. Maize, squash, melons, gourds, beans, cowpeas, winter wheat, and some grasses were key crops grown in the floodplain areas along the Colorado River. Hunting and gathering were also important elements of the subsistence strategy undertaken by younger adults while the elderly stayed in the village to tend to the crops (Deur and Confer 2012).

Spiritually, the Chemehuevi were tied to their land, with spiritual power coming from particular landmarks within their territory such as mountain peaks, caves, or springs. Puha trails link the landmarks together and are also considered to have spiritual power (Deur and Confer 2012). The manner in which ceremonies were practiced showed the tribe's close ties with the Mojave. Hunting and gathering traditions followed the traditional Paiute pattern, as did burial practices. Other ceremonial practices testify to the Mojave influence (Deur and Confer 2012).

Mojave were also agrarian and had a reliance on fishing in the Colorado River. It should be noted that the Chemehuevi deferred fishing rights to the Mojave (Deur and Confer 2012). The Mojave people during the protohistoric and historic times were semi-sedentary. Floodplain farming was common, and the Colorado

River made up the center of their territory. The extent of their territory extended on either side of the Colorado River to the east as far as the highest crest of the Black Mountains, the Buck Mountains, and the Mojave Mountains and to the west to the Sacramento, Dead, and Newberry Mountains. From north to south their territory ran from the Mohave Valley to south of what is now the City of Blythe (Bean and Vane 2002).

The Mojave peoples were nationalistic, considering their home territory to be their own country (Deur and Confer 2012). Frequently warring with the Halchidoma, the Mojave and Quechan joined forces to evict the Halchidoma from their territory. The Mojave then encouraged the Chemehuevi to move into the river area (Russell et al. 2002). Trade was of particular importance to the Mojave, who had extensive trail networks to take them to the Pacific Coast in the west, and to the Cahuilla in the south and east (Bean and Vane 2002).

In the spring and summer months the Mojave lived along the banks of the Colorado River where they harvested crops and fished for sustenance. Crops were planted in the spring as the river, swollen from the winter rains, receded. Seeds were planted in the newly exposed and saturated mud. While the Mojave peoples relied on their crops, their major food staple was mesquite and screwbean pods, which were gathered. In the winter they moved their settlement areas to rises above the river to avoid seasonal flooding (Russell et al 2002).

2.2.3 History

The first significant European settlement of California began during the Spanish Period (1769 to 1821) when 21 missions and four presidios were established between San Diego and Sonoma. Although located primarily along the coast, the missions dominated economic and political life over the greater California region. The purpose of the missions was primarily for political control and forced assimilation of the Native American population into Spanish society and Catholicism, along with economic support to the presidios (Castillo 1978).

In the 1700s, due to pressures from other colonizers (Russians, French, British), New Spain decided that a party should be sent north with the idea of founding both military presidios and religious missions in Alta California to secure Spain's hold on its lands. The aim of the party was twofold. The first was the establishment of presidios, which would give Spain a military presence within its lands. The second was the establishment of a chain of missions along the coast slightly inland, with the aim of Christianizing the native population. By converting the native Californians, they could be counted as Spanish subjects, thereby bolstering the colonial population within a relatively short time (Lech 2012: 3-4).

The party was led by Gaspar de Portolá and consisted of two groups: one would take an overland route, and one would go by sea. All parties were to converge on San Diego, which would be the starting point for the chain of Spanish colonies. What became known as the Portolá Expedition set out on March 24, 1769. Portolá, who was very loyal to the crown and understood the gravity of his charge, arrived in what would become San Diego on July 1, 1769. Here, he immediately founded the presidio of San Diego. Leaving one group in the southern part of Alta California, Portolá took a smaller group and began heading north to his ultimate destination of Monterey Bay. Continuing up the coast, Portolá established Monterey Bay as a Spanish possession on June 3, 1770, although it would take two expeditions to accomplish this task. Having established the presidios at San Diego and Monterey, Portolá returned to Mexico. During the first four years of Spanish presence in Alta California, Father Junípero Serra, a member of the Portolá expedition and the Catholic leader of the new province, began establishing what would become a chain of 21 coastal missions in California. The first, founded concurrently at San Diego with the presidio, was the launching point for this group. During this time, four additional missions (San Carlos Borromeo de Carmelo, San Antonio de Padua, San Gabriel Arcángel, and San Luis Obispo de Tolosa) were established (Lech 2012: 1-4).

The Mexican Period (1821-1848) began with the success of the Mexican Revolution in 1821, but changes to the mission system were slow to follow. When secularization of the missions occurred in the 1830s, the missions' vast land holdings in California were divided into large land grants called ranchos. The Mexican government granted ranchos throughout California to Spanish and Hispanic soldiers and settlers (Castillo 1978; Cleland 1941). Even after the decree of secularization was issued in 1833 by the Mexican Congress, missionaries continued to operate a small diocesan church. In 1834, the San Gabriel Mission, including over 16,000 head of cattle, was turned over to the civil administrator.

In 1848, the Treaty of Guadalupe Hidalgo ended the Mexican American War and marked the beginning of the American Period (1848 to present). The discovery of gold that same year sparked the 1849 California Gold Rush, bringing thousands of miners and other new immigrants to California from various parts of the United States, most of whom settled in the northern part of the state. For those settlers who chose to come to southern California, much of their economic prosperity was fueled by cattle ranching rather than by gold. This prosperity, however, came to a halt in the 1860s because of severe floods and droughts, as well as legal disputes over land boundaries, which put many ranchos into bankruptcy.

Imperial County was formed in 1907 from a portion of San Diego County known as Imperial Valley and is the newest of California's counties. It is known for being one of California's most prosperous agricultural communities because of its vast canal systems stemming from the Colorado River. The first diversion of the Colorado River was in 1905 and continued through 1942 when the All-American Canal was completed. It is this water, conveyed from the Colorado River, that makes Imperial County so rich (Hoover et al. 2002).

The City of Calipatria get its name from the words "California" and "patria," which means "fatherland." The City was first designated as Date City by the Imperial Valley Farm Land Association, established in 1914 (USGS 2021); Calipatria became incorporated in 1919 (City of Calipatria 2021). Today Calipatria is located 23 miles north of El Centro and is considered to be in the north El Centro metropolis area although it is predominately composed of agricultural land. Calipatria is 180 feet below sea level (City of Calipatria 2021); it boasts to be the lowest established city in the Western Hemisphere. Calipatria is also noted for its 184-foot flagpole where the flag flies at sea level. This historic flag monument was in part dedicated to the community when the story of a tragic vehicle accident in 1957 that befell a local Japanese-American pharmacist, whose wife passed away in the accident, brought international press and recognition to this small town in the Imperial Valley in 1957; the monument was erected shortly thereafter as a memorial for their fellow townsperson (City of Calipatria 2021).

SECTION 3.0 – RESEARCH DESIGN

3.1 PALEONTOLOGICAL RESOURCES

Chambers Group conducted a desktop review that included a review of published and unpublished paleontological literature and a search of museum records obtained by the San Diego Natural History Museum (SDNHM; McComas 2020). Using the results of the literature review and records search, Chambers Group, evaluated the paleontological resource potential of the geologic units underlying the Project site. A field survey was conducted for the geologic units identified as highly sensitive to assist in determining where paleontological monitoring may be necessary during Project implementation.

Determining the probability that a given project site might yield paleontological resources requires a knowledge of the geology and stratigraphy of the project site, as well as researching any nearby fossil finds by: (1) reviewing published and unpublished maps and reports; (2) consulting online databases; (3) seeking any information regarding pertinent paleontological localities from local and regional museum repositories, and (4) if needed, conducting a reconnaissance site visit or paleontological resources field survey.

The University of California Museum of Paleontology (UCMP) online paleontological database was used to search for previously recorded paleontological localities in the Project vicinity (UCMP 2020). Only a single right dentary fragment from a Camelidae species was found near Coachella in 1953 (V5303). In addition, Chambers Group obtained paleontological record search data from the SDNHM on October 27, 2020 (McComas 2020). The SDNHM determined that the proposed Project has the potential to impact late Pleistocene to Holocene-age Lake Cahuilla Beds. Although no recorded fossil localities have been identified within a one-mile radius of the Project site, it is recommended that, due to the high sensitivity of the Lake Cahuilla Beds, a paleontological resource mitigation program and monitoring be conducted on excavation activities extending down into undisturbed sediment.

3.2 CULTURAL RESOURCES

A records search dated October 22, 2020, was obtained from the South Coastal Information Center (SCIC) at San Diego State University (Appendix A). The records search provided information on all documented cultural resources and previous archaeological investigations within the one-mile record search radius. Resources consulted during the records search conducted by the SCIC included the NRHP, California Historical Landmarks, California Points of Historical Interest, and the California State Historic Resources Inventory. Results of the records search and additional research are detailed below.

3.2.1 Reports within the Study Area

Based upon the records search conducted by the SCIC, 22 cultural resource studies have previously been completed within the one-mile records search radius. Of the 22 previous studies, five of these studies (IM-01096, IM-01484, IM-01505, IM-01559, and IM-01642) were within the current Project site and are shown in **bold** (Table 1).

Table 1: Previous Cultural Resources Studies within the Study Area

Report Number	Year	Author	Title	Resources
IM-00225	1980	WESTEC Services, INC.	APPENDIX A-History of Local Development.	N/A
IM-00230	1981	WESTEC Services, INC.	Salton Sea anomaly cultural resource review data-support package.	N/A
IM-00234	1981	WESTEC Services, INC.	Salton Sea Anomaly – Master Environmental Impact Report	N/A
IM-00236	1981	WESTEC Services, INC.	Volume II – Salton Sea Anomaly Master Environmental Impact Report and MAGMA Power Plant #3 (49 MW) Environmental Impact Report Appendices.	N/A
IM-00237	1981	WESTEC Services, INC.	Volume I – Salton Sea Anomaly Master Environmental Impact Report and MAGMA Power Plant #3 (49 MW) Environmental Impact Report DRAFT	N/A
IM-00254	1981	WESTEC Services, INC.	Final Salton Sea Anomaly Master Environmental Impact Report and MAGMA Power Plant #3 (49 MW) Environmental Impact Report Comments and Responses	N/A
IM-00255	1981	WESTEC Services, INC.	Final Salton Sea Anomaly Master Environmental Impact Report and MAGMA Power Plant #3 (49 MW) Environmental Impact Report Volume I.	N/A
IM-00512	1994	RTP Environmental Associates INC.	Conditional Use Permit and Environmental Information for the Hazard Area Exploration Wells.	N/A
IM-00513	1994	OGDEN Environmental and Energy Services	Biological Technical Report in Support of an Environmental Assessment for the Hazard Area Geothermal Exploration Project.	N/A
IM-00636	1980	Von Werlhof, Jay	Imperial Valley College Foundation Environmental Studies for Ten Geothermal Exploratory Wells.	N/A
IM-01096	**2007**	**ASM Affiliates**	**Cultural Resources Survey of the Hudson Ranch I Geothermal Project, Imperial County, California.**	**N/A**
IM-01181	2000	TETRA TECH, INC.	Draft Salton Sea Restoration Project Environmental Impact.	
IM-01255	2001	MCGOWN, LUCILLE RONAN, GORDON A. CLOPINE, DORIS HOOVER BOWERS, JAY VON WERLHOF, RUTH DEETTE SIMPSON, RONALD V. MAY, and PAT KING	The Archaeological Survey Association of Southern California's Lake Le Conte Survey.	

Table 1: Previous Cultural Resources Studies within the Study Area

Report Number	Year	Author	Title	Resources
IM-01385	2008	Laylander, Don. Sarah Stringer-Bowsher, and Jerry Schaefer	Cultural Resources Review for the Sonny Bono Salton Sea National Wildlife Refuse Complex, Imperial and Riverside Counties, California.	
IM-01470	2010	Schaefer, Jerry, Shelby Gunderman, and Don Laylander	Cultural Resource Study for the Hudson Ranch II Project, Imperial County, California.	
IM-01484	**2010**	**Imperial County Planning Department**	**SIMBOL Calipatria I Plant Project**	
IM-1494	2012	Ecology and Environment, Inc.	County of Imperial Hudson Ranch Power II CUP #G10-0002/ SIMBOL II CUP #12-0005 DRAFT Environmental Impact Report.	
IM-01505	**2012**	**Ecology and Environment, Inc.**	**County of Imperial SIMBOL Calipatria Plant I CUP#12-0004 DRAFT Environmental Impact Report Volume 1.**	
IM-01559	**2011**	**Giacinto, Adam**	**Cultural Resource Study for the SIMBOL SM Calipatria Plant I, Imperial County, California.**	
IM-01642	**2012**		**County of Imperial-Hudson Ranch Power II CUP #G10-002/SIMBOL II CUP #12-0005 Final Environmental Impact Report, Volumes I and II.**	
IM-01643	2016		Geo-Genco Geothermal Project, Imperial County, California.	
IM-01695	2016	Castells, Shelby Gunderman	Cultural Resource Study for the Geo-Genco Geothermal Project, Imperial County, California.	13-014277, 13-014278

3.2.2 Previously Recorded Cultural Resources within the Study Area

Based upon the records search conducted by the SCIC, six previously recorded cultural resources were recorded within the one-mile record search radius (Table 2). Results show no previously recorded resources within the Project site.

Table 2: Previously Recorded Cultural Resources within the Study Area

Primary Number	Trinomial	Resource Name	Site Description
P-13-003251	CA-IMP-003251	4-IMP-3251H	Pond of good water. 7 feet across, 2 feet deep.
P-13-003257	CA-IMP-003257	4-IMP-3257H	Mud volcanoes, 119 ft wide
P-13-009110	CA-IMP-008395		Remnants of five carbon dioxide (CO_2) wells installed near the southern end of the Salton Sea.

Table 2: Previously Recorded Cultural Resources within the Study Area

Primary Number	Trinomial	Resource Name	Site Description
P-13-014277	CA-IMP-012061		UPDATE Resource CA-IMP-12061/Small historic trash scatter (could not be relocated due to graded road)
P-13-014278			1-mile segment of the lateral distribution system of the East Highland canal
P-13-014279		N DRAIN	1-mile segment of the N Drain-part of the lateral distribution system of the East Highland canal

3.2.3 Native American Heritage Commission

Sacred Lands File Search

Chambers Group submitted a request for a search of the Sacred Lands Files (SLF) housed at the California Native American Heritage Commission (NAHC) on October 15, 2020. The results of the search were returned on October 20, 2020, and were negative, stating that the absence of specific site information in the SLF does not indicate the absence of cultural resources in the Project site that still may be impacted by Project development. The NAHC response provided contact information for the 27 tribes that may have information on cultural resources on the Project site.

Letters requesting information were sent via certified mail on October 23, 2020. Emails were also sent to the contacts in an effort to elicit a quicker response. As of January 22, 2020, the Quechan Indian Tribe has requested consultation and communications are ongoing.

SECTION 4.0 – FIELD METHODS

Survey of the Project site took place over the course of November 4 and 5, 2020, and included Chambers Group archaeologists Kellie Kandybowicz, B.A., Sarah Roebel, B.A., and paleontologist Niranjala Kottachchi, M.A. The Project site was surveyed at 15-meter intervals, and crews were equipped with submeter accurate Global Positioning Systems (GPS) units for recording spatial data and to document the survey area and all findings through ArcGIS Collector and Survey 123. The purpose of the field survey was to visually inspect the ground surface for both paleontological and archaeologically significant materials. No geographic obstructions or impediments were present, and the crew was able to survey the Project site in its entirety. All of the Project site was clear of vegetation, thus facilitating visual inspection of the ground surface; overall ground visibility was high (95 percent).

The paleontologist examined the surface soils, assessed for exposed fossils, and evaluated the stratigraphy for its potential to contain preserved paleontological resources. The survey focused on areas underlain by ancient Lake Cahuilla Beds previously interpreted to have a high sensitivity to produce paleontological resources. The archaeologists assessed the ground surface for prehistoric artifacts (e.g., flaked stone tools, tool-making debris, stone milling tools), historic-period artifacts (e.g., metal, glass, ceramics), sediment discoloration that might indicate the presence of a cultural midden, as well as depressions and other features indicative of the former presence of structures or buildings (e.g., post holes, foundations).

When an artifact or feature was observed during survey, the GPS data was recorded using the ArcGIS Collector application, photographs and measurements were taken, and when applicable, for historic glass artifacts, the maker’s marks and date codes were recorded for further out-of-field analysis.

SECTION 5.0 – RESULTS

5.1 RESULTS OF PALEONTOLOGICAL SURVEY

Because the area was previously graded to a depth of 3 feet, likely in the late 1950s, for utilization as a retention basin, much of the surface sediment, consisting of 2 inches of medium to coarse sand with small clay nodules, was disturbed. Below this, soil becomes clay rich and is interpreted to be that of the Cahuilla Lake Beds. Additionally, because this area is still an active geothermal field as part of the Salton Sea, inactive fumaroles or mud pots were present on the southwest end of the Project site and active fumaroles were found on the south end outside the Project survey area. The parcels were once utilized as duck hunting ponds back in the 1970s, and therefore the soil surface consisted of approximately an inch of silty sands. Below this, silty clays of Lake Cahuilla Beds were present. No paleontological resources were discovered during the surveys. Notes were taken on the geology and lithology of the geologic unit(s), and photographs were taken to document the survey.

5.2 RESULTS OF ARCHAEOLOGICAL SURVEY

An archival records search, background studies, and intensive pedestrian survey of the Project site were conducted as part of a Phase I cultural resource study. The NAHC Sacred Lands File search returned a negative result and indicated that no known sacred sites or tribal cultural resources exist within the one-mile search radius but advised that resources may still be present that are currently unknown. A records search request was submitted to the SCIC at San Diego State University, San Diego, October 10, 2020. The records search results (Confidential Appendix A) were received on October 22, 2020. The results indicate that no cultural resources have been previously identified within the Project site; six resources, however, have been identified within a one-mile radius of the Project site. These results were summarized in Table 2 above. In addition, 22 cultural resources studies have been conducted in the vicinity, with five being within the Project site (Table 1).

During completion of the survey, two newly discovered historic-period sites were identified, as shown in Table 3. The new historic period sites were fully documented with the appropriate DPR 523 series forms for each of the new resources and will be submitted to the SCIC for inclusion in the archaeological database (Appendix B). These two historic-period sites will be assigned primary numbers by the SCIC (pending). A description of the new finds can be found following Table 3.

Table 3: Newly Identified Cultural Resources Within Project Site

Resource Name (Temporary)	Trinomial Number	Date Recorded	Age	Description	Recommended Evaluation
21267-001	Pending	November 4, 2020	Historic	Retention basin dated to 1950s-1960s; Historic debris scatter dated to 1950s-1960s	Not Evaluated
21267-002	Pending	November 4, 2020	Historic (Multi-Component)	Historic debris scatter dated to ca. 1930s; Duck hunting pond	Not Evaluated

Table 3: Newly Identified Cultural Resources Within Project Site

Resource Name (Temporary)	Trinomial Number	Date Recorded	Age	Description	Recommended Evaluation
				features with shooting hides ca. 1970s	

21268-001 is a historic-period machine-made water retention basin with a small glass scatter locus. Both the feature and the artifacts date to roughly the 1950s-1960s. The water retention basin was excavated sometime in the late 1950s, which is represented by the lack of presence on the 1952 aerial photograph (NETR Online 2020) and the positive presence on the 1976 topo map (USGS 1976). The glass bottle and jar fragments date from between the 1930s and 1960s and are predominately beverage bottles. The glass scatter is composed of over 100 various colors of glass fragments with 10 to 20 intact bottle or legible bases with dateable maker's marks. One example is a colorless bottle fragment with an applied color label (ACL) depicting the blue and white Barq's Root Beer label which states "DRINK Barq's IT'S GOOD" This bottle was manufactured by Glass Containers, Inc during the 1930s-1960s (Toulouse 1971). Another intact green glass bottle was observed which was also manufactured by Glass Containers, Inc. during the 1930s-1960s (Toulouse 1971). The glass scatter was partially on the surface with some having been covered over the past decades. It is plausible that the trash scatter was created during or around the time of construction of the retention basin. See Figures 2, 3, and 5.

21268-002 is a multi-component, historic-period trash scatter and duck pond feature dating to two separate occupation periods. The first occupation period is between 1910 and 1940; the second occupation period likely began between the 1950s and 1970s, and its use extended through 2010 when the duck ponds were fully abandoned.

The first occupation dates, likely ranging approximately from the 1910s possibly to the 1940s, is based on the dates obtained from the maker's marks on the intact glass jars. An intact, cobalt blue Vick's VapoRub jar with two triangles on the base was observed in the southeast corner of the easternmost duck pond and dates to the 1910s to the 1930s, the production date range for that specific maker's mark. A colorless Chesebrough Vaseline jar fragment was also located in the same vicinity with a date range of 1918-1938, which is based on the visible embossing on the side of the jar (Toulouse 1971; SHA 2021). In addition, ceramic houseware fragments, a porcelain insulator, small unidentifiable metal fragments, and other glass shards were present.

The second occupation period begins approximately between the 1950s and the 1970s, based on topographical maps and aerial photography, and extends up until 2010 when the duck ponds were abandoned. Additionally, the presence of the historic-period trash scatter in the soils of the duck ponds indicates that the area was disturbed at least post-1950s. This second occupation consists of the construction and use of duck ponds with multiple hides used for the sport of duck hunting (Figures 6 and 7). The duck ponds were excavated at the earliest in the late 1950s, which is represented by the lack of presence on the 1953 aerial photograph (NETR Online 2021) and the positive presence on the 1992 aerial photograph; the years 1953-1992 are not represented (NETR Online 2020). The uncultivated land was likely flooded seasonally to attract waterfowl for hunting and is historically mapped as freshwater ponds, shown on the aerial images as early as 1992 (NETR Online 2021). On the 1956 topo map, the Southend Sportsman Club is visible on the adjacent lot to the west, indicating that type of activity in the area. Each duck pond, separated by a berm approximately 12 feet wide and 4 high, is 400 feet in diameter and 1,177 feet in length.

SECTION 6.0 – SUMMARY AND RECOMMENDATIONS

6.1 SUMMARY

Chambers Group conducted paleontological and archaeological investigations within the Project site in November 2020. The work was performed under Chambers Group's contract with Imperial County Planning and Development Services Department. The main goal of the investigations was to gather and analyze information needed to determine if the Project, as currently proposed, would impact paleontological and cultural resources.

The SDNHM determined that the proposed Project has the potential to impact late Pleistocene to Holocene-age Lake Cahuilla Beds. No recorded fossil localities have been identified within a one-mile radius of the Project site.

Archival record searches, background studies, and an intensive pedestrian survey of the Project site were conducted as part of a Phase I cultural resource study. The cultural record search identified five cultural resource studies and no archaeological resources within the Project site.

The survey yielded two new historic-period resources, 21268-001 and 21268-002, within the Project site. Over the years, those sites have been minimally obscured with sediment through aeolian and alluvial processes and are only slightly disturbed due to the amount of time since deposition. The historical debris component of 21268-002 is the most disturbed due to the construction of duck ponds which altered the depositional state of the original debris scatter.

6.2 RECOMMENDATIONS

6.2.1 <u>Paleontological</u>

Prior to construction activity, a Qualified Paleontologist should prepare a Paleontological Resource Mitigation Plan (PRMP) to be implemented during ground-disturbing activity for the proposed Project. This program should outline the procedures for paleontological monitoring including extent and duration, protocols for salvage and preparation of fossils, and the requirements for a final mitigation and monitoring report. A qualified and trained paleontological monitor should be present on site to observe all earth-disturbing activities in previously undisturbed geologic deposits determined to have a high paleontological sensitivity (i.e., Lake Cahuilla Beds). Monitoring should consist of the visual inspection of excavated or graded areas and trench sidewalls. Screening of sedimentary matrix should be conducted, as some invertebrates may not be visible to the naked eye.

6.2.2 <u>Cultural</u>

The records search and archaeological survey resulted in the identification of eight resources within 1 mile of the Project site. Two new sites were identified and recorded within the Project site during the survey. The six previously recorded resources identified in the records search were not located within the Project site.

Based on the background research and results of the survey it is not recommended that any further archaeological testing or evaluation occur for any of the above listed archaeological sites prior to construction. Due to the highly disturbed nature of the project site, archaeological monitoring is not required.

The site does have paleontological sensitivity and it is recommended that a qualified paleontologist is retained and is onsite for construction monitoring. These requirements are outlined in the proposed mitigation measures, below.

If human remains are found during ground-disturbing activities, State of California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the Imperial County Medical Examiner-Coroner has made a determination of origin and disposition pursuant to PRC Section 5097.98. In the event of an unanticipated discovery of human remains, the Imperial County Medical Examiner-Coroner shall be notified immediately. If the human remains are determined to be prehistoric, the Medical Examiner-Coroner shall notify the NAHC, which shall notify a most likely descendant (MLD). The MLD shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials (NPS 1983).

Prior to permitting ground-disturbing work within the Project site, it is recommended that the County consult with the Quechan Indian Tribe and the Torres-Martinez Indian Tribe to identify any concerns they may have regarding the Project. No significant impacts to cultural or paleontological resources are anticipated as a result of the current undertaking if the recommendations included below are implemented.

MM PALEO-1 Developer shall retain the services of a qualified paleontologist and require that all initial ground disturbing work be monitored by someone trained in fossil identification in monitoring contexts. The consultant shall provide a supervising paleontological specialist and a paleontological monitor present at the Project construction phase kickoff meeting.

MM PALEO-2 Just prior to commencing construction activities and thus prior to any ground disturbance in the Proposed Project Site, the supervising cultural resources specialist and cultural resources monitor shall conduct initial Worker Environmental Awareness Program (WEAP) training to all construction personnel, including supervisors, present at the outset of the Project construction work phase, for which the lead contractor and all subcontractors shall make their personnel available. This WEAP training will educate construction personnel on how to work with the monitor(s) to identify and minimize impacts to paleontological resources and maintain environmental compliance, and be performed periodically for new personnel coming on to the project as needed.

MM PALEO-3 The contractor shall provide the supervising paleontological resources specialist with a schedule of initial potential ground disturbing activities. A minimum of 48 hours will be provided to the consultant of commencement of any initial ground disturbing activities such as vegetation grubbing or clearing, grading, trenching, or mass excavation.

As detailed in the schedule provided, a paleontological monitor shall be present onsite at the commencement of ground-disturbing activities related to the Project. The monitor, in consultation with the supervising paleontologist, shall observe initial ground disturbing activities and, as they proceed, make adjustments to the number of monitors as needed to provide adequate observation and oversight. All monitors will have stop-work authority to allow for recordation and evaluation of finds during construction. The monitor will maintain a daily record of observations as an ongoing reference resource and to provide a resource for final reporting upon completion of the Project.

The supervising paleontologist, paleontological monitor, and the lead contractor and subcontractors shall maintain a line of communication regarding schedule and activity such that the monitor is aware of all ground disturbing activities in advance in order to provide appropriate oversight.

MM-PALEO-4 If paleontological) resources are discovered, construction shall be halted within 50 feet of any paleontological finds and shall not resume until a qualified paleontologist can determine the significance of the find and/or the find has been fully investigated, documented, and cleared.

MM PALEO-5 At the completion of all ground disturbing activities, the consultant shall prepare a Paleontological Resources Monitoring Report summarizing all monitoring efforts and observations, as performed, and any and all prehistoric or historic archaeological finds, as well as providing follow-up reports of any finds to the SCCIC, as required.

HUMAN REMAINS – LEGAL REQUIREMENTS In the unlikely event that human remains are discovered during ground-disturbing activities, then the Proposed Project would be subject to California Health and Safety Code 7050.5, CEQA Section 15064.5, and California Public Resources Code Section 5097.98 (NPS 1983).If human remains are found during ground-disturbing activities, State of California Health and Safety Code Section 7050.5 states that no further disturbance shall occur until the Los Angeles County Medical Examiner-Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. In the event of an unanticipated discovery of human remains, the Los Angeles County Medical Examiner-Coroner shall be notified immediately. If the human remains are determined to be prehistoric, the Medical Examiner-Coroner shall notify the NAHC, which shall notify a most likely descendant (MLD). The MLD shall complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials (NPS 1983).

SECTION 7.0 – SITE PHOTOGRAPHS

Figure 2: View of water retention basin with HR1 in background, facing east/southeast.

Figure 3: Survey area inside retention basin, facing north.

Figure 4: Dried mud pot in Project site west of HR1, facing south.

Figure 5: Historic glass scatter in Project site west of HR1, facing west.

Figure 6: Dried duck pond in Project site south of HR1, facing east.

Figure 7: Duck pond hide in Project site, south of HR1, facing north.

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APPENDIX A – CONFIDENTIAL CULTURAL RECORDS SEARCH RESULTS

APPENDIX B – CONFIDENTIAL DPR SERIED 523 FORMS

APPENDIX E – GEOTECHNICAL REPORT, PROPOSED MINERAL EXTRACTION FACILITY

Geotechnical Report

Proposed Mineral Extraction Facility
409 W. McDonald Road
Calipatria, California

Prepared for:

Energy Source, LLC
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Prepared by:

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Mr. Jurg Heuberger
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Preliminary Geotechnical Report
Proposed Mineral Extraction Facility
409 W. McDonald Road
Calipatria, California
LCI Report No. LE19154

Dear Mr. Heuberger:

This preliminary geotechnical report is provided for design and construction of the proposed mineral extraction facility at the Hudson Ranch No. 1 geothermal power plant located at 409 W. McDonald Road northwest of Calipatria, California. Our geotechnical exploration was conducted in response to your request for our services. The enclosed report describes our soil engineering site evaluation and presents our professional opinions regarding geotechnical conditions at the site to be considered in the design and construction of the project.

Based on the geotechnical conditions encountered at the points of exploration, the project site appears suitable for the proposed construction provided the professional opinions contained in this report are considered in the design and construction of this project. The site is not located within published geohazard areas other than high seismic ground motions and liquefaction risks. The nearest know earthquake fault is located 5 miles south-west. Prior studies in this area have detected CO_2 gas pockets at 50 to 100 feet below ground surface. Deep foundations should not be extended into the gas pockets.

We appreciate the opportunity to provide our findings and professional opinions regarding geotechnical conditions at the site. Please provide our office with a set of the foundation plans and civil plans for review to insure that the geotechnical site constraints have been included in the design documents. If you have any questions or comments regarding our findings, please call our office at (760) 370-3000.

Respectfully Submitted,
Landmark Consultants, Inc.

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Appendices

EXECUTIVE SUMMARY

This executive summary presents ***selected*** elements of our findings and professional opinions. This summary ***may not*** present all details needed for the proper application of our findings and professional opinions. Our findings, professional opinions, and application options are ***best related through reading the full report***, and are best evaluated with the active participation of the engineer of record who developed them. The findings of this study are summarized below:

- Clay soils (CL) of medium to high expansion (EI = 70 to 100) predominate the near surface soils at the project site.
- Replacement of the upper 3.0 feet of clays with imported non-expansive granular fill can be used to mitigate the expansion forces and eliminate the need for special foundation designs for the administration area buildings, warehouses and other structures with thin slab-on-grade foundations. Design and construction of site improvements (concrete flatwork, curbs, housekeeping slabs, etc.) should include provisions to mitigate clay soil movement. Additionally, the weak clay subgrade soil requires thickened structural sections for pavements.
- The risk of liquefaction induced settlement is very low. Liquefaction may occur in isolated silt and sand layers encountered at various depths between 8 and 50 feet below ground surface. Potential liquefaction induced settlements of less than ¼ inch have been estimated for the project site. There is a very low risk of ground rupture and/or sand boil formation should liquefaction occur.
- The native soil is severely corrosive to metals and contains sufficient sulfates and chlorides to require special concrete mixes (6.5 sack cement factor with a 0.45 maximum water cement ratio and Type V cement) and protection of embedded steel components (5-inch minimum concrete cover) when concrete is placed in contact with native soil. Polypropylene vapor retarders (10 to 15 mil) should be used below all slabs on grade to reduce corrosion potential of steel reinforcement
- All reinforcing bars, anchor bolts and hold down bolts shall have a minimum concrete cover of 5.0 inches unless epoxy coated (ASTM D3963/A934). Hold-down straps at the foundation perimeter and pressurized water lines below or within the foundations are not allowed.
- In order to reduce settlement in the mineral extraction plant structures to generally accepted limits, existing soft, compressible clays may be strengthened by soil improvement (soil mixing or replacement with sand/cement) or by use of deep foundation systems like auger cast or driven piles. Pile lengths should be less than 50 feet to avoid penetrating CO_2 gas pockets below the site. Structural mats may also be used to limit movement between groups of process vessels or equipment. These options are discussed in the report.

- The mineral extraction plant site is located adjacent to CO_2 gas mud pots and above a naturally occurring CO_2 gas reservoir. The reservoir is generally located at depths greater than 50 feet. The measured gas pressure obtained from previous investigation at the adjacent geothermal plant site was approximately 15 to 25 psi.

- Pavement structural sections should be designed for clay subgrade soils (R-Value = 5) and an appropriate Traffic Index (TI) selected by the civil designer.

- Groundwater is expected to be encountered at about 8 to 9 feet below ground surface at the project site.

Section 1
INTRODUCTION

1.1 Project Description

This report presents the findings of our geotechnical exploration and soil testing for the proposed mineral extraction facility at the Hudson Ranch No.1 geothermal power plant located at 409 W. McDonald Road northwest of Calipatria, California (See Vicinity Map, Plate A-1). The proposed mineral extraction facility will likely consist of a clarifier, thickener, filter and reactor vessels, pipe racks, lab and administration buildings, warehouse, electrolysis block, chilled water plant, cooling towers, and various ancillary structures. No site plan was available for the proposed development at the time that this report was prepared.

The process, warehouse, laboratory, and administration buildings are planned to consist of single story structures with slab-on-grade floors and steel-frame construction. Expected footing loads are estimated at 1 to 2 kips per lineal foot with column loading of 10 to 50 kips for the small structures. Process tanks may range in diameter from 8 to 32 feet (1,000 psf to 2,500 psf loading). The clarifier tank diameter will be approximately 125 feet with a maximum load of 2,000 psf.

Site development will include initial site grading, deep ground improvement to control tank settlements, deep foundations for heavily loaded pipe supports or process structures, building support pad construction, underground utility installation, electrical grounding grid placement, roadway construction and concrete flatwork placement.

1.2 Purpose and Scope of Work

The purpose of this geotechnical study was to investigate the subsurface soil at selected locations within the site for evaluation of physical/engineering properties and liquefaction potential during seismic events. Professional opinions were developed from field and laboratory test data and are provided in this report regarding geotechnical conditions at this site and the effect on design and construction.

The scope of our services consisted of the following:

- Field exploration and in-situ testing of the site soils at selected locations and depths.
- Laboratory testing for physical and/or chemical properties of selected samples.
- Review of the available literature and publications pertaining to local geology, faulting, and seismicity.
- Engineering analysis and evaluation of the data collected.
- Preparation of this report presenting our findings and professional opinions regarding the geotechnical aspects of project design and construction.

This report addresses the following geotechnical parameters:

- Subsurface soil and groundwater conditions
- Site geology, regional faulting and seismicity, and site seismic design criteria
- Liquefaction potential and its mitigation
- Expansive soil and methods of mitigation
- Aggressive soil conditions to metals and concrete

Professional opinions with regard to the above parameters are provided for the following:

- Site grading, earthwork and embankment construction
- Building pad and foundation subgrade preparation
- Allowable soil bearing pressures and expected settlements
- Deep foundation alternatives
- Soil improvement alternatives
- Concrete slabs-on-grade
- Lateral earth pressures
- Excavation conditions and buried utility installations
- Mitigation of the potential effects of salt concentrations in native soil to concrete mixes and steel reinforcement
- Seismic design parameters
- Pavement structural sections

Our scope of work for this report did not include an evaluation of the site for the presence of environmentally hazardous materials or conditions, storm water infiltration, groundwater mounding, landscape suitability of the soil, or CO_2 gas reservoirs below the site.

1.3 Authorization

Mr. Derek Benson, Chief Operating Officer of Energy Source Minerals, LLC, provided authorization by written agreement to proceed with our work on September 3, 2019. The Notice to Proceed was received in July 2020. We conducted our work in general accordance with our written proposal dated July 25, 2019.

Section 2
METHODS OF INVESTIGATION

2.1 Field Exploration

Subsurface exploration was performed on July 20, 2020 using Kehoe Testing and Engineering, Inc. of Huntington Beach, California to advance three (3) electric cone penetrometer (CPT) soundings to approximate depths of 50 feet below existing ground surface. The soundings were made at the locations shown on the Site and Exploration Plan (Plate A-2). The approximate sounding locations were established in the field and plotted on the site map by sighting to discernible site features. Shallow (5-foot deep) mechanical auger borings (6-inch diameter) were made in the future laydown yard to the west in order to obtain near surface soil samples for laboratory analysis.

CPT soundings provide a continuous profile of the soil stratigraphy with readings every 2.5cm (1 inch) in depth. Direct sampling for visual and physical confirmation of soil properties has been used by our firm to establish direct correlations with CPT exploration in this geographical region.

The CPT exploration was conducted by hydraulically advancing an instrumented Hogentogler 15cm^2 conical probe into the ground at a rate of 2cm per second using a 30-ton truck as a reaction mass. An electronic data acquisition system recorded a nearly continuous log of the resistance of the soil against the cone tip (Qc) and soil friction against the cone sleeve (Fs) as the probe was advanced. Empirical relationships (Robertson and Campanella, 1989) were then applied to the data to give a continuous profile of the soil stratigraphy. Interpretation of CPT data provides correlations for SPT blow count, phi (ϕ) angle (soil friction angle), undrained shear strength (S_u) of clays and over-consolidation ratio (OCR). These correlations may then be used to evaluate vertical and lateral soil bearing capacities and consolidation characteristics of the subsurface soil.

Interpretive logs of the CPT soundings and logs of the test borings were produced after review of field and laboratory test data and are presented on Plates B-1 through B-5 in Appendix B of this report. Keys to the interpretation of CPT soundings and Logs of Test Borings and are presented on Plates B-6 and B-7. The stratification lines shown on the subsurface logs represent the approximate boundaries between the various strata. However, the transition from one stratum to another may be gradual over some range of depth.

2.2 Laboratory Testing

Laboratory tests were conducted on selected bulk (auger cuttings) obtained from the soil borings to aid in classification and evaluation of selected engineering properties of the site soils. The tests were conducted in general conformance to the procedures of the American Society for Testing and Materials (ASTM) or other standardized methods as referenced below. The laboratory testing program consisted of the following tests:

- Plasticity Index (ASTM D4318)
- Moisture-Density Relationship (ASTM D1557)
- Chemical Analyses (soluble sulfates & chlorides, pH, and resistivity) (Caltrans Methods)

The laboratory test results are presented on the subsurface logs (Appendix B) and in Appendix C.

Engineering parameters of soil strength, compressibility and relative density utilized for developing design criteria provided within this report were either extrapolated from correlations with the subsurface CPT data or from data obtained from the field and laboratory testing program.

Section 3
DISCUSSION

3.1 Site Conditions

The project site is located approximately 3.0 miles west of English Road on the west side of Hudson Ranch No. 1 geothermal plant on McDonald Road northwest of Calipatria, California. The proposed mineral extraction facility project site is planned to be located on the existing equipment/material laydown yard located at the west and south sides of the Hudson Ranch No. 1 geothermal plant. The laydown yard area contains pipes, steel vertical tanks, containers, equipment and materials for the Hudson Ranch geothermal plant. The Mineral Extraction Demonstration Building is located at the mid-east side of the proposed mineral extraction project site.

The project area is located adjacent to the Salton Sea (located approximately ½-mile west), an inland lake with no outlet. Agricultural wastewater and periodic storm water runoff supply the majority of the water sustaining the lake.

Adjacent properties are flat-lying and are approximately at the same elevation with this site. The Hudson Ranch 1 Geothermal Plant forms the eastern boundary of the site. McDonald Road abuts the north side of the project site. Abandoned shallow duck ponds lies to the southeast side of the project site. Several carbon dioxide (CO_2) gas driven mud volcanoes are sited at the vacant parcel located southwest of the site. Vacant land located adjacent to the west side is planned to be used as the new open laydown yard.

The project site lies at an elevation of approximately 220 feet below mean sea level (MSL) (El. 780 local datum) in the Imperial Valley region of the California low desert. The surrounding properties lie on terrain which is flat (planar), part of a large agricultural valley, which was previously an ancient lake bed covered with fresh water to an elevation of 43± feet above MSL. Annual rainfall in this arid region is less than 3 inches per year with four months of average summertime temperatures above 100 ^{o}F. Winter temperatures are mild, seldom reaching freezing.

3.2 Geologic Setting

The project site is located in the Salton Trough region of the Colorado Desert physiographic province of southeastern California. The Salton Trough is a topographic and geologic structural depression resulting extending from the San Gorgonio Pass to the Gulf of California (Norris & Webb, 1990). The Salton Trough is bounded on the northeast by the San Andreas fault and Chocolate Mountains and the southwest by the Peninsular Range and faults of the San Jacinto Fault Zone. The Salton Trough represents the northward extension of the Gulf of California, containing both marine and non-marine sediments deposited since the Miocene Epoch (Morton, 1977). Tectonic activity that formed the trough continues at a high rate as evidenced by deformed young sedimentary deposits and high levels of seismicity. Figure 1 shows the location of the site in relation to regional faults and physiographic features.

The Imperial Valley is directly underlain by lacustrine deposits, which consist of interbedded lenticular and tabular silt, sand, and clay. The Late Pleistocene to Holocene (present) lake deposits are probably less than 100 feet thick and derived from periodic flooding of the Colorado River which intermittently formed a fresh water lake (Lake Cahuilla). Older deposits consist of Miocene to Pleistocene non-marine and marine sediments deposited during intrusions of the Gulf of California. Basement rock consisting of Mesozoic granite and Paleozoic metamorphic rocks are estimated to exist at depths between 15,000 - 20,000 feet.

3.3 Subsurface Soil

The UC Davis California Soil Resource Lab “SoilWeb Earth” computer application (UC Davis, 2020) for Google Earth indicates that surficial deposits at the project site consist predominantly of silty clay loams overlying fine sands of the Imperial soil group (see Plate A-3). These loams are formed in sediment and alluvium of mixed origin (Colorado River overflows and fresh-water lake-bed sediments).

Subsurface soils encountered during the field exploration conducted on July 20, 2020, consist of approximately 18 to 23 feet of near surface clays (CL-CH). A 1 to 2 feet thick layer of loose to medium dense sandy silt (ML) layer was encountered from 18 to 24 feet below ground surface. Stiff clays to clayey silt soils (CL-ML) were encountered at a depth of 20 to 48 feet below ground surface. Very loose to loose sandy/clayey silts (ML) were encountered at 48 to 50 feet below ground surface the maximum depth of exploration.

The project site is known to have pockets of CO_2 gas between a depth of 50 and 100 feet below ground surface. Gas pressure within this depth was measured at 15 to 24 psi at the Hudson Ranch 1 Geothermal Plant site. Svensen and others (2007) indicate that a sandstone CO_2 reservoir underlies the site at a depth of 150 to 200 meters. The subsurface logs (Plates B-1 through B-5) depicts the stratigraphic relationships of the various soil types.

The native surface clays likely exhibit moderate to high swell potential (Expansion Index, EI = 70 to 110) when correlated to Plasticity Index tests (ASTM D4318) performed on the native soils. The clay is expansive when wetted and can shrink with moisture loss (drying). Development of building foundations and concrete flatwork should include provisions for mitigating potential swelling forces and reduction in soil strength, which can occur from saturation of the soil.

Typical measures considered to remediate expansive soil include:

- Capping silt/clay soil with a non-expansive sand layer of sufficient thickness (3.0 feet minimum) to reduce the effects of soil shrink/swell.
- Moisture conditioning subgrade soils to a minimum of 5% above optimum moisture (ASTM D1557) within the drying zone of surface soils.
- Design of foundations that are resistant to shrink/swell forces of silt/clay soil.
- A combination of the methods described above

3.4 Groundwater

Groundwater was not noted in the CPT soundings, but is typically encountered at approximately 8 to 9 feet below ground surface in the vicinity of the project site. The silts encountered at 18 to 24 feet below ground surface are the water bearing strata.

There is uncertainty in the accuracy of short-term water level measurements, particularly in fine-grained soil. Groundwater levels may fluctuate with precipitation, irrigation of adjacent properties, site landscape watering, drainage, and site grading. The referenced groundwater level should not be interpreted to represent an accurate or permanent condition. Our work scope did not include a groundwater surface mounding study resulting from applied landscape water.

3.5 Faulting

The project site is located in the seismically active Imperial Valley of southern California with numerous mapped faults of the San Andreas Fault System traversing the region. The San Andreas Fault System is comprised of the San Andreas, San Jacinto, and Elsinore Fault Zones in southern California. The Imperial fault represents a transition from the more continuous San Andreas fault to a more nearly echelon pattern characteristic of the faults under the Gulf of California (USGS, 1990). We have performed a computer-aided search of known faults or seismic zones that lie within a 45 mile (72 kilometer) radius of the project site (Table 1).

A fault map illustrating known active faults relative to the site is presented on Figure 1, *Regional Fault Map*. Figure 2 shows the project site in relation to local faults. The criterion for fault classification adopted by the California Geological Survey defines Earthquake Fault Zones along Holocene-active or pre-Holocene faults (CGS, 2019b). Earthquake Fault Zones are regulatory zones that address the hazard of surface fault rupture. A Holocene-active fault is one that has ruptured during Holocene time (within the last 11,700 years). A pre-Holocene fault is a fault that has not ruptured in the last 11,700 years. Pre-Holocene faults may still be capable of surface rupture in the future, but are not regulated by the Alquist-Priolo Act (AP). Review of the current Earthquake Fault Zone maps (CGS, 2019a) indicates that the nearest zoned fault is the Elmore Ranch fault located approximately 5.0 miles southwest of the project site and San Andreas fault located approximately 13.2 miles northwest of the project site.

The project site lies 1.3 miles east of the Brawley Seismic Zone (BSZ), a pull-apart basin between the southern terminus of the San Andreas fault and the northern trace of the Imperial fault. The BSZ is composed of numerous cross-cutting high angle normal faults. The BSZ extends northward beyond the termination of the mapped Imperial/Brawley faults to beneath the Salton Sea, where it terminates upon intersecting the San Andreas fault near Bombay Beach. The Brawley Seismic Zone was the source of the 1981 5.9M_W Westmorland earthquake sequence that involved activity on at least seven distinct fault planes within the zone. An earthquake swarm with eleven (11) earthquakes above magnitude 4.0 (the largest being 5.5$M_{w)}$ occurred approximately 2 miles northwest of Brawley, California between August 26-28, 2012. Although there was no evidence of surface rupture associated with this event, numerous structures in Brawley were damaged.

The faults in the Brawley Seismic Zone are considered to be short enough that earthquakes much larger than 6-6.5M_W are unlikely. The California Geological Survey considers the Brawley Seismic Zone to have a maximum magnitude of 6.4Mw, with a very short 24-year average return interval, and a geologic slip rate of 25 mm/year (CDMG, 1996).

3.6 General Ground Motion Analysis

The project site is considered likely to be subjected to moderate to strong ground motion from earthquakes in the region. Ground motions are dependent primarily on the earthquake magnitude and distance to the seismogenic (rupture) zone. Acceleration magnitudes also are dependent upon attenuation by rock and soil deposits, direction of rupture and type of fault; therefore, ground motions may vary considerably in the same general area.

2019 CBC General Ground Motion Parameters: The California Building Code (CBC) requires that a site-specific ground motion hazard analysis be performed in accordance with ASCE 7-16 Section 11.4.8 for structures on Site Class D and E sites with S_1 greater than or equal to 0.2 and Site Class E sites with S_s greater than or equal to 1.0. **This project site has been classified as Site Class D and has a S_1 value of 0.6, which would require a site-specific ground motion hazard analysis**. However, ASCE 7-16 Section 11.4.8 provides three exceptions which permit the use of conservative values of design parameters for certain conditions for Site Class D and E sites in lieu of a site specific hazard analysis. The exceptions are:

- Exception 1: Structures on Site Class E sites with S_s greater than or equal to 1.0, provided the site coefficient F_a is taken as equal to that of Site Class C.
- Exception 2: Structures on Site Class D sites with S_1 greater than or equal to 0.2, provided the value of the seismic response coefficient C_s is determined by Equations 12.8-2 for values of $T \leq 1.5T_S$ and taken as equal to 1.5 times the value computed in accordance with either Equation 12.8-3 for $T_L \geq T > 1.5T_S$ or Equation 12.8-4 for $T > T_L$.
- Exception 3: Structures on Site Class E sites with S_1 greater than or equal to 0.2, provided that T is less than or equal to T_S and the equivalent static force procedure is used for design.

The project structural engineer should confirm that an exception applies to the project. If none of the exceptions apply, our office should be consulted to perform a site-specific ground motion hazard analysis.

The 2019 CBC general ground motion parameters are based on the Risk-Targeted Maximum Considered Earthquake (MCE_R). The Structural Engineers Association of California (SEAOC) and Office of Statewide Health Planning and Development (OSHPD) Seismic Design Maps Web Application (SEAOC, 2020) was used to obtain the site coefficients and adjusted maximum considered earthquake spectral response acceleration parameters. Design spectral response acceleration parameters are defined as the earthquake ground motions that are two-thirds (2/3) of the corresponding MCE_R ground motions. The Maximum Considered Earthquake Geometric Mean (MCE_G) peak ground acceleration adjusted for soil site class effects (PGA_M) value to be used for liquefaction and seismic settlement analysis in accordance with 2019 CBC Section 1803.5.12 ($PGA_M = F_{PGA}$*PGA) is estimated at 0.55g for the project site. **Design earthquake ground motion parameters are provided in Table 2.**

3.7 Seismic and Other Hazards

- **Groundshaking.** The primary seismic hazard at the project site is the potential for strong groundshaking during earthquakes along the Elmore, Imperial, Brawley, and San Andreas Faults and the Brawley Seismic Zone.
- **Surface Rupture.** The California Geological Survey (2019b) has established Earthquake Fault Zones in accordance with the 1972 Alquist-Priolo Earthquake Fault Zone Act. The Earthquake Fault Zones consists of boundary zones surrounding well defined, active faults or fault segments. The project site does not lie within an A-P Earthquake Fault Zone; therefore, surface fault rupture is considered to be low at the project site.

- **Liquefaction and lateral spreading.** Liquefaction is a potential design consideration because of underlying saturated sandy substrata. Although the Imperial Valley has not yet been evaluated for seismic hazards by the California Geological Survey seismic hazards zonation program, liquefaction is well documented in the Imperial Valley after strong seismic events (McCrink, et al, 2011 and Rymer et al, 2011). The potential for liquefaction at the site is discussed in more detail in Section 3.8. Liquefaction induced lateral spreading is not expected to occur at this site due to the planar topography.

Other Potential Geologic Hazards.

- **Landsliding.** The hazard of landsliding is unlikely due to the regional planar topography. No ancient landslides are shown on geologic maps, aerial photographs and topographic maps of the region and no indications of landslides were observed during our site investigation.
- **Volcanic hazards.** The site is located in proximity to a known volcanically active area (Obsidian Butte and Red Hill). Obsidian Butte and Red Hill are small remnants of volcanic domes located approximately 1.25 and 4 miles southwest of the project site, respectively. The domes erupted about 1,800 to 2,500 years ago (Wright et al, 2015). The subsurface brine fluids around the domes have a high heat flow and are currently being utilized to produce geothermal energy.
- **Tsunamis and seiches.** The site lies within 1 mile of the Salton Sea, so the threat of seiches or other seismically-induced flooding is considered possible. The County of Imperial has established -220 MSL as the minimum height for foundation of all structures unless protected from Salton Sea flood stage by a continuous berm with top elevation of -220 MSL. This minimum height may be modified with time as the Salton Sea level is declining.
- **Flooding.** Based on our review of FEMA (2008) FIRM Panel 060250725C which encompasses the project site, the project site is located in Flood Zone X, an area determined to be outside the 0.2% annual chance (500-year) floodplain. The County of Imperial has established -220 MSL as the minimum height for foundation of all structures unless protected from Salton Sea flood stage by a continuous berm with top elevation of -220 MSL.

- **Collapsible soils.** Collapsible soil generally consists of dry, loose, low-density material that have the potential collapse and compact (decrease in volume) when subjected to the addition of water or excessive loading. Soils found to be most susceptible to collapse include loess (fine grained wind-blown soils), young alluvium fan deposits in semi-arid to arid climates, debris flow deposits and residual soil deposits. Due to the cohesive nature of the subsurface soils and shallow groundwater, the potential for hydro-collapse of the subsurface soils at this project site is considered very low.
- **Expansive soils.** In general, much of the near surface soils in the Imperial Valley consist of silty clays and clays which are moderate to highly expansive. The expansive soil conditions are discussed in more detail in Section 3.3.
- **Underground Carbon Dioxide Gas.** The site lies near a large reservoir of carbon dioxide gas as evidenced by nearby (adjacent southwest vacant property) open craters with bubbling gas and mud pot domes (mud volcanoes). Pockets of CO_2 gas between a depth of 50 and 100 feet below ground surface were encountered in previously geotechnical exploration performed for the Hudson Ranch 1 Geothermal Plant site with a measured gas pressure within this depth of at 15 to 25 psi. Svensen and others (2007) indicate that a sandstone CO_2 reservoir underlies the site at a depth of 150 to 200 meters.

3.8 Liquefaction

Liquefaction occurs when granular soils below the water table are subjected to vibratory motions, such as those produced by earthquakes. With strong ground shaking, the pore water pressure increases as the soil tends to reduce in volume. If the increase in pore water pressure is sufficient to reduce the vertical effective stress (suspending the soil particles in water), the soil strength decreases and the soil behaves as a liquid (similar to quicksand). Liquefaction can produce excessive settlement, ground rupture, lateral spreading, or failure of shallow bearing foundations.

Four conditions are generally required for liquefaction to occur:

(1) the soil must be saturated (relatively shallow groundwater);
(2) the soil must be loosely packed (low to medium relative density);
(3) the soil must be relatively cohesionless (not clayey); and
(4) groundshaking of sufficient intensity must occur to function as a trigger mechanism.

All of these conditions exist to some degree at this site.

Methods of Analysis: The computer program CLiq (Version 2.2.0.32, Geologismiki, 2017) was utilized for liquefaction assessment at the project site. The estimated settlements have been adjusted for transition zones between layers and the post liquefaction volumetric strain has been weighed with depth (Robertson, 2014 and Cetin et al., 2009). Computer printouts of the liquefaction analyses are provided in Appendix E.

The liquefaction potential at the project site was evaluated using the 1997 NCEER Liquefaction Workshop and the Idriss and Boulanger (2008) methods. The 1997 NCEER methods utilize CPT cone readings from site exploration and earthquake magnitude/PGA estimates from the seismic hazard analysis. The resistance to liquefaction is plotted on a chart of cyclic shear stress ratio (CSR) versus a corrected tip pressures $Q_{tn,cs}$. The analysis was performed using a PGA_M value of 0.55g was used in the analysis with a 8-foot groundwater depth and a threshold factor of safety (FS) of 1.3.

The fines content of the liquefiable sands and silts increases their liquefaction resistance in that more ground motion cycles are required to fully develop the increased pore pressures. The CPT tip pressures (Qc) were adjusted to an equivalent clean sand pressure ($Q_{tn,cs}$) in accordance with NCEER (1998).

The soils encountered at the points of exploration included saturated silts and silty sands that could liquefy during a Maximum Considered Earthquake. Liquefaction can occur within several thin isolated sandy silty layers between depths of 8 to 49 feet. The likely triggering mechanism for liquefaction appears to be strong groundshaking associated with the rupture of the San Andreas Fault, Elmore Fault and Brawley Seismic Zone. The analysis is summarized in the table below.

Table 3. Summary of Liquefaction Analysis

Boring Location	Depth To First Liquefiable Zone (ft)	Potential Induced Settlement (in)
CPT-1	15	Less than ¼”
CPT-2	8	Less than ¼”
CPT-3	20.5	Less than ¼”

Liquefaction Induced Settlements: ***Based on empirical relationships, total induced settlements are estimated to be less than ¼ inch should liquefaction occur.*** Differential settlement is estimated at be two-thirds of the total potential settlement in accordance with California Special Publication 117. Accordingly, there is a potential for ⅙ inch of liquefaction induced differential settlement at the project site. The differential settlement based on seismic settlements is estimated at 1 inch over a distance of 100 feet. Foundations should be designed for a maximum deflection of L/720.

Because of the depth of the liquefiable layer, the 8 to 15 feet thick non-liquefiable clay layer will likely act as a bridge over the liquefiable layer resulting in a fairly uniform ground surface settlement; therefore, wide area subsidence of the soil overburden would be the expected effect of liquefaction rather than bearing capacity failure of the proposed structures.

Liquefaction Induced Ground Failure: Based on research from Ishihara (1985) and Youd and Garris (1995) small ground fissure or sand boil formation is unlikely because of the thickness of the overlying unliquefiable soil. Sand boils are conical piles of sand derived from the upward flow of groundwater caused by excess porewater pressures created during strong ground shaking. Sand boils are not inherently damaging by themselves, but are an indication that liquefaction occurred at depth (Jones, 2003). Liquefaction induced lateral spreading is not expected to occur at this site due to the planar topography. According to Youd (2005), if the liquefiable layer lies at a depth greater that about twice the height of a free face, lateral spread is not likely to develop. No slopes or free faces occur at this site.

Mitigation: Based on an estimate of less than ¼ inch of liquefaction induced settlements, no ground improvement or deep foundations are required to mitigate liquefaction settlement at this project site.

Section 4
DESIGN CRITERIA

4.1 Site Preparation

Clearing and Grubbing: All surface improvements, debris or vegetation including grass, trees, and weeds on the site at the time of construction should be removed from the construction area. Root balls should be completely excavated. Organic strippings should be stockpiled and not used as engineered fill. All trash, construction debris, concrete slabs, old pavement, landfill, contaminated soil, and buried obstructions such as old foundations and utility lines exposed during rough grading should be traced to the limits of the foreign material by the grading contractor and removed under our supervision. Any excavations resulting from site clearing should be sloped to a bowl shape to the lowest depth of disturbance and backfilled under the observation of the geotechnical engineer's representative.

Mass Grading: The surface soils are loose with 2 to 4 inches of "fluff" on the surface, as indicated by wheel load depressions. Prior to placing any fills, the surface 12 inches of soil should be uniformly moisture conditioned by discing and wetting to a minimum of optimum plus 2 to 8% and compacted to a minimum of 90% of ASTM D1557 maximum density. Onsite native clays placed as engineered fill should be uniformly moisture conditioned by discing and wetting or drying to optimum plus 2 to 8% and compacted in 6 inch maximum lifts to a minimum of 90% relative compaction. Clods shall be reduced by discing to a maximum dimension of 1.0 inch prior to being placed as fill.

Building Pad Preparation: The existing surface soil within building pads for offices, maintenance shops, laboratory, production packaging, storage and other light building foundation areas should be removed to 36 inches below the building pad elevation or existing grade (whichever is lower) extending five feet beyond all exterior wall/column lines (including adjacent concreted areas). Exposed subgrade should be scarified to a depth of 8 inches, uniformly moisture conditioned to 2 to 8% above optimum moisture content and recompacted to a minimum of 90% of the maximum density determined in accordance with ASTM D1557 methods.

It is possible that wet soils will pump under equipment loads. Light earthmoving and compaction equipment should be planned for compacting soil at depth.

An engineered building support pad consisting a minimum of 3.0 feet of granular soil, placed in maximum 8-inch lifts (loose), compacted to a minimum of 95% of ASTM D1557 maximum density at 2% below to 4% above optimum moisture, should be placed below the administration complex buildings and warehouse slabs. If soft conditions are encountered at the bottom of the excavation and subgrade compaction is not achievable, a layer of geotextile stabilization/separation fabric such as Mirafi 600X or equivalent should be placed directly on the bottom of the excavation after fine grading of the subgrade soils. The geotextile stabilization/separation fabric should be placed in accordance to the manufacturer's recommendations.

Imported fill soil shall be non-expansive and should meet the USCS classifications of ML (non-plastic), SM, SP-SM, or SW-SM with a maximum rock size of 3 inches and no less than 5% passing the No. 200 sieve. The geotechnical engineer should approve imported fill soil sources before hauling material to the site. Imported fill should be placed in lifts no greater than 8 inches in loose thickness and compacted to a minimum of 95% of ASTM D1557 maximum dry density at optimum moisture ±2%.

Mat Foundation Subgrade Preparation (Lightly Loaded Structures): The existing surface soil within mat foundations areas should be removed to 12 inches below the mat foundation elevation or existing grade (whichever is lower) extending five feet beyond the mat foundation. Exposed subgrade should be inspected by the geotechnical engineer and if found to be loose, shall be scarified to a depth of 8 inches, uniformly moisture conditioned to 2 to 8% above optimum and recompacted to at least 90% of the maximum density determined in accordance with ASTM D1557 methods.

An engineered support pad consisting of 12 inches of Class 2 aggregate base shall be placed below mat foundations. The aggregate base shall be compacted to a minimum of 95% of ASTM D1557 maximum density at 2% below to 4% above optimum moisture.

Reinforced Structural Fill: Structures that are not sensitive to settlements, not heavy loaded, or that can be economically replaced or repaired such as small tanks, pumps and vessels, can be supported on shallow foundations on reinforced structural fill. Also, some heavy loaded structures that are settlement tolerant may be supported by mat foundations placed on reinforced structural fill (see Section 4.2 Shallow Foundations, Structural Mats and Settlements).

The performance of structural fill with respect to resisting liquefaction failure mechanisms, and reducing some of the static differential settlements can be enhanced by reinforced the structural fill with geogrid fabrics. Geogrids are polymer grid structures that come in rolls (much like wire mesh). When placed in horizontal layers within the compacted structural fill mass, the geogrids provide tensile properties.

Geotextile fabric and geogrid reinforced structural fill will enhance spreading of foundation loads and resist soil rupture resulting in the following benefits:

- Reduced static and differential settlement.
- Reduced transient loads to the compressible clay soils.
- Reduced rupture potential of surface soils, thus allowing higher foundation loadings.

Effectiveness of the geogrids to achieve the above results is dependent on its projection beyond the loaded foundation to create a reinforced mass larger than the loaded area. It is especially effective where several loaded areas or individual spread footings are underlain by the continuously reinforced mass projecting beyond the extremities of the loaded areas.

Excavation for Reinforced Fill: The native soils should be excavated from the designated foundation areas extending 5.0 feet beyond all exterior foundation lines to 3.0 feet below the planned bottom of foundation level. Exposed subgrade should be inspected by the geotechnical engineer and if found to be loose, shall be scarified to a depth of 8 inches, uniformly moisture conditioned to 2 to 8% above optimum and recompacted to a minimum of 90% of the maximum density determined in accordance with ASTM D1557 methods. A 6 oz. non-woven separation fabric equivalent to Mirafi 160N or equialent should be placed over the subgrade prior to placing the reinforced structural fill.

If soft conditions are encountered at the bottom of the excavation and subgrade compaction is not achievable, a geotextile separation fabric and geogrid layer should be placed over the graded smooth surface prior to placing the reinforced structural fill. The geotextile shall a 6 oz. non-woven fabric equivalent to Mirafi 160N or equivalent. Geogrids shall be either Tensar TriAx 5 or Greenbook Type S2 biaxial geogrid (ex. Tenax MS330 or equivalent). The geotextile stabilization/separation fabric and the geogrid should be placed in accordance to the manufacturer’s recommendations.

Reinforced Structural Fill: Structural fill should consist of crushed Caltrans Class 2 aggregate base. The first lift of aggregate base should be end dumped and spread in a 1.0 foot thick uniform layer, uniformly moisture conditioned to ±2% of optimum moisture and compacted to a minimum of 90% of ASTM D1557 maximum density. After completion of compacting, a geogrid reinforcing mesh (Tensar TriAx 5 or Greenbook Type S2 biaxial geogrid (ex. Tenax MS330 or equivalent)). should be placed over the first layer of base material lapped at sides/ends (1.0 foot minimum) in conformance to the manufacturer's installation instructions.

A second 1.0 foot thick layer of aggregate base should be end dumped and spread uniformly over the geogrid mesh. This layer may be placed in two lifts, uniformly moisture conditioned to ±2% of optimum moisture and compacted to a minimum of 95% of ASTM D1557 maximum density. After compacting the second layer a geogrid mesh should be placed over the aggregate base material and two final 0.5 foot thick aggregate base layers placed and compacted to a minimum of 95% of ASTM D1557 maximum density. The completed reinforced structural fill should be a minimum of 3 feet thick.

Following completion of concrete placement for the mat foundation, the remaining excavation area against the foundation should be backfilled with aggregate base in 0.5 foot maximum lifts and compacted to a minimum of 95%.

Concrete Hardscape Areas: In areas other than the basin backfill which are to receive housekeeping slabs or area concrete slabs, the ground surface should be presaturated (20% minimum moisture content) to a minimum depth of 24 inches and then scarified to 8 inches, moisture conditioned to a minimum of 5% over optimum, and recompacted to a minimum of 90% of ASTM D1557 maximum density just prior to concrete placement.

Observation and Density Testing: All site preparation and fill placement should be continuously observed and tested by a representative of a qualified geotechnical engineering firm. Full-time observation services during the excavation and scarification process is necessary to detect undesirable materials or conditions and soft areas that may be encountered in the construction area. The geotechnical firm that provides observation and testing during construction shall assume the responsibility of "*geotechnical engineer of record*" and, as such, shall perform additional tests and investigation as necessary to satisfy themselves as to the site conditions and the geotechnical parameters for site development.

Auxiliary Structures Foundation Preparation: Auxiliary structures such as free standing or retaining walls should have footings extended to a minimum of 30 inches below grade. The existing soil beneath the structure foundation prepared in the manner described for the building pad except the preparation needed only to extend 24 inches below and beyond the footing.

4.2 Shallow Foundations, Structural Mats and Settlements

Spread footings: Shallow spread footings and continuous wall footings are suitable to support the structures planned for offices, control rooms and warehouses. Footings shall be founded on 3.0 feet of engineered granular fill as described in Section 4.1. The foundations may be designed using an allowable soil bearing pressure of 2,000 psf. The allowable soil pressure may be increased by one-third for short term loads induced by winds or seismic events.

Resistance to horizontal loads will be developed by passive earth pressure on the sides of footings and frictional resistance developed along the bases of footings and concrete slabs. Passive resistance to lateral earth pressure may be calculated using an equivalent fluid pressure of 300 pcf (for imported sands) to resist lateral loadings. The top one foot of embedment should not be considered in computing passive resistance unless the adjacent area is confined by a slab or pavement. An allowable friction coefficient of 0.35 (for imported sands) may also be used at the base of the footings to resist lateral loading.

Foundation movement under the estimated static (non-seismic) loadings and static site conditions are estimated to not exceed ¾ inch with differential movement of about two-thirds of total movement for the loading assumptions stated above when the subgrade preparation guidelines given above are followed. Seismically induced liquefaction settlement may be on the order of less than ¾ inch.

Structural Mat Foundations for Lightly Loaded Structures: Mat foundations for lightly loaded structures like pumps, small tanks, generators, etc., may be designed using an allowable soil bearing pressure of 1,500 psf when the foundation is supported on 12 inches of compacted Class 2 aggregate base (95% of ASTM D1557 maximum density to ±2% of optimum moisture). The native soils supporting the concrete structural mat and compacted aggregate base shall be moisture conditioned and recompacted as specified in Section 4.1 of this report.

The allowable soil pressure may be increased by one-third for short term loads induced by winds or seismic events. Design criteria for these mat foundations are provided below.

Flat Plate Structural Mats: The structural mat should have a double mat of steel and a minimum thickness of 12 inches. Structural mats may be designed for a modulus of subgrade reaction (Ks) of 100 pci when placed on 12 inches of compacted Class 2 aggregate base.

Settlement estimates (in inches) for lightly loaded structures (1,000 and 1,500 psf) for different mat dimensions and 12 inches of compacted aggregate base follow:

Table 4: Settlement Estimates (inches)

Load, psf	**Size of Mat (ft.)**						
	6 x 8	**8 x 11**	**10 x10**	**10 x 15**	**15 x 25**	**20 x 20**	**25 x 50**
1,000	0.8	1.0	1.1	1.3	1.9	2.0	2.8
1,500	1.1	1.4	1.5	1.8	2.6	2.7	3.8

Differential movements of about two-thirds of total movement are expected for the lightly loaded structures (1,500 psf).

Structural Mat Foundations for Heavy Structures: Heavily loaded structures that are settlement tolerant may be supported on structural concrete mat foundations. The mat shall be founded on the reinforced structural fill which has been properly prepared and compacted as described in Section 4.1 of this report.

Structural mat foundations placed over reinforced structural fill may be designed using an allowable soil bearing pressure of 4,000 psf. The allowable soil pressure may be increased by one-third for short term loads induced by winds or seismic events.

Flat Plate Structural Mats: Structural mats may be designed for a modulus of subgrade reaction (Ks) of 300 pci when placed on 3.0 feet of Class 2 aggregate base material (reinforced structural fill). The structural fill supported pad shall be moisture conditioned and compacted as specified in Section 4.1 of this report.

Resistance to horizontal loads will be developed by passive earth pressure on the sides of footings and frictional resistance developed along the bases of footings. Passive resistance to lateral earth pressure may be calculated using an equivalent fluid pressure of 350 pcf (for aggregate base) to resist lateral loadings. The top one foot of embedment should not be considered in computing passive resistance unless the adjacent area is confined by a slab or pavement. An allowable friction coefficient of 0.40 may also be used at the base of the mats with aggregate base subgrade to resist lateral loading.

Settlement estimates (in inches) developed for different footing and mat dimensions supported on 3.0 feet of reinforced structural fill and loaded from 1,000 to 4,000 psf follow:

Table 5: Settlement Estimates (inches)

Load, psf	**Size of Footing or Mat (ft.)**							
	10 x 10	**12 x 25**	**20 x 20**	**25 x 30**	**30 x 35**	**50 x 50**	**50 x 75**	**60 x 120**
1,000	1.1	1.7	1.9	2.4	2.7	3.3	3.5	3.8
2,000	1.9	2.9	3.3	4.1	4.6	5.7	6.1	6.5
3,000	2.6	3.9	4.5	5.5	6.1	---	---	---
4,000	3.1	4.8	5.5	6.7	---	---	---	---

4.3 Flexible Tank Foundations and Settlements

Tank Engineered Pad Preparation: The existing soils underlying the proposed tank area should be removed to a depth of 36 inches below ground surface or a minimum of 24 inches below the bottom of the ring wall foundation (whichever is lower), extending to a minimum of 5 feet beyond the perimeter of the tank. Exposed subgrade should be scarified to a depth of 8 inches, uniformly moisture conditioned to 2 to 8% above optimum moisture content and recompacted to a minimum of 90% of the maximum density determined in accordance with ASTM D1557 methods.

If soft conditions are encountered at the bottom of the excavation and subgrade compaction is not achievable, the native soil at the sub-excavation and footing excavation level should be overlain by a woven geotextile stabilizing fabric (Mirafi HP 370 or equivalent). The area should then be brought to finish grade with engineered fill consisting of the following components:

- 36 inches of reinforced crushed aggregate base
- 8 inches of crushed rock (1" x No. 4)
- 4 inches of oiled sand

The fill may be crowned about 40% of the total center settlement to allow for differential settlement between the tank perimeter and center. If compaction of sub-excavation level is achievable, the 36 inches of aggregate base shall be placed in 8-inch maximum loose lifts and compacted to a minimum 95% of ASTM D1557 maximum density within 2% of optimum moisture.

If bottom of excavation subgrade compaction is not achievable and the geotextile stabilizing fabric is utilized, the first 12-inch layer of aggregate base placed over the geotextile fabric shall be compacted to a minimum of 90%. The remaining engineered aggregate base fill should be placed in 8-inch maximum loose lifts and compacted to a minimum 95% of ASTM D1557 maximum density within 2% of optimum moisture. The crushed rock tank underlayment should meet the gradation requirements of ASTM C33, Size 57 (1" x No. 4 rock).

Steel Tank Foundation: Flexible steel tanks, which can withstand large settlements, generally require minimal foundations, allowing settlement to occur and using flexible connections to inlet/outlet piping. The tank should have a perimeter ring wall foundation which supports the tank wall and roof.

The interior footings and the ringwall may be proportioned for a net load (in addition to the uniform tank liquid load) for dead load of roof weight (plus sustained live load). This soil pressure can be increased by one third for transient and seismic loads. The minimum depth of the ring wall footing should be 24 inches below the finished ground surface. The minimum footing width should be 12 inches.

Estimated Settlements: The subsurface clays are moist and overconsolidated in their natural state. Imposed foundations loads can consolidate the soils by reducing the void ratio through pore water expulsion. The amount of vertical settlement that occurs as a result of soil compression varies with applied loads, foundation shape and width. The clays will consolidate fairly slowly because of its low permeability.

Flexible connections such a "Flex-Tend" expansion joints should be used to connect exterior piping with the tank. The tank should be preloaded and monitored for settlement prior to making piping connections. It may be necessary to readjust piping connections after the loading sequence.

Estimated settlements were calculated using the consolidation and field data test data for the clay strata and Schmertman's analysis for the granular strata using the CPT data correlations. The soils to a depth of the diameter of the tanks (80, 100 and 120 feet) may be significantly stressed to contribute to the overall settlement. The estimated settlement for the different proposed diameter tanks with an imposed pressure load of 1,500 and 2,000 psf are as follow:

Table 6: Settlement Estimates (inches)

Diameter (ft)	Load (psf)	Settlement Estimates (in)
80	1,500	5.2
	2,000	6.5
100	1,500	5.5
	2,000	6.8
120	1,500	5.7
	2,000	7.0

Soil Improvements and Underlayment: If estimated settlements are excessive even for the flexible steel tanks and connections supported by the engineered fill, the existing soils underlying the clarifier tank should be improved by soil mixing or soil replacement (sand/cement) with 48 inch diameter shafts. The minimum surface area replacement ratio shall be 20 percent.

Table 7: Estimated Settlement – Flexible Steel Tanks Overlaying Soil Mixed Columns

Diameter (ft)	Treatment Depth (ft)	Load (psf)	Settlement Estimates (in)
80	20	1,500	2.0
	25	1,500	1.1
	30	1,500	0.4
	20	2,000	3.1
	25	2,000	2.0
	30	2,000	1.2
100	20	1,500	2.1
	25	1,500	1.1
	30	1,500	0.4
	20	2,000	3.1
	25	2,000	2.1
	30	2,000	1.2
120	20	1,500	2.1
	25	1,500	1.1
	30	1,500	0.4
	20	2,000	3.2
	25	2,000	2.1
	30	2,000	1.2

Following soil mixing, the area should be brought to finish grade with engineered fill consisting of the following components:

- 36 inches of reinforced crushed aggregate base
- 8 inches of crushed rock (1” x No. 4)
- 4 inches of oiled sand

The fill may be crowned about 40% of the total center settlement to allow for differential settlement between the tank perimeter and center.

Estimated Tank Settlements: Tank settlements with soil mixing improvement below the tank are shown in Table 6 and 7 of this report. Flexible connections should be used at inlet/outlet pipes. The clays will consolidate fairly slowly because of their low permeability. "Flex-Tend" piping joints are a common flexible connector. The tank should be preloaded and monitored for settlement prior to making piping connections. It may be necessary to readjust piping connections after the loading sequence.

4.4 Soil Mixing (Rigid Mats)

The use of soil improvement like soil mixing with cement or soil replacement (sand/cement) may be used to reduce settlement to tolerable limits. The highly plastic native clays were found to not mix well with conventional soil mixing augers (Hudson Ranch 1 Plant site) and imported sands may be required for soil-cement mixing.

Structural mat foundations placed over the improved soil are anticipated to be used to support the various structural elements of the plant. Mats overlaying soil mixed columns should be underlain by 3.0 feet of crushed aggregate base (Caltrans Class 2, 1-½” or ¾” grading).

The existing soils should be improved by soil mixing or soil replacement (sand/cement) with 48 inch diameter shafts. The minimum surface area replacement ratio shall be 20 percent. The deep soil mixing serves to reduce settlement by replacing the compressible clay soils below the structures with very stiff soil-cement columns, creating a stiffer composite soil matrix. Soil-cement design should be provided by a licensed specialty contractor. Soil improvement treatment depth may reduce settlements according to Tables No. 8 and 9:

Table 8: Estimated Settlements (1,500 psf Mat Loading)
Mats Overlaying Soil Mixed Columns

Treatment Depth (ft)	Foundation Size (ft)	Load (psf)	Settlement Estimates (in)
20	30x35	1,500	1.6
25	30x35	1,500	0.9
30	30x35	1,500	0.3
20	50x50	1,500	1.9
25	50x50	1,500	1.1
30	50x50	1,500	0.4

Table 9: Estimated Settlements (2,500 psf Mat Loading)
Mats Overlaying Soil Mixed Columns

Treatment Depth (ft)	Foundation Size (ft)	Load (psf)	Settlement Estimates (in)
20	30x35	2,500	3.2
25	30x35	2,500	2.4
30	30x35	2,500	1.7
20	50x50	2,500	3.7
25	50x50	2,500	2.8
30	50x50	2,500	1.9

It is unlikely that significant differential settlement will occur on foundations supported by improved soil. Soil-cement design should be provided by a licensed specialty contractor. Soil-cement design should be provided by a licensed specialty contractor.

4.5 Auger Cast Piles

Auger cast piles (cast-in-place grout with steel cage reinforcement) has been used successfully to provide deep foundations for heavily loaded and critical elements of industrial plants. Estimated capacities of 24 and 30-inch diameter auger cast pile are provided below.

Vertical Capacity: Vertical capacity for 24 and 30-inch diameter shafts are presented in Plate D-1. Capacities for other shaft sizes can be determined in direct proportion to shaft diameters. End bearing and skin friction parameters have been used to determine the allowable shaft capacity. The allowable capacities include a factor of safety of 2.5. Resistance to uplift may be considered equivalent to 50 percent of the allowable downward vertical capacity.

The allowable vertical compression capacities may be increased by 33 percent to accommodate temporary loads from wind or seismic forces. The allowable vertical shaft capacities are based on the supporting capacity of the soil. The structural capacity of the piles should be verified by the structural engineer.

Lateral Capacity: The lateral capacity for 24 and 30 inch diameter shafts are given in the Table 8. The allowable horizontal deflection at the shaft head has been assumed to be one-half inch (0.50 inch).

Table 10: Lateral Capacities – Auger Cast Piles

Shaft Diameter (in.)	**24**		**30**	
Head Condition	Free	Fixed	Free	Fixed
Allowable Head Deflection (in.)	0.5	0.5	0.5	0.5
Length (ft.)	**30**	**30**	**30**	**30**
Lateral Capacity (kips)	22.3	46.0	31.6	63.3
Maximum Moment (foot-kips)	110.8	-290.0	187.5	-479.2
@Depth from Pier Head (ft.)	9.5	0	11.2	0
Length (ft.)	**40**	**40**	**40**	**40**
Lateral Capacity (kips)	22.4	46.1	31.7	66.0
Maximum Moment (foot-kips)	-111.7	-290.8	188.3	-500.0
@Depth from Pier Head (ft.)	9.5	0	11.4	0
Length (ft.)	**45**	**45**	**45**	**45**
Lateral Capacity (kips)	22.4	46.1	31.7	66.0
Maximum Moment (foot-kips)	-111.7	-290.8	188.3	-500.0
@Depth from Pier Head (ft.)	9.5	0	11.4	0

The geotechnical engineer should observe the auger cast pile drilling and electronic logs to evaluate each pile on a case-by-case basis.

Settlement: Total settlements of less than ¼ inch are anticipated for single auger cast piles designed according to the preceding recommendations.

Axial Load Group Effect: If pile spacing is a least 2.5 pile diameters center-to-center, no reduction in axial load capacity is considered necessary for a group effect.

Lateral Load Group Effect: Group action should be considered when the pile/pier spacing in the direction of loading is less than 6 to 8 pile diameters. Reduction in lateral loading for pile/pier group action can be evaluated by reducing the effective Modulus of Soil Reaction in the direction of loading by a reduction factor R, as follow:

Table 11: Lateral Load Reduction Factors for Group Action

Pile Spacing in Direction of Loading D=Pile Diameter	Reduction Factor, R
8D	1.00
6D	0.80
4D	0.50
3D	0.40

Soil Parameters: Soil parameters of the subsurface soil for determining deep foundation capacities are presented in Table No. 10.

Table 12: Soil Strength Parameters for Deep Foundations

Layer Type	Depth (ft)	Unit Weight (pcf)	Friction Angle (deg)	Cohesion (ksf)	Strain Factor, E50 o Dr (%)	Lateral Soil Modulus, k (pci)
CL-CH	0 to 20	125	---	0.70	1.25	120
ML	20 to 22	120	24°	0.50	0.85	300
CL	22 to 48	125	---	0.90	1.00	200
ML	48 to 50	120	24°	0.90	0.85	300

Soil parameters for short drilled pier foundation design (T-Poles) are provided below:

Cohesion = 700 psf (Includes F.S. = 2.0)
Soil Unit Weight = 125 pcf
Phi Angle, Ø = 0
Native Soil Modulus of Soil Reaction, K = 50 pci
Allowable Tip Bearing Capacity = 2,000 psf
Allowable Vertical Skin Friction per foot of depth = 200 psf/ft
Allowable Negative Skin Friction (Tension) per foot of depth = 280 psf/ft
Depth to Groundwater = 9.0 ft. (Historic Level)

4.6 Driven Piles

The use of driven steel pipes had been used successfully for elevated pipe rack supports. Special provisions for corrosion protection due to the corrosive nature of the subsurface soils will be required. Steel driven pipe for the elevated pipe rack supports have been preliminary sized as 10-in diameter with a ½" thick wall. Axial and lateral loads were applied at 2 feet above ground surface. Estimated axial and lateral capacities of a 10-in diameter driven steel pipe are provided in Table 13.

Table 13: Allowable Capacities of Driven Steel Pipe

Pile Type:	Driven 10-in Diameter Steel Pipe		
Pile Length (ft):	**32 feet**	**42 feet**	**47 feet**
Specified Tip Depth (ft):	**30 feet**	**40 feet**	**45 feet**
Height Above Ground (ft):	**2 feet**	**2 feet**	**2 feet**
Pipe Pile Size:	10”	10”	10”
Allowable Axial Capacity (kips) – FS=2.5:	25.1	34.5	39.5
Allowable Lateral Load – Free Head Condition (kips):	2.3	2.4	2.5
Top Deflection (in) – Free Head Condition	0.50	0.50	0.50
Maximum Moment from Lateral Load, Free Head Condition (ft-kips):	8.3	8.4	9.2
Depth of Maximum Moment(from Top of Post), Free Head (ft):	4.8	4.8	4.8

Recommendations for other steel shapes and sizes can be made available upon request.

Vertical Capacity: Point bearing and skin friction parameters have been used to determine the allowable shaft capacity. The allowable capacities include a factor of safety of 2.5. The allowable vertical compression capacities may be increased by 33 percent to accommodate temporary loads derived from wind or seismic forces. The allowable vertical shaft capacities are based on the supporting capacity of the soil. Resistance to uplift may be considered equivalent to 50 percent of the allowable downward vertical capacity.

Lateral Capacity: The allowable lateral load was assumed to be applied at the top of the pile. The allowable horizontal deflection at the shaft head has been assumed to be one-half inch (0.50 inch).

Settlement: Total settlements of less than ¼ inch are anticipated for single piles designed according to the preceding recommendations. If pile spacing is a least 2.5 pile diameters center-to-center, no reduction in axial load capacity is considered necessary for a group effect.

Pile Driving: Complete documentation of the proposed hammer should be submitted to the geotechnical engineer for approval prior to mobilization. Driving records should be maintained on each pile. The numbers of blows required to drive a pile each foot should be recorded. Driving energy necessary to insure development of full design capacity shall be established after each selection of the pile driver.

The geotechnical engineer should observe pile driving and evaluate each pile on a case-by-case basis. Pre-drilling of pilot holes for piles to a depth of half the pile depth will be allowed without reduction in pile capacity.

4.7 Concrete Mixes and Corrosivity

Selected chemical analyses for corrosivity were conducted on bulk samples of the near surface soil from the project site (Plate C-2). The native soils were found to have S2 (severe) levels of sulfate ion concentration (6,426 to 7,014ppm). Sulfate ions in high concentrations can attack the cementitious material in concrete, causing weakening of the cement matrix and eventual deterioration by raveling. The following table provides American Concrete Institute (ACI) recommended cement types, water-cement ratio and minimum compressive strengths for concrete in contact with soils:

Table 14. Concrete Mix Design Criteria due to Soluble Sulfate Exposure

Sulfate Exposure Class	Water-soluble Sulfate (SO_4) in soil, ppm	Cement Type	Maximum Water-Cement Ratio by weight	Minimum Strength f'c (psi)
S0	0-1,000	–	–	–
S1	1,000-2,000	II	0.50	4,000
S2	2,000-20,000	V	0.45	4,500
S3	Over 20,000	V (plus Pozzolon)	0.45	4,500

Note: From ACI 318-14 Table 19.3.1.1 and Table 19.3.2.1

A minimum of 6.5 sacks per cubic yard of concrete (4,500 psi) of Type V Portland Cement with a maximum water/cement ratio of 0.45 (by weight) should be used for concrete placed in contact with native soil on this project (sitework including sidewalks, housekeeping slabs and foundations). Admixtures may be required to allow placement of this low water/cement ratio concrete. Thorough concrete consolidation and hard trowel finishes should be used due to the aggressive soil exposure.

The native soil has very severe levels of chloride ion concentration (>18,000ppm). Chloride ions can cause corrosion of reinforcing steel, anchor bolts and other buried metallic conduits. Resistivity determinations on the soil indicate very severe potential for metal loss because of electrochemical corrosion processes. Mitigation of the corrosion of steel can be achieved by using steel pipes coated with epoxy corrosion inhibitors, asphaltic and epoxy coatings, cathodic protection or by encapsulating the portion of the pipe lying above groundwater with a minimum of 4 inches of densely consolidated concrete. ***No metallic water pipes or conduits should be placed below foundations.***

Foundation designs shall provide a minimum concrete cover of five (5) inches around steel reinforcing or embedded components (anchor bolts, etc.) exposed to native soil. If the 5-inch concrete edge distance cannot be achieved, all embedded steel components (anchor bolts, etc.) shall be epoxy coated for corrosion protection (in accordance with ASTM D3963/A934) or a corrosion inhibitor and a permanent waterproofing membrane shall be placed along the exterior face of the exterior footings. Additionally, the concrete should be thoroughly vibrated at footings during placement to decrease the permeability of the concrete.

Typical corrosion protection for steel pipe piles used for pipe rack supports has consisted of a 12” by 36” deep collar at the top of the pipe pile. This is accomplished by predrilling a 36” diameter hole to 36” deep at each pile location and filling with concrete following pile driving.

Landmark does not practice corrosion engineering. We recommend that a qualified corrosion engineer evaluate the corrosion potential on metal construction materials and concrete at the site to obtain final design recommendations.

4.8 Embankment Construction and General Site Fill

<u>Site preparation and embankment construction:</u> All areas to receive new fill for the embankments should be stripped of all vegetation. The surface 12 inches of native soil shall be uniformly moisture conditioned to 2 to 8% above optimum moisture by discing and compacted in 6-inch maximum lifts to a minimum of 90% of ASTM D1557 maximum density.

The embankment slopes may be constructed no steeper than 3:1 (unless lined with concrete or HDPE/PVC sheeting) with a minimum crown width of 15 feet. Embankments should be overbuilt by 6 inches and subsequently cut to the plan line and grade to remove loose material along the slope faces.

Native cohesive soil from the site or adjacent land areas is anticipated to be used as general and embankment fill and as pond liner material. The fill soils should consist of cohesive silty clay (CL) or clay (CH). The clay soils are considered adequate for engineered fill. The general and embankment fill should be pulverized/disced to less than 1.0 inch maximum clod size, uniformly moisture conditioned to 2 to 8% over optimum, placed in 6 inch maximum lifts and compacted to a minimum of 90% of ASTM D1557 maximum density.

4.9 Excavations

All site excavations should conform to CalOSHA requirements for Type B soil. The contractor is solely responsible for the safety of workers entering trenches. Temporary excavations with depths of 4 feet or less may be cut nearly vertical for short duration. Excavations deeper than 4 feet will require shoring or slope inclinations in conformance to CAL/OSHA regulations for Type B soil. Surcharge loads of stockpiled soil or construction materials should be set back from the top of the slope a minimum distance equal to the height of the slope. All permanent slopes should not be steeper than 3:1 to reduce wind and rain erosion. Protected slopes with ground cover may be as steep as 2:1. However, maintenance with motorized equipment may not be possible at this inclination.

4.10 Utility Trench Backfill

Utility Trench Backfill: Prior to placement of utility bedding, the exposed subgrade at the bottom of trench excavations should be examined for soft, loose, or unstable soil. Loose materials at trench bottoms resulting from excavation disturbance should be removed to firm material. If extensive soft or unstable areas are encountered, these areas should be over-excavated to a depth of at least 2 feet or to a firm base and be replaced with additional bedding material.

Backfill Materials: Pipe zone backfill (i.e., material beneath and in the immediate vicinity of the pipe) should consist of a 4 to 8 inch bed of ⅜-inch crushed rock, sand/cement slurry (3 sack cement factor), and/or crusher fines (sand) extending to a minimum of 12 inches above the top of pipe. If crushed rock is used for pipe zone backfill for utilities, the crushed rock material should be completed surrounded by a 6 oz. non-woven filter fabric such as Mirafi 160N or equivalent. The filter fabric shall cover the trench bottom, sidewalls and over the top of the crushed rock. The filter fabric is recommended to inhibit the migration of fine material into void spaces in the crushed rock which may create the potential for sinkholes or depressions to develop at the ground surface.

Pipe bedding should be in accordance with pipe manufacturer's recommendations. Recommendations provided above for pipe zone backfill are minimum requirements only. More stringent material specifications may be required to fulfill local codes and/or bedding requirements for specific types of pipes. On-site soil free of debris, vegetation, and other deleterious matter may be suitable for use as utility trench backfill above pipezone, but may be difficult to uniformly maintain at specified moistures and compact to the specified densities. Native backfill should only be placed and compacted after encapsulating buried pipes with suitable bedding and pipe envelope material.

Compaction Criteria: Mechanical compaction is recommended; ponding or jetting should not be allowed, especially in areas supporting structural loads or beneath concrete slabs supported-on-grade, pavements, or other improvements. All trench backfill should be placed and compacted in accordance with recommendations provided above for engineered fill.

The pipe zone material (crusher fines, sand) shall be compacted to a minimum of 95% of ASTM D1557 maximum density. Pipe deflection should be checked to not exceed 2% of pipe diameter. Native clay/silt soils may be used to backfill the remainder of the trench. Soils used for trench backfill shall be placed in maximum 6 inch lifts (loose), compacted to a minimum of 90% of ASTM D1557 maximum density at a minimum of 4% above optimum moisture.

Imported granular material is acceptable for backfill of utility trenches. Granular trench backfill used in building pad areas should be plugged with a solid (no clods or voids) 2-foot width of native clay soils at each end of the building foundation to prevent landscape water migration into the trench below the building.

Backfill soil of utility trenches within paved areas should be uniformly moisture conditioned to a minimum of 4% above optimum moisture, placed in layers not more than 6 inches in thickness and mechanically compacted to a minimum of 90% of the ASTM D1557 maximum dry density, except that the top 12 inches shall be compacted to 95% (if granular trench backfill).

4.11 Seismic Design

This site is located in the seismically active southern California area and the site structures are subject to strong ground shaking due to potential fault movements along the San Andreas and Elmore Faults and the Brawley Seismic Zone. Engineered design and earthquake-resistant construction are the common solutions to increase safety and development of seismic areas. Designs should comply with the latest edition of the CBC for Site Class D using the seismic coefficients given in Section 3.6 and Table 2 of this report.

4.12 Laydown Yard

The new laydown yard should consist of a minimum of 8.0 inches of Caltrans Class 2 aggregate base placed over 12 inches of moisture conditioned native clay soil (minimum of 2% above optimum moisture) compacted to a minimum of 90% of the maximum dry density determined by ASTM D1557. Alternately, the access roads may consist of 6.0 inches of aggregate base placed over 9 inches of lime treated soil compacted to a minimum of 90%. Preliminary estimates of lime content required to stabilize the clay soils is 6% hydrated lime by weight of soil.

4.13 Pavements

Pavements should be designed according to the 2020 Caltrans Highway Design Manual or other acceptable methods. Traffic indices were not provided by the project engineer or owner; therefore, we have provided structural sections for several traffic indices for comparative evaluation. The public agency or design engineer should decide the appropriate traffic index for the site. Maintenance of proper drainage is necessary to prolong the service life of the pavements. Based on the current Caltrans method, an estimated R-value of 5 for the subgrade soil and assumed traffic indices, the following table provides our estimates for asphaltic concrete (AC) and Portland Cement Concrete (PCC) pavement sections.

Table 15. Pavement Structural Sections

R-Value of Subgrade Soil - 5 (estimated) Design Method - Caltrans 2020

Traffic Index	Flexible Pavements		Rigid (PCC) Pavements	
	Asphaltic Concrete Thickness (in.)	Aggregate Base Thickness (in.)	Concrete Thickness (in.)	Aggregate Base Thickness (in.)
4.0	3.0	6.5	5.0	6.0
5.0	3.0	10.0	5.5	6.0
6.0	4.0	11.5	6.0	8.0
6.5	4.0	14.0	7.0	8.0
8.0	5.0	17.5	8.0	11.0
10.0	5.0	23.5	9.0	13.0
11.0	6.0	26.0	10.0	15.0

Notes:

1) Asphaltic concrete shall be Caltrans, Type A HMA (Hot Mix Asphalt), ¾ inch maximum (½ inch maximum for parking areas), with PG70-10 asphalt concrete, compacted to a minimum of 95% of the Hveem density (CAL 308) or a minimum of 92% of the Maximum Theoretical Density (ASTM D2041).
2) Aggregate base shall conform to Caltrans Class 2 (¾ in. maximum), compacted to a minimum of 95% of ASTM D1557 maximum dry density.
3) Place pavements on 12 inches of moisture conditioned (minimum 2% above optimum if clays) native clay soil compacted to a minimum of 90% of the maximum dry density determined by ASTM D1557. Prewetting of subgrade soils (to 3.5 feet) may be required depending on moisture of subgrade at time of aggregate base placement.
4) Portland cement concrete for pavements should have Type V cement, a minimum compressive strength of 4,500 psi at 28 days, and a maximum water-cement ratio of 0.45.

5) Typical Street Classifications (Imperial County).

Parking Areas: TI = 4.0
Cul-de-Sacs: TI = 5.0
Local Streets: TI = 6.0
Minor Collectors: TI = 6.5 (trash truck areas)
Major Collectors: TI = 8.0
Minor Arterial: TI = 10.0
Primary Arterial: TI = 11.0

Section 5
LIMITATIONS AND ADDITIONAL SERVICES

5.1 Limitations

The findings and professional opinions within this report are based on current information regarding the proposed mineral extraction facility at the Hudson Ranch No.1 geothermal power plant located at 409 W. McDonald Road northwest of Calipatria, California. The conclusions and professional opinions of this report are invalid if:

- Structural loads change from those stated or the structures are relocated.
- The Additional Services section of this report is not followed.
- This report is used for adjacent or other property.
- Changes of grade or groundwater occur between the issuance of this report and construction other than those anticipated in this report.
- Any other change that materially alters the project from that proposed at the time this report was prepared.

This report was prepared according to the generally accepted *geotechnical engineering standards of practice* that existed in Imperial County at the time the report was prepared. No express or implied warranties are made in connection with our services.

Findings and professional opinions in this report are based on selected points of field exploration, geologic literature, limited laboratory testing, and our understanding of the proposed project. Our analysis of data and professional opinions presented herein are based on the assumption that soil conditions do not vary significantly from those found at specific exploratory locations. Variations in soil conditions can exist between and beyond the exploration points or groundwater elevations may change. The nature and extend of such variations may not become evident until, during or after construction. If variations are detected, we should immediately be notified as these conditions may require additional studies, consultation, and possible design revisions.

Environmental or hazardous materials evaluations were not performed by Landmark for this project. Landmark will assume no responsibility or liability whatsoever for any claim, damage, or injury which results from pre-existing hazardous materials being encountered or present on the project site, or from the discovery of such hazardous materials.

The client has responsibility to see that all parties to the project including designer, contractor, and subcontractor are made aware of this entire report within a reasonable time from its issuance. This report should be considered invalid for periods after two years from the date of report issuance without a review of the validity of the findings and professional opinions by our firm, because of potential changes in the Geotechnical Engineering Standards of Practice. This report is based upon government regulations in effect at the time of preparation of this report. Future changes or modifications to these regulations may require modification of this report. Land or facility use, on and off-site conditions, regulations, design criteria, procedures, or other factors may change over time, which may require additional work. Any party other than the client who wishes to use this report shall notify Landmark of such intended use. Based on the intended use of the report, Landmark may require that additional work be performed and that an updated report be issued. Non-compliance with any of these requirements by the client or anyone else will release Landmark from any liability resulting from the use of this report by any unauthorized party and client agrees to defend, indemnify, and hold Landmark harmless from any claim or liability associated with such unauthorized use or non-compliance.

This report contains information that may be useful in the preparation of contract specifications. However, the report is not worded is such a manner that we recommend its use as a construction specification document without proper modification. The use of information contained in this report for bidding purposes should be done at the contractor's option and risk.

5.2 Plan Review

Landmark Consultants, Inc. should be retained during development of design and construction documents to check that the geotechnical professional opinions are appropriate for the proposed project and that the geotechnical professional opinions are properly interpreted and incorporated into the documents. Landmark should have the opportunity to review the final design plans and specifications for the project prior to the issuance of such for bidding.

Governmental agencies may require review of the plans by the geotechnical engineer of record for compliance to the geotechnical report.

5.3 Additional Services

We recommend that Landmark Consultant be retained to provide the tests and observations services during construction. *The geotechnical engineering firm providing such tests and observations shall become the geotechnical engineer of record and assume responsibility for the project.*

Landmark Consultants, Inc. professional opinions for this site are, to a high degree, dependent upon appropriate quality control of subgrade preparation, fill placement, and foundation construction. Accordingly, the findings and professional opinions in this report are made contingent upon the opportunity for Landmark Consultants to observe grading operations and foundation excavations for the proposed construction.

If parties other than Landmark Consultants, Inc. are engaged to provide observation and testing services during construction, such parties must be notified that they will be required to assume complete responsibility as the geotechnical engineer of record for the geotechnical phase of the project by concurring with the professional opinions in this report and/or by providing alternative professional guidance.

Additional information concerning the scope and cost of these services can be obtained from our office.

Section 6
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TABLES

Table 1
Summary of Characteristics of Closest Known Active Faults

Fault Name	Approximate Distance (miles)	Approximate Distance (km)	Maximum Moment Magnitude (Mw)	Fault Length (km)	Slip Rate (mm/yr)
Elmore Ranch	5.0	8.0	6.6	29 ± 3	1 ± 0.5
Hot Springs *	12.4	19.8			
San Andreas - Coachella	13.2	21.0	7.2	96 ± 10	25 ± 5
Imperial	18.3	29.4	7	62 ± 6	20 ± 5
Brawley *	18.6	29.7			
Superstition Hills	18.8	30.1	6.6	23 ± 2	4 ± 2
Superstition Mountain	22.5	36.0	6.6	24 ± 2	5 ± 3
San Jacinto - Borrego	27.0	43.1	6.6	29 ± 3	4 ± 2
Rico *	28.9	46.2			
Painted Gorge Wash*	29.6	47.4			
San Jacinto - Anza	31.5	50.4	7.2	91 ± 9	12 ± 6
Yuha Well *	33.9	54.3			
Unnamed 1*	34.0	54.4			
Shell Beds	34.4	55.1			
Vista de Anza*	35.6	57.0			
Yuha*	35.8	57.3			
Unnamed 2*	36.6	58.5			
San Jacinto - Coyote Creek	37.3	59.7	6.8	41 ± 4	4 ± 2
Ocotillo*	37.8	60.4			
Laguna Salada	38.0	60.8	7	67 ± 7	3.5 ± 1.5
Elsinore - Coyote Mountain	38.9	62.2	6.8	39 ± 4	4 ± 2
Borrego (Mexico)*	45.0	72.0			

* Note: Faults not included in CGS database.

Table 2a
2019 California Building Code (CBC) and ASCE 7-16 Seismic Parameters

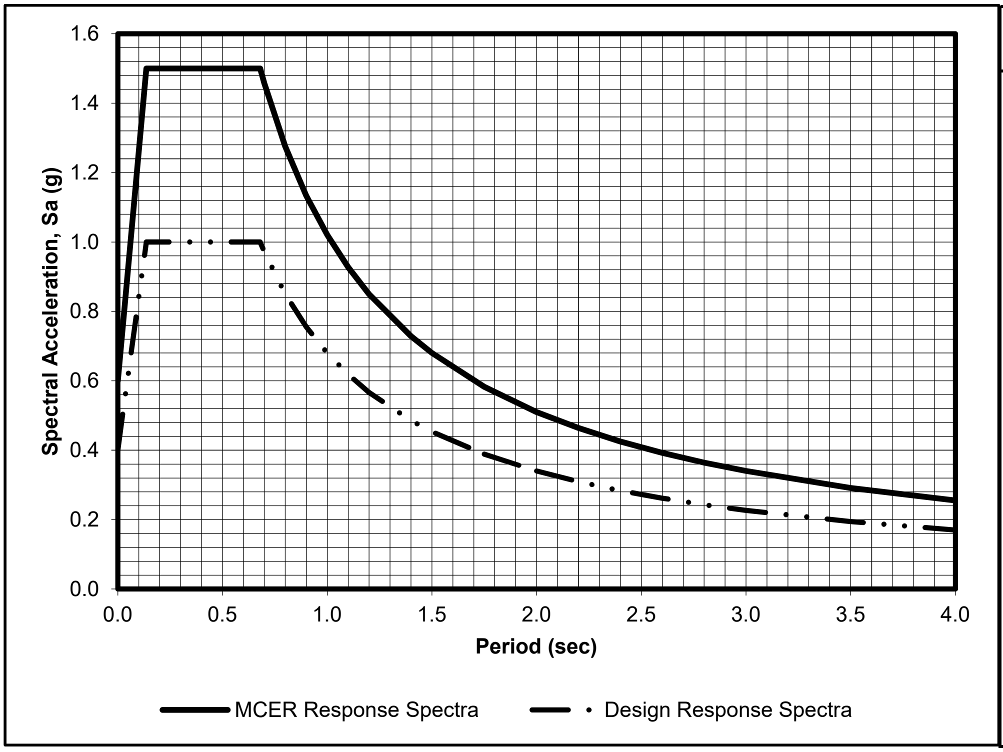
			ASCE 7-16 Reference
Soil Site Class:	**D**		Table 20.3-1
Latitude:	33.2048	N	
Longitude:	-115.5790	W	
Risk Category:	II		
Seismic Design Category:	D		

Maximum Considered Earthquake (MCE) Ground Motion

Mapped MCE_R Short Period Spectral Response	S_s	1.500 g	CBC Figure 1613.3.1(1)	
Mapped MCE_R 1 second Spectral Response	S_1	0.600 g	CBC Figure 1613.3.1(2)	
Short Period (0.2 s) Site Coefficient	F_a	1.00	CBC Table 1613.3.3(1)	
Long Period (1.0 s) Site Coefficient	F_v	1.70	CBC Table 1613.3.3(2)	
MCE_R Spectral Response Acceleration Parameter (0.2 s)	S_{MS}	1.500 g	$= F_a * S_s$	CBC Equation 16-37
MCE_R Spectral Response Acceleration Parameter (1.0 s)	S_{M1}	1.020 g	$= F_v * S_1$	CBC Equation 16-38

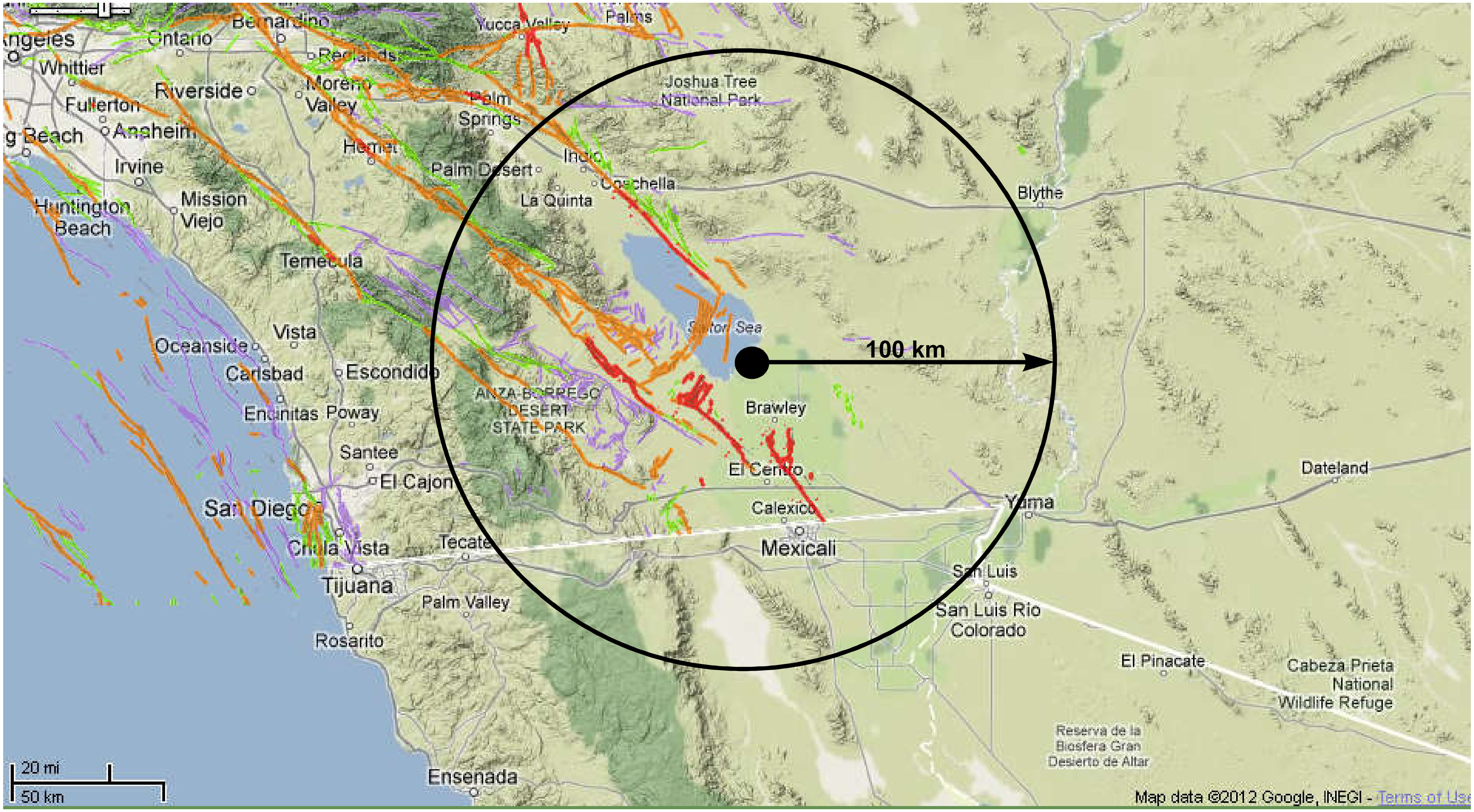
Design Earthquake Ground Motion

Design Spectral Response Acceleration Parameter (0.2 s)	S_{DS}	1.000 g	$= 2/3*S_{MS}$	CBC Equation 16-39
Design Spectral Response Acceleration Parameter (1.0 s)	S_{D1}	0.680 g	$= 2/3*S_{M1}$	CBC Equation 16-40
Risk Coefficient at Short Periods (less than 0.2 s)	C_{RS}	0.945		ASCE Figure 22-17
Risk Coefficient at Long Periods (greater than 1.0 s)	C_{R1}	0.917		ASCE Figure 22-18
	T_L	8.00 sec		ASCE Figure 22-12
	T_O	0.14 sec	$=0.2*S_{D1}/S_{DS}$	
	T_S	0.68 sec	$=S_{D1}/S_{DS}$	
Peak Ground Acceleration	PGA_M	0.55 g		ASCE Equation 11.8-1



Period T (sec)	Sa (g)	MCE_R Sa (g)
0.00	0.40	0.60
0.14	1.00	1.50
0.68	1.00	1.50
0.70	0.97	1.46
0.80	0.85	1.28
0.90	0.76	1.13
1.00	0.68	1.02
1.10	0.62	0.93
1.20	0.57	0.85
1.20	0.57	0.85
1.40	0.49	0.73
1.50	0.45	0.68
1.75	0.39	0.58
2.00	0.34	0.51
2.20	0.31	0.46
2.40	0.28	0.43
2.60	0.26	0.39
2.80	0.24	0.36
3.00	0.23	0.34
3.50	0.19	0.29
4.00	0.17	0.26

FIGURES



Source: California Geological Survey 2010 Fault Activity Map of California
http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html#

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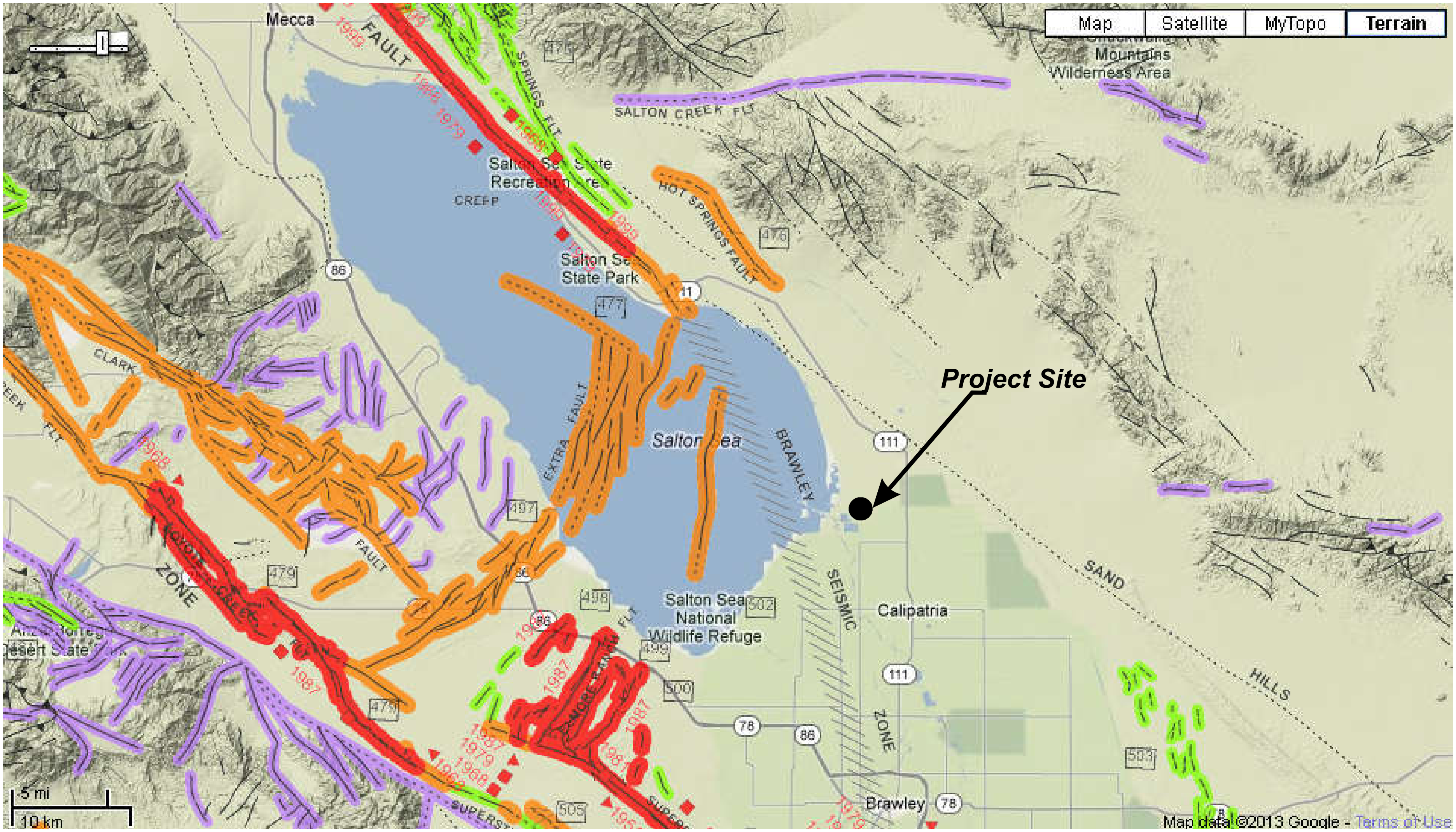
Regional Fault Map

Figure 1



Source: California Geological Survey 2010 Fault Activity Map of California
http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html#

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Map of Local Faults

Figure 2

EXPLANATION

Fault traces on land are indicated by solid lines where well located, by dashed lines where approximately located or inferred, and by dotted lines where concealed by younger rocks or by lakes or bays. Fault traces are queried where continuation or existence is uncertain. Concealed faults in the Great Valley are based on maps of selected subsurface horizons, so locations shown are approximate and may indicate structural trend only. All offshore faults based on seismic reflection profile records are shown as solid lines where well defined, dashed where inferred, queried where uncertain.

FAULT CLASSIFICATION COLOR CODE
(Indicating Recency of Movement)

🟥 ——— — — ……?	Fault along which historic (last 200 years) displacement has occurred and is associated with one or more of the following: (a) a recorded earthquake with surface rupture. (Also included are some well-defined surface breaks caused by ground shaking during earthquakes, e.g. extensive ground breakage, not on the White Wolf fault, caused by the Arvin-Tehachapi earthquake of 1952). The date of the associated earthquake is indicated. Where repeated surface ruptures on the same fault have occurred, only the date of the latest movement may be indicated, especially if earlier reports are not well documented as to location of ground breaks. (b) fault creep slippage - slow ground displacement usually without accompanying earthquakes. (c) displaced survey lines.
🟥 1906 ▶ ◀ 1906 🟥 1838 ▷ ◁ 1838	A triangle to the right or left of the date indicates termination point of observed surface displacement. Solid red triangle indicates known location of rupture termination point. Open black triangle indicates uncertain or estimated location of rupture termination point.
🟥 ▶ 1951 ◀	Date bracketed by triangles indicates local fault break.
🟥 1992	No triangle by date indicates an intermediate point along fault break.
🟥 ▨ CREEP	Fault that exhibits fault creep slippage. Hachures indicate linear extent of fault creep. Annotation (creep with leader) indicates representative locations where fault creep has been observed and recorded.
🟥 1969 ■ 1968 ■ ■ 1968	Square on fault indicates where fault creep slippage has occured that has been triggered by an earthquake on some other fault. Date of causative earthquake indicated. Squares to right and left of date indicate terminal points between which triggered creep slippage has occurred (creep either continuous or intermittent between these end points).
🟧 ——— — — ……?	Holocene fault displacement (during past 11,700 years) without historic record. Geomorphic evidence for Holocene faulting includes sag ponds, scarps showing little erosion, or the following features in Holocene age deposits: offset stream courses, linear scarps, shutter ridges, and triangular faceted spurs. Recency of faulting offshore is based on the interpreted age of the youngest strata displaced by faulting.
🟩 ——— — — ……?	Late Quaternary fault displacement (during past 700,000 years). Geomorphic evidence similar to that described for Holocene faults except features are less distinct. Faulting may be younger, but lack of younger overlying deposits precludes more accurate age classification.
🟪 ——— — — ……?	Quaternary fault (age undifferentiated). Most faults of this category show evidence of displacement sometime during the past 1.6 million years; possible exceptions are faults which displace rocks of undifferentiated Plio-Pleistocene age. Unnumbered Quaternary faults were based on Fault Map of California, 1975. See Bulletin 201, Appendix D for source data.
——— — — ……?	Pre-Quaternary fault (older that 1.6 million years) or fault without recognized Quaternary displacement. Some faults are shown in this category because the source of mapping used was of reconnaissnce nature, or was not done with the object of dating fault displacements. Faults in this category are not necessarily inactive.

ADDITIONAL FAULT SYMBOLS

——⫯— — — ……?	Bar and ball on downthrown side (relative or apparent).
⇌ ——— — — ……?	Arrows along fault indicate relative or apparent direction of lateral movement.
——↑— — — ……?	Arrow on fault indicates direction of dip.
——▼— — ▼ ……▼?	Low angle fault (barbs on upper plate). Fault surface generally dips less than 45° but locally may have been subsequently steepened. On offshore faults, barbs simply indicate a reverse fault regardless of steepness of dip.

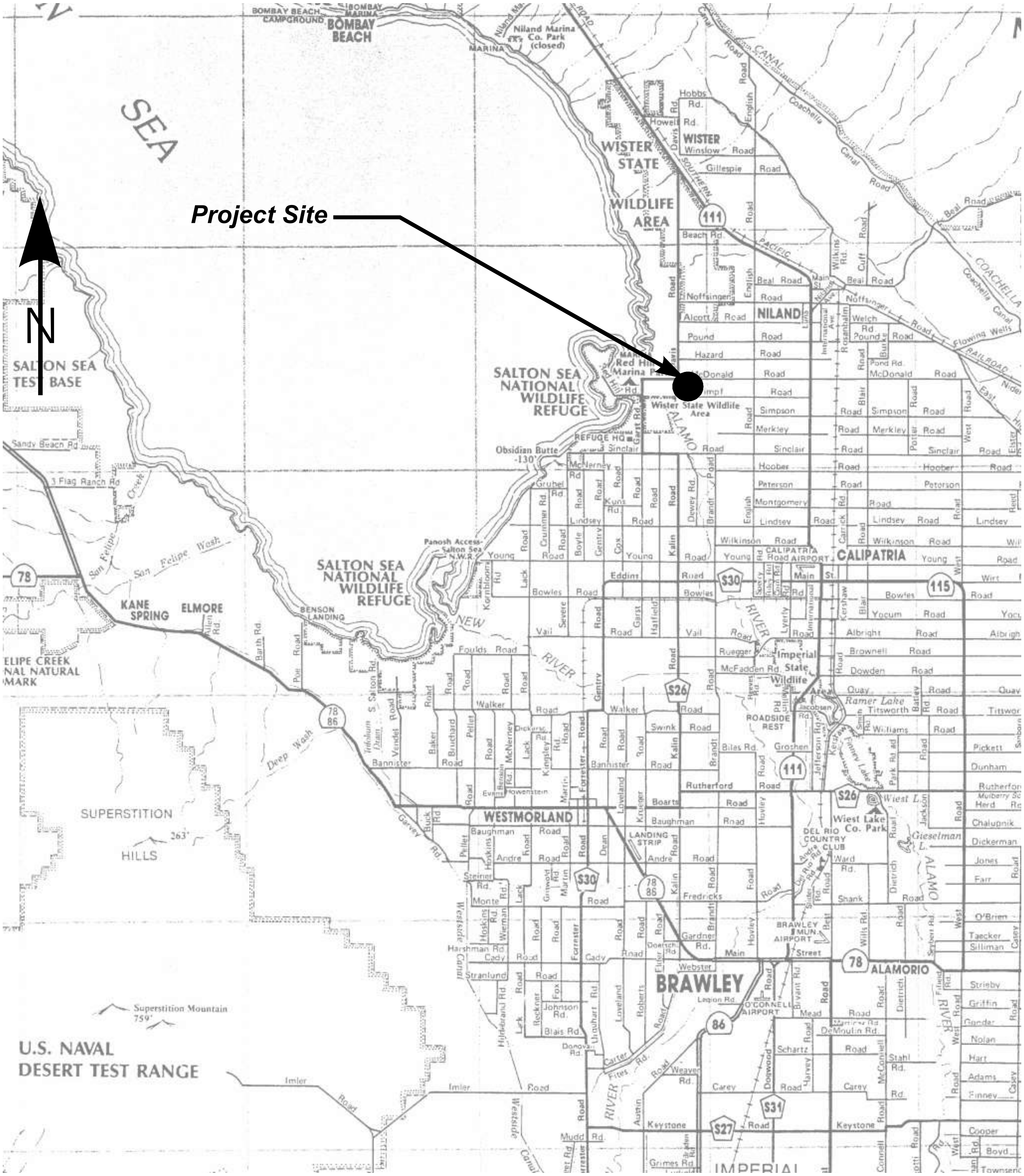
OTHER SYMBOLS

491 ——— — — ……?	Numbers refer to annotations listed in the appendices of the accompanying report. Annotations include fault name, age of fault displacement, and pertinent references including Earthquake Fault Zone maps where a fault has been zoned by the Alquist-Priolo Earthquake Fault Zoning Act. This Act requires the State Geologist to delineate zones to encompass faults with Holocene displacement.
—··—··—··—	Structural discontinuity (offshore) separating differing Neogene structural domains. May indicate discontinuities between basement rocks.
//////////	Brawley Seismic Zone, a linear zone of seismicity locally up to 10 km wide associated with the releasing step between the Imperial and San Andreas faults.

Geologic Time Scale			Years Before Present (Approx.)	Fault Symbol	Recency of Movement	DESCRIPTION	
						ON LAND	OFFSHORE
Quaternary	Late Quaternary	Historic	200	🟥	🟥	Displacement during historic time (e.g. San Andreas fault 1906). Includes areas of known fault creep.	
		Holocene	11,700	🟧	🟧 🟩? 🟪? —?	Displacement during Holocene time.	Fault offsets seafloor sediments or strata of Holocene age.
		Pleistocene	700,000	🟩	🟩 🟪? —?	Faults showing evidence of displacement during late Quaternary time.	Fault cuts strata of Late Pleistocene age.
	Early Quaternary		1,600,000*	🟪	🟪 —?	Undivided Quaternary faults - most faults in this category show evidence of displacement during the last 1,600,000 years; possible exceptions are faults which displace rocks of undifferentiated Plio-Pleistocene age.	Fault cuts strata of Quaternary age.
Pre-Quaternary			4.5 billion (Age of Earth)	—	—	Faults without recognized Quaternary displacement or showing evidence of no displacement during Quaternary time. Not necessarily inactive.	Fault cuts strata of Pliocene or older age.

* Quaternary now recognized as extending to 2.6 Ma (Walker and Geissman, 2009). Quaternary faults in this map were established using the previous 1.6 Ma criterion.

APPENDIX A



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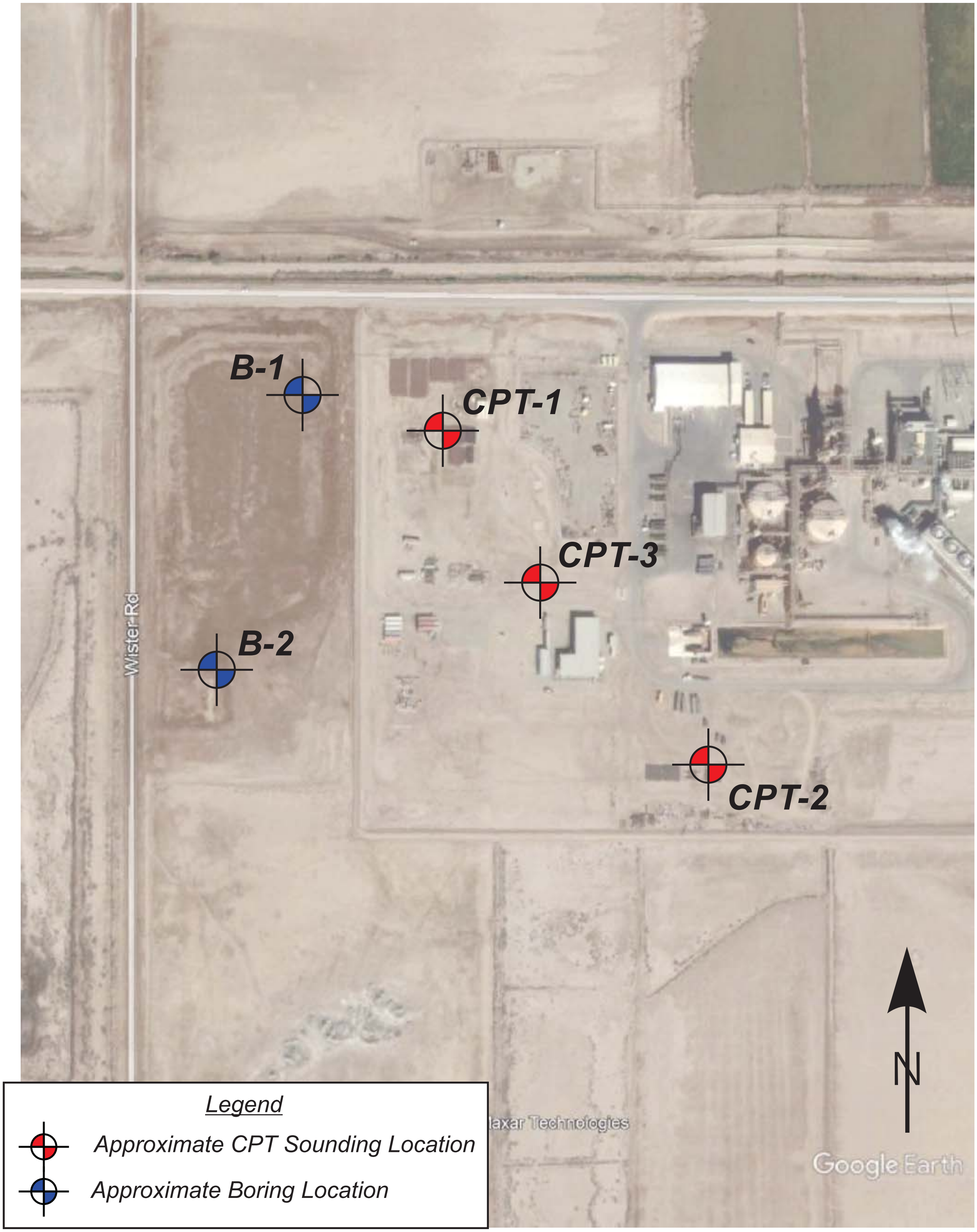
Vicinity Map

Plate A-1



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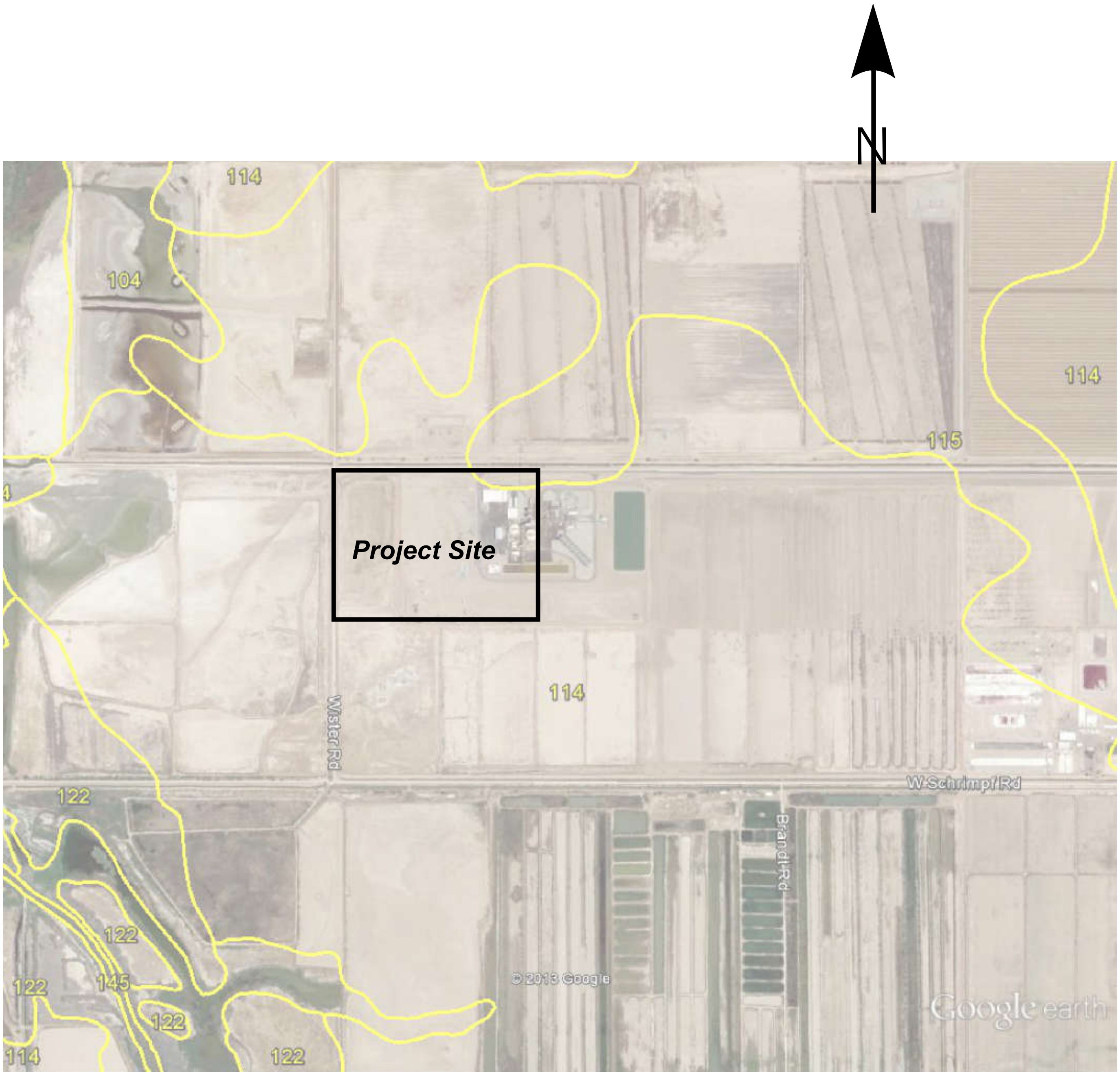
Site and Exploration Plan

Plate
A-2



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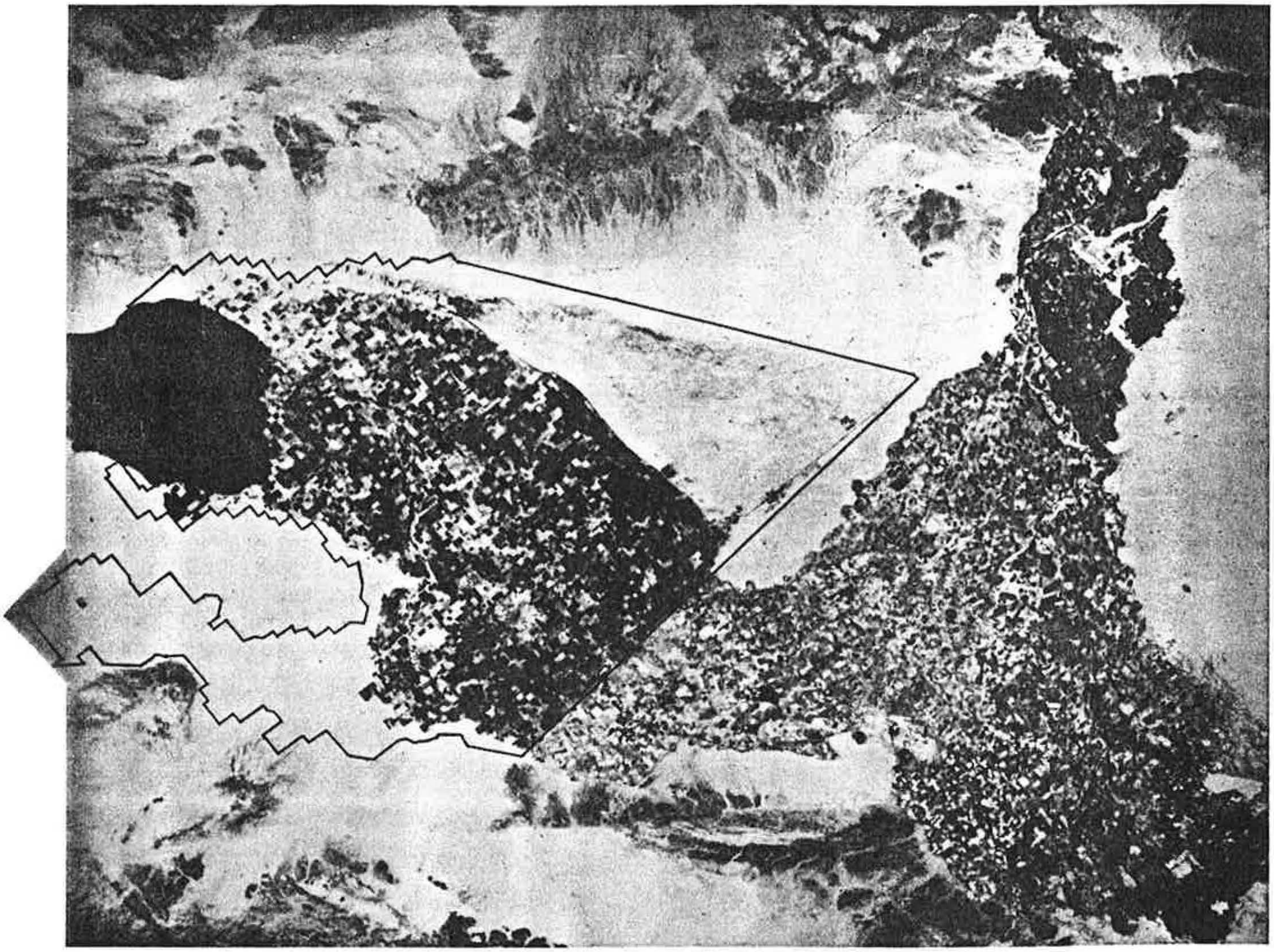
Soil Survey Map

Plate A-3

Soil Survey of

IMPERIAL COUNTY
CALIFORNIA
IMPERIAL VALLEY AREA



United States Department of Agriculture Soil Conservation Service
in cooperation with
University of California Agricultural Experiment Station
and
Imperial Irrigation District

TABLE 11.--ENGINEERING INDEX PROPERTIES

[The symbol > means more than. Absence of an entry indicates that data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
100---------------- Antho	0-13	Loamy fine sand	SM	A-2	0	100	100	75-85	10-30	---	NP
	13-60	Sandy loam, fine sandy loam.	SM	A-2, A-4	0	90-100	75-95	50-60	15-40	---	NP
101*:											
Antho--------------	0-8	Loamy fine sand	SM	A-2	0	100	100	75-85	10-30	---	NP
	8-60	Sandy loam, fine sandy loam.	SM	A-2, A-4	0	90-100	75-95	50-60	15-40	---	NP
Superstition------	0-6	Fine sand-------	SM	A-2	0	100	95-100	70-85	15-25	---	NP
	6-60	Loamy fine sand, fine sand, sand.	SM	A-2	0	100	95-100	70-85	15-25	---	NP
102*. Badland											
103---------------- Carsitas	0-10	Gravelly sand---	SP, SP-SM	A-1, A-2	0-5	60-90	50-85	30-55	0-10	---	NP
	10-60	Gravelly sand, gravelly coarse sand, sand.	SP, SP-SM	A-1	0-5	60-90	50-85	25-50	0-10	---	NP
104* Fluvaquents											
105---------------- Glenbar	0-13	Clay loam-------	CL	A-6	0	100	100	90-100	70-95	35-45	15-30
	13-60	Clay loam, silty clay loam.	CL	A-6	0	100	100	90-100	70-95	35-45	15-30
106---------------- Glenbar	0-13	Clay loam-------	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
	13-60	Clay loam, silty clay loam.	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
107*--------------- Glenbar	0-13	Loam------------	ML, CL-ML, CL	A-4	0	100	100	100	70-80	20-30	NP-10
	13-60	Clay loam, silty clay loam.	CL	A-6, A-7	0	100	100	95-100	75-95	35-45	15-30
108---------------- Holtville	0-14	Loam------------	ML	A-4	0	100	100	85-100	55-95	25-35	NP-10
	14-22	Clay, silty clay	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	22-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	65-85	25-35	NP-10
109---------------- Holtville	0-17	Silty clay------	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	17-24	Clay, silty clay	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	24-35	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	65-85	25-35	NP-10
	35-60	Loamy very fine sand, loamy fine sand.	SM, ML	A-2, A-4	0	100	100	75-100	20-55	---	NP
110---------------- Holtville	0-17	Silty clay------	CH, CL	A-7	0	100	100	95-100	85-95	40-65	20-35
	17-24	Clay, silty clay	CH, CL	A-7	0	100	100	95-100	85-95	40-65	20-35
	24-35	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	55-85	25-35	NP-10
	35-60	Loamy very fine sand, loamy fine sand.	SM, ML	A-2, A-4	0	100	100	75-100	20-55	---	NP

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
111*:											
Holtville----------	0-10	Silty clay loam	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	10-22	Clay, silty clay	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	22-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	65-85	25-35	NP-10
Imperial----------	0-12	Silty clay loam	CL	A-7	0	100	100	100	85-95	40-50	10-20
	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
112---------------- Imperial	0-12	Silty clay------	CH	A-7	0	100	100	100	85-95	50-70	25-45
	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
113---------------- Imperial	0-12	Silty clay------	CH	A-7	0	100	100	100	85-95	50-70	25-45
	12-60	Silty clay, clay, silty clay loam.	CH	A-7	0	100	100	100	85-95	50-70	25-45
114---------------- Imperial	0-12	Silty clay------	CH	A-7	0	100	100	100	85-95	50-70	25-45
	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
115*:											
Imperial----------	0-12	Silty clay loam	CL	A-7	0	100	100	100	85-95	40-50	10-20
	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
Glenbar-----------	0-13	Silty clay loam	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
	13-60	Clay loam, silty clay loam.	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
116*:											
Imperial----------	0-13	Silty clay loam	CL	A-7	0	100	100	100	85-95	40-50	10-20
	13-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
Glenbar-----------	0-13	Silty clay loam	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
	13-60	Clay loam, silty clay loam.	CL	A-6	0	100	100	90-100	70-95	35-45	15-30
117, 118----------- Indio	0-12	Loam------------	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
	12-72	Stratified loamy very fine sand to silt loam.	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
119*:											
Indio-------------	0-12	Loam------------	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
	12-72	Stratified loamy very fine sand to silt loam.	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
Vint--------------	0-10	Loamy fine sand	SM	A-2	0	95-100	95-100	70-80	25-35	---	NP
	10-60	Loamy sand, loamy fine sand.	SM	A-2	0	95-100	95-100	70-80	20-30	---	NP
120*--------------- Laveen	0-12	Loam------------	ML, CL-ML	A-4	0	100	95-100	75-85	55-65	20-30	NP-10
	12-60	Loam, very fine sandy loam.	ML, CL-ML	A-4	0	95-100	85-95	70-80	55-65	15-25	NP-10

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

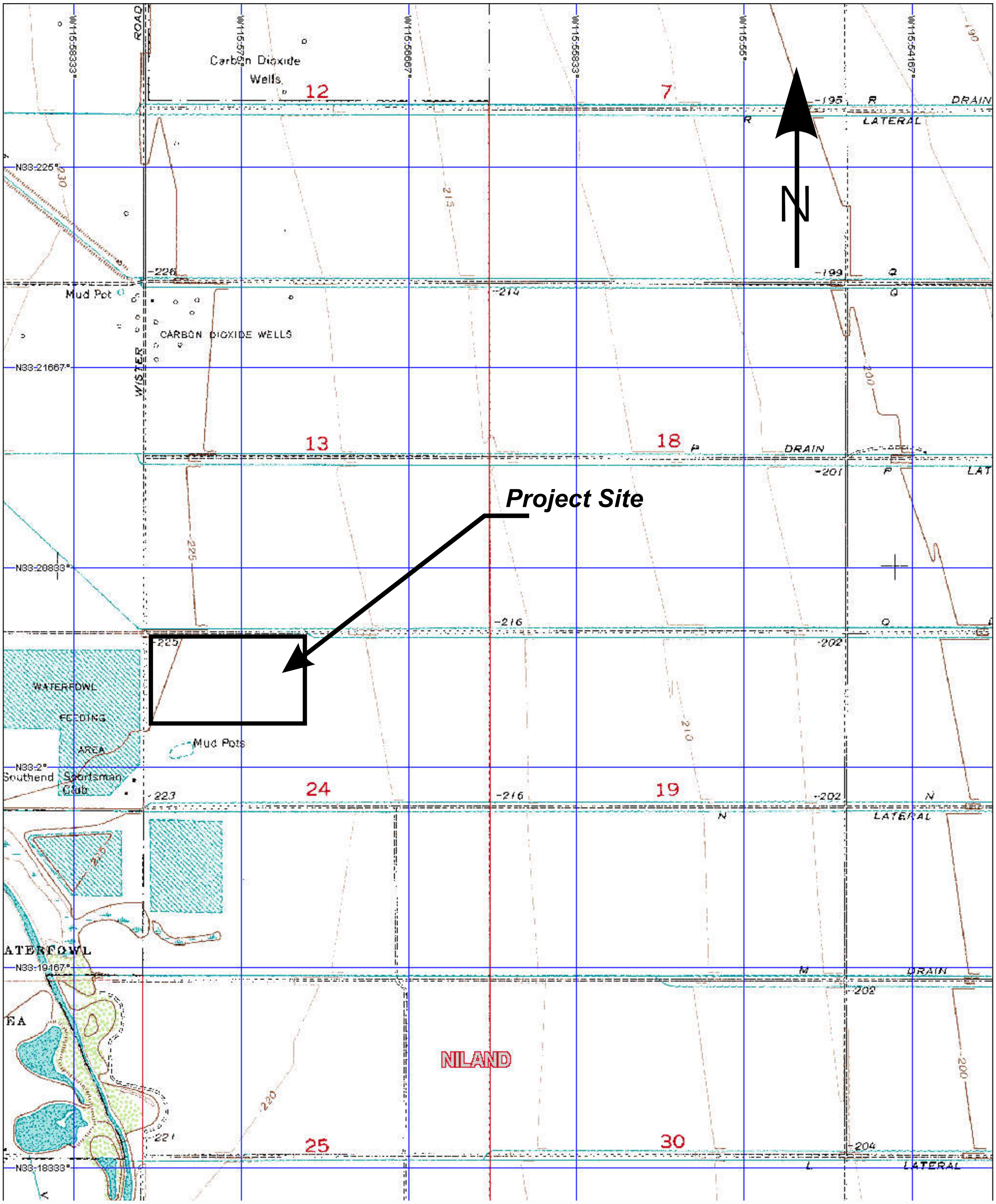
Soil name and map symbol	Depth	USDA texture	Classification		Frag-ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas-ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
121 Meloland	0-12	Fine sand	SM, SP-SM	A-2, A-3	0	95-100	90-100	75-100	5-30	---	NP
	12-26	Stratified loamy fine sand to silt loam.	ML	A-4	0	100	100	90-100	50-65	25-35	NP-10
	26-71	Clay, silty clay, silty clay loam.	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-40
122 Meloland	0-12	Very fine sandy loam.	ML	A-4	0	95-100	95-100	95-100	55-85	25-35	NP-10
	12-26	Stratified loamy fine sand to silt loam.	ML	A-4	0	100	100	90-100	50-70	25-35	NP-10
	26-71	Clay, silty clay, silty clay loam.	CH, CL	A-7	0	100	100	95-100	85-95	40-65	20-40
123*:											
Meloland	0-12	Loam	ML	A-4	0	95-100	95-100	95-100	55-85	25-35	NP-10
	12-26	Stratified loamy fine sand to silt loam.	ML	A-4	0	100	100	90-100	50-70	25-35	NP-10
	26-38	Clay, silty clay, silty clay loam.	CH, CL	A-7	0	100	100	95-100	85-95	40-65	20-40
	38-60	Stratified silt loam to loamy fine sand.	SM, ML	A-4	0	100	100	75-100	35-55	25-35	NP-10
Holtville	0-12	Loam	ML	A-4	0	100	100	85-100	55-95	25-35	NP-10
	12-24	Clay, silty clay	CH, CL	A-7	0	100	100	95-100	85-95	40-65	20-35
	24-36	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	55-85	25-35	NP-10
	36-60	Loamy very fine sand, loamy fine sand.	SM, ML	A-2, A-4	0	100	100	75-100	20-55	---	NP
124, 125 Niland	0-23	Gravelly sand	SM, SP-SM	A-2, A-3	0	90-100	70-95	50-65	5-25	---	NP
	23-60	Silty clay, clay, clay loam.	CL, CH	A-7	0	100	100	85-100	80-95	40-65	20-40
126 Niland	0-23	Fine sand	SM, SP-SM	A-2, A-3	0	90-100	90-100	50-65	5-25	---	NP
	23-60	Silty clay	CL, CH	A-7	0	100	100	85-100	80-95	40-65	20-40
127 Niland	0-23	Loamy fine sand	SM	A-2	0	90-100	90-100	50-65	15-30	---	NP
	23-60	Silty clay	CL, CH	A-7	0	100	100	85-100	80-95	40-65	20-40
128*:											
Niland	0-23	Gravelly sand	SM, SP-SM	A-2, A-3	0	90-100	70-95	50-65	5-25	---	NP
	23-60	Silty clay, clay, clay loam.	CL, CH	A-7	0	100	100	85-100	80-100	40-65	20-40
Imperial	0-12	Silty clay	CH	A-7	0	100	100	100	85-95	50-70	25-45
	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
129*: Pits											
130, 131 Rositas	0-27	Sand	SP-SM	A-3, A-1, A-2	0	100	80-100	40-70	5-15	---	NP
	27-60	Sand, fine sand, loamy sand.	SM, SP-SM	A-3, A-2, A-1	0	100	80-100	40-85	5-30	---	NP

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
132, 133, 134, 135-Rositas	0-9	Fine sand-------	SM	A-3, A-2	0	100	80-100	50-80	10-25	---	NP
	9-60	Sand, fine sand, loamy sand.	SM, SP-SM	A-3, A-2, A-1	0	100	80-100	40-85	5-30	---	NP
136----------------Rositas	0-4	Loamy fine sand	SM	A-1, A-2	0	100	80-100	40-85	10-35	---	NP
	4-60	Sand, fine sand, loamy sand.	SM, SP-SM	A-3, A-2, A-1	0	100	80-100	40-85	5-30	---	NP
137----------------Rositas	0-12	Silt loam-------	ML	A-4	0	100	100	90-100	70-90	20-30	NP-5
	12-60	Sand, fine sand, loamy sand.	SM, SP-SM	A-3, A-2, A-1	0	100	80-100	40-85	5-30	---	NP
138*:											
Rositas-----------	0-4	Loamy fine sand	SM	A-1, A-2	0	100	80-100	40-85	10-35	---	NP
	4-60	Sand, fine sand, loamy sand.	SM, SP-SM	A-3, A-2, A-1	0	100	80-100	40-85	5-30	---	NP
Superstition------	0-6	Loamy fine sand	SM	A-2	0	100	95-100	70-85	15-25	---	NP
	6-60	Loamy fine sand, fine sand, sand.	SM	A-2	0	100	95-100	70-85	15-25	---	NP
139----------------Superstition	0-6	Loamy fine sand	SM	A-2	0	100	95-100	70-85	15-25	---	NP
	6-60	Loamy fine sand, fine sand, sand.	SM	A-2	0	100	95-100	70-85	15-25	---	NP
140*:											
Torriorthents											
Rock outcrop											
141*:											
Torriorthents											
Orthids											
142----------------Vint	0-10	Loamy very fine sand.	SM, ML	A-4	0	100	100	85-95	40-65	15-25	NP-5
	10-60	Loamy fine sand	SM	A-2	0	95-100	95-100	70-80	20-30	---	NP
143----------------Vint	0-12	Fine sandy loam	ML, CL-ML, SM, SM-SC	A-4	0	100	100	75-85	45-55	15-25	NP-5
	12-60	Loamy sand, loamy fine sand.	SM	A-2	0	95-100	95-100	70-80	20-30	---	NP
144*:											
Vint--------------	0-10	Very fine sandy loam.	SM, ML	A-4	0	100	100	85-95	40-65	15-25	NP-5
	10-40	Loamy fine sand	SM	A-2	0	95-100	95-100	70-80	20-30	---	NP
	40-60	Silty clay------	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
Indio-------------	0-12	Very fine sandy loam.	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
	12-40	Stratified loamy very fine sand to silt loam.	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
	40-72	Silty clay------	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35

* See description of the map unit for composition and behavior characteristics of the map unit.

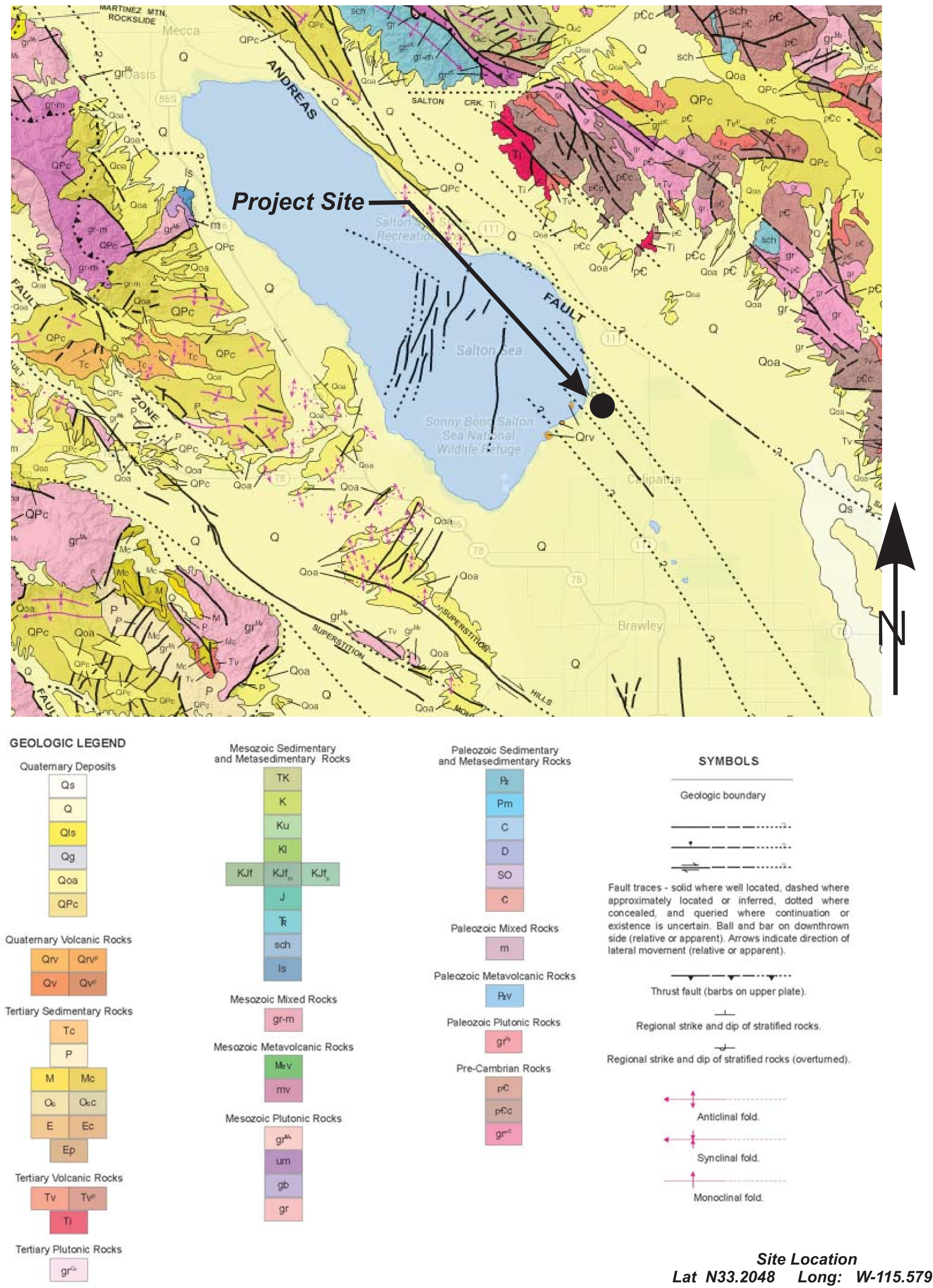


LANDMARK
Geo-Engineers and Geologists

Project No.: LE19154

Topographic Map

Plate A-4



Site Location
Lat N33.2048 Long: W-115.5790

LANDMARK
Geo-Engineers and Geologists

Project No.: LE19154

Regional Geologic Map

Plate A-5

APPENDIX B

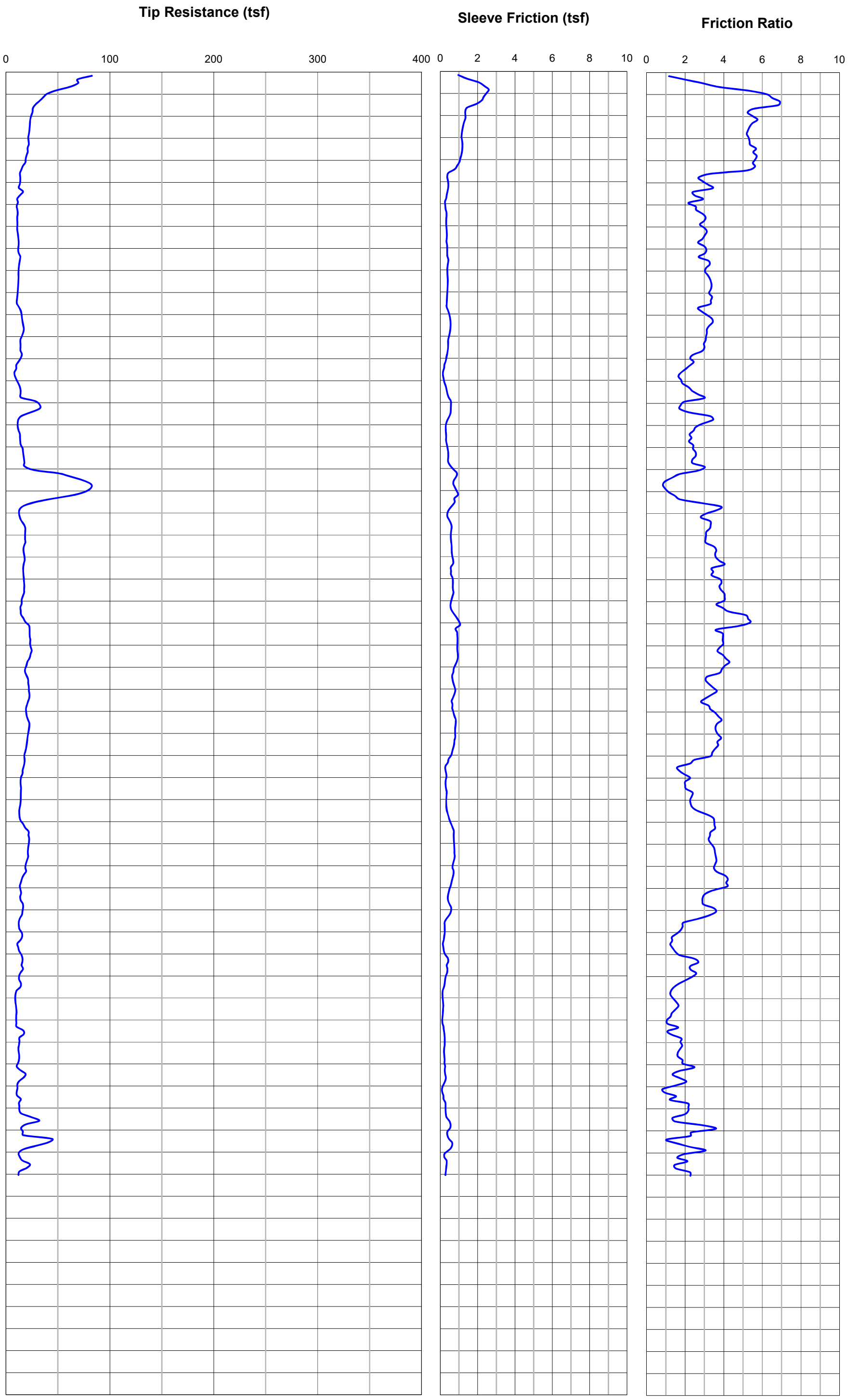
CLIENT: Energy Source
PROJECT: Minerals Processing Facility - Calipatria, CA
LOCATION: See Site and Boring Location Plan

CONE PENETROMETER: Kehoe Testing & Engineering Truck Mounted Electric Cone with 30 ton reaction weight
DATE: 7/20/2020

CONE SOUNDING DATA CPT-1

INTERPRETED SOIL PROFILE
From Robertson and Campanella (1989

DEPTH	GROUND ELEVATION +/-		
	Clayey Silt to Silty Clay	ML/CL	hard
	Clay	CL/CH	very stiff
	Clay	" "	very stiff
	Clay	" "	very stiff
5	Clay	" "	stiff
	Clayey Silt to Silty Clay	ML/CL	stiff
	Silty Clay to Clay	CL	stiff
	Silty Clay to Clay	" "	stiff
	Silty Clay to Clay	" "	stiff
10	Silty Clay to Clay	" "	stiff
	Silty Clay to Clay	" "	stiff
	Clayey Silt to Silty Clay	ML/CL	stiff
	Clayey Silt to Silty Clay	" "	stiff
	Clayey Silt to Silty Clay	" "	stiff
15	Clayey Silt to Silty Clay	" "	stiff
	Clayey Silt to Silty Clay	" "	very stiff
	Clayey Silt to Silty Clay	" "	stiff
	Clayey Silt to Silty Clay	" "	very stiff
	Sand to Silty Sand	SP/SM	medium dense
20	Sandy Silt to Clayey Silt	ML	loose
	Clayey Silt to Silty Clay	ML/CL	stiff
	Clayey Silt to Silty Clay	" "	stiff
	Silty Clay to Clay	CL	stiff
	Silty Clay to Clay	" "	stiff
25	Clay	CL/CH	stiff
	Silty Clay to Clay	CL	very stiff
	Silty Clay to Clay	" "	very stiff
	Clayey Silt to Silty Clay	ML/CL	very stiff
	Clayey Silt to Silty Clay	" "	very stiff
30	Clayey Silt to Silty Clay	" "	very stiff
	Clayey Silt to Silty Clay	" "	very stiff
	Clayey Silt to Silty Clay	" "	stiff
	Clayey Silt to Silty Clay	" "	stiff
	Clayey Silt to Silty Clay	" "	stiff
35	Clayey Silt to Silty Clay	" "	very stiff
	Clayey Silt to Silty Clay	" "	very stiff
	Silty Clay to Clay	CL	stiff
	Clayey Silt to Silty Clay	ML/CL	stiff
	Clayey Silt to Silty Clay	" "	stiff
40	Sandy Silt to Clayey Silt	ML	very loose
	Clayey Silt to Silty Clay	ML/CL	stiff
	Clayey Silt to Silty Clay	" "	stiff
	Clayey Silt to Silty Clay	" "	firm
	Sandy Silt to Clayey Silt	ML	very loose
45	Clayey Silt to Silty Clay	ML/CL	stiff
	Clayey Silt to Silty Clay	" "	stiff
	Clayey Silt to Silty Clay	" "	stiff
	Clayey Silt to Silty Clay	" "	very stiff
	Sandy Silt to Clayey Silt	ML	loose
50	Sandy Silt to Clayey Silt	" "	very loose
55			



END OF SOUNDING AT 50 ft.

Project No.
LE19154

LANDMARK
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PLATE
B-1

LANDMARK CONSULTANTS, INC.
CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Minerals Processing Facility - Calipatria, CA **Project No:** LE19154 **Date:** 7/20/2020

CONE SOUNDING: CPT-1
Est. GWT (ft): 8
Phi Correlation: **0** 0-Schm(78),1-R&C(83),2-PHT(74)

Base	Base	Avg	Avg				Est.			Est.	Rel.	**Nk:**	**17**	
Depth	Depth	Tip	Friction	Soil		Density or	Density	SPT	Norm.	%	Dens.	Phi	Su	
(m)	(ft)	Qc, tsf	Ratio, %	Classification	USCS	Consistency	(pcf)	N(60)	Qc1n	Fines	Dr (%)	(deg.)	(tsf)	OCR
0.15	0.5	73.71	2.06	Silty Sand to Sandy Silt	SM/ML	very dense	115	16	139.3	30	125	46		
0.30	1.0	50.28	5.10	Silty Clay to Clay	CL	hard	125	29		60			2.96	>10
0.45	1.5	32.03	6.75	Clay	CL/CH	very stiff	125	26		80			1.88	>10
0.60	2.0	25.30	5.43	Clay	CL/CH	very stiff	125	20		80			1.48	>10
0.75	2.5	23.16	5.53	Clay	CL/CH	very stiff	125	19		85			1.35	>10
0.93	3.0	22.05	5.25	Clay	CL/CH	very stiff	125	18		85			1.29	>10
1.08	3.5	21.52	5.46	Clay	CL/CH	very stiff	125	17		85			1.25	>10
1.23	4.0	19.94	5.62	Clay	CL/CH	very stiff	125	16		90			1.16	>10
1.38	4.5	16.51	5.47	Clay	CL/CH	stiff	125	13		95			0.96	>10
1.53	5.0	13.67	2.96	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		80			0.79	>10
1.68	5.5	13.95	2.88	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		80			0.80	>10
1.83	6.0	10.92	2.55	Clayey Silt to Silty Clay	ML/CL	stiff	120	4		85			0.62	>10
1.98	6.5	11.04	2.84	Silty Clay to Clay	CL	stiff	125	6		90			0.63	>10
2.13	7.0	10.92	2.92	Silty Clay to Clay	CL	stiff	125	6		90			0.62	>10
2.28	7.5	11.54	3.01	Silty Clay to Clay	CL	stiff	125	7		90			0.65	>10
2.45	8.0	12.06	2.92	Silty Clay to Clay	CL	stiff	125	7		85			0.68	>10
2.60	8.5	13.18	2.97	Silty Clay to Clay	CL	stiff	125	8		85			0.75	>10
2.75	9.0	12.41	3.13	Silty Clay to Clay	CL	stiff	125	7		90			0.70	>10
2.90	9.5	12.01	3.27	Silty Clay to Clay	CL	stiff	125	7		95			0.68	>10
3.05	10.0	11.57	3.31	Silty Clay to Clay	CL	stiff	125	7		95			0.65	>10
3.20	10.5	10.60	3.34	Silty Clay to Clay	CL	stiff	125	6		100			0.59	9.00
3.35	11.0	13.94	2.88	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		85			0.79	>10
3.50	11.5	15.99	3.35	Silty Clay to Clay	CL	stiff	125	9		85			0.91	>10
3.65	12.0	16.40	3.11	Clayey Silt to Silty Clay	ML/CL	stiff	120	7		85			0.93	>10
3.80	12.5	13.94	3.01	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		90			0.78	>10
3.95	13.0	14.53	2.52	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		85			0.82	>10
4.13	13.5	10.69	2.23	Clayey Silt to Silty Clay	ML/CL	stiff	120	4		95			0.59	>10
4.28	14.0	8.93	1.74	Clayey Silt to Silty Clay	ML/CL	firm	120	4		100			0.49	6.88
4.43	14.5	13.09	2.14	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		90			0.73	>10
4.58	15.0	18.97	2.55	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		80			1.08	>10
4.73	15.5	29.93	1.92	Sandy Silt to Clayey Silt	ML	medium dense	115	9	34.7	60	41	34		
4.88	16.0	12.52	3.06	Silty Clay to Clay	CL	stiff	125	7		100			0.69	7.70
5.03	16.5	12.97	2.33	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		95			0.72	>10
5.18	17.0	14.64	2.34	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		90			0.82	>10
5.33	17.5	16.90	2.49	Clayey Silt to Silty Clay	ML/CL	stiff	120	7		85			0.95	>10
5.48	18.0	20.59	2.70	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		85			1.17	>10
5.65	18.5	63.66	1.34	Silty Sand to Sandy Silt	SM/ML	medium dense	115	14	69.7	35	62	37		
5.80	19.0	80.09	0.99	Sand to Silty Sand	SP/SM	medium dense	115	15	87.0	25	68	38		
5.95	19.5	45.01	2.01	Sandy Silt to Clayey Silt	ML	medium dense	115	13	48.5	50	51	35		
6.10	20.0	14.03	3.51	Silty Clay to Clay	CL	stiff	125	8		100			0.78	7.27
6.25	20.5	15.02	3.14	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		100			0.83	>10
6.40	21.0	18.51	3.15	Clayey Silt to Silty Clay	ML/CL	very stiff	120	7		95			1.04	>10
6.55	21.5	18.15	3.20	Clayey Silt to Silty Clay	ML/CL	very stiff	120	7		100			1.02	>10
6.70	22.0	17.28	3.59	Silty Clay to Clay	CL	stiff	125	10		100			0.96	9.59
6.85	22.5	17.23	3.73	Silty Clay to Clay	CL	stiff	125	10		100			0.96	9.19
7.00	23.0	16.87	3.54	Silty Clay to Clay	CL	stiff	125	10		100			0.94	8.41
7.18	23.5	17.48	3.84	Silty Clay to Clay	CL	stiff	125	10		100			0.97	8.70
7.33	24.0	16.22	4.03	Silty Clay to Clay	CL	stiff	125	9		100			0.90	7.41
7.48	24.5	14.41	3.94	Silty Clay to Clay	CL	stiff	125	8		100			0.79	5.88
7.63	25.0	16.61	5.26	Clay	CL/CH	stiff	125	13		100			0.92	5.65
7.78	25.5	22.55	4.10	Silty Clay to Clay	CL	very stiff	125	13		100			1.27	>10
7.93	26.0	23.15	3.96	Silty Clay to Clay	CL	very stiff	125	13		100			1.30	>10
8.08	26.5	23.78	3.88	Silty Clay to Clay	CL	very stiff	125	14		100			1.34	>10
8.23	27.0	19.71	4.08	Silty Clay to Clay	CL	very stiff	125	11		100			1.10	8.85
8.38	27.5	19.97	3.33	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		100			1.11	>10
8.53	28.0	21.84	3.44	Clayey Silt to Silty Clay	ML/CL	very stiff	120	9		100			1.22	>10
8.68	28.5	22.14	3.08	Clayey Silt to Silty Clay	ML/CL	very stiff	120	9		100			1.24	>10
8.85	29.0	19.71	3.36	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		100			1.09	>10
9.00	29.5	21.17	3.76	Silty Clay to Clay	CL	very stiff	125	12		100			1.18	9.00
9.15	30.0	21.93	3.63	Clayey Silt to Silty Clay	ML/CL	very stiff	120	9		100			1.22	>10
9.30	30.5	20.35	3.75	Silty Clay to Clay	CL	very stiff	125	12		100			1.13	8.00
9.45	31.0	18.51	3.42	Clayey Silt to Silty Clay	ML/CL	very stiff	120	7		100			1.02	9.39
9.60	31.5	17.60	2.12	Clayey Silt to Silty Clay	ML/CL	stiff	120	7		100			0.97	8.27
9.75	32.0	15.49	1.97	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		100			0.84	6.43
9.90	32.5	14.23	2.02	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		100			0.77	5.42
10.05	33.0	14.26	2.33	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		100			0.77	5.31
10.20	33.5	13.47	2.41	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		100			0.72	4.78
10.38	34.0	13.35	3.34	Silty Clay to Clay	CL	stiff	125	8		100			0.71	3.50
10.53	34.5	19.03	3.46	Silty Clay to Clay	CL	very stiff	125	11		100			1.05	6.00
10.68	35.0	22.10	3.27	Clayey Silt to Silty Clay	ML/CL	very stiff	120	9		100			1.22	>10
10.83	35.5	21.29	3.52	Clayey Silt to Silty Clay	ML/CL	very stiff	120	9		100			1.18	>10
10.98	36.0	20.24	3.59	Silty Clay to Clay	CL	very stiff	125	12		100			1.11	6.21
11.13	36.5	17.63	3.86	Silty Clay to Clay	CL	stiff	125	10		100			0.96	4.89
11.28	37.0	13.91	3.94	Silty Clay to Clay	CL	stiff	125	8		100			0.74	3.35
11.43	37.5	14.14	2.96	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		100			0.75	4.47
11.58	38.0	16.22	3.35	Silty Clay to Clay	CL	stiff	125	9		100			0.87	4.00
11.73	38.5	13.76	2.59	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		100			0.73	4.09

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Minerals Processing Facility - Calipatria, CA **Project No:** LE19154 **Date:** 7/20/2020

CONE SOUNDING: CPT-1
Est. GWT (ft): 8
Phi Correlation: **0** 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth (m)	Base Depth (ft)	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	SPT N(60)	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	**Nk:** Phi (deg.)	**17** Su (tsf)	OCR
11.88	39.0	13.53	1.74	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		100			0.71	3.91
12.05	39.5	13.56	1.29	Sandy Silt to Clayey Silt	ML	very loose	115	4	11.1	100	8	29		
12.20	40.0	13.03	1.52	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		100			0.68	3.58
12.35	40.5	15.58	2.48	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		100			0.83	4.68
12.50	41.0	14.41	2.40	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		100			0.76	4.09
12.65	41.5	13.68	1.68	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		100			0.72	3.66
12.80	42.0	9.49	1.29	Clayey Silt to Silty Clay	ML/CL	firm	120	4		100			0.47	2.13
12.95	42.5	9.49	1.57	Clayey Silt to Silty Clay	ML/CL	firm	120	4		100			0.47	2.06
13.10	43.0	9.99	1.20	Clayey Silt to Silty Clay	ML/CL	firm	120	4		100			0.50	2.20
13.25	43.5	12.27	1.28	Sandy Silt to Clayey Silt	ML	very loose	115	4	9.7	100	3	28		
13.40	44.0	14.41	1.62	Sandy Silt to Clayey Silt	ML	very loose	115	4	11.3	100	8	29		
13.58	44.5	12.27	1.73	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		100			0.63	2.91
13.73	45.0	12.36	1.79	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		100			0.63	2.91
13.88	45.5	14.32	1.85	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		100			0.75	3.58
14.03	46.0	13.65	1.77	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		100			0.71	3.28
14.18	46.5	10.69	1.10	Clayey Silt to Silty Clay	ML/CL	stiff	120	4		100			0.53	2.27
14.33	47.0	13.18	1.92	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		100			0.68	3.07
14.48	47.5	23.75	1.60	Sandy Silt to Clayey Silt	ML	loose	115	7	18.0	95	22	31		
14.63	48.0	16.66	2.93	Clayey Silt to Silty Clay	ML/CL	stiff	120	7		100			0.88	4.18
14.78	48.5	33.85	1.62	Sandy Silt to Clayey Silt	ML	loose	115	10	25.5	80	32	32		
14.93	49.0	18.65	2.42	Clayey Silt to Silty Clay	ML/CL	stiff	120	7		100			1.00	4.89
15.10	49.5	17.39	1.72	Sandy Silt to Clayey Silt	ML	very loose	115	5	13.0	100	12	30		
15.25	50.0	15.14	2.01	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		100			0.79	3.43

CLIENT: Energy Source
PROJECT: Minerals Processing Facility - Calipatria, CA
LOCATION: See Site and Boring Location Plan

CONE PENETROMETER: Kehoe Testing & Engineering Truck Mounted Electric Cone with 30 ton reaction weight
DATE: 7/20/2020

CONE SOUNDING DATA CPT-2

DEPTH

INTERPRETED SOIL PROFILE
From Robertson and Campanella (1989

GROUND ELEVATION +/-

Clayey Silt to Silty Clay	ML/CL	hard
Clay	CL/CH	very stiff
Clay	" "	very stiff
Clay	" "	very stiff
Clay	" "	stiff
Clay	" "	very stiff
Clay	" "	very stiff
Silty Clay to Clay	CL	stiff
Clayey Silt to Silty Clay	ML/CL	stiff
Silty Clay to Clay	CL	firm
Silty Clay to Clay	" "	stiff
Silty Clay to Clay	" "	stiff
Silty Clay to Clay	" "	stiff
Silty Clay to Clay	" "	stiff
Silty Clay to Clay	" "	stiff
Silty Clay to Clay	" "	stiff
Clayey Silt to Silty Clay	ML/CL	stiff
Silty Clay to Clay	CL	firm
Silty Clay to Clay	" "	stiff
Silty Clay to Clay	" "	stiff
Silty Clay to Clay	" "	stiff
Silty Clay to Clay	" "	stiff
Clayey Silt to Silty Clay	ML/CL	stiff
Sandy Silt to Clayey Silt	ML	loose
Clayey Silt to Silty Clay	ML/CL	stiff
Clay	CL/CH	stiff
Clay	" "	very stiff
Clayey Silt to Silty Clay	ML/CL	very stiff
Clay	CL/CH	stiff
Silty Clay to Clay	CL	stiff
Clay	CL/CH	very stiff
Clay	" "	stiff
Silty Clay to Clay	CL	stiff
Silty Clay to Clay	" "	stiff
Clayey Silt to Silty Clay	ML/CL	stiff
Silty Clay to Clay	CL	stiff
Clayey Silt to Silty Clay	ML/CL	stiff
Clayey Silt to Silty Clay	" "	stiff
Silty Clay to Clay	CL	stiff
Silty Clay to Clay	" "	very stiff
Clayey Silt to Silty Clay	ML/CL	very stiff
Clayey Silt to Silty Clay	" "	very stiff
Clayey Silt to Silty Clay	" "	very stiff
Clayey Silt to Silty Clay	" "	stiff
Clayey Silt to Silty Clay	" "	stiff
Silty Clay to Clay	CL	stiff
Sandy Silt to Clayey Silt	ML	very loose
Sandy Silt to Clayey Silt	" "	very loose
Sandy Silt to Clayey Silt	" "	very loose
Sandy Silt to Clayey Silt	" "	loose

END OF SOUNDING AT 50 ft.

Project No.
LE19154

LANDMARK
Geo-Engineers and Geologists

PLATE
B-2

LANDMARK CONSULTANTS, INC.
CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Minerals Processing Facility - Calipatria, CA **Project No:** LE19154 **Date:** 7/20/2020

CONE SOUNDING: CPT-2
Est. GWT (ft): 8
Phi Correlation: **0** 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth (m)	Base Depth (ft)	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	SPT N(60)	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	**Nk:** Phi (deg.)	**17** Su (tsf)	OCR
0.15	0.5	48.85	0.60	Sand to Silty Sand	SP/SM	very dense	115	9	92.3	20	113	44		
0.30	1.0	41.20	5.85	Clay	CL/CH	hard	125	33		70			2.42	>10
0.45	1.5	25.51	7.37	Clay	CL/CH	very stiff	125	20		90			1.50	>10
0.60	2.0	27.45	6.97	Clay	CL/CH	very stiff	125	22		85			1.61	>10
0.75	2.5	33.35	5.74	Clay	CL/CH	very stiff	125	27		75			1.95	>10
0.93	3.0	34.91	5.66	Clay	CL/CH	hard	125	28		70			2.04	>10
1.08	3.5	17.60	7.54	Clay	CL/CH	very stiff	125	14		100			1.02	>10
1.23	4.0	17.45	6.56	Clay	CL/CH	very stiff	125	14		100			1.01	>10
1.38	4.5	16.81	7.39	Clay	CL/CH	stiff	125	13		100			0.97	>10
1.53	5.0	15.29	5.78	Clay	CL/CH	stiff	125	12		100			0.88	>10
1.68	5.5	17.99	6.53	Clay	CL/CH	very stiff	125	14		95			1.04	>10
1.83	6.0	18.30	6.55	Clay	CL/CH	very stiff	125	15		95			1.06	>10
1.98	6.5	19.59	5.97	Clay	CL/CH	very stiff	125	16		90			1.13	>10
2.13	7.0	19.62	6.11	Clay	CL/CH	very stiff	125	16		90			1.13	>10
2.28	7.5	16.63	4.32	Clay	CL/CH	stiff	125	13		85			0.95	>10
2.45	8.0	17.69	3.51	Silty Clay to Clay	CL	very stiff	125	10		80			1.01	>10
2.60	8.5	12.33	2.39	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		80			0.70	>10
2.75	9.0	7.26	2.02	Silty Clay to Clay	CL	firm	125	4		100			0.40	5.42
2.90	9.5	6.71	1.73	Silty Clay to Clay	CL	firm	125	4		100			0.36	4.57
3.05	10.0	7.70	2.16	Silty Clay to Clay	CL	firm	125	4		100			0.42	5.42
3.20	10.5	10.07	2.67	Silty Clay to Clay	CL	stiff	125	6		95			0.56	8.14
3.35	11.0	11.10	3.03	Silty Clay to Clay	CL	stiff	125	6		100			0.62	9.39
3.50	11.5	11.63	2.97	Silty Clay to Clay	CL	stiff	125	7		95			0.65	9.79
3.65	12.0	12.09	3.13	Silty Clay to Clay	CL	stiff	125	7		100			0.68	>10
3.80	12.5	14.61	3.05	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		90			0.82	>10
3.95	13.0	16.95	4.14	Silty Clay to Clay	CL	stiff	125	10		95			0.96	>10
4.13	13.5	15.67	3.84	Silty Clay to Clay	CL	stiff	125	9		95			0.88	>10
4.28	14.0	16.34	3.49	Silty Clay to Clay	CL	stiff	125	9		95			0.92	>10
4.43	14.5	13.94	3.48	Silty Clay to Clay	CL	stiff	125	8		100			0.78	>10
4.58	15.0	12.04	3.23	Silty Clay to Clay	CL	stiff	125	7		100			0.67	7.56
4.73	15.5	11.30	3.09	Silty Clay to Clay	CL	stiff	125	6		100			0.62	6.54
4.88	16.0	11.20	2.67	Clayey Silt to Silty Clay	ML/CL	stiff	120	4		100			0.62	8.70
5.03	16.5	11.01	2.05	Clayey Silt to Silty Clay	ML/CL	stiff	120	4		100			0.60	8.14
5.18	17.0	10.66	2.18	Clayey Silt to Silty Clay	ML/CL	stiff	120	4		100			0.58	7.27
5.33	17.5	9.49	2.76	Silty Clay to Clay	CL	stiff	125	5		100			0.51	4.28
5.48	18.0	8.90	2.99	Silty Clay to Clay	CL	firm	125	5		100			0.48	3.74
5.65	18.5	10.07	3.48	Silty Clay to Clay	CL	stiff	125	6		100			0.55	4.37
5.80	19.0	13.35	3.80	Silty Clay to Clay	CL	stiff	125	8		100			0.74	6.76
5.95	19.5	12.82	3.79	Silty Clay to Clay	CL	stiff	125	7		100			0.71	6.21
6.10	20.0	11.95	3.32	Silty Clay to Clay	CL	stiff	125	7		100			0.65	5.31
6.25	20.5	11.04	3.61	Silty Clay to Clay	CL	stiff	125	6		100			0.60	4.57
6.40	21.0	15.20	3.22	Silty Clay to Clay	CL	stiff	125	9		100			0.84	7.56
6.55	21.5	14.79	3.79	Silty Clay to Clay	CL	stiff	125	8		100			0.82	6.88
6.70	22.0	12.80	3.63	Silty Clay to Clay	CL	stiff	125	7		100			0.70	5.31
6.85	22.5	14.53	2.81	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		100			0.80	9.00
7.00	23.0	14.82	3.24	Silty Clay to Clay	CL	stiff	125	8		100			0.82	6.43
7.18	23.5	35.05	1.69	Sandy Silt to Clayey Silt	ML	medium dense	115	10	34.8	60	41	34		
7.33	24.0	16.75	2.92	Clayey Silt to Silty Clay	ML/CL	stiff	120	7		100			0.93	>10
7.48	24.5	13.43	2.33	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		100			0.73	6.88
7.63	25.0	14.64	3.76	Silty Clay to Clay	CL	stiff	125	8		100			0.80	5.76
7.78	25.5	15.52	4.53	Clay	CL/CH	stiff	125	12		100			0.85	4.78
7.93	26.0	16.34	4.66	Clay	CL/CH	stiff	125	13		100			0.90	5.00
8.08	26.5	18.91	4.83	Clay	CL/CH	very stiff	125	15		100			1.05	6.21
8.23	27.0	17.75	3.85	Silty Clay to Clay	CL	stiff	125	10		100			0.98	7.13
8.38	27.5	19.74	3.51	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		100			1.10	>10
8.53	28.0	19.27	3.48	Silty Clay to Clay	CL	very stiff	125	11		100			1.07	7.85
8.68	28.5	16.46	4.39	Clay	CL/CH	stiff	125	13		100			0.90	4.47
8.85	29.0	16.37	4.76	Clay	CL/CH	stiff	125	13		100			0.90	4.37
9.00	29.5	15.46	3.64	Silty Clay to Clay	CL	stiff	125	9		100			0.84	5.00
9.15	30.0	19.50	3.49	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		100			1.08	>10
9.30	30.5	22.81	4.42	Silty Clay to Clay	CL	very stiff	125	13		100			1.27	9.59
9.45	31.0	18.04	4.65	Clay	CL/CH	stiff	125	14		100			0.99	4.68
9.60	31.5	14.70	4.07	Clay	CL/CH	stiff	125	12		100			0.79	3.43
9.75	32.0	15.93	4.24	Clay	CL/CH	stiff	125	13		100			0.87	3.74
9.90	32.5	14.49	3.98	Clay	CL/CH	stiff	125	12		100			0.78	3.21
10.05	33.0	12.71	3.35	Silty Clay to Clay	CL	stiff	125	7		100			0.67	3.28
10.20	33.5	13.26	3.08	Silty Clay to Clay	CL	stiff	125	8		100			0.71	3.43
10.38	34.0	13.62	3.12	Silty Clay to Clay	CL	stiff	125	8		100			0.73	3.43
10.53	34.5	13.30	2.87	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		100			0.71	4.28
10.68	35.0	12.36	2.84	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		100			0.65	3.74
10.83	35.5	11.39	3.08	Silty Clay to Clay	CL	stiff	125	7		100			0.59	2.57
10.98	36.0	11.33	2.67	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		100			0.59	3.28
11.13	36.5	12.56	2.84	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		100			0.66	3.66
11.28	37.0	13.00	2.69	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		100			0.68	3.83
11.43	37.5	13.32	2.90	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		100			0.70	3.91
11.58	38.0	13.85	3.03	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		100			0.73	4.09
11.73	38.5	15.02	3.41	Silty Clay to Clay	CL	stiff	125	9		100			0.80	3.43

LANDMARK CONSULTANTS, INC.
CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Minerals Processing Facility - Calipatria, CA **Project No:** LE19154 **Date:** 7/20/2020

CONE SOUNDING: CPT-2
Est. GWT (ft): 8
Phi Correlation: **0** 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth (m)	Base Depth (ft)	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	SPT N(60)	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	**Nk:** Phi (deg.)	**17** Su (tsf)	OCR
11.88	39.0	17.48	3.81	Silty Clay to Clay	CL	stiff	125	10		100			0.94	4.28
12.05	39.5	18.77	4.10	Silty Clay to Clay	CL	very stiff	125	11		100			1.02	4.68
12.20	40.0	21.70	3.59	Clayey Silt to Silty Clay	ML/CL	very stiff	120	9		100			1.19	8.14
12.35	40.5	25.45	3.13	Clayey Silt to Silty Clay	ML/CL	very stiff	120	10		100			1.41	>10
12.50	41.0	23.31	3.80	Silty Clay to Clay	CL	very stiff	125	13		100			1.28	6.43
12.65	41.5	21.44	3.69	Silty Clay to Clay	CL	very stiff	125	12		100			1.17	5.42
12.80	42.0	20.82	3.15	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		100			1.14	7.00
12.95	42.5	19.85	3.01	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		100			1.08	6.32
13.10	43.0	17.57	2.84	Clayey Silt to Silty Clay	ML/CL	stiff	120	7		100			0.94	5.10
13.25	43.5	16.66	2.65	Clayey Silt to Silty Clay	ML/CL	stiff	120	7		100			0.89	4.57
13.40	44.0	18.92	2.00	Sandy Silt to Clayey Silt	ML	very loose	115	5	14.6	100	16	30		
13.58	44.5	12.01	1.89	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		100			0.61	2.73
13.73	45.0	14.91	2.03	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		100			0.78	3.66
13.88	45.5	17.07	2.97	Clayey Silt to Silty Clay	ML/CL	stiff	120	7		100			0.91	4.47
14.03	46.0	14.26	3.97	Clay	CL/CH	stiff	125	11		100			0.74	2.06
14.18	46.5	16.43	1.99	Clayey Silt to Silty Clay	ML/CL	stiff	120	7		100			0.87	4.09
14.33	47.0	14.34	1.43	Sandy Silt to Clayey Silt	ML	very loose	115	4	10.8	100	7	29		
14.48	47.5	13.06	1.35	Sandy Silt to Clayey Silt	ML	very loose	115	4	9.8	100	4	29		
14.63	48.0	12.91	1.22	Sandy Silt to Clayey Silt	ML	very loose	115	4	9.7	100	3	28		
14.78	48.5	13.28	1.07	Sandy Silt to Clayey Silt	ML	very loose	115	4	9.9	100	4	29		
14.93	49.0	19.21	2.55	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		100			1.03	5.00
15.10	49.5	21.38	3.15	Clayey Silt to Silty Clay	ML/CL	very stiff	120	9		100			1.16	5.88
15.25	50.0	64.39	1.34	Silty Sand to Sandy Silt	SM/ML	medium dense	115	14	47.4	55	50	35		

CLIENT: Energy Source
PROJECT: Minerals Processing Facility - Calipatria, CA
LOCATION: See Site and Boring Location Plan

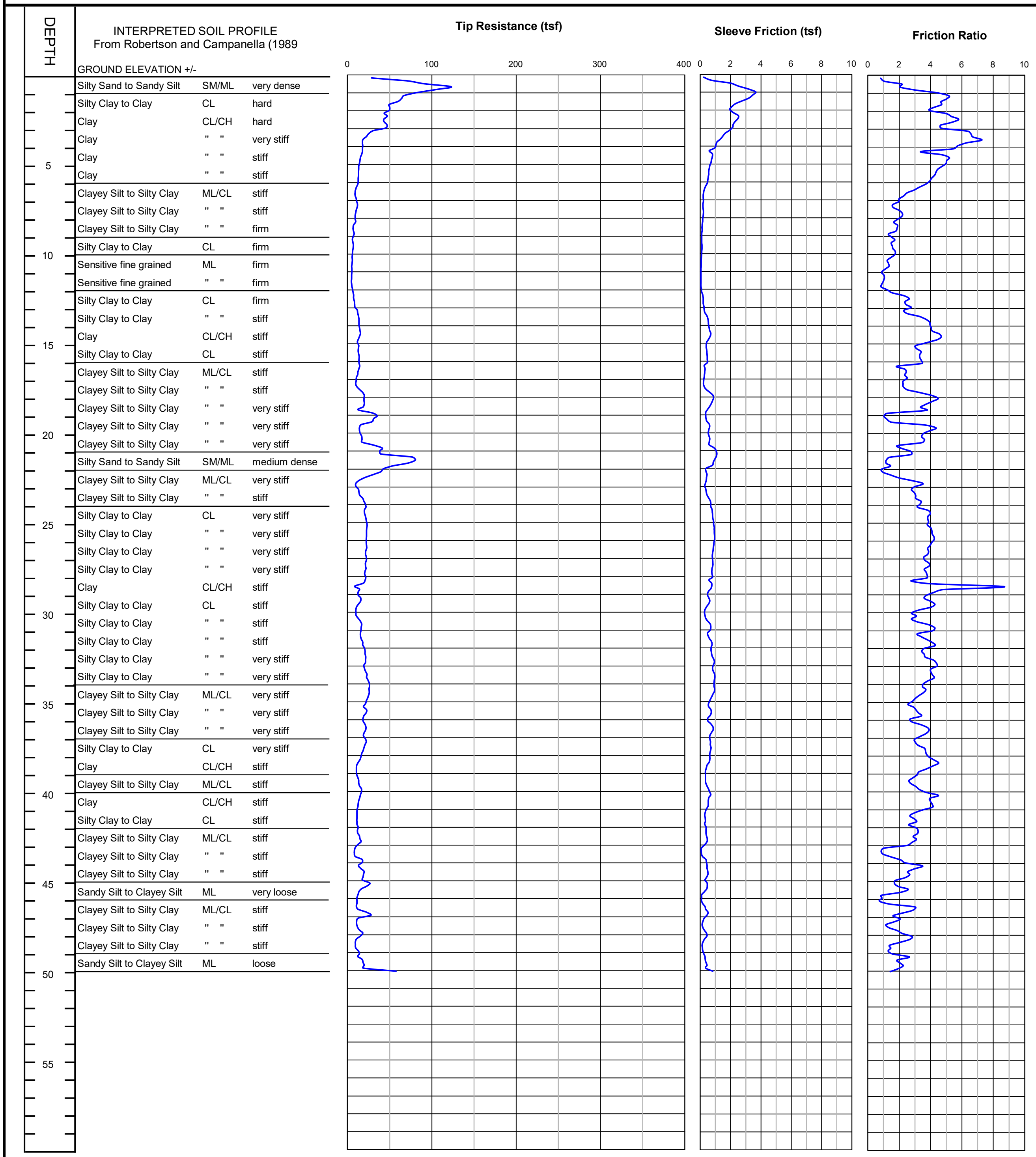
CONE PENETROMETER: Kehoe Testing & Engineering Truck Mounted Electric Cone with 30 ton reaction weight
DATE: 7/20/2020

CONE SOUNDING DATA CPT-3

INTERPRETED SOIL PROFILE
From Robertson and Campanella (1989

GROUND ELEVATION +/-

Silty Sand to Sandy Silt	SM/ML	very dense
Silty Clay to Clay	CL	hard
Clay	CL/CH	hard
Clay	" "	very stiff
Clay	" "	stiff
Clay	" "	stiff
Clayey Silt to Silty Clay	ML/CL	stiff
Clayey Silt to Silty Clay	" "	stiff
Clayey Silt to Silty Clay	" "	firm
Silty Clay to Clay	CL	firm
Sensitive fine grained	ML	firm
Sensitive fine grained	" "	firm
Silty Clay to Clay	CL	firm
Silty Clay to Clay	" "	stiff
Clay	CL/CH	stiff
Silty Clay to Clay	CL	stiff
Clayey Silt to Silty Clay	ML/CL	stiff
Clayey Silt to Silty Clay	" "	stiff
Clayey Silt to Silty Clay	" "	very stiff
Clayey Silt to Silty Clay	" "	very stiff
Clayey Silt to Silty Clay	" "	very stiff
Silty Sand to Sandy Silt	SM/ML	medium dense
Clayey Silt to Silty Clay	ML/CL	very stiff
Clayey Silt to Silty Clay	" "	stiff
Silty Clay to Clay	CL	very stiff
Silty Clay to Clay	" "	very stiff
Silty Clay to Clay	" "	very stiff
Silty Clay to Clay	" "	very stiff
Clay	CL/CH	stiff
Silty Clay to Clay	CL	stiff
Silty Clay to Clay	" "	stiff
Silty Clay to Clay	" "	stiff
Silty Clay to Clay	" "	very stiff
Silty Clay to Clay	" "	very stiff
Clayey Silt to Silty Clay	ML/CL	very stiff
Clayey Silt to Silty Clay	" "	very stiff
Clayey Silt to Silty Clay	" "	very stiff
Silty Clay to Clay	CL	very stiff
Clay	CL/CH	stiff
Clayey Silt to Silty Clay	ML/CL	stiff
Clay	CL/CH	stiff
Silty Clay to Clay	CL	stiff
Clayey Silt to Silty Clay	ML/CL	stiff
Clayey Silt to Silty Clay	" "	stiff
Clayey Silt to Silty Clay	" "	stiff
Sandy Silt to Clayey Silt	ML	very loose
Clayey Silt to Silty Clay	ML/CL	stiff
Clayey Silt to Silty Clay	" "	stiff
Clayey Silt to Silty Clay	" "	stiff
Sandy Silt to Clayey Silt	ML	loose



END OF SOUNDING AT 50 ft.

Project No.
LE19154

LANDMARK
Geo-Engineers and Geologists

PLATE
B-3

LANDMARK CONSULTANTS, INC.
CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Minerals Processing Facility - Calipatria, CA **Project No:** LE19154 **Date:** 7/20/2020

CONE SOUNDING: CPT-3
Est. GWT (ft): 8
Phi Correlation: **0** 0-Schm(78),1-R&C(83),2-PHT(74)

Base	Base	Avg	Avg				Est.			Est.	Rel.	**Nk:**	**17**	
Depth	Depth	Tip	Friction	Soil		Density or	Density	SPT	Norm.	%	Dens.	Phi	Su	
(m)	(ft)	Qc, tsf	Ratio, %	Classification	USCS	Consistency	(pcf)	N(60)	Qc1n	Fines	Dr (%)	(deg.)	(tsf)	OCR
0.15	0.5	63.22	1.34	Silty Sand to Sandy Silt	SM/ML	very dense	115	14	119.5	25	121	45		
0.30	1.0	103.50	3.18	Sandy Silt to Clayey Silt	ML	very dense	115	30	195.7	35	119	45		
0.45	1.5	63.74	4.96	Overconsolidated Soil	??	very dense	120	64	120.5	55	97	42		
0.60	2.0	49.78	4.26	Clayey Silt to Silty Clay	ML/CL	hard	120	20		55			2.92	>10
0.75	2.5	44.64	5.37	Clay	CL/CH	hard	125	36		65			2.62	>10
0.93	3.0	45.37	4.88	Silty Clay to Clay	CL	hard	125	26		60			2.66	>10
1.08	3.5	25.98	6.55	Clay	CL/CH	very stiff	125	21		85			1.52	>10
1.23	4.0	18.05	6.43	Clay	CL/CH	very stiff	125	14		95			1.05	>10
1.38	4.5	17.53	4.50	Clay	CL/CH	very stiff	125	14		85			1.02	>10
1.53	5.0	14.92	5.07	Clay	CL/CH	stiff	125	12		95			0.86	>10
1.68	5.5	13.25	4.44	Clay	CL/CH	stiff	125	11		95			0.76	>10
1.83	6.0	12.73	3.91	Clay	CL/CH	stiff	125	10		90			0.73	>10
1.98	6.5	9.89	2.92	Silty Clay to Clay	CL	stiff	125	6		95			0.56	>10
2.13	7.0	10.06	2.09	Clayey Silt to Silty Clay	ML/CL	stiff	120	4		85			0.57	>10
2.28	7.5	11.27	1.74	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		75			0.64	>10
2.45	8.0	9.39	2.09	Clayey Silt to Silty Clay	ML/CL	stiff	120	4		85			0.52	>10
2.60	8.5	7.93	1.80	Clayey Silt to Silty Clay	ML/CL	firm	120	3		90			0.44	9.79
2.75	9.0	7.26	1.54	Clayey Silt to Silty Clay	ML/CL	firm	120	3		90			0.40	7.70
2.90	9.5	6.49	1.59	Silty Clay to Clay	CL	firm	125	4		100			0.35	4.47
3.05	10.0	6.29	1.70	Silty Clay to Clay	CL	firm	125	4		100			0.34	4.00
3.20	10.5	5.65	1.34	Sensitive fine grained	ML	firm	120	3		100			0.30	5.21
3.35	11.0	5.18	1.10	Sensitive fine grained	ML	firm	120	3		100			0.27	4.28
3.50	11.5	4.94	1.03	Sensitive fine grained	ML	firm	120	2		100			0.26	3.83
3.65	12.0	5.44	1.00	Sensitive fine grained	ML	firm	120	3		100			0.29	4.28
3.80	12.5	7.11	2.17	Silty Clay to Clay	CL	firm	125	4		100			0.38	4.00
3.95	13.0	8.57	2.53	Silty Clay to Clay	CL	firm	125	5		100			0.47	5.21
4.13	13.5	12.26	2.68	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		95			0.68	>10
4.28	14.0	13.65	3.87	Silty Clay to Clay	CL	stiff	125	8		100			0.76	>10
4.43	14.5	14.89	4.24	Clay	CL/CH	stiff	125	12		100			0.84	9.00
4.58	15.0	12.99	4.27	Clay	CL/CH	stiff	125	10		100			0.72	6.76
4.73	15.5	13.05	3.18	Silty Clay to Clay	CL	stiff	125	7		100			0.73	8.70
4.88	16.0	13.70	3.37	Silty Clay to Clay	CL	stiff	125	8		100			0.76	9.19
5.03	16.5	13.54	2.22	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		90			0.75	>10
5.18	17.0	11.00	2.37	Clayey Silt to Silty Clay	ML/CL	stiff	120	4		100			0.60	8.00
5.33	17.5	11.67	2.35	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		100			0.64	8.70
5.48	18.0	19.13	3.98	Silty Clay to Clay	CL	very stiff	125	11		95			1.08	>10
5.65	18.5	19.38	3.71	Silty Clay to Clay	CL	very stiff	125	11		95			1.09	>10
5.80	19.0	25.71	2.00	Sandy Silt to Clayey Silt	ML	loose	115	7	27.9	70	35	33		
5.95	19.5	25.60	2.11	Sandy Silt to Clayey Silt	ML	loose	115	7	27.5	70	34	33		
6.10	20.0	14.57	3.93	Silty Clay to Clay	CL	stiff	125	8		100			0.81	7.85
6.25	20.5	17.23	3.50	Silty Clay to Clay	CL	stiff	125	10		100			0.96	>10
6.40	21.0	37.03	2.27	Sandy Silt to Clayey Silt	ML	medium dense	115	11	38.8	60	45	34		
6.55	21.5	65.68	1.77	Silty Sand to Sandy Silt	SM/ML	medium dense	115	15	68.3	40	61	37		
6.70	22.0	57.05	1.17	Silty Sand to Sandy Silt	SM/ML	medium dense	115	13	58.9	40	57	36		
6.85	22.5	30.51	1.47	Sandy Silt to Clayey Silt	ML	loose	115	9	31.3	60	38	33		
7.00	23.0	11.32	3.14	Silty Clay to Clay	CL	stiff	125	6		100			0.61	4.37
7.18	23.5	13.72	2.93	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		100			0.75	8.00
7.33	24.0	19.48	3.26	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		100			1.09	>10
7.48	24.5	20.86	3.66	Silty Clay to Clay	CL	very stiff	125	12		100			1.17	>10
7.63	25.0	21.94	3.85	Silty Clay to Clay	CL	very stiff	125	13		100			1.23	>10
7.78	25.5	22.99	3.97	Silty Clay to Clay	CL	very stiff	125	13		100			1.29	>10
7.93	26.0	22.58	4.18	Silty Clay to Clay	CL	very stiff	125	13		100			1.27	>10
8.08	26.5	22.40	3.93	Silty Clay to Clay	CL	very stiff	125	13		100			1.26	>10
8.23	27.0	22.08	3.67	Silty Clay to Clay	CL	very stiff	125	13		100			1.24	>10
8.38	27.5	21.59	3.80	Silty Clay to Clay	CL	very stiff	125	12		100			1.21	>10
8.53	28.0	21.00	3.75	Silty Clay to Clay	CL	very stiff	125	12		100			1.17	9.79
8.68	28.5	16.09	5.17	Clay	CL/CH	stiff	125	13		100			0.88	4.47
8.85	29.0	13.28	4.24	Clay	CL/CH	stiff	125	11		100			0.72	3.35
9.00	29.5	14.86	3.96	Silty Clay to Clay	CL	stiff	125	8		100			0.81	4.89
9.15	30.0	10.35	3.34	Silty Clay to Clay	CL	stiff	125	6		100			0.54	2.82
9.30	30.5	12.96	3.03	Silty Clay to Clay	CL	stiff	125	7		100			0.69	3.74
9.45	31.0	16.44	4.11	Silty Clay to Clay	CL	stiff	125	9		100			0.90	5.42
9.60	31.5	15.80	3.45	Silty Clay to Clay	CL	stiff	125	9		100			0.86	5.00
9.75	32.0	18.78	4.00	Silty Clay to Clay	CL	very stiff	125	11		100			1.03	6.43
9.90	32.5	21.19	3.57	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		100			1.18	>10
10.05	33.0	20.83	4.33	Silty Clay to Clay	CL	very stiff	125	12		100			1.15	7.41
10.20	33.5	21.59	4.05	Silty Clay to Clay	CL	very stiff	125	12		100			1.20	7.70
10.38	34.0	24.28	3.88	Silty Clay to Clay	CL	very stiff	125	14		100			1.35	9.39
10.53	34.5	25.92	3.58	Clayey Silt to Silty Clay	ML/CL	very stiff	120	10		100			1.45	>10
10.68	35.0	23.93	3.05	Clayey Silt to Silty Clay	ML/CL	very stiff	120	10		100			1.33	>10
10.83	35.5	21.06	2.85	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		100			1.16	9.79
10.98	36.0	20.19	3.12	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		100			1.11	8.70
11.13	36.5	20.78	3.48	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		100			1.14	9.00
11.28	37.0	20.01	3.33	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		100			1.10	8.14
11.43	37.5	20.89	3.29	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		100			1.15	8.70
11.58	38.0	17.17	3.77	Silty Clay to Clay	CL	stiff	125	10		100			0.93	4.37
11.73	38.5	12.93	4.30	Clay	CL/CH	stiff	125	10		100			0.68	2.27

LANDMARK CONSULTANTS, INC.

CONE PENETROMETER INTERPRETATION (based on Robertson & Campanella, 1989, refer to Key to CPT logs)

Project: Minerals Processing Facility - Calipatria, CA **Project No:** LE19154 **Date:** 7/20/2020

CONE SOUNDING: CPT-3
Est. GWT (ft): 8
Phi Correlation: **0** 0-Schm(78),1-R&C(83),2-PHT(74)

Base Depth (m)	Base Depth (ft)	Avg Tip Qc, tsf	Avg Friction Ratio, %	Soil Classification	USCS	Density or Consistency	Est. Density (pcf)	SPT N(60)	Norm. Qc1n	Est. % Fines	Rel. Dens. Dr (%)	**Nk:** Phi (deg.)	**17** Su (tsf)	OCR
11.88	39.0	10.74	3.38	Silty Clay to Clay	CL	stiff	125	6		100			0.55	2.13
12.05	39.5	12.93	2.75	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		100			0.68	3.58
12.20	40.0	15.86	3.36	Silty Clay to Clay	CL	stiff	125	9		100			0.85	3.66
12.35	40.5	14.48	4.14	Clay	CL/CH	stiff	125	12		100			0.77	2.57
12.50	41.0	12.26	3.90	Clay	CL/CH	stiff	125	10		100			0.63	2.00
12.65	41.5	11.20	2.87	Silty Clay to Clay	CL	stiff	125	6		100			0.57	2.13
12.80	42.0	11.73	2.93	Silty Clay to Clay	CL	stiff	125	7		100			0.60	2.20
12.95	42.5	12.76	3.09	Silty Clay to Clay	CL	stiff	125	7		100			0.66	2.49
13.10	43.0	14.39	2.81	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		100			0.76	3.74
13.25	43.5	8.57	0.95	Sensitive fine grained	ML	firm	120	4		100			0.41	2.00
13.40	44.0	14.74	2.01	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		100			0.78	3.83
13.58	44.5	15.97	3.00	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		100			0.85	4.28
13.73	45.0	18.55	2.26	Clayey Silt to Silty Clay	ML/CL	stiff	120	7		100			1.00	5.42
13.88	45.5	22.21	2.08	Sandy Silt to Clayey Silt	ML	loose	115	6	17.1	100	20	31		
14.03	46.0	12.49	1.27	Sandy Silt to Clayey Silt	ML	very loose	115	4	9.6	100	3	28		
14.18	46.5	10.97	1.74	Clayey Silt to Silty Clay	ML/CL	stiff	120	4		100			0.55	2.27
14.33	47.0	19.01	2.20	Clayey Silt to Silty Clay	ML/CL	very stiff	120	8		100			1.02	5.31
14.48	47.5	11.26	1.41	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		100			0.57	2.34
14.63	48.0	16.00	2.30	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		100			0.84	3.91
14.78	48.5	9.98	2.04	Clayey Silt to Silty Clay	ML/CL	firm	120	4		100			0.49	1.92
14.93	49.0	12.17	1.45	Clayey Silt to Silty Clay	ML/CL	stiff	120	5		100			0.62	2.49
15.10	49.5	15.97	2.19	Clayey Silt to Silty Clay	ML/CL	stiff	120	6		100			0.84	3.74
15.25	50.0	32.11	1.87	Sandy Silt to Clayey Silt	ML	loose	115	9	23.8	90	30	32		

LOG OF BORING NO. B-1

SHEET 1 OF 1

DEPTH	FIELD SAMPLE	FIELD USCS CLASS.	FIELD BLOW COUNT	FIELD POCKET PEN. (tsf)	DESCRIPTION OF MATERIAL	LABORATORY DRY DENSITY (pcf)	LABORATORY MOISTURE CONTENT (% dry wt.)	LABORATORY OTHER TESTS
	☒	▨			SILTY CLAY (CL): Brown, very moist, medium stiff to stiff, medium plasticity.		27.3	LL=35% PI=19%
5								
10								
15								
20								
25								
30								

DATE DRILLED: 7/20/2020

TOTAL DEPTH: 5 Feet

DEPTH TO WATER: N/A

LOGGED BY: J. Avalos

TYPE OF BIT: 6” Auger

DIAMETER: 6 in.

SURFACE ELEVATION: Approximately -225'

HAMMER WT.:

DROP:

PROJECT No. LE9154

LANDMARK
Geo-Engineers and Geologists

PLATE B-4

LOG OF BORING NO. B-2

SHEET 1 OF 1

	FIELD					LABORATORY		
DEPTH	SAMPLE	USCS CLASS.	BLOW COUNT	POCKET PEN. (tsf)	DESCRIPTION OF MATERIAL	DRY DENSITY (pcf)	MOISTURE CONTENT (% dry wt.)	OTHER TESTS
	☒	▨			SILTY CLAY (CL): Brown, very moist, medium stiff to stiff, medium plasticity.		23.1	LL=39% PI=21%
5								
10								
15								
20								
25								
30								

DATE DRILLED: 7/20/2020

TOTAL DEPTH: 5 Feet

DEPTH TO WATER: N/A

LOGGED BY: J. Avalos

TYPE OF BIT: 6” Auger

DIAMETER: 6 in.

SURFACE ELEVATION: Approximately -225'

HAMMER WT.:

DROP:

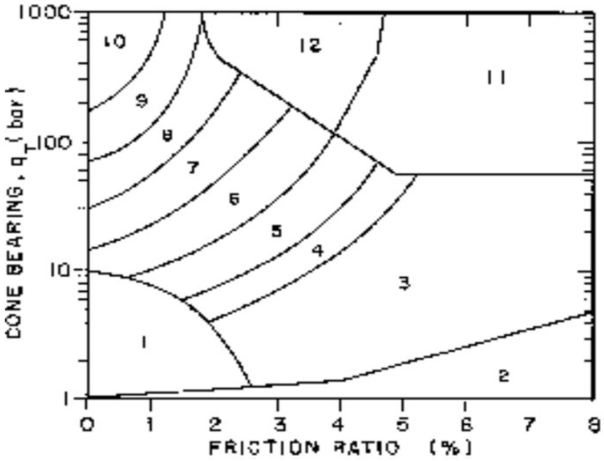
PROJECT No. LE9154

LANDMARK
Geo-Engineers and Geologists

PLATE B-5

Simplified Soil Classification Chart

After Robertson & Campanella (1989)



Geotechnical Parameters from CPT Data:

Equivalent SPT N(60) blow count = Qc/(Qc/N Ratio)

N1(60) = Cn*N(60) Normalized SPT blow count

Cn = 1/(p'o)^0.5 < 1.6 max. from Liao & Whitman (1986)

p'o = effective overburden pressure (tsf) using unit densities
given below and estimated groundwater table.

Dr = Relative density (%) from Jamiolkowski et. al. (1986) relationship
= -98 +68*log(Qc/p'o^0.5) where Qc, p'o in tonne/sqm

Note: 1 tonne/sqm = 0.1024 tsf, 1 bar =1.0443 tsf

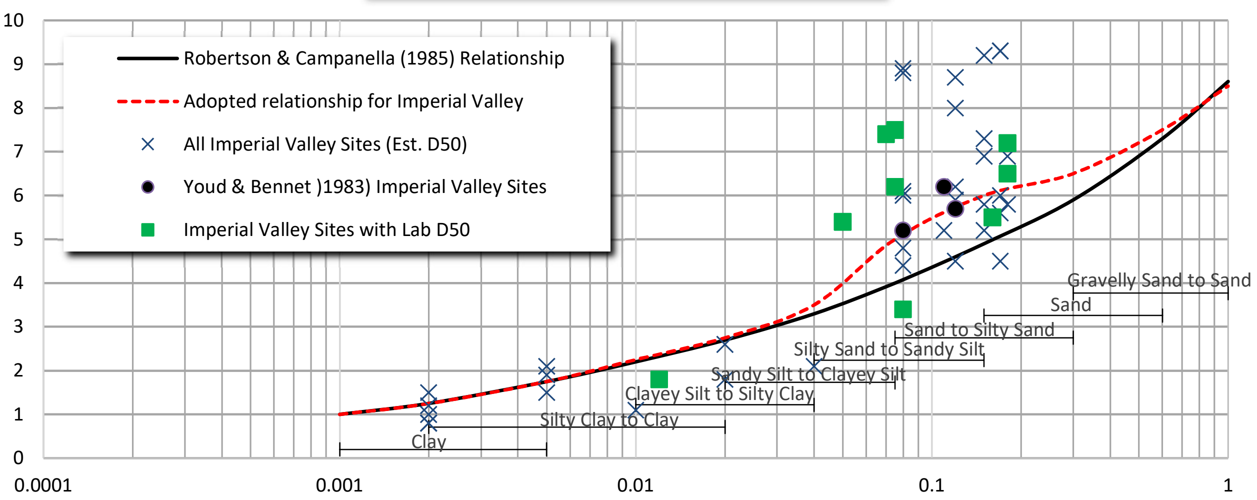
Phi = Friction Angle estimated from either:

1. Roberton & Campanella (1983) chart:
Phi = 5.3 + 24*(log(Qc/p'o))+3(log(Qc/p'o))^2
2. Peck, Hansen & Thornburn (1974) N-Phi Correlation
3. Schmertman (1978) chart [Phi = 28+0.14*Dr for fine uniform sands]

Su = undrained shear strength (tsf)
= (Qc-p'o)/Nk where Nk varies from 10 to 22, 17 for OC clays

OCR = Overconsolidation Ratio estimated from Schmertman (1978)
chart using Su/p'o ratio and estimated normal consolidated Su/p'o

Variation of Qc/N Ratio with Grain Size



Note: Assumed Properties and Adopted Qc/N Ratio based on correlations from Imperial Valley, California soils

Table of Soil Types and Assumed Properties

Zone	Soil Classification	UCS	Density (pcf)	R&C Qc/N	Adopted Qc/N	Est. PI	Fines (%)	D50 (mm)
1	Sensitive fine grained	ML	120	2	2	NP-15	65-100	0.02
2	Organic Material	OL/OH	120	1	1	--	--	--
3	Clay	CL/CH	125	1	1.25	25-40+	90-100	0.002
4	Silty Clay to Clay	CL	125	1.5	2	15-40	90-100	0.01
5	Clayey Silt to Silty Clay	ML/CL	120	2	2.75	25-May	90-100	0.02
6	Sandy Silt to Clayey Silt	ML	115	2.5	3.5	NP-10	65-100	0.04
7	Silty Sand to Sandy Silt	SM/ML	115	3	5	NP	35-75	0.075
8	Sand to Silty Sand	SP/SM	115	4	6	NP	May-35	0.15
9	Sand	SP	110	5	6.5	NP	0-5	0.3
10	Gravelly Sand to Sand	SW	115	6	7.5	NP	0-5	0.6
11	Overconsolidated Soil	--	120	1	1	NP	90-100	0.01
12	Sand to Clayey Sand	SP/SC	115	2	2	NP-5	--	---

Su (tsf)	Consistency
0-0.13	very soft
0.13-.25	soft
0.25-0.5	firm
0.5-1.0	stiff
1.0-2.0	very stiff
>2.0	hard
Dr (%)	**Relative Density**
0-15	very loose
15-35	loose
35-65	medium dense
65-85	dense
>85	very dense

LANDMARK
Geo-Engineers and Geologists

Project No: LE19154

Key to CPT Interpretation of Logs

Plate B-6

DEFINITION OF TERMS

PRIMARY DIVISIONS			SYMBOLS		SECONDARY DIVISIONS
Coarse grained soils More than half of material is larger that No. 200 sieve	**Gravels**	Clean gravels (less than 5% fines)	▨	**GW**	Well graded gravels, gravel-sand mixtures, little or no fines
	More than half of coarse fraction is larger than No. 4 sieve		▨	**GP**	Poorly graded gravels, or gravel-sand mixtures, little or no fines
		Gravel with fines	▨	**GM**	Silty gravels, gravel-sand-silt mixtures, non-plastic fines
			▨	**GC**	Clayey gravels, gravel-sand-clay mixtures, plastic fines
	Sands	Clean sands (less than 5% fines)	▨	**SW**	Well graded sands, gravelly sands, little or no fines
	More than half of coarse fraction is smaller than No. 4 sieve		▨	**SP**	Poorly graded sands or gravelly sands, little or no fines
		Sands with fines	▨	**SM**	Silty sands, sand-silt mixtures, non-plastic fines
			▨	**SC**	Clayey sands, sand-clay mixtures, plastic fines
Fine grained soils More than half of material is smaller than No. 200 sieve	**Silts and clays**		▨	**ML**	Inorganic silts, clayey silts with slight plasticity
	Liquid limit is less than 50%		▨	**CL**	Inorganic clays of low to medium plasticity, gravely, sandy, or lean clays
			▨	**OL**	Organic silts and organic clays of low plasticity
	Silts and clays		▨	**MH**	Inorganic silts, micaceous or diatomaceous silty soils, elastic silts
	Liquid limit is more than 50%		▨	**CH**	Inorganic clays of high plasticity, fat clays
			▨	**OH**	Organic clays of medium to high plasticity, organic silts
Highly organic soils			▨	**PT**	Peat and other highly organic soils

GRAIN SIZES

Silts and Clays	Sand			Gravel		Cobbles	Boulders
	Fine	Medium	Coarse	Fine	Coarse		

200 40 10 4 3/4" 3" 12"

US Standard Series Sieve Clear Square Openings

Sands, Gravels, etc.	Blows/ft. *
Very Loose	0-4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	Over 50

Clays & Plastic Silts	Strength **	Blows/ft. *
Very Soft	0-0.25	0-2
Soft	0.25-0.5	2-4
Firm	0.5-1.0	4-8
Stiff	1.0-2.0	8-16
Very Stiff	2.0-4.0	16-32
Hard	Over 4.0	Over 32

* Number of blows of 140 lb. hammer falling 30 inches to drive a 2 inch O.D. (1 3/8 in. I.D.) split spoon (ASTM D1586).

** Unconfined compressive strength in tons/s.f. as determined by laboratory testing or approximated by the Standard Penetration Test (ASTM D1586), Pocket Penetrometer, Torvane, or visual observation.

Type of Samples:

◩ Ring Sample ⧄ Standard Penetration Test I Shelby Tube ☒ Bulk (Bag) Sample

Drilling Notes:

1. Sampling and Blow Counts
   - Ring Sampler - Number of blows per foot of a 140 lb. hammer falling 30 inches.
   - Standard Penetration Test - Number of blows per foot.
   - Shelby Tube - Three (3) inch nominal diameter tube hydraulically pushed.
2. P. P. = Pocket Penetrometer (tons/s.f.).
3. NR = No recovery.
4. GWT ▼ = Ground Water Table observed @ specified time.

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Key to Logs

Plate B-7

APPENDIX C

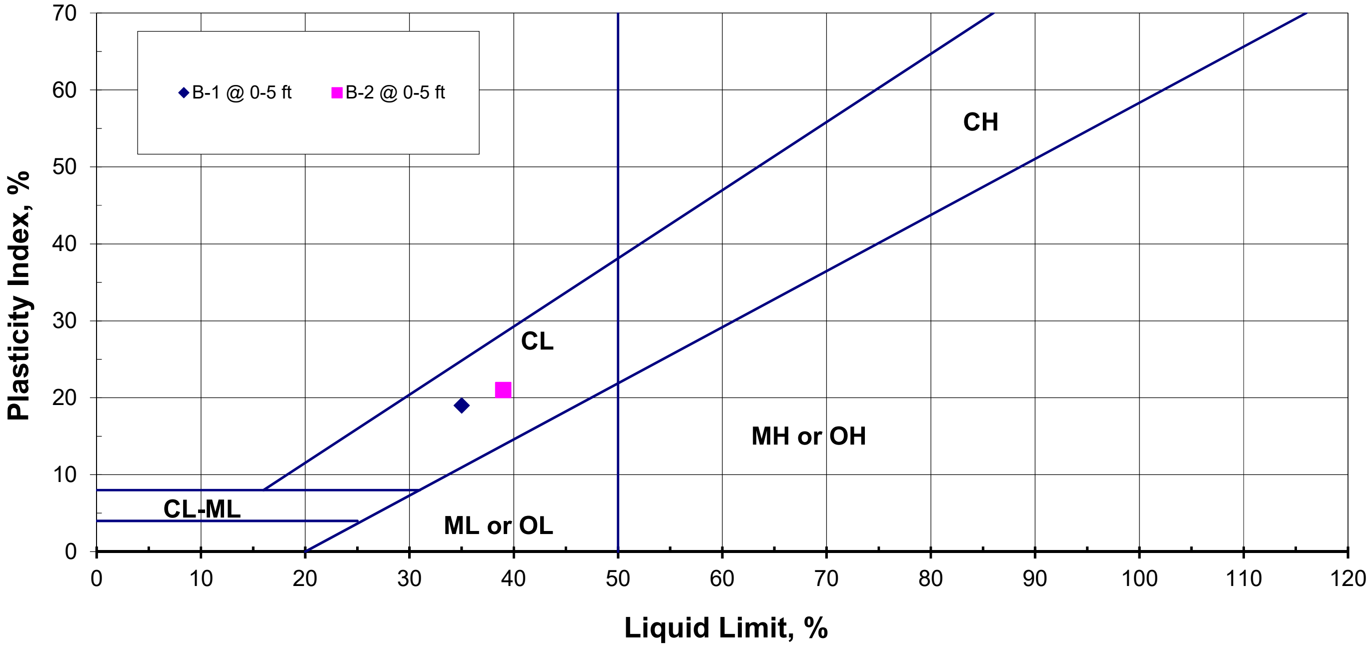
LANDMARK CONSULTANTS, INC.

CLIENT: Energy Source
PROJECT: Hudson Ranch Mineral Processing Facility
JOB No.: LE19154
DATE: 07/23/20

ATTERBERG LIMITS (ASTM D4318)

Sample Location	Sample Depth (ft)	Liquid Limit (LL)	Plastic Limit (PL)	Plasticity Index (PI)	USCS Classification
B-1	0-5	35	16	19	CL
B-2	0-5	39	18	21	CL

PLASTICITY CHART



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Project No.: LE19154

Atterberg Limits
Test Results

Plate

C-1

LANDMARK CONSULTANTS, INC.

CLIENT: Energy Source
PROJECT: Hudson Ranch Mineral Processing Facility
JOB No.: LE19154
DATE: 07/27/20

CHEMICAL ANALYSIS

Boring:	B-1	B-2	**Caltrans**
Sample Depth, ft:	0-5	0-5	**Method**
pH:	8.2	8.7	**643**
Electrical Conductivity (mmhos):	8.24	10.1	**424**
Resistivity (ohm-cm):	20	23	**643**
Chloride (Cl), ppm:	>18,000	>18,000	**422**
Sulfate (SO4), ppm:	6,426	7,014	**417**

General Guidelines for Soil Corrosivity

Material Affected	Chemical Agent	Range of Values	Degree of Corrosivity
Concrete	Soluble Sulfates (ppm)	0 - 1,000	Low
		1,000 - 2,000	Moderate
		2,000 - 20,000	Severe
		> 20,000	Very Severe
Normal Grade Steel	Soluble Chlorides (ppm)	0 - 200	Low
		200 - 700	Moderate
		700 - 1,500	Severe
		> 1,500	Very Severe
Normal Grade Steel	Resistivity (ohm-cm)	1 - 1,000	Very Severe
		1,000 - 2,000	Severe
		2,000 - 10,000	Moderate
		> 10,000	Low

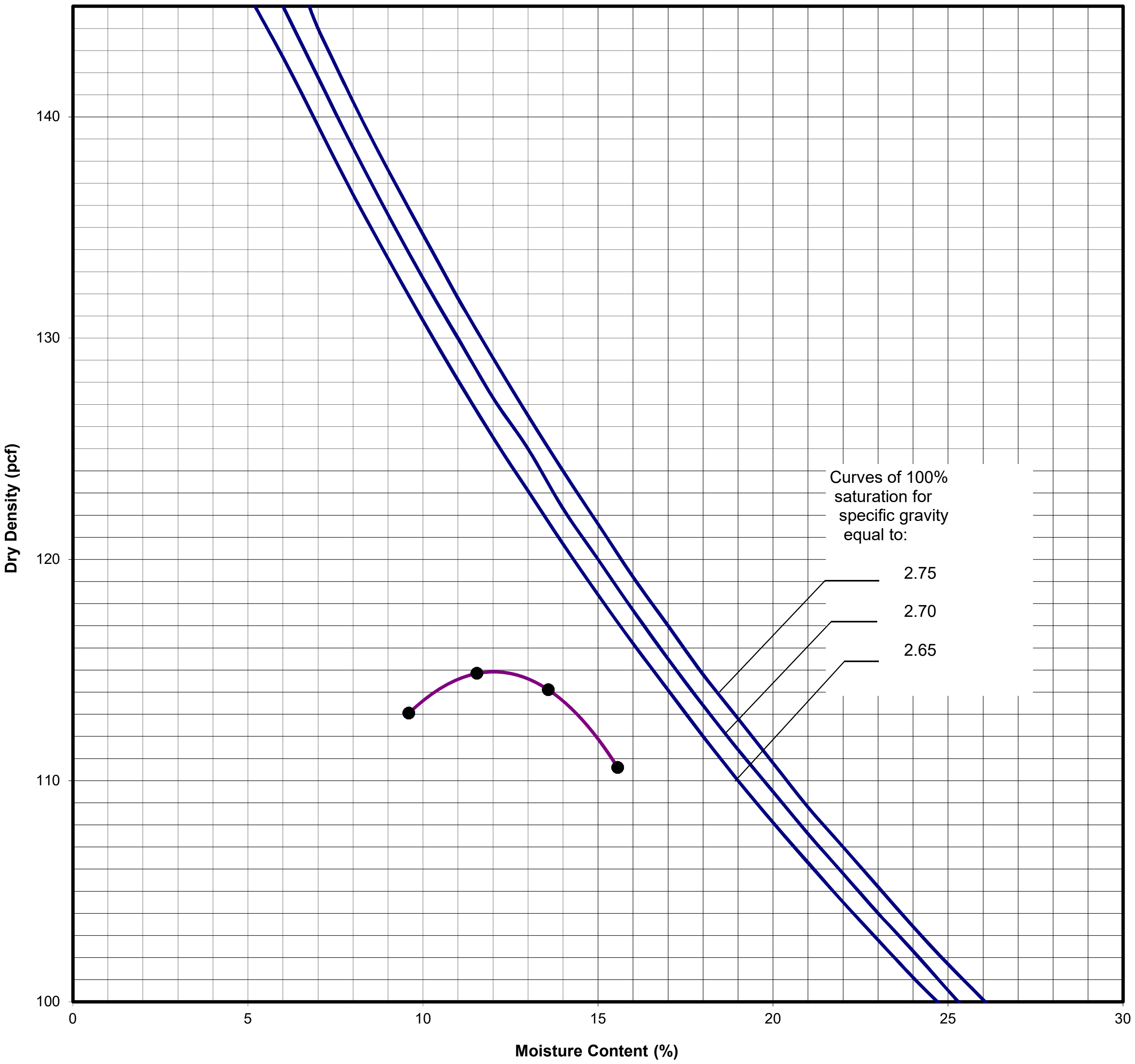
Project No.: LE19154

Selected Chemical Test Results

Plate C-2

Client: Energy Source
Project: H.R Mineral Processing Facility
Project No.: LE19154
Date: 7/28/2020
Lab. No.: EC20-396

Soil Description: Silty Clay (CL)
Sample Location: B-1 @ 0-5'
Test Method: ASTM D-1557-A
Maximum Dry Density (pcf): 114.9
Optimum Moisture Content (%): 12.0



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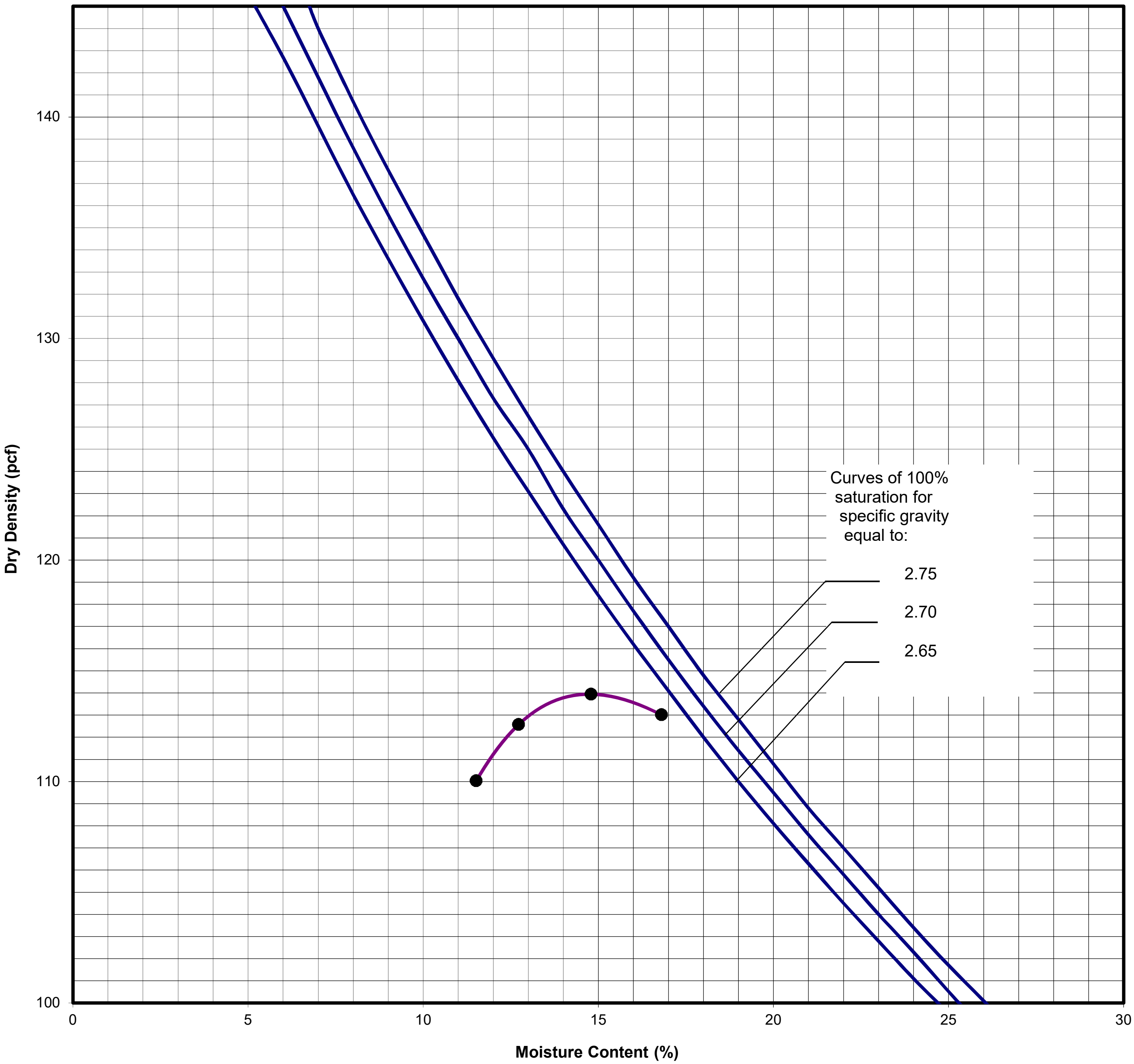
Project No.: LE19154

Moisture Density Relationship

Plate C-3

Client:	Energy Source	**Soil Description:**	Silty Clay (CL)
Project:	H.R Mineral Processing Facility	**Sample Location:**	B-2 @ 0-5'
Project No.:	LE19154	**Test Method:**	ASTM D-1557-A
Date:	7/28/2020	**Maximum Dry Density (pcf):**	**113.9**
Lab. No.:	EC20-397	**Optimum Moisture Content (%):**	**14.7**



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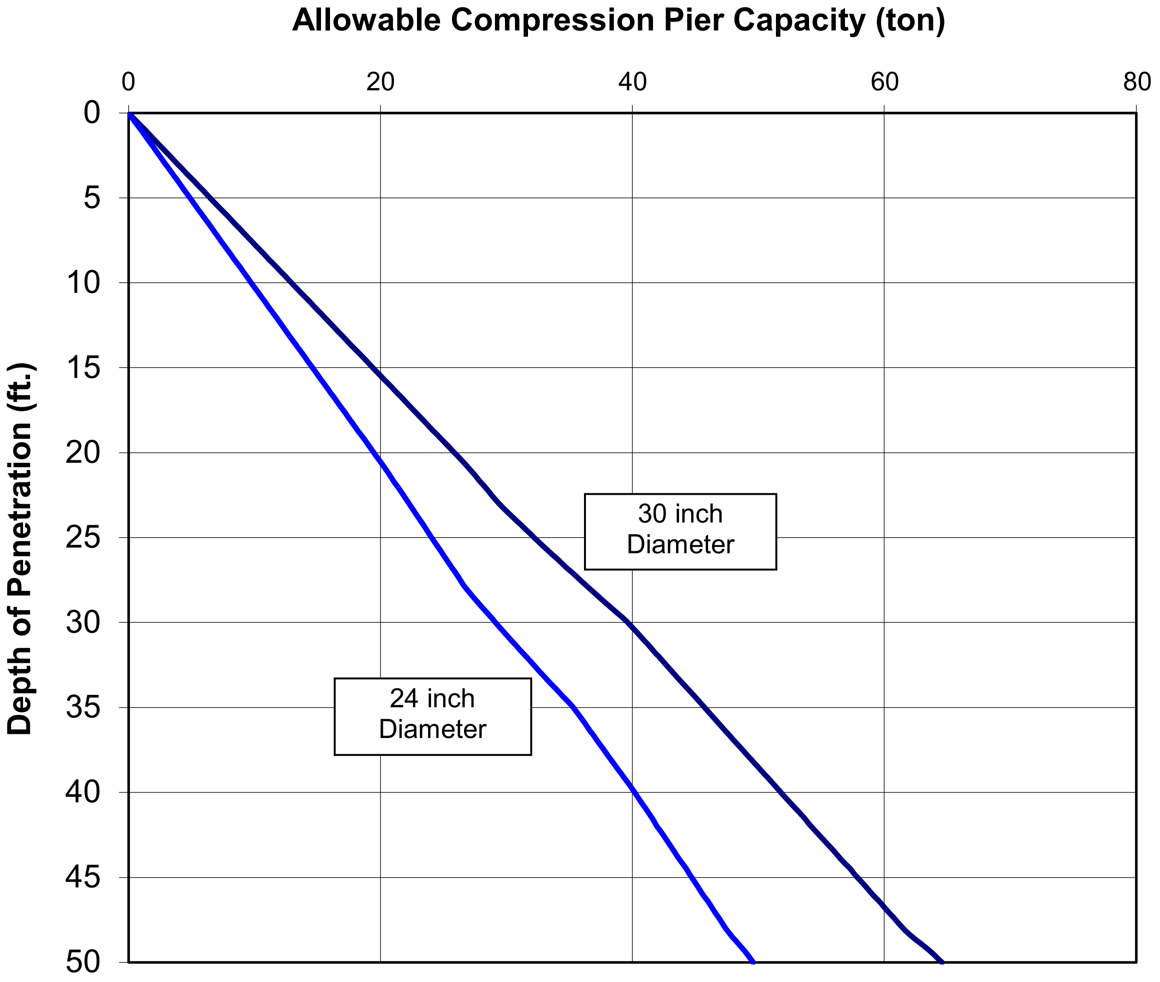
Project No.: LE19154

Moisture Density Relationship

Plate C-4

APPENDIX D



Notes:

1. Compression load capacity are based on skin friction and end-bearing capacity. The structural capacity of the piers should be checked.
2. The indicated capacities are for sustained (dead plus live) vertical compression load, and include a factor of safety of at least 2.5.
3. For temporary wind or seismic load, the above values may be increased by one-third.
4. Capacities of other pier sizes are in direct proportion to the pile diameter.
5. Pier capacity in tension should be taken as 50% of the compression capacity.

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Project No.: LE19154

Drilled Pier Compression Capacity Chart
Energy Source Mineral Extraction Facility
Calipatria, CA

Plate
D-1

APPENDIX E

Landmark Consultants, Inc.
780 N. 4th Street
El Centro, CA 92243

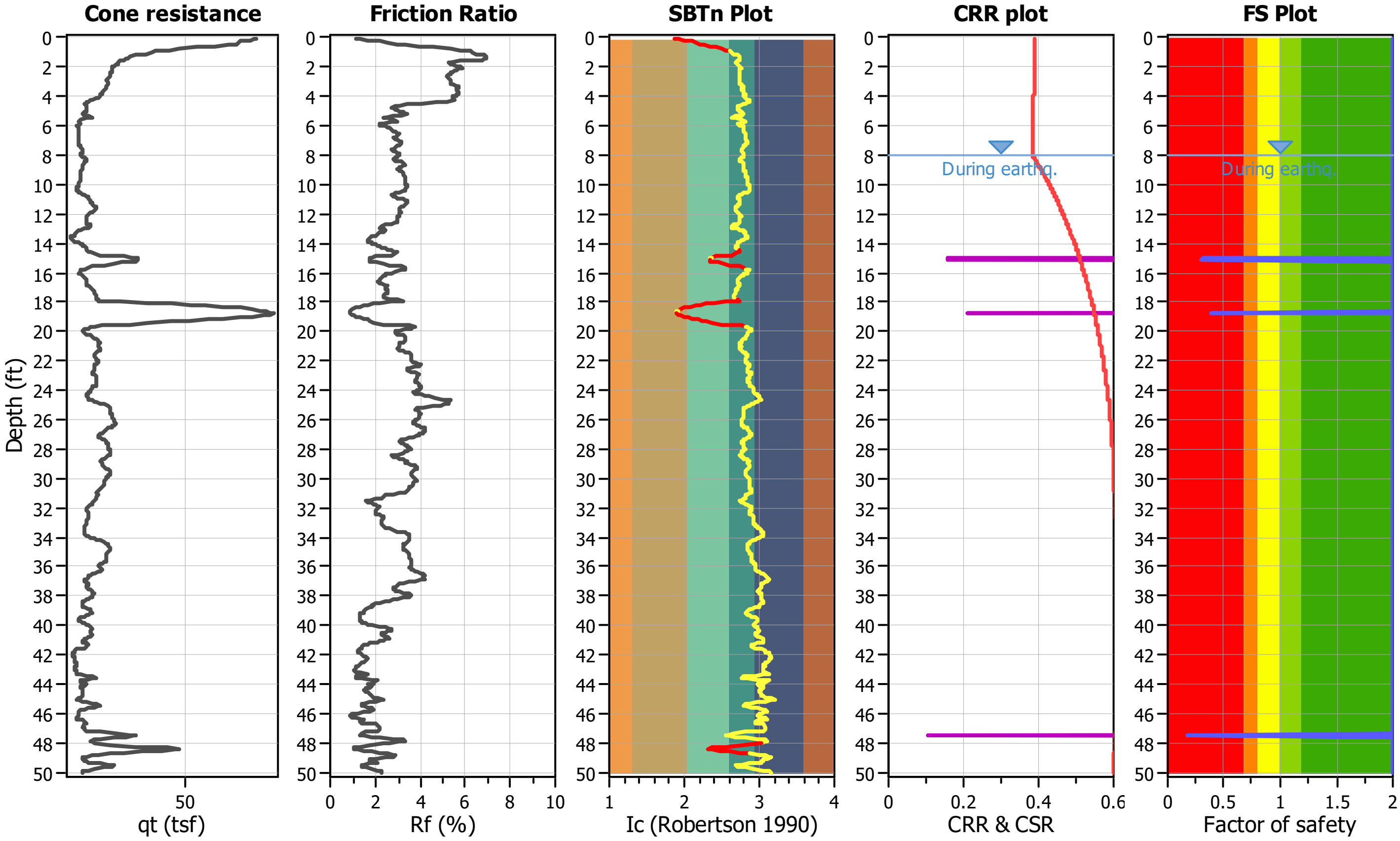
LIQUEFACTION ANALYSIS REPORT

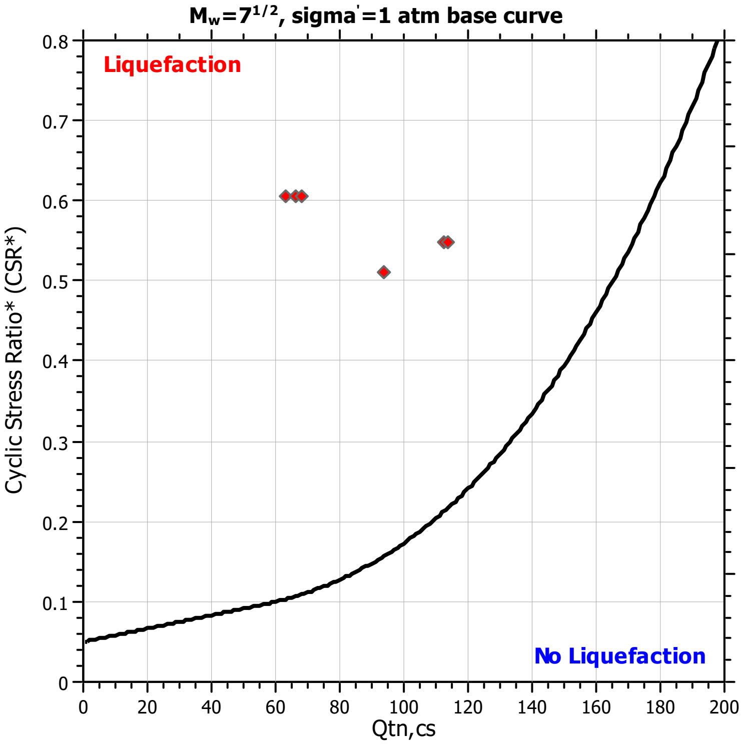
Project title : Mineral Processing Facility **Location : Calipatria, CA**

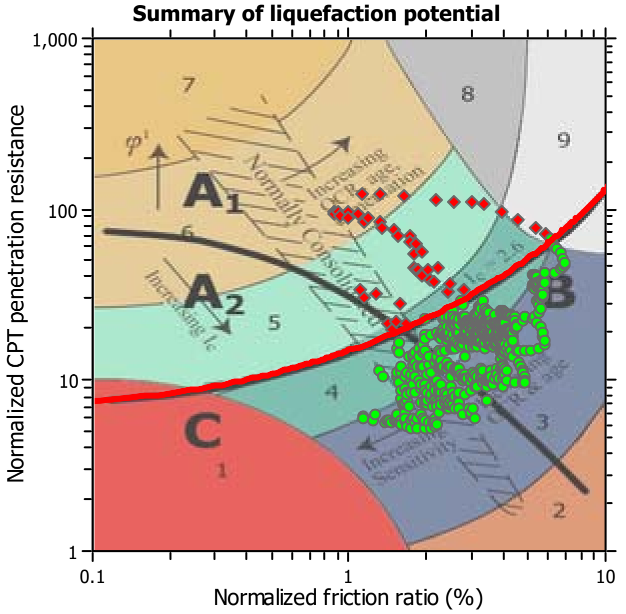
CPT file : CPT-01

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	8.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	8.00 ft	Fill height:	N/A		
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth applied:	No
Earthquake magnitude M_w:	7.00	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	Limit depth:	N/A
Peak ground acceleration:	0.55	Unit weight calculation:	Based on SBT	K_σ applied:	Yes	MSF method:	Method based

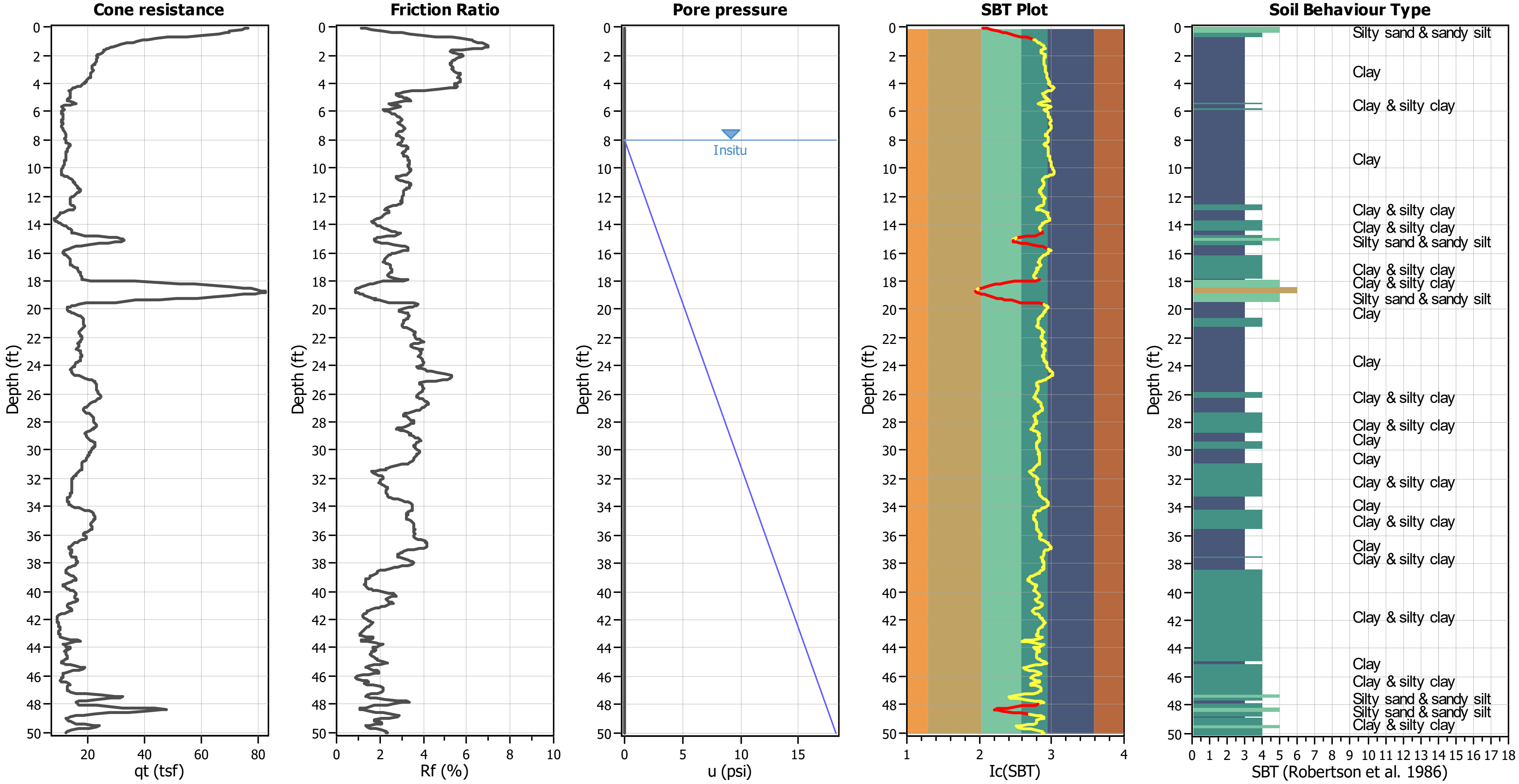






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



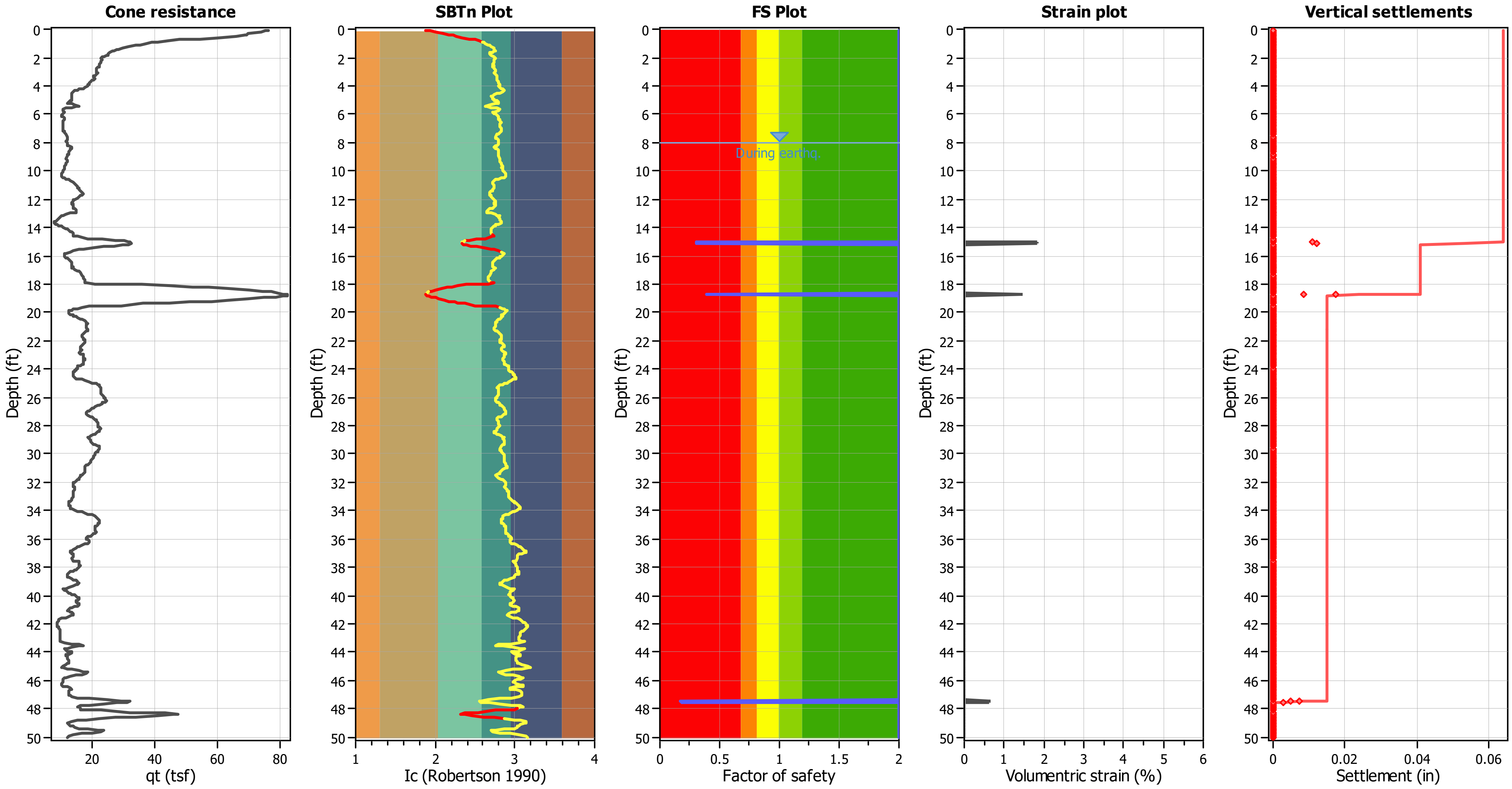
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	8.00 ft	Fill weight:	N/A		
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes		
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes		
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only		
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	No		
Depth to water table (insitu):	8.00 ft	Fill height:	N/A	Limit depth:	N/A		

SBT legend

🟥 1. Sensitive fine grained	🟩 4. Clayey silt to silty	🟧 7. Gravely sand to sand
🟫 2. Organic material	🟩 5. Silty sand to sandy silt	⬛ 8. Very stiff sand to
🟦 3. Clay to silty clay	🟨 6. Clean sand to silty sand	⬜ 9. Very stiff fine grained

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

:: Post-earthquake settlement due to soil liquefaction ::

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
8.05	87.73	2.00	0.00	0.86	0.00	8.09	87.77	2.00	0.00	0.86	0.00
8.17	87.81	2.00	0.00	0.86	0.00	8.20	87.79	2.00	0.00	0.86	0.00
8.29	88.67	2.00	0.00	0.86	0.00	8.37	90.30	2.00	0.00	0.86	0.00
8.42	92.41	2.00	0.00	0.86	0.00	8.47	93.66	2.00	0.00	0.86	0.00
8.54	93.96	2.00	0.00	0.86	0.00	8.64	93.57	2.00	0.00	0.85	0.00
8.68	92.38	2.00	0.00	0.85	0.00	8.81	91.15	2.00	0.00	0.85	0.00
8.85	89.79	2.00	0.00	0.85	0.00	8.90	88.87	2.00	0.00	0.85	0.00
8.96	88.26	2.00	0.00	0.85	0.00	8.99	88.34	2.00	0.00	0.85	0.00
9.10	88.91	2.00	0.00	0.85	0.00	9.14	89.70	2.00	0.00	0.85	0.00
9.19	90.37	2.00	0.00	0.84	0.00	9.29	90.95	2.00	0.00	0.84	0.00
9.33	91.32	2.00	0.00	0.84	0.00	9.43	91.47	2.00	0.00	0.84	0.00
9.47	91.45	2.00	0.00	0.84	0.00	9.52	91.37	2.00	0.00	0.84	0.00
9.58	91.16	2.00	0.00	0.84	0.00	9.69	90.90	2.00	0.00	0.84	0.00
9.73	90.63	2.00	0.00	0.84	0.00	9.78	89.94	2.00	0.00	0.83	0.00
9.92	89.43	2.00	0.00	0.83	0.00	10.02	88.98	2.00	0.00	0.83	0.00
10.08	88.97	2.00	0.00	0.83	0.00	10.12	88.76	2.00	0.00	0.83	0.00
10.17	88.18	2.00	0.00	0.83	0.00	10.27	87.51	2.00	0.00	0.83	0.00
10.33	86.92	2.00	0.00	0.82	0.00	10.38	86.72	2.00	0.00	0.82	0.00
10.44	86.72	2.00	0.00	0.82	0.00	10.53	86.29	2.00	0.00	0.82	0.00
10.58	85.36	2.00	0.00	0.82	0.00	10.64	85.38	2.00	0.00	0.82	0.00
10.70	87.35	2.00	0.00	0.82	0.00	10.80	90.21	2.00	0.00	0.82	0.00
10.85	93.13	2.00	0.00	0.82	0.00	10.92	95.16	2.00	0.00	0.81	0.00
10.97	98.11	2.00	0.00	0.81	0.00	11.05	100.21	2.00	0.00	0.81	0.00
11.15	102.11	2.00	0.00	0.81	0.00	11.21	102.80	2.00	0.00	0.81	0.00
11.26	103.51	2.00	0.00	0.81	0.00	11.30	103.75	2.00	0.00	0.81	0.00
11.40	103.67	2.00	0.00	0.81	0.00	11.45	103.28	2.00	0.00	0.81	0.00
11.50	102.92	2.00	0.00	0.81	0.00	11.56	102.65	2.00	0.00	0.80	0.00
11.67	102.13	2.00	0.00	0.80	0.00	11.71	101.64	2.00	0.00	0.80	0.00
11.77	100.67	2.00	0.00	0.80	0.00	11.84	99.34	2.00	0.00	0.80	0.00
11.89	97.08	2.00	0.00	0.80	0.00	12.03	95.22	2.00	0.00	0.80	0.00
12.08	93.87	2.00	0.00	0.80	0.00	12.13	93.27	2.00	0.00	0.79	0.00
12.20	92.66	2.00	0.00	0.79	0.00	12.23	92.28	2.00	0.00	0.79	0.00
12.33	92.34	2.00	0.00	0.79	0.00	12.38	92.53	2.00	0.00	0.79	0.00
12.49	92.52	2.00	0.00	0.79	0.00	12.55	91.88	2.00	0.00	0.79	0.00
12.60	90.77	2.00	0.00	0.79	0.00	12.64	89.36	2.00	0.00	0.79	0.00
12.69	87.84	2.00	0.00	0.78	0.00	12.76	86.27	2.00	0.00	0.78	0.00
12.81	83.94	2.00	0.00	0.78	0.00	12.91	82.40	2.00	0.00	0.78	0.00
12.95	81.22	2.00	0.00	0.78	0.00	13.01	80.89	2.00	0.00	0.78	0.00
13.07	79.10	2.00	0.00	0.78	0.00	13.17	76.46	2.00	0.00	0.78	0.00
13.22	73.49	2.00	0.00	0.78	0.00	13.26	70.84	2.00	0.00	0.78	0.00
13.33	68.84	2.00	0.00	0.77	0.00	13.48	66.77	2.00	0.00	0.77	0.00
13.53	64.17	2.00	0.00	0.77	0.00	13.58	61.80	2.00	0.00	0.77	0.00
13.65	60.11	2.00	0.00	0.77	0.00	13.70	59.86	2.00	0.00	0.77	0.00
13.75	59.83	2.00	0.00	0.77	0.00	13.80	60.41	2.00	0.00	0.77	0.00
13.86	62.24	2.00	0.00	0.77	0.00	13.93	64.18	2.00	0.00	0.76	0.00
13.98	66.81	2.00	0.00	0.76	0.00	14.07	68.84	2.00	0.00	0.76	0.00
14.11	72.16	2.00	0.00	0.76	0.00	14.21	74.85	2.00	0.00	0.76	0.00
14.25	78.08	2.00	0.00	0.76	0.00	14.34	80.07	2.00	0.00	0.76	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
14.38	82.81	2.00	0.00	0.76	0.00	14.46	84.85	2.00	0.00	0.75	0.00
14.51	87.38	2.00	0.00	0.75	0.00	14.60	89.81	2.00	0.00	0.75	0.00
14.64	94.48	2.00	0.00	0.75	0.00	14.79	95.95	2.00	0.00	0.75	0.00
14.82	96.01	2.00	0.00	0.75	0.00	14.89	94.16	2.00	0.00	0.75	0.00
14.95	93.83	2.00	0.00	0.75	0.00	14.99	93.84	2.00	0.00	0.75	0.00
15.04	93.96	0.31	1.83	0.75	0.01	15.10	93.61	0.31	1.84	0.74	0.01
15.22	93.37	2.00	0.00	0.74	0.00	15.26	93.48	2.00	0.00	0.74	0.00
15.31	94.57	2.00	0.00	0.74	0.00	15.36	96.03	2.00	0.00	0.74	0.00
15.48	97.17	2.00	0.00	0.74	0.00	15.53	98.21	2.00	0.00	0.74	0.00
15.57	97.95	2.00	0.00	0.74	0.00	15.63	95.97	2.00	0.00	0.74	0.00
15.74	92.59	2.00	0.00	0.73	0.00	15.79	88.66	2.00	0.00	0.73	0.00
15.84	85.65	2.00	0.00	0.73	0.00	15.90	82.45	2.00	0.00	0.73	0.00
16.00	79.56	2.00	0.00	0.73	0.00	16.06	77.73	2.00	0.00	0.73	0.00
16.10	77.23	2.00	0.00	0.73	0.00	16.14	77.11	2.00	0.00	0.73	0.00
16.24	76.76	2.00	0.00	0.72	0.00	16.31	76.53	2.00	0.00	0.72	0.00
16.36	77.02	2.00	0.00	0.72	0.00	16.41	76.48	2.00	0.00	0.72	0.00
16.59	76.12	2.00	0.00	0.72	0.00	16.63	75.55	2.00	0.00	0.72	0.00
16.68	76.41	2.00	0.00	0.72	0.00	16.74	77.48	2.00	0.00	0.72	0.00
16.78	78.87	2.00	0.00	0.72	0.00	16.84	80.74	2.00	0.00	0.71	0.00
16.90	81.88	2.00	0.00	0.71	0.00	16.93	82.95	2.00	0.00	0.71	0.00
17.03	83.92	2.00	0.00	0.71	0.00	17.07	85.31	2.00	0.00	0.71	0.00
17.14	86.30	2.00	0.00	0.71	0.00	17.21	86.84	2.00	0.00	0.71	0.00
17.34	87.11	2.00	0.00	0.71	0.00	17.39	87.14	2.00	0.00	0.71	0.00
17.43	86.41	2.00	0.00	0.70	0.00	17.52	85.30	2.00	0.00	0.70	0.00
17.56	84.40	2.00	0.00	0.70	0.00	17.60	84.64	2.00	0.00	0.70	0.00
17.66	86.15	2.00	0.00	0.70	0.00	17.75	90.42	2.00	0.00	0.70	0.00
17.86	95.80	2.00	0.00	0.70	0.00	17.91	101.68	2.00	0.00	0.70	0.00
17.96	104.21	2.00	0.00	0.70	0.00	18.00	104.62	2.00	0.00	0.69	0.00
18.05	105.13	2.00	0.00	0.69	0.00	18.14	107.01	2.00	0.00	0.69	0.00
18.20	109.02	2.00	0.00	0.69	0.00	18.26	109.23	2.00	0.00	0.69	0.00
18.31	109.67	2.00	0.00	0.69	0.00	18.40	110.22	2.00	0.00	0.69	0.00
18.49	110.33	2.00	0.00	0.69	0.00	18.55	110.29	2.00	0.00	0.69	0.00
18.59	111.20	2.00	0.00	0.68	0.00	18.69	112.43	0.39	1.45	0.68	0.02
18.74	113.75	0.40	1.43	0.68	0.01	18.78	114.72	2.00	0.00	0.68	0.00
18.84	115.67	2.00	0.00	0.68	0.00	18.93	116.12	2.00	0.00	0.68	0.00
18.98	115.36	2.00	0.00	0.68	0.00	19.07	114.14	2.00	0.00	0.68	0.00
19.13	113.52	2.00	0.00	0.68	0.00	19.20	113.71	2.00	0.00	0.67	0.00
19.24	109.52	2.00	0.00	0.67	0.00	19.33	102.29	2.00	0.00	0.67	0.00
19.39	98.56	2.00	0.00	0.67	0.00	19.51	100.99	2.00	0.00	0.67	0.00
19.55	107.05	2.00	0.00	0.67	0.00	19.60	106.16	2.00	0.00	0.67	0.00
19.65	103.58	2.00	0.00	0.67	0.00	19.71	99.41	2.00	0.00	0.67	0.00
19.79	95.35	2.00	0.00	0.66	0.00	19.84	91.38	2.00	0.00	0.66	0.00
19.88	87.75	2.00	0.00	0.66	0.00	19.97	83.96	2.00	0.00	0.66	0.00
20.02	81.80	2.00	0.00	0.66	0.00	20.13	82.70	2.00	0.00	0.66	0.00
20.20	85.27	2.00	0.00	0.66	0.00	20.24	88.30	2.00	0.00	0.66	0.00
20.29	91.48	2.00	0.00	0.66	0.00	20.40	93.81	2.00	0.00	0.65	0.00
20.46	95.76	2.00	0.00	0.65	0.00	20.50	96.81	2.00	0.00	0.65	0.00
20.55	98.00	2.00	0.00	0.65	0.00	20.66	98.50	2.00	0.00	0.65	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
20.72	98.16	2.00	0.00	0.65	0.00	20.77	97.16	2.00	0.00	0.65	0.00
20.81	96.10	2.00	0.00	0.65	0.00	20.91	95.42	2.00	0.00	0.65	0.00
20.96	95.18	2.00	0.00	0.64	0.00	21.02	94.97	2.00	0.00	0.64	0.00
21.08	94.47	2.00	0.00	0.64	0.00	21.18	93.97	2.00	0.00	0.64	0.00
21.21	94.25	2.00	0.00	0.64	0.00	21.30	95.12	2.00	0.00	0.64	0.00
21.35	96.67	2.00	0.00	0.64	0.00	21.44	97.69	2.00	0.00	0.64	0.00
21.48	98.57	2.00	0.00	0.64	0.00	21.56	98.74	2.00	0.00	0.63	0.00
21.61	98.85	2.00	0.00	0.63	0.00	21.66	98.85	2.00	0.00	0.63	0.00
21.76	99.06	2.00	0.00	0.63	0.00	21.82	99.50	2.00	0.00	0.63	0.00
21.88	100.05	2.00	0.00	0.63	0.00	21.92	100.62	2.00	0.00	0.63	0.00
22.03	101.34	2.00	0.00	0.63	0.00	22.09	102.28	2.00	0.00	0.63	0.00
22.14	103.33	2.00	0.00	0.62	0.00	22.19	103.97	2.00	0.00	0.62	0.00
22.29	104.10	2.00	0.00	0.62	0.00	22.36	102.61	2.00	0.00	0.62	0.00
22.40	99.39	2.00	0.00	0.62	0.00	22.45	96.13	2.00	0.00	0.62	0.00
22.55	94.52	2.00	0.00	0.62	0.00	22.61	94.55	2.00	0.00	0.62	0.00
22.67	94.63	2.00	0.00	0.62	0.00	22.71	96.10	2.00	0.00	0.62	0.00
22.81	98.22	2.00	0.00	0.61	0.00	22.85	100.38	2.00	0.00	0.61	0.00
22.94	101.02	2.00	0.00	0.61	0.00	23.00	101.39	2.00	0.00	0.61	0.00
23.07	101.87	2.00	0.00	0.61	0.00	23.16	102.00	2.00	0.00	0.61	0.00
23.21	101.80	2.00	0.00	0.61	0.00	23.29	101.53	2.00	0.00	0.61	0.00
23.33	101.30	2.00	0.00	0.60	0.00	23.40	101.27	2.00	0.00	0.60	0.00
23.44	101.72	2.00	0.00	0.60	0.00	23.52	102.52	2.00	0.00	0.60	0.00
23.56	102.72	2.00	0.00	0.60	0.00	23.65	102.30	2.00	0.00	0.60	0.00
23.69	101.19	2.00	0.00	0.60	0.00	23.77	100.26	2.00	0.00	0.60	0.00
23.82	98.79	2.00	0.00	0.60	0.00	23.93	97.40	2.00	0.00	0.59	0.00
23.98	95.34	2.00	0.00	0.59	0.00	24.06	93.67	2.00	0.00	0.59	0.00
24.11	92.42	2.00	0.00	0.59	0.00	24.19	92.32	2.00	0.00	0.59	0.00
24.22	92.75	2.00	0.00	0.59	0.00	24.29	93.99	2.00	0.00	0.59	0.00
24.39	95.27	2.00	0.00	0.59	0.00	24.43	97.28	2.00	0.00	0.59	0.00
24.52	100.71	2.00	0.00	0.58	0.00	24.60	105.12	2.00	0.00	0.58	0.00
24.66	109.38	2.00	0.00	0.58	0.00	24.70	112.16	2.00	0.00	0.58	0.00
24.75	115.03	2.00	0.00	0.58	0.00	24.84	117.82	2.00	0.00	0.58	0.00
24.89	120.57	2.00	0.00	0.58	0.00	24.97	122.04	2.00	0.00	0.58	0.00
25.03	122.58	2.00	0.00	0.58	0.00	25.09	119.53	2.00	0.00	0.57	0.00
25.15	114.19	2.00	0.00	0.57	0.00	25.20	110.20	2.00	0.00	0.57	0.00
25.29	109.63	2.00	0.00	0.57	0.00	25.36	111.29	2.00	0.00	0.57	0.00
25.41	111.58	2.00	0.00	0.57	0.00	25.46	111.63	2.00	0.00	0.57	0.00
25.54	111.80	2.00	0.00	0.57	0.00	25.60	112.24	2.00	0.00	0.57	0.00
25.66	112.53	2.00	0.00	0.57	0.00	25.72	112.62	2.00	0.00	0.56	0.00
25.81	112.43	2.00	0.00	0.56	0.00	25.86	111.99	2.00	0.00	0.56	0.00
25.93	111.43	2.00	0.00	0.56	0.00	25.99	110.84	2.00	0.00	0.56	0.00
26.08	110.35	2.00	0.00	0.56	0.00	26.13	110.22	2.00	0.00	0.56	0.00
26.21	110.31	2.00	0.00	0.56	0.00	26.26	111.09	2.00	0.00	0.55	0.00
26.35	111.67	2.00	0.00	0.55	0.00	26.38	112.28	2.00	0.00	0.55	0.00
26.48	112.46	2.00	0.00	0.55	0.00	26.52	112.29	2.00	0.00	0.55	0.00
26.60	111.62	2.00	0.00	0.55	0.00	26.67	110.33	2.00	0.00	0.55	0.00
26.74	109.03	2.00	0.00	0.55	0.00	26.79	107.35	2.00	0.00	0.55	0.00
26.88	105.71	2.00	0.00	0.54	0.00	26.92	103.45	2.00	0.00	0.54	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
26.99	101.61	2.00	0.00	0.54	0.00	27.04	100.14	2.00	0.00	0.54	0.00
27.12	99.26	2.00	0.00	0.54	0.00	27.18	97.87	2.00	0.00	0.54	0.00
27.26	95.99	2.00	0.00	0.54	0.00	27.33	94.17	2.00	0.00	0.54	0.00
27.38	93.32	2.00	0.00	0.54	0.00	27.48	93.19	2.00	0.00	0.53	0.00
27.54	93.91	2.00	0.00	0.53	0.00	27.58	94.94	2.00	0.00	0.53	0.00
27.63	96.61	2.00	0.00	0.53	0.00	27.73	97.96	2.00	0.00	0.53	0.00
27.78	99.28	2.00	0.00	0.53	0.00	27.84	100.26	2.00	0.00	0.53	0.00
27.89	101.53	2.00	0.00	0.53	0.00	27.99	102.12	2.00	0.00	0.53	0.00
28.05	101.82	2.00	0.00	0.52	0.00	28.11	100.75	2.00	0.00	0.52	0.00
28.16	99.62	2.00	0.00	0.52	0.00	28.31	97.59	2.00	0.00	0.52	0.00
28.37	94.06	2.00	0.00	0.52	0.00	28.42	90.42	2.00	0.00	0.52	0.00
28.47	88.54	2.00	0.00	0.52	0.00	28.52	89.47	2.00	0.00	0.52	0.00
28.58	91.08	2.00	0.00	0.52	0.00	28.64	92.31	2.00	0.00	0.51	0.00
28.69	92.75	2.00	0.00	0.51	0.00	28.78	92.60	2.00	0.00	0.51	0.00
28.84	92.57	2.00	0.00	0.51	0.00	28.89	93.11	2.00	0.00	0.51	0.00
28.94	94.41	2.00	0.00	0.51	0.00	29.02	96.03	2.00	0.00	0.51	0.00
29.11	97.39	2.00	0.00	0.51	0.00	29.14	98.87	2.00	0.00	0.51	0.00
29.22	100.37	2.00	0.00	0.50	0.00	29.29	101.90	2.00	0.00	0.50	0.00
29.33	102.90	2.00	0.00	0.50	0.00	29.41	102.94	2.00	0.00	0.50	0.00
29.48	102.29	2.00	0.00	0.50	0.00	29.59	101.48	2.00	0.00	0.50	0.00
29.63	100.99	2.00	0.00	0.50	0.00	29.70	100.77	2.00	0.00	0.50	0.00
29.74	100.52	2.00	0.00	0.50	0.00	29.82	100.32	2.00	0.00	0.49	0.00
29.86	100.31	2.00	0.00	0.49	0.00	29.95	100.50	2.00	0.00	0.49	0.00
30.03	100.72	2.00	0.00	0.49	0.00	30.12	100.83	2.00	0.00	0.49	0.00
30.14	100.29	2.00	0.00	0.49	0.00	30.22	99.60	2.00	0.00	0.49	0.00
30.26	98.61	2.00	0.00	0.49	0.00	30.35	97.96	2.00	0.00	0.49	0.00
30.39	96.80	2.00	0.00	0.48	0.00	30.52	95.74	2.00	0.00	0.48	0.00
30.55	94.74	2.00	0.00	0.48	0.00	30.62	94.23	2.00	0.00	0.48	0.00
30.66	93.60	2.00	0.00	0.48	0.00	30.75	92.31	2.00	0.00	0.48	0.00
30.81	90.91	2.00	0.00	0.48	0.00	30.85	89.01	2.00	0.00	0.48	0.00
30.96	87.31	2.00	0.00	0.48	0.00	31.01	84.01	2.00	0.00	0.47	0.00
31.10	80.61	2.00	0.00	0.47	0.00	31.15	76.88	2.00	0.00	0.47	0.00
31.27	74.77	2.00	0.00	0.47	0.00	31.32	73.45	2.00	0.00	0.47	0.00
31.37	72.97	2.00	0.00	0.47	0.00	31.41	69.45	2.00	0.00	0.47	0.00
31.47	65.22	2.00	0.00	0.47	0.00	31.54	61.52	2.00	0.00	0.47	0.00
31.63	62.43	2.00	0.00	0.46	0.00	31.69	64.38	2.00	0.00	0.46	0.00
31.77	65.72	2.00	0.00	0.46	0.00	31.83	66.47	2.00	0.00	0.46	0.00
31.92	67.02	2.00	0.00	0.46	0.00	31.97	66.53	2.00	0.00	0.46	0.00
32.05	65.35	2.00	0.00	0.46	0.00	32.11	63.93	2.00	0.00	0.46	0.00
32.19	63.50	2.00	0.00	0.45	0.00	32.23	63.49	2.00	0.00	0.45	0.00
32.34	63.52	2.00	0.00	0.45	0.00	32.36	63.89	2.00	0.00	0.45	0.00
32.43	64.78	2.00	0.00	0.45	0.00	32.50	66.35	2.00	0.00	0.45	0.00
32.58	67.60	2.00	0.00	0.45	0.00	32.63	68.35	2.00	0.00	0.45	0.00
32.71	68.20	2.00	0.00	0.45	0.00	32.75	67.66	2.00	0.00	0.44	0.00
32.82	67.10	2.00	0.00	0.44	0.00	32.89	66.70	2.00	0.00	0.44	0.00
32.94	66.65	2.00	0.00	0.44	0.00	33.03	66.56	2.00	0.00	0.44	0.00
33.07	66.45	2.00	0.00	0.44	0.00	33.16	66.36	2.00	0.00	0.44	0.00
33.22	66.29	2.00	0.00	0.44	0.00	33.30	66.27	2.00	0.00	0.44	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
33.34	66.67	2.00	0.00	0.43	0.00	33.43	67.44	2.00	0.00	0.43	0.00
33.48	69.47	2.00	0.00	0.43	0.00	33.61	71.37	2.00	0.00	0.43	0.00
33.65	73.38	2.00	0.00	0.43	0.00	33.70	74.71	2.00	0.00	0.43	0.00
33.74	76.03	2.00	0.00	0.43	0.00	33.83	76.99	2.00	0.00	0.43	0.00
33.88	78.06	2.00	0.00	0.43	0.00	33.93	79.99	2.00	0.00	0.43	0.00
34.04	82.44	2.00	0.00	0.42	0.00	34.09	84.91	2.00	0.00	0.42	0.00
34.14	87.14	2.00	0.00	0.42	0.00	34.24	89.76	2.00	0.00	0.42	0.00
34.30	90.64	2.00	0.00	0.42	0.00	34.41	91.53	2.00	0.00	0.42	0.00
34.45	91.04	2.00	0.00	0.42	0.00	34.50	91.74	2.00	0.00	0.42	0.00
34.56	91.63	2.00	0.00	0.41	0.00	34.62	91.83	2.00	0.00	0.41	0.00
34.67	91.91	2.00	0.00	0.41	0.00	34.76	91.78	2.00	0.00	0.41	0.00
34.78	91.75	2.00	0.00	0.41	0.00	34.87	91.96	2.00	0.00	0.41	0.00
34.92	92.44	2.00	0.00	0.41	0.00	35.00	92.85	2.00	0.00	0.41	0.00
35.05	93.11	2.00	0.00	0.41	0.00	35.14	93.15	2.00	0.00	0.40	0.00
35.18	93.18	2.00	0.00	0.40	0.00	35.26	93.23	2.00	0.00	0.40	0.00
35.32	93.32	2.00	0.00	0.40	0.00	35.38	93.35	2.00	0.00	0.40	0.00
35.44	93.43	2.00	0.00	0.40	0.00	35.53	93.65	2.00	0.00	0.40	0.00
35.58	93.61	2.00	0.00	0.40	0.00	35.66	93.07	2.00	0.00	0.40	0.00
35.71	91.65	2.00	0.00	0.39	0.00	35.81	90.23	2.00	0.00	0.39	0.00
35.85	89.01	2.00	0.00	0.39	0.00	35.93	88.33	2.00	0.00	0.39	0.00
35.98	87.78	2.00	0.00	0.39	0.00	36.03	87.97	2.00	0.00	0.39	0.00
36.14	88.93	2.00	0.00	0.39	0.00	36.20	89.99	2.00	0.00	0.39	0.00
36.24	90.37	2.00	0.00	0.39	0.00	36.29	90.09	2.00	0.00	0.38	0.00
36.39	89.58	2.00	0.00	0.38	0.00	36.45	88.86	2.00	0.00	0.38	0.00
36.50	87.81	2.00	0.00	0.38	0.00	36.55	86.38	2.00	0.00	0.38	0.00
36.66	84.88	2.00	0.00	0.38	0.00	36.72	83.25	2.00	0.00	0.38	0.00
36.82	81.90	2.00	0.00	0.38	0.00	36.86	80.52	2.00	0.00	0.38	0.00
36.91	79.23	2.00	0.00	0.37	0.00	36.97	77.73	2.00	0.00	0.37	0.00
37.04	76.37	2.00	0.00	0.37	0.00	37.09	74.94	2.00	0.00	0.37	0.00
37.18	73.34	2.00	0.00	0.37	0.00	37.25	72.32	2.00	0.00	0.37	0.00
37.31	71.19	2.00	0.00	0.37	0.00	37.35	69.83	2.00	0.00	0.37	0.00
37.41	69.33	2.00	0.00	0.37	0.00	37.53	70.14	2.00	0.00	0.36	0.00
37.57	72.39	2.00	0.00	0.36	0.00	37.62	73.97	2.00	0.00	0.36	0.00
37.67	76.06	2.00	0.00	0.36	0.00	37.75	78.23	2.00	0.00	0.36	0.00
37.84	80.16	2.00	0.00	0.36	0.00	37.87	81.25	2.00	0.00	0.36	0.00
37.95	81.44	2.00	0.00	0.36	0.00	38.01	81.09	2.00	0.00	0.36	0.00
38.06	79.36	2.00	0.00	0.35	0.00	38.15	76.35	2.00	0.00	0.35	0.00
38.24	72.54	2.00	0.00	0.35	0.00	38.28	69.06	2.00	0.00	0.35	0.00
38.33	66.07	2.00	0.00	0.35	0.00	38.41	62.91	2.00	0.00	0.35	0.00
38.48	59.65	2.00	0.00	0.35	0.00	38.53	57.02	2.00	0.00	0.35	0.00
38.58	55.79	2.00	0.00	0.35	0.00	38.66	56.05	2.00	0.00	0.34	0.00
38.72	56.29	2.00	0.00	0.34	0.00	38.80	56.16	2.00	0.00	0.34	0.00
38.88	55.66	2.00	0.00	0.34	0.00	38.91	55.86	2.00	0.00	0.34	0.00
38.98	55.87	2.00	0.00	0.34	0.00	39.10	55.39	2.00	0.00	0.34	0.00
39.15	54.26	2.00	0.00	0.34	0.00	39.20	53.12	2.00	0.00	0.34	0.00
39.24	52.16	2.00	0.00	0.33	0.00	39.33	51.42	2.00	0.00	0.33	0.00
39.37	49.95	2.00	0.00	0.33	0.00	39.48	48.06	2.00	0.00	0.33	0.00
39.52	46.85	2.00	0.00	0.33	0.00	39.63	47.13	2.00	0.00	0.33	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
39.67	48.43	2.00	0.00	0.33	0.00	39.78	49.71	2.00	0.00	0.33	0.00
39.82	51.59	2.00	0.00	0.33	0.00	39.87	53.55	2.00	0.00	0.32	0.00
39.92	55.52	2.00	0.00	0.32	0.00	39.97	59.02	2.00	0.00	0.32	0.00
40.05	63.38	2.00	0.00	0.32	0.00	40.14	67.48	2.00	0.00	0.32	0.00
40.19	69.70	2.00	0.00	0.32	0.00	40.25	70.33	2.00	0.00	0.32	0.00
40.31	70.24	2.00	0.00	0.32	0.00	40.36	68.14	2.00	0.00	0.32	0.00
40.45	66.51	2.00	0.00	0.31	0.00	40.52	65.37	2.00	0.00	0.31	0.00
40.58	66.17	2.00	0.00	0.31	0.00	40.62	66.47	2.00	0.00	0.31	0.00
40.73	66.43	2.00	0.00	0.31	0.00	40.76	66.14	2.00	0.00	0.31	0.00
40.84	65.15	2.00	0.00	0.31	0.00	40.90	63.24	2.00	0.00	0.31	0.00
40.97	60.76	2.00	0.00	0.31	0.00	41.03	58.58	2.00	0.00	0.30	0.00
41.11	57.40	2.00	0.00	0.30	0.00	41.15	56.89	2.00	0.00	0.30	0.00
41.22	56.32	2.00	0.00	0.30	0.00	41.28	54.90	2.00	0.00	0.30	0.00
41.37	53.12	2.00	0.00	0.30	0.00	41.42	51.09	2.00	0.00	0.30	0.00
41.51	49.88	2.00	0.00	0.30	0.00	41.55	47.58	2.00	0.00	0.30	0.00
41.64	45.16	2.00	0.00	0.29	0.00	41.69	42.70	2.00	0.00	0.29	0.00
41.82	41.98	2.00	0.00	0.29	0.00	41.85	42.28	2.00	0.00	0.29	0.00
41.91	42.59	2.00	0.00	0.29	0.00	41.95	43.40	2.00	0.00	0.29	0.00
42.05	44.08	2.00	0.00	0.29	0.00	42.09	45.04	2.00	0.00	0.29	0.00
42.17	45.67	2.00	0.00	0.29	0.00	42.22	46.39	2.00	0.00	0.28	0.00
42.30	46.64	2.00	0.00	0.28	0.00	42.35	46.55	2.00	0.00	0.28	0.00
42.41	46.21	2.00	0.00	0.28	0.00	42.47	45.82	2.00	0.00	0.28	0.00
42.52	45.31	2.00	0.00	0.28	0.00	42.62	44.80	2.00	0.00	0.28	0.00
42.68	44.03	2.00	0.00	0.28	0.00	42.74	43.48	2.00	0.00	0.28	0.00
42.79	42.30	2.00	0.00	0.27	0.00	42.90	41.52	2.00	0.00	0.27	0.00
43.01	40.82	2.00	0.00	0.27	0.00	43.05	41.09	2.00	0.00	0.27	0.00
43.10	41.42	2.00	0.00	0.27	0.00	43.16	42.16	2.00	0.00	0.27	0.00
43.21	44.39	2.00	0.00	0.27	0.00	43.27	47.82	2.00	0.00	0.27	0.00
43.32	50.64	2.00	0.00	0.27	0.00	43.41	51.17	2.00	0.00	0.26	0.00
43.46	50.07	2.00	0.00	0.26	0.00	43.53	50.72	2.00	0.00	0.26	0.00
43.59	53.75	2.00	0.00	0.26	0.00	43.68	55.66	2.00	0.00	0.26	0.00
43.73	55.71	2.00	0.00	0.26	0.00	43.79	54.66	2.00	0.00	0.26	0.00
43.86	54.28	2.00	0.00	0.26	0.00	43.95	54.15	2.00	0.00	0.26	0.00
43.97	53.74	2.00	0.00	0.25	0.00	44.03	53.82	2.00	0.00	0.25	0.00
44.12	53.51	2.00	0.00	0.25	0.00	44.17	52.74	2.00	0.00	0.25	0.00
44.27	51.84	2.00	0.00	0.25	0.00	44.31	50.57	2.00	0.00	0.25	0.00
44.39	50.33	2.00	0.00	0.25	0.00	44.43	50.06	2.00	0.00	0.25	0.00
44.53	50.99	2.00	0.00	0.25	0.00	44.57	51.80	2.00	0.00	0.24	0.00
44.65	53.13	2.00	0.00	0.24	0.00	44.73	53.94	2.00	0.00	0.24	0.00
44.78	53.85	2.00	0.00	0.24	0.00	44.83	53.17	2.00	0.00	0.24	0.00
44.90	52.61	2.00	0.00	0.24	0.00	44.97	53.31	2.00	0.00	0.24	0.00
45.05	54.02	2.00	0.00	0.24	0.00	45.10	54.85	2.00	0.00	0.24	0.00
45.19	54.62	2.00	0.00	0.23	0.00	45.23	54.10	2.00	0.00	0.23	0.00
45.28	53.90	2.00	0.00	0.23	0.00	45.36	54.26	2.00	0.00	0.23	0.00
45.41	55.80	2.00	0.00	0.23	0.00	45.52	57.44	2.00	0.00	0.23	0.00
45.57	58.24	2.00	0.00	0.23	0.00	45.63	57.51	2.00	0.00	0.23	0.00
45.67	55.40	2.00	0.00	0.23	0.00	45.78	52.93	2.00	0.00	0.22	0.00
45.84	49.95	2.00	0.00	0.22	0.00	45.89	46.82	2.00	0.00	0.22	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
45.94	43.62	2.00	0.00	0.22	0.00	46.03	40.76	2.00	0.00	0.22	0.00
46.08	39.42	2.00	0.00	0.22	0.00	46.14	38.96	2.00	0.00	0.22	0.00
46.21	39.79	2.00	0.00	0.22	0.00	46.30	42.01	2.00	0.00	0.22	0.00
46.36	44.32	2.00	0.00	0.21	0.00	46.42	46.12	2.00	0.00	0.21	0.00
46.47	47.23	2.00	0.00	0.21	0.00	46.56	47.92	2.00	0.00	0.21	0.00
46.63	49.70	2.00	0.00	0.21	0.00	46.67	52.52	2.00	0.00	0.21	0.00
46.73	55.13	2.00	0.00	0.21	0.00	46.89	56.57	2.00	0.00	0.21	0.00
46.92	56.81	2.00	0.00	0.20	0.00	47.00	56.78	2.00	0.00	0.20	0.00
47.05	57.17	2.00	0.00	0.20	0.00	47.16	57.61	2.00	0.00	0.20	0.00
47.20	58.48	2.00	0.00	0.20	0.00	47.28	59.16	2.00	0.00	0.20	0.00
47.33	61.04	2.00	0.00	0.20	0.00	47.42	63.43	0.17	0.67	0.20	0.01
47.48	66.17	0.18	0.64	0.20	0.00	47.52	68.14	0.18	0.62	0.19	0.00
47.58	70.67	2.00	0.00	0.19	0.00	47.68	72.94	2.00	0.00	0.19	0.00
47.72	74.11	2.00	0.00	0.19	0.00	47.77	73.68	2.00	0.00	0.19	0.00
47.86	72.64	2.00	0.00	0.19	0.00	47.91	70.32	2.00	0.00	0.19	0.00
48.00	67.40	2.00	0.00	0.19	0.00	48.05	64.68	2.00	0.00	0.19	0.00
48.10	64.48	2.00	0.00	0.18	0.00	48.25	64.36	2.00	0.00	0.18	0.00
48.30	65.61	2.00	0.00	0.18	0.00	48.39	67.48	2.00	0.00	0.18	0.00
48.44	70.45	2.00	0.00	0.18	0.00	48.52	73.36	2.00	0.00	0.18	0.00
48.58	76.13	2.00	0.00	0.18	0.00	48.64	76.02	2.00	0.00	0.18	0.00
48.73	74.46	2.00	0.00	0.17	0.00	48.79	72.03	2.00	0.00	0.17	0.00
48.82	68.10	2.00	0.00	0.17	0.00	48.90	63.24	2.00	0.00	0.17	0.00
48.96	57.31	2.00	0.00	0.17	0.00	49.04	53.89	2.00	0.00	0.17	0.00
49.08	51.55	2.00	0.00	0.17	0.00	49.17	52.59	2.00	0.00	0.17	0.00
49.25	55.43	2.00	0.00	0.17	0.00	49.32	58.51	2.00	0.00	0.16	0.00
49.37	60.06	2.00	0.00	0.16	0.00	49.41	60.30	2.00	0.00	0.16	0.00
49.50	59.80	2.00	0.00	0.16	0.00	49.54	58.99	2.00	0.00	0.16	0.00
49.63	58.51	2.00	0.00	0.16	0.00	49.69	58.79	2.00	0.00	0.16	0.00
49.74	58.31	2.00	0.00	0.16	0.00	49.85	57.50	2.00	0.00	0.16	0.00
49.94	56.38	2.00	0.00	0.15	0.00	49.99	55.74	2.00	0.00	0.15	0.00
50.03	55.41	2.00	0.00	0.15	0.00						

Total estimated settlement: 0.06

Abbreviations

$Q_{tn,cs}$:	Equivalent clean sand normalized cone resistance
FS:	Factor of safety against liquefaction
e_v (%):	Post-liquefaction volumentric strain
DF:	e_v depth weighting factor
Settlement:	Calculated settlement

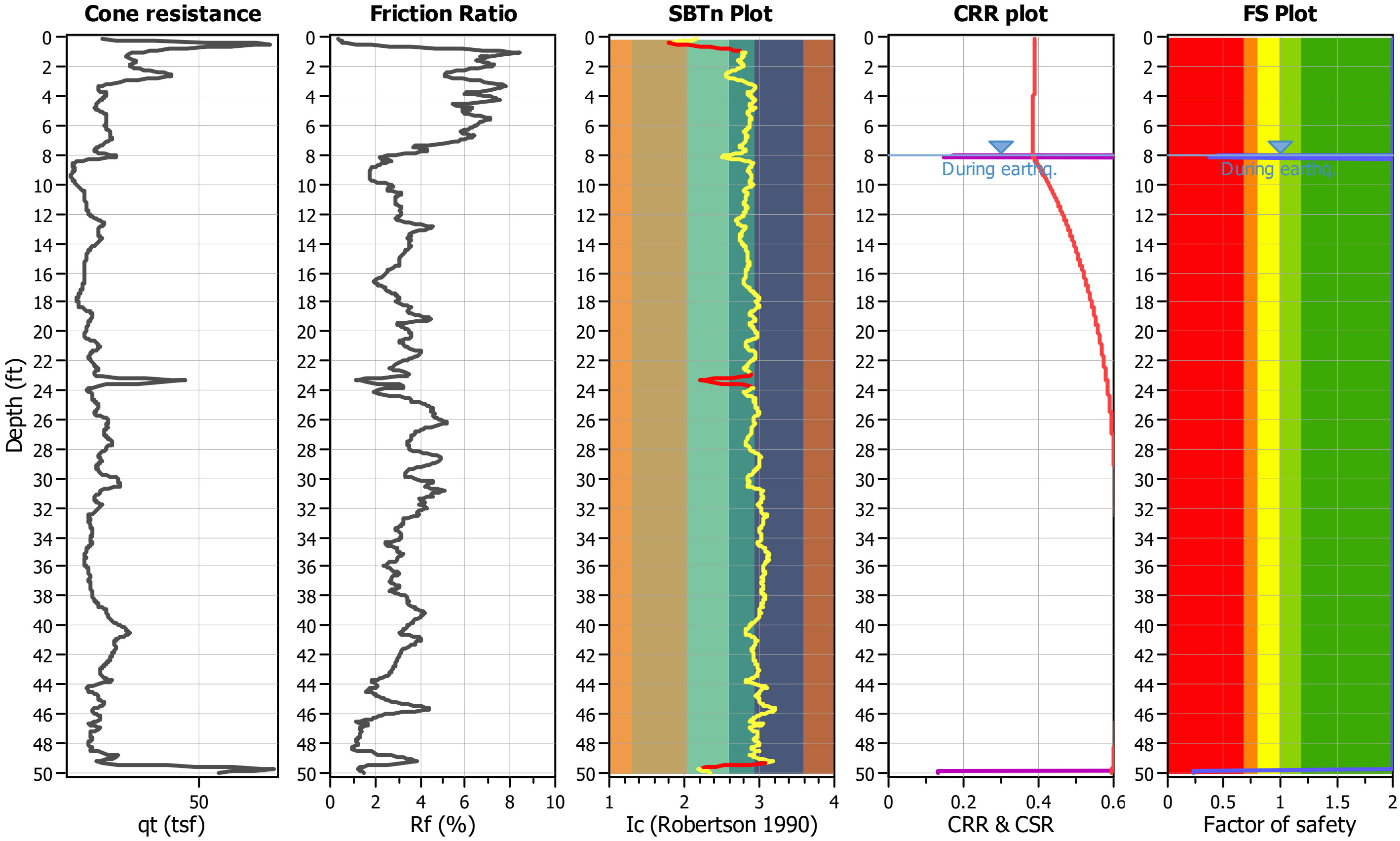
LIQUEFACTION ANALYSIS REPORT

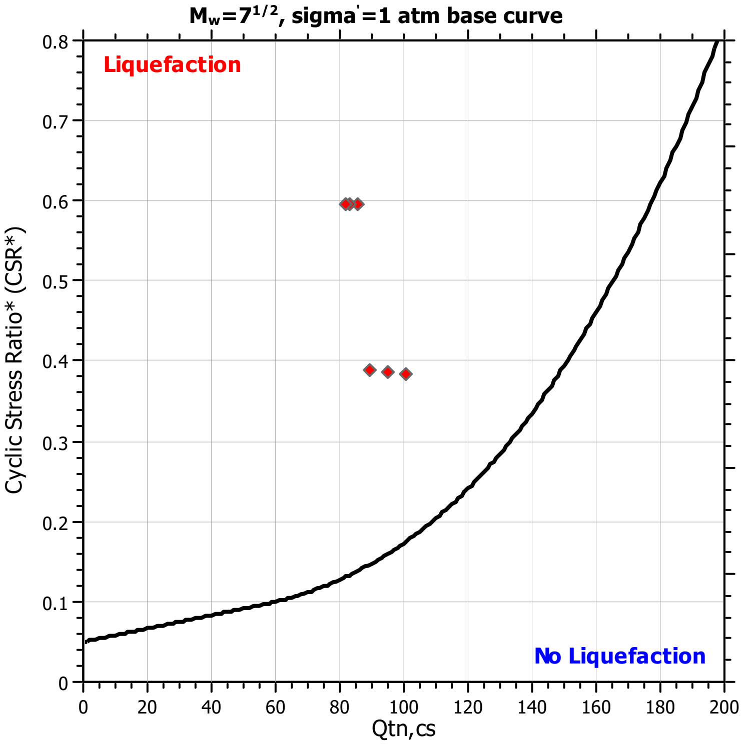
Project title : Mineral Processing Facility **Location : Calipatria, CA**

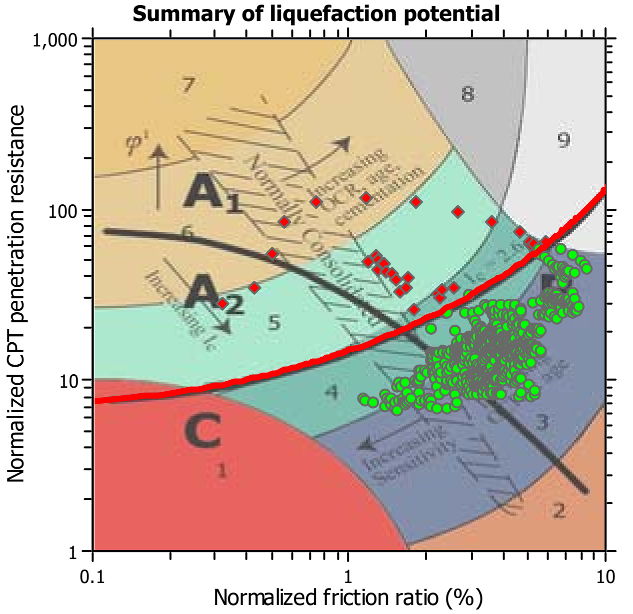
CPT file : CPT-02

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	8.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	8.00 ft	Fill height:	N/A		
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth applied:	No
Earthquake magnitude M_w:	7.00	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	Limit depth:	N/A
Peak ground acceleration:	0.55	Unit weight calculation:	Based on SBT	K_σ applied:	Yes	MSF method:	Method based

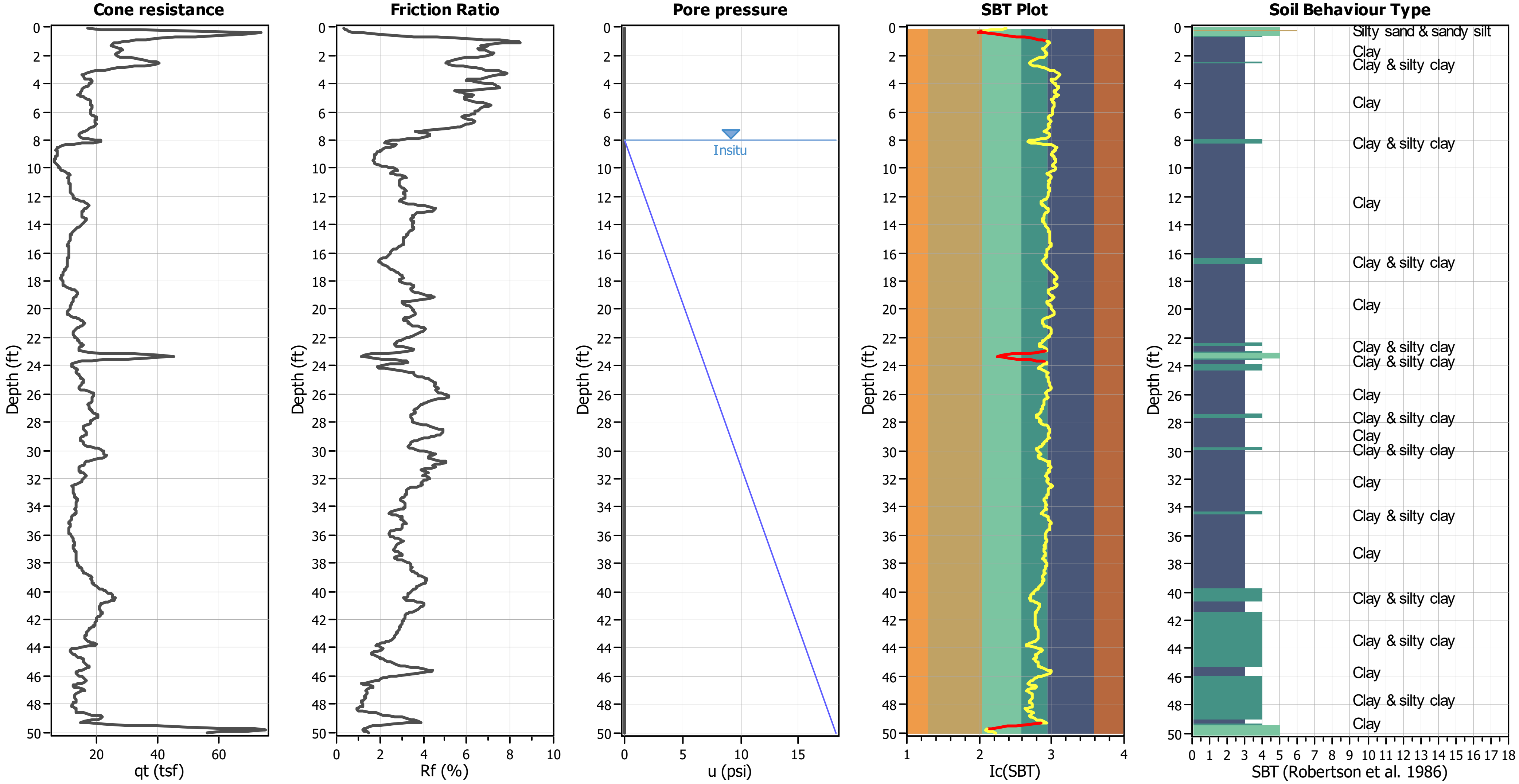






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



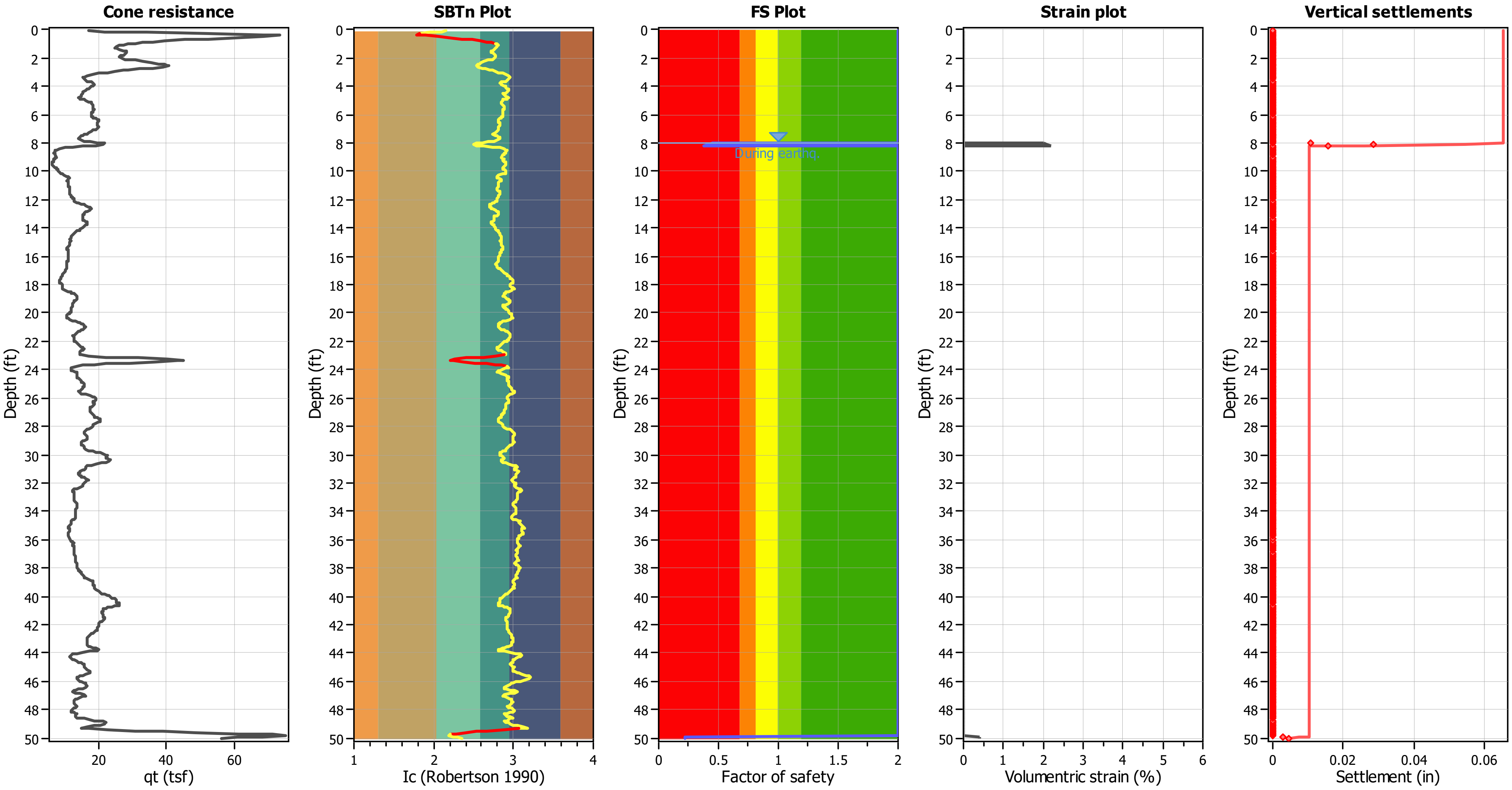
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	8.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	8.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

- 🟥 1. Sensitive fine grained
- 🟫 2. Organic material
- 🟦 3. Clay to silty clay
- 🟩 4. Clayey silt to silty
- 🟩 5. Silty sand to sandy silt
- 🟫 6. Clean sand to silty sand
- 🟧 7. Gravely sand to sand
- ⬛ 8. Very stiff sand to
- ⬜ 9. Very stiff fine grained

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

:: Post-earthquake settlement due to soil liquefaction ::

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
8.02	100.48	0.45	2.01	0.86	0.01	8.13	94.88	0.41	2.10	0.86	0.03
8.19	89.16	0.38	2.21	0.86	0.02	8.24	84.52	2.00	0.00	0.86	0.00
8.28	81.83	2.00	0.00	0.86	0.00	8.34	78.54	2.00	0.00	0.86	0.00
8.40	73.04	2.00	0.00	0.86	0.00	8.51	68.33	2.00	0.00	0.86	0.00
8.55	63.93	2.00	0.00	0.86	0.00	8.66	62.29	2.00	0.00	0.85	0.00
8.72	61.01	2.00	0.00	0.85	0.00	8.77	60.76	2.00	0.00	0.85	0.00
8.82	60.48	2.00	0.00	0.85	0.00	8.86	59.60	2.00	0.00	0.85	0.00
9.04	58.78	2.00	0.00	0.85	0.00	9.09	58.10	2.00	0.00	0.85	0.00
9.13	57.68	2.00	0.00	0.85	0.00	9.18	57.08	2.00	0.00	0.84	0.00
9.24	56.36	2.00	0.00	0.84	0.00	9.31	55.81	2.00	0.00	0.84	0.00
9.35	55.42	2.00	0.00	0.84	0.00	9.40	54.96	2.00	0.00	0.84	0.00
9.46	54.69	2.00	0.00	0.84	0.00	9.52	55.25	2.00	0.00	0.84	0.00
9.66	56.72	2.00	0.00	0.84	0.00	9.71	59.04	2.00	0.00	0.84	0.00
9.76	61.32	2.00	0.00	0.83	0.00	9.83	63.75	2.00	0.00	0.83	0.00
9.88	66.11	2.00	0.00	0.83	0.00	9.93	68.39	2.00	0.00	0.83	0.00
9.98	70.86	2.00	0.00	0.83	0.00	10.05	73.39	2.00	0.00	0.83	0.00
10.14	75.35	2.00	0.00	0.83	0.00	10.20	75.31	2.00	0.00	0.83	0.00
10.25	75.87	2.00	0.00	0.83	0.00	10.36	77.11	2.00	0.00	0.82	0.00
10.41	79.99	2.00	0.00	0.82	0.00	10.45	82.42	2.00	0.00	0.82	0.00
10.52	84.77	2.00	0.00	0.82	0.00	10.59	86.38	2.00	0.00	0.82	0.00
10.63	86.74	2.00	0.00	0.82	0.00	10.73	85.85	2.00	0.00	0.82	0.00
10.77	84.94	2.00	0.00	0.82	0.00	10.86	84.19	2.00	0.00	0.82	0.00
10.93	84.10	2.00	0.00	0.81	0.00	11.04	83.71	2.00	0.00	0.81	0.00
11.08	83.86	2.00	0.00	0.81	0.00	11.13	83.97	2.00	0.00	0.81	0.00
11.18	84.63	2.00	0.00	0.81	0.00	11.23	85.10	2.00	0.00	0.81	0.00
11.29	85.68	2.00	0.00	0.81	0.00	11.39	86.53	2.00	0.00	0.81	0.00
11.44	87.61	2.00	0.00	0.81	0.00	11.49	88.49	2.00	0.00	0.81	0.00
11.56	88.46	2.00	0.00	0.80	0.00	11.62	88.10	2.00	0.00	0.80	0.00
11.71	88.14	2.00	0.00	0.80	0.00	11.77	89.34	2.00	0.00	0.80	0.00
11.84	90.56	2.00	0.00	0.80	0.00	11.92	91.31	2.00	0.00	0.80	0.00
11.97	91.37	2.00	0.00	0.80	0.00	12.08	91.44	2.00	0.00	0.80	0.00
12.15	91.65	2.00	0.00	0.79	0.00	12.19	92.02	2.00	0.00	0.79	0.00
12.24	92.43	2.00	0.00	0.79	0.00	12.31	93.46	2.00	0.00	0.79	0.00
12.37	96.34	2.00	0.00	0.79	0.00	12.46	100.63	2.00	0.00	0.79	0.00
12.52	105.42	2.00	0.00	0.79	0.00	12.56	110.26	2.00	0.00	0.79	0.00
12.63	114.71	2.00	0.00	0.79	0.00	12.68	119.09	2.00	0.00	0.79	0.00
12.78	121.71	2.00	0.00	0.78	0.00	12.84	122.65	2.00	0.00	0.78	0.00
12.89	121.93	2.00	0.00	0.78	0.00	12.94	120.21	2.00	0.00	0.78	0.00
13.03	118.15	2.00	0.00	0.78	0.00	13.10	115.07	2.00	0.00	0.78	0.00
13.16	111.83	2.00	0.00	0.78	0.00	13.20	107.27	2.00	0.00	0.78	0.00
13.34	105.16	2.00	0.00	0.77	0.00	13.40	104.27	2.00	0.00	0.77	0.00
13.47	105.54	2.00	0.00	0.77	0.00	13.52	105.58	2.00	0.00	0.77	0.00
13.56	105.35	2.00	0.00	0.77	0.00	13.60	105.31	2.00	0.00	0.77	0.00
13.66	105.95	2.00	0.00	0.77	0.00	13.75	106.38	2.00	0.00	0.77	0.00
13.81	106.28	2.00	0.00	0.77	0.00	13.87	105.44	2.00	0.00	0.76	0.00
13.92	104.27	2.00	0.00	0.76	0.00	14.02	103.09	2.00	0.00	0.76	0.00
14.07	101.79	2.00	0.00	0.76	0.00	14.14	100.84	2.00	0.00	0.76	0.00
14.18	99.91	2.00	0.00	0.76	0.00	14.28	98.29	2.00	0.00	0.76	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
14.35	96.35	2.00	0.00	0.76	0.00	14.40	94.54	2.00	0.00	0.76	0.00
14.45	93.27	2.00	0.00	0.76	0.00	14.55	92.18	2.00	0.00	0.75	0.00
14.61	90.99	2.00	0.00	0.75	0.00	14.67	90.05	2.00	0.00	0.75	0.00
14.71	89.10	2.00	0.00	0.75	0.00	14.82	88.31	2.00	0.00	0.75	0.00
14.88	87.66	2.00	0.00	0.75	0.00	14.92	87.17	2.00	0.00	0.75	0.00
14.98	86.59	2.00	0.00	0.75	0.00	15.07	85.99	2.00	0.00	0.74	0.00
15.12	85.53	2.00	0.00	0.74	0.00	15.25	85.17	2.00	0.00	0.74	0.00
15.29	84.88	2.00	0.00	0.74	0.00	15.35	84.43	2.00	0.00	0.74	0.00
15.41	83.74	2.00	0.00	0.74	0.00	15.47	82.98	2.00	0.00	0.74	0.00
15.51	82.22	2.00	0.00	0.74	0.00	15.56	81.01	2.00	0.00	0.74	0.00
15.68	79.90	2.00	0.00	0.73	0.00	15.73	78.88	2.00	0.00	0.73	0.00
15.78	78.31	2.00	0.00	0.73	0.00	15.84	77.29	2.00	0.00	0.73	0.00
15.95	76.41	2.00	0.00	0.73	0.00	16.00	75.82	2.00	0.00	0.73	0.00
16.04	75.50	2.00	0.00	0.73	0.00	16.11	74.97	2.00	0.00	0.73	0.00
16.15	74.37	2.00	0.00	0.73	0.00	16.22	73.93	2.00	0.00	0.73	0.00
16.31	72.60	2.00	0.00	0.72	0.00	16.35	70.03	2.00	0.00	0.72	0.00
16.40	67.51	2.00	0.00	0.72	0.00	16.53	66.31	2.00	0.00	0.72	0.00
16.62	66.89	2.00	0.00	0.72	0.00	16.67	67.75	2.00	0.00	0.72	0.00
16.75	68.29	2.00	0.00	0.72	0.00	16.82	69.38	2.00	0.00	0.71	0.00
16.91	70.53	2.00	0.00	0.71	0.00	17.00	71.70	2.00	0.00	0.71	0.00
17.05	72.05	2.00	0.00	0.71	0.00	17.10	71.99	2.00	0.00	0.71	0.00
17.18	72.10	2.00	0.00	0.71	0.00	17.21	72.52	2.00	0.00	0.71	0.00
17.27	73.15	2.00	0.00	0.71	0.00	17.36	73.81	2.00	0.00	0.71	0.00
17.42	74.46	2.00	0.00	0.70	0.00	17.48	74.85	2.00	0.00	0.70	0.00
17.54	74.85	2.00	0.00	0.70	0.00	17.63	74.63	2.00	0.00	0.70	0.00
17.68	74.30	2.00	0.00	0.70	0.00	17.75	73.88	2.00	0.00	0.70	0.00
17.80	73.49	2.00	0.00	0.70	0.00	17.89	73.27	2.00	0.00	0.70	0.00
17.94	73.51	2.00	0.00	0.70	0.00	18.00	74.38	2.00	0.00	0.69	0.00
18.06	76.26	2.00	0.00	0.69	0.00	18.17	78.14	2.00	0.00	0.69	0.00
18.21	79.76	2.00	0.00	0.69	0.00	18.28	80.89	2.00	0.00	0.69	0.00
18.33	82.39	2.00	0.00	0.69	0.00	18.38	84.17	2.00	0.00	0.69	0.00
18.48	85.83	2.00	0.00	0.69	0.00	18.55	87.11	2.00	0.00	0.69	0.00
18.60	88.48	2.00	0.00	0.68	0.00	18.64	90.53	2.00	0.00	0.68	0.00
18.74	92.55	2.00	0.00	0.68	0.00	18.80	94.72	2.00	0.00	0.68	0.00
18.85	96.63	2.00	0.00	0.68	0.00	18.91	99.05	2.00	0.00	0.68	0.00
19.01	101.20	2.00	0.00	0.68	0.00	19.07	102.85	2.00	0.00	0.68	0.00
19.13	103.31	2.00	0.00	0.68	0.00	19.17	102.47	2.00	0.00	0.68	0.00
19.27	99.61	2.00	0.00	0.67	0.00	19.33	93.74	2.00	0.00	0.67	0.00
19.39	87.54	2.00	0.00	0.67	0.00	19.43	82.91	2.00	0.00	0.67	0.00
19.50	82.33	2.00	0.00	0.67	0.00	19.60	82.80	2.00	0.00	0.67	0.00
19.66	83.30	2.00	0.00	0.67	0.00	19.70	84.01	2.00	0.00	0.67	0.00
19.77	85.28	2.00	0.00	0.66	0.00	19.87	86.37	2.00	0.00	0.66	0.00
19.92	86.84	2.00	0.00	0.66	0.00	19.96	86.35	2.00	0.00	0.66	0.00
20.05	85.69	2.00	0.00	0.66	0.00	20.10	84.95	2.00	0.00	0.66	0.00
20.15	84.60	2.00	0.00	0.66	0.00	20.22	84.43	2.00	0.00	0.66	0.00
20.32	84.41	2.00	0.00	0.66	0.00	20.36	85.04	2.00	0.00	0.65	0.00
20.46	85.82	2.00	0.00	0.65	0.00	20.52	86.27	2.00	0.00	0.65	0.00
20.58	86.31	2.00	0.00	0.65	0.00	20.63	86.45	2.00	0.00	0.65	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
20.67	87.46	2.00	0.00	0.65	0.00	20.76	88.95	2.00	0.00	0.65	0.00
20.82	91.12	2.00	0.00	0.65	0.00	20.87	93.03	2.00	0.00	0.65	0.00
20.98	94.12	2.00	0.00	0.64	0.00	21.02	94.42	2.00	0.00	0.64	0.00
21.07	94.69	2.00	0.00	0.64	0.00	21.18	95.32	2.00	0.00	0.64	0.00
21.23	96.61	2.00	0.00	0.64	0.00	21.29	97.50	2.00	0.00	0.64	0.00
21.34	97.76	2.00	0.00	0.64	0.00	21.43	96.76	2.00	0.00	0.64	0.00
21.49	94.96	2.00	0.00	0.64	0.00	21.60	93.01	2.00	0.00	0.63	0.00
21.65	91.47	2.00	0.00	0.63	0.00	21.75	90.17	2.00	0.00	0.63	0.00
21.81	88.85	2.00	0.00	0.63	0.00	21.86	87.74	2.00	0.00	0.63	0.00
21.91	86.96	2.00	0.00	0.63	0.00	21.97	86.27	2.00	0.00	0.63	0.00
22.02	85.65	2.00	0.00	0.63	0.00	22.13	85.09	2.00	0.00	0.62	0.00
22.18	83.37	2.00	0.00	0.62	0.00	22.27	82.75	2.00	0.00	0.62	0.00
22.34	81.89	2.00	0.00	0.62	0.00	22.40	82.42	2.00	0.00	0.62	0.00
22.44	82.06	2.00	0.00	0.62	0.00	22.49	82.25	2.00	0.00	0.62	0.00
22.53	82.92	2.00	0.00	0.62	0.00	22.60	83.60	2.00	0.00	0.62	0.00
22.64	86.33	2.00	0.00	0.62	0.00	22.78	89.01	2.00	0.00	0.61	0.00
22.84	91.22	2.00	0.00	0.61	0.00	22.89	90.96	2.00	0.00	0.61	0.00
22.93	90.48	2.00	0.00	0.61	0.00	22.99	90.39	2.00	0.00	0.61	0.00
23.03	89.23	2.00	0.00	0.61	0.00	23.12	86.03	2.00	0.00	0.61	0.00
23.17	81.58	2.00	0.00	0.61	0.00	23.26	80.71	2.00	0.00	0.61	0.00
23.31	82.23	2.00	0.00	0.60	0.00	23.37	84.60	2.00	0.00	0.60	0.00
23.43	87.47	2.00	0.00	0.60	0.00	23.52	91.09	2.00	0.00	0.60	0.00
23.57	92.93	2.00	0.00	0.60	0.00	23.64	92.90	2.00	0.00	0.60	0.00
23.70	89.15	2.00	0.00	0.60	0.00	23.79	84.58	2.00	0.00	0.60	0.00
23.84	77.88	2.00	0.00	0.60	0.00	23.89	71.86	2.00	0.00	0.60	0.00
24.01	66.69	2.00	0.00	0.59	0.00	24.05	63.75	2.00	0.00	0.59	0.00
24.10	64.58	2.00	0.00	0.59	0.00	24.15	66.01	2.00	0.00	0.59	0.00
24.22	70.63	2.00	0.00	0.59	0.00	24.32	76.35	2.00	0.00	0.59	0.00
24.41	82.31	2.00	0.00	0.59	0.00	24.48	85.49	2.00	0.00	0.59	0.00
24.54	87.39	2.00	0.00	0.58	0.00	24.59	88.43	2.00	0.00	0.58	0.00
24.63	89.36	2.00	0.00	0.58	0.00	24.74	90.78	2.00	0.00	0.58	0.00
24.80	92.91	2.00	0.00	0.58	0.00	24.85	95.44	2.00	0.00	0.58	0.00
24.89	97.67	2.00	0.00	0.58	0.00	24.95	99.72	2.00	0.00	0.58	0.00
25.02	101.06	2.00	0.00	0.58	0.00	25.07	102.35	2.00	0.00	0.58	0.00
25.17	103.29	2.00	0.00	0.57	0.00	25.21	102.95	2.00	0.00	0.57	0.00
25.33	102.17	2.00	0.00	0.57	0.00	25.38	100.75	2.00	0.00	0.57	0.00
25.43	100.08	2.00	0.00	0.57	0.00	25.48	99.75	2.00	0.00	0.57	0.00
25.54	99.36	2.00	0.00	0.57	0.00	25.60	100.41	2.00	0.00	0.57	0.00
25.69	101.34	2.00	0.00	0.56	0.00	25.74	105.03	2.00	0.00	0.56	0.00
25.85	108.60	2.00	0.00	0.56	0.00	25.91	112.27	2.00	0.00	0.56	0.00
25.95	114.50	2.00	0.00	0.56	0.00	26.00	116.39	2.00	0.00	0.56	0.00
26.08	117.94	2.00	0.00	0.56	0.00	26.13	118.50	2.00	0.00	0.56	0.00
26.22	117.79	2.00	0.00	0.56	0.00	26.26	116.33	2.00	0.00	0.55	0.00
26.32	114.49	2.00	0.00	0.55	0.00	26.39	111.76	2.00	0.00	0.55	0.00
26.48	108.75	2.00	0.00	0.55	0.00	26.53	105.44	2.00	0.00	0.55	0.00
26.63	103.02	2.00	0.00	0.55	0.00	26.70	100.99	2.00	0.00	0.55	0.00
26.75	99.68	2.00	0.00	0.55	0.00	26.80	98.57	2.00	0.00	0.55	0.00
26.84	97.77	2.00	0.00	0.55	0.00	26.92	97.29	2.00	0.00	0.54	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
27.01	97.05	2.00	0.00	0.54	0.00	27.06	96.72	2.00	0.00	0.54	0.00
27.12	96.48	2.00	0.00	0.54	0.00	27.19	96.51	2.00	0.00	0.54	0.00
27.23	97.27	2.00	0.00	0.54	0.00	27.33	97.88	2.00	0.00	0.54	0.00
27.39	98.24	2.00	0.00	0.54	0.00	27.44	98.11	2.00	0.00	0.53	0.00
27.50	98.00	2.00	0.00	0.53	0.00	27.59	98.00	2.00	0.00	0.53	0.00
27.64	98.18	2.00	0.00	0.53	0.00	27.70	97.45	2.00	0.00	0.53	0.00
27.81	96.31	2.00	0.00	0.53	0.00	27.85	94.87	2.00	0.00	0.53	0.00
27.91	94.29	2.00	0.00	0.53	0.00	27.96	94.08	2.00	0.00	0.53	0.00
28.03	94.52	2.00	0.00	0.52	0.00	28.12	95.42	2.00	0.00	0.52	0.00
28.16	96.93	2.00	0.00	0.52	0.00	28.22	97.90	2.00	0.00	0.52	0.00
28.28	98.27	2.00	0.00	0.52	0.00	28.38	99.60	2.00	0.00	0.52	0.00
28.48	101.34	2.00	0.00	0.52	0.00	28.53	103.22	2.00	0.00	0.52	0.00
28.61	104.37	2.00	0.00	0.52	0.00	28.70	105.05	2.00	0.00	0.51	0.00
28.82	105.13	2.00	0.00	0.51	0.00	28.88	103.97	2.00	0.00	0.51	0.00
28.92	101.78	2.00	0.00	0.51	0.00	28.98	99.28	2.00	0.00	0.51	0.00
29.03	96.52	2.00	0.00	0.51	0.00	29.07	93.76	2.00	0.00	0.51	0.00
29.17	91.27	2.00	0.00	0.51	0.00	29.23	89.14	2.00	0.00	0.50	0.00
29.29	87.86	2.00	0.00	0.50	0.00	29.34	87.11	2.00	0.00	0.50	0.00
29.43	86.70	2.00	0.00	0.50	0.00	29.49	86.63	2.00	0.00	0.50	0.00
29.54	86.54	2.00	0.00	0.50	0.00	29.60	86.76	2.00	0.00	0.50	0.00
29.69	87.46	2.00	0.00	0.50	0.00	29.74	89.71	2.00	0.00	0.50	0.00
29.83	92.65	2.00	0.00	0.49	0.00	29.88	96.85	2.00	0.00	0.49	0.00
29.96	100.38	2.00	0.00	0.49	0.00	30.00	103.97	2.00	0.00	0.49	0.00
30.10	107.32	2.00	0.00	0.49	0.00	30.15	110.78	2.00	0.00	0.49	0.00
30.22	113.34	2.00	0.00	0.49	0.00	30.26	114.39	2.00	0.00	0.49	0.00
30.36	113.71	2.00	0.00	0.49	0.00	30.41	112.25	2.00	0.00	0.48	0.00
30.51	110.39	2.00	0.00	0.48	0.00	30.57	108.85	2.00	0.00	0.48	0.00
30.61	107.13	2.00	0.00	0.48	0.00	30.71	105.71	2.00	0.00	0.48	0.00
30.75	104.60	2.00	0.00	0.48	0.00	30.80	103.90	2.00	0.00	0.48	0.00
30.85	102.46	2.00	0.00	0.48	0.00	30.93	100.46	2.00	0.00	0.48	0.00
30.98	97.89	2.00	0.00	0.48	0.00	31.07	95.67	2.00	0.00	0.47	0.00
31.13	94.19	2.00	0.00	0.47	0.00	31.19	93.46	2.00	0.00	0.47	0.00
31.24	90.51	2.00	0.00	0.47	0.00	31.33	88.18	2.00	0.00	0.47	0.00
31.40	86.23	2.00	0.00	0.47	0.00	31.45	87.70	2.00	0.00	0.47	0.00
31.51	89.39	2.00	0.00	0.47	0.00	31.60	90.95	2.00	0.00	0.46	0.00
31.64	92.28	2.00	0.00	0.46	0.00	31.73	92.68	2.00	0.00	0.46	0.00
31.77	93.01	2.00	0.00	0.46	0.00	31.84	93.32	2.00	0.00	0.46	0.00
31.93	93.42	2.00	0.00	0.46	0.00	31.98	93.23	2.00	0.00	0.46	0.00
32.03	92.47	2.00	0.00	0.46	0.00	32.10	91.26	2.00	0.00	0.46	0.00
32.15	89.59	2.00	0.00	0.46	0.00	32.24	87.83	2.00	0.00	0.45	0.00
32.29	85.62	2.00	0.00	0.45	0.00	32.41	83.37	2.00	0.00	0.45	0.00
32.46	81.23	2.00	0.00	0.45	0.00	32.51	79.87	2.00	0.00	0.45	0.00
32.56	78.72	2.00	0.00	0.45	0.00	32.62	77.37	2.00	0.00	0.45	0.00
32.68	75.89	2.00	0.00	0.45	0.00	32.77	74.66	2.00	0.00	0.44	0.00
32.82	74.10	2.00	0.00	0.44	0.00	32.88	73.88	2.00	0.00	0.44	0.00
32.95	73.85	2.00	0.00	0.44	0.00	33.04	73.95	2.00	0.00	0.44	0.00
33.09	74.18	2.00	0.00	0.44	0.00	33.14	74.05	2.00	0.00	0.44	0.00
33.21	73.62	2.00	0.00	0.44	0.00	33.31	73.18	2.00	0.00	0.44	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
33.36	73.01	2.00	0.00	0.43	0.00	33.41	73.10	2.00	0.00	0.43	0.00
33.47	73.37	2.00	0.00	0.43	0.00	33.57	73.74	2.00	0.00	0.43	0.00
33.62	74.34	2.00	0.00	0.43	0.00	33.77	74.63	2.00	0.00	0.43	0.00
33.83	74.77	2.00	0.00	0.43	0.00	33.88	74.57	2.00	0.00	0.43	0.00
33.92	74.38	2.00	0.00	0.43	0.00	33.98	74.21	2.00	0.00	0.42	0.00
34.04	73.99	2.00	0.00	0.42	0.00	34.10	73.61	2.00	0.00	0.42	0.00
34.15	73.27	2.00	0.00	0.42	0.00	34.20	71.86	2.00	0.00	0.42	0.00
34.30	69.44	2.00	0.00	0.42	0.00	34.36	67.30	2.00	0.00	0.42	0.00
34.46	66.43	2.00	0.00	0.42	0.00	34.50	66.84	2.00	0.00	0.42	0.00
34.55	67.19	2.00	0.00	0.41	0.00	34.63	67.70	2.00	0.00	0.41	0.00
34.68	68.36	2.00	0.00	0.41	0.00	34.73	68.87	2.00	0.00	0.41	0.00
34.82	69.04	2.00	0.00	0.41	0.00	34.89	68.86	2.00	0.00	0.41	0.00
34.94	68.40	2.00	0.00	0.41	0.00	34.98	68.21	2.00	0.00	0.41	0.00
35.09	68.21	2.00	0.00	0.41	0.00	35.16	68.37	2.00	0.00	0.40	0.00
35.21	68.21	2.00	0.00	0.40	0.00	35.25	67.63	2.00	0.00	0.40	0.00
35.35	67.14	2.00	0.00	0.40	0.00	35.41	66.93	2.00	0.00	0.40	0.00
35.47	66.72	2.00	0.00	0.40	0.00	35.56	65.97	2.00	0.00	0.40	0.00
35.61	65.09	2.00	0.00	0.40	0.00	35.65	64.13	2.00	0.00	0.40	0.00
35.71	63.18	2.00	0.00	0.39	0.00	35.76	62.18	2.00	0.00	0.39	0.00
35.87	61.52	2.00	0.00	0.39	0.00	35.92	61.27	2.00	0.00	0.39	0.00
35.96	61.97	2.00	0.00	0.39	0.00	36.09	63.18	2.00	0.00	0.39	0.00
36.13	65.12	2.00	0.00	0.39	0.00	36.23	66.63	2.00	0.00	0.39	0.00
36.28	67.78	2.00	0.00	0.39	0.00	36.35	68.76	2.00	0.00	0.38	0.00
36.40	69.53	2.00	0.00	0.38	0.00	36.44	70.16	2.00	0.00	0.38	0.00
36.49	70.20	2.00	0.00	0.38	0.00	36.59	69.67	2.00	0.00	0.38	0.00
36.65	68.74	2.00	0.00	0.38	0.00	36.71	67.76	2.00	0.00	0.38	0.00
36.75	67.02	2.00	0.00	0.38	0.00	36.92	66.45	2.00	0.00	0.37	0.00
36.97	66.12	2.00	0.00	0.37	0.00	37.02	66.13	2.00	0.00	0.37	0.00
37.08	66.48	2.00	0.00	0.37	0.00	37.12	67.25	2.00	0.00	0.37	0.00
37.19	68.55	2.00	0.00	0.37	0.00	37.28	69.82	2.00	0.00	0.37	0.00
37.33	71.12	2.00	0.00	0.37	0.00	37.46	70.67	2.00	0.00	0.37	0.00
37.50	69.33	2.00	0.00	0.36	0.00	37.59	67.64	2.00	0.00	0.36	0.00
37.65	67.58	2.00	0.00	0.36	0.00	37.73	68.61	2.00	0.00	0.36	0.00
37.77	69.74	2.00	0.00	0.36	0.00	37.81	71.16	2.00	0.00	0.36	0.00
37.89	72.75	2.00	0.00	0.36	0.00	37.94	74.19	2.00	0.00	0.36	0.00
38.02	74.88	2.00	0.00	0.36	0.00	38.11	75.24	2.00	0.00	0.35	0.00
38.16	75.62	2.00	0.00	0.35	0.00	38.20	76.42	2.00	0.00	0.35	0.00
38.29	77.12	2.00	0.00	0.35	0.00	38.33	77.88	2.00	0.00	0.35	0.00
38.43	78.27	2.00	0.00	0.35	0.00	38.46	78.93	2.00	0.00	0.35	0.00
38.56	79.48	2.00	0.00	0.35	0.00	38.60	80.28	2.00	0.00	0.35	0.00
38.69	81.62	2.00	0.00	0.34	0.00	38.73	83.44	2.00	0.00	0.34	0.00
38.82	85.41	2.00	0.00	0.34	0.00	38.87	86.99	2.00	0.00	0.34	0.00
38.92	89.00	2.00	0.00	0.34	0.00	39.04	90.58	2.00	0.00	0.34	0.00
39.08	91.82	2.00	0.00	0.34	0.00	39.13	92.08	2.00	0.00	0.34	0.00
39.18	92.09	2.00	0.00	0.34	0.00	39.26	92.00	2.00	0.00	0.33	0.00
39.35	91.77	2.00	0.00	0.33	0.00	39.40	91.55	2.00	0.00	0.33	0.00
39.45	91.26	2.00	0.00	0.33	0.00	39.56	90.99	2.00	0.00	0.33	0.00
39.62	90.81	2.00	0.00	0.33	0.00	39.66	90.63	2.00	0.00	0.33	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
39.71	90.84	2.00	0.00	0.33	0.00	39.82	91.40	2.00	0.00	0.33	0.00
39.88	92.05	2.00	0.00	0.32	0.00	39.93	92.36	2.00	0.00	0.32	0.00
39.97	92.57	2.00	0.00	0.32	0.00	40.08	92.78	2.00	0.00	0.32	0.00
40.14	93.06	2.00	0.00	0.32	0.00	40.19	93.19	2.00	0.00	0.32	0.00
40.24	93.16	2.00	0.00	0.32	0.00	40.31	93.17	2.00	0.00	0.32	0.00
40.41	92.90	2.00	0.00	0.32	0.00	40.46	91.16	2.00	0.00	0.31	0.00
40.50	91.75	2.00	0.00	0.31	0.00	40.63	92.96	2.00	0.00	0.31	0.00
40.66	96.04	2.00	0.00	0.31	0.00	40.77	96.62	2.00	0.00	0.31	0.00
40.81	96.66	2.00	0.00	0.31	0.00	40.86	96.22	2.00	0.00	0.31	0.00
40.90	95.58	2.00	0.00	0.31	0.00	40.98	94.78	2.00	0.00	0.31	0.00
41.03	93.95	2.00	0.00	0.30	0.00	41.09	92.73	2.00	0.00	0.30	0.00
41.20	91.91	2.00	0.00	0.30	0.00	41.25	91.33	2.00	0.00	0.30	0.00
41.30	91.28	2.00	0.00	0.30	0.00	41.34	90.24	2.00	0.00	0.30	0.00
41.46	89.15	2.00	0.00	0.30	0.00	41.51	87.89	2.00	0.00	0.30	0.00
41.56	87.04	2.00	0.00	0.30	0.00	41.61	86.05	2.00	0.00	0.29	0.00
41.71	84.68	2.00	0.00	0.29	0.00	41.78	83.63	2.00	0.00	0.29	0.00
41.83	82.73	2.00	0.00	0.29	0.00	41.87	82.28	2.00	0.00	0.29	0.00
41.97	81.87	2.00	0.00	0.29	0.00	42.04	81.52	2.00	0.00	0.29	0.00
42.09	81.33	2.00	0.00	0.29	0.00	42.14	80.85	2.00	0.00	0.29	0.00
42.23	80.18	2.00	0.00	0.28	0.00	42.34	79.49	2.00	0.00	0.28	0.00
42.40	78.95	2.00	0.00	0.28	0.00	42.45	78.34	2.00	0.00	0.28	0.00
42.50	77.51	2.00	0.00	0.28	0.00	42.56	76.63	2.00	0.00	0.28	0.00
42.62	75.90	2.00	0.00	0.28	0.00	42.67	75.00	2.00	0.00	0.28	0.00
42.77	73.93	2.00	0.00	0.28	0.00	42.82	72.72	2.00	0.00	0.27	0.00
42.89	71.98	2.00	0.00	0.27	0.00	42.93	71.45	2.00	0.00	0.27	0.00
43.03	71.09	2.00	0.00	0.27	0.00	43.09	70.66	2.00	0.00	0.27	0.00
43.15	70.25	2.00	0.00	0.27	0.00	43.20	69.95	2.00	0.00	0.27	0.00
43.25	69.82	2.00	0.00	0.27	0.00	43.36	69.59	2.00	0.00	0.27	0.00
43.42	69.05	2.00	0.00	0.26	0.00	43.51	68.25	2.00	0.00	0.26	0.00
43.56	67.47	2.00	0.00	0.26	0.00	43.64	66.96	2.00	0.00	0.26	0.00
43.69	66.60	2.00	0.00	0.26	0.00	43.73	65.92	2.00	0.00	0.26	0.00
43.79	64.95	2.00	0.00	0.26	0.00	43.84	63.72	2.00	0.00	0.26	0.00
43.91	62.61	2.00	0.00	0.26	0.00	43.99	60.74	2.00	0.00	0.25	0.00
44.08	58.71	2.00	0.00	0.25	0.00	44.11	56.33	2.00	0.00	0.25	0.00
44.21	54.47	2.00	0.00	0.25	0.00	44.26	52.57	2.00	0.00	0.25	0.00
44.32	51.23	2.00	0.00	0.25	0.00	44.37	50.66	2.00	0.00	0.25	0.00
44.47	51.25	2.00	0.00	0.25	0.00	44.51	52.62	2.00	0.00	0.25	0.00
44.56	55.37	2.00	0.00	0.24	0.00	44.65	57.57	2.00	0.00	0.24	0.00
44.71	59.47	2.00	0.00	0.24	0.00	44.76	60.38	2.00	0.00	0.24	0.00
44.82	61.87	2.00	0.00	0.24	0.00	44.91	63.31	2.00	0.00	0.24	0.00
44.96	64.44	2.00	0.00	0.24	0.00	45.02	65.53	2.00	0.00	0.24	0.00
45.08	67.74	2.00	0.00	0.24	0.00	45.22	70.41	2.00	0.00	0.23	0.00
45.26	73.23	2.00	0.00	0.23	0.00	45.31	75.74	2.00	0.00	0.23	0.00
45.35	78.43	2.00	0.00	0.23	0.00	45.45	80.38	2.00	0.00	0.23	0.00
45.50	81.22	2.00	0.00	0.23	0.00	45.58	80.59	2.00	0.00	0.23	0.00
45.66	79.19	2.00	0.00	0.23	0.00	45.70	77.63	2.00	0.00	0.23	0.00
45.75	75.22	2.00	0.00	0.22	0.00	45.84	72.24	2.00	0.00	0.22	0.00
45.88	68.69	2.00	0.00	0.22	0.00	45.97	65.99	2.00	0.00	0.22	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
46.03	64.07	2.00	0.00	0.22	0.00	46.09	63.12	2.00	0.00	0.22	0.00
46.14	62.16	2.00	0.00	0.22	0.00	46.24	61.31	2.00	0.00	0.22	0.00
46.29	60.27	2.00	0.00	0.22	0.00	46.35	59.15	2.00	0.00	0.21	0.00
46.42	54.63	2.00	0.00	0.21	0.00	46.50	50.27	2.00	0.00	0.21	0.00
46.57	46.63	2.00	0.00	0.21	0.00	46.62	47.92	2.00	0.00	0.21	0.00
46.68	49.29	2.00	0.00	0.21	0.00	46.72	50.84	2.00	0.00	0.21	0.00
46.81	52.17	2.00	0.00	0.21	0.00	46.85	52.62	2.00	0.00	0.21	0.00
46.95	52.28	2.00	0.00	0.20	0.00	47.00	51.53	2.00	0.00	0.20	0.00
47.07	51.04	2.00	0.00	0.20	0.00	47.15	50.42	2.00	0.00	0.20	0.00
47.21	49.68	2.00	0.00	0.20	0.00	47.24	48.66	2.00	0.00	0.20	0.00
47.34	47.87	2.00	0.00	0.20	0.00	47.43	47.28	2.00	0.00	0.20	0.00
47.44	47.21	2.00	0.00	0.20	0.00	47.51	47.35	2.00	0.00	0.19	0.00
47.60	47.37	2.00	0.00	0.19	0.00	47.65	47.13	2.00	0.00	0.19	0.00
47.74	46.54	2.00	0.00	0.19	0.00	47.79	45.89	2.00	0.00	0.19	0.00
47.87	45.41	2.00	0.00	0.19	0.00	47.92	44.98	2.00	0.00	0.19	0.00
48.01	44.70	2.00	0.00	0.19	0.00	48.05	44.59	2.00	0.00	0.19	0.00
48.14	44.65	2.00	0.00	0.18	0.00	48.18	44.01	2.00	0.00	0.18	0.00
48.27	43.28	2.00	0.00	0.18	0.00	48.32	42.52	2.00	0.00	0.18	0.00
48.41	42.47	2.00	0.00	0.18	0.00	48.47	43.33	2.00	0.00	0.18	0.00
48.53	46.19	2.00	0.00	0.18	0.00	48.58	50.48	2.00	0.00	0.18	0.00
48.63	57.42	2.00	0.00	0.18	0.00	48.77	64.85	2.00	0.00	0.17	0.00
48.84	71.61	2.00	0.00	0.17	0.00	48.89	76.39	2.00	0.00	0.17	0.00
48.93	79.67	2.00	0.00	0.17	0.00	48.99	81.68	2.00	0.00	0.17	0.00
49.10	82.01	2.00	0.00	0.17	0.00	49.15	79.92	2.00	0.00	0.17	0.00
49.24	77.24	2.00	0.00	0.17	0.00	49.30	74.71	2.00	0.00	0.16	0.00
49.36	74.39	2.00	0.00	0.16	0.00	49.46	74.36	2.00	0.00	0.16	0.00
49.51	74.38	2.00	0.00	0.16	0.00	49.56	75.66	2.00	0.00	0.16	0.00
49.61	78.17	2.00	0.00	0.16	0.00	49.68	82.19	2.00	0.00	0.16	0.00
49.77	86.09	2.00	0.00	0.16	0.00	49.83	87.80	2.00	0.00	0.16	0.00
49.89	85.49	0.23	0.41	0.15	0.00	49.94	83.29	0.22	0.42	0.15	0.00
50.04	81.90	0.22	0.42	0.15	0.00						

Total estimated settlement: 0.07

Abbreviations

$Q_{tn,cs}$:	Equivalent clean sand normalized cone resistance
FS:	Factor of safety against liquefaction
e_v (%):	Post-liquefaction volumentric strain
DF:	e_v depth weighting factor
Settlement:	Calculated settlement

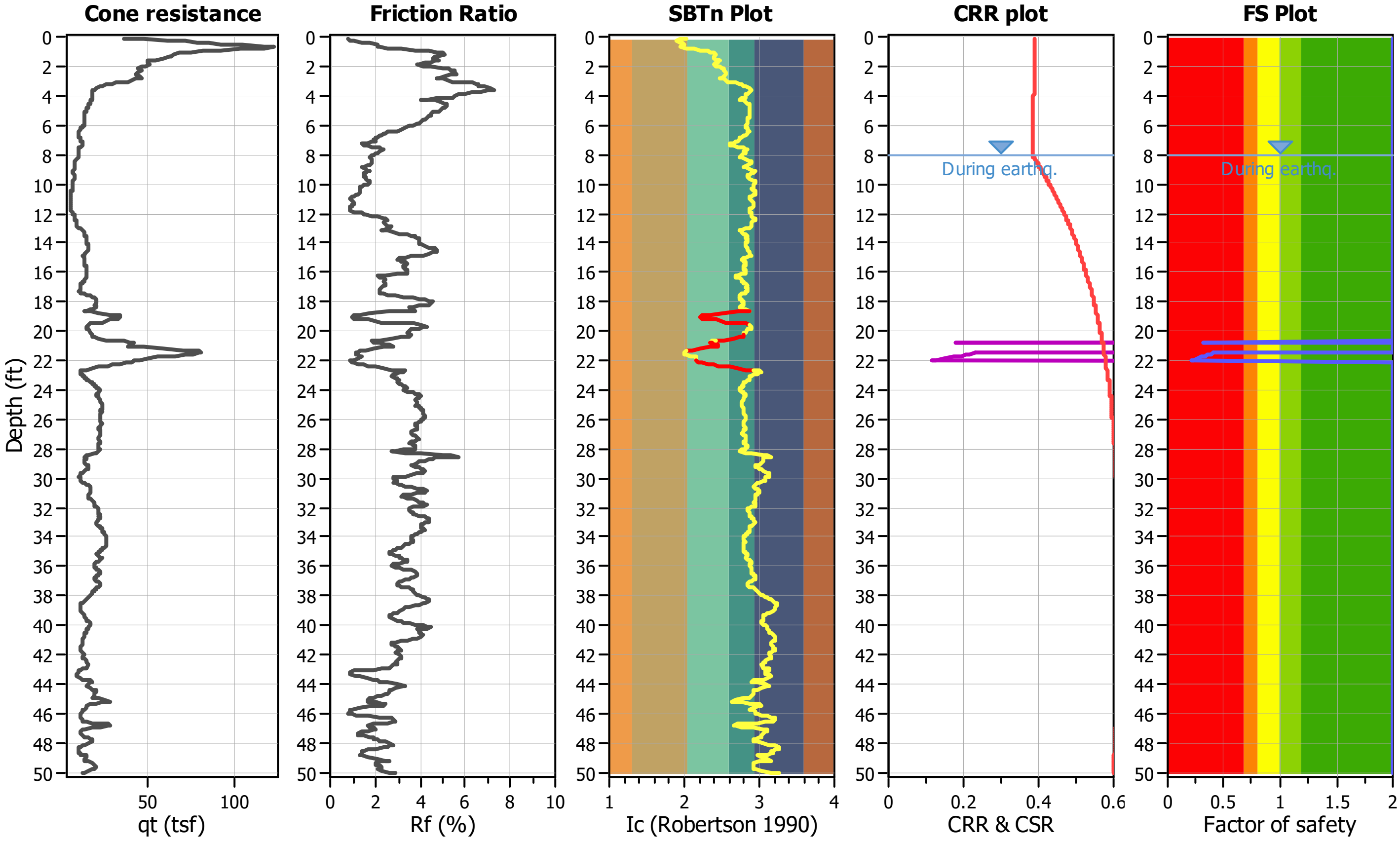
LIQUEFACTION ANALYSIS REPORT

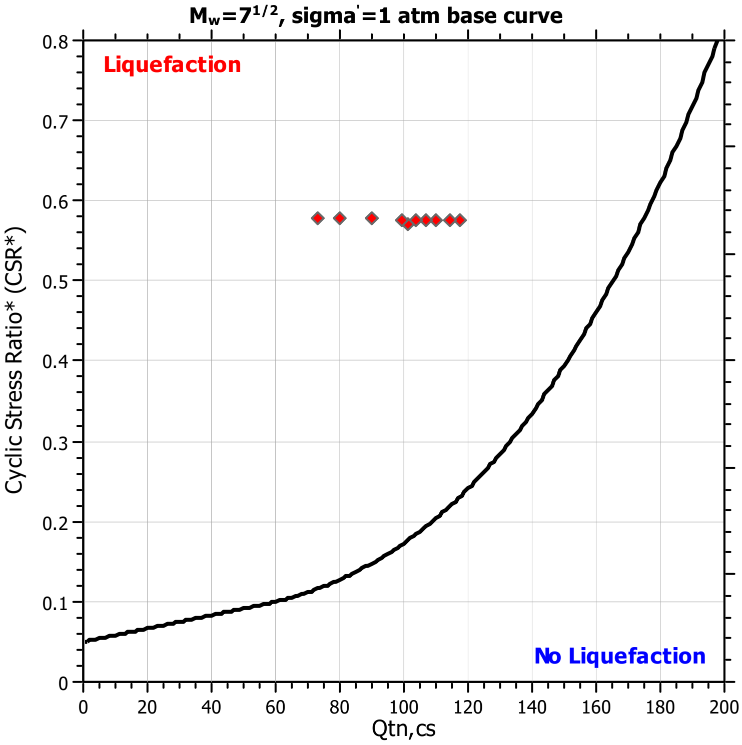
Project title : Mineral Processing Facility **Location : Calipatria, CA**

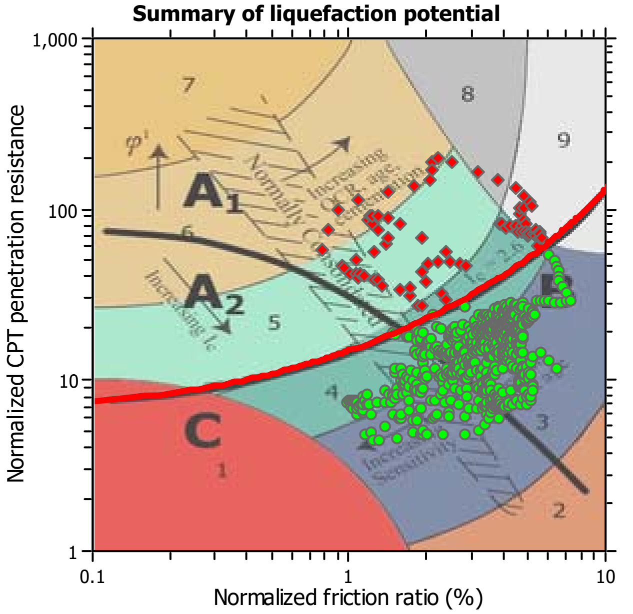
CPT file : CPT-03

Input parameters and analysis data

Analysis method:	NCEER (1998)	G.W.T. (in-situ):	8.00 ft	Use fill:	No	Clay like behavior applied:	Sands only
Fines correction method:	NCEER (1998)	G.W.T. (earthq.):	8.00 ft	Fill height:	N/A	Limit depth applied:	No
Points to test:	Based on Ic value	Average results interval:	3	Fill weight:	N/A	Limit depth:	N/A
Earthquake magnitude M_w:	7.00	Ic cut-off value:	2.60	Trans. detect. applied:	Yes	MSF method:	Method based
Peak ground acceleration:	0.55	Unit weight calculation:	Based on SBT	K_σ applied:	Yes		

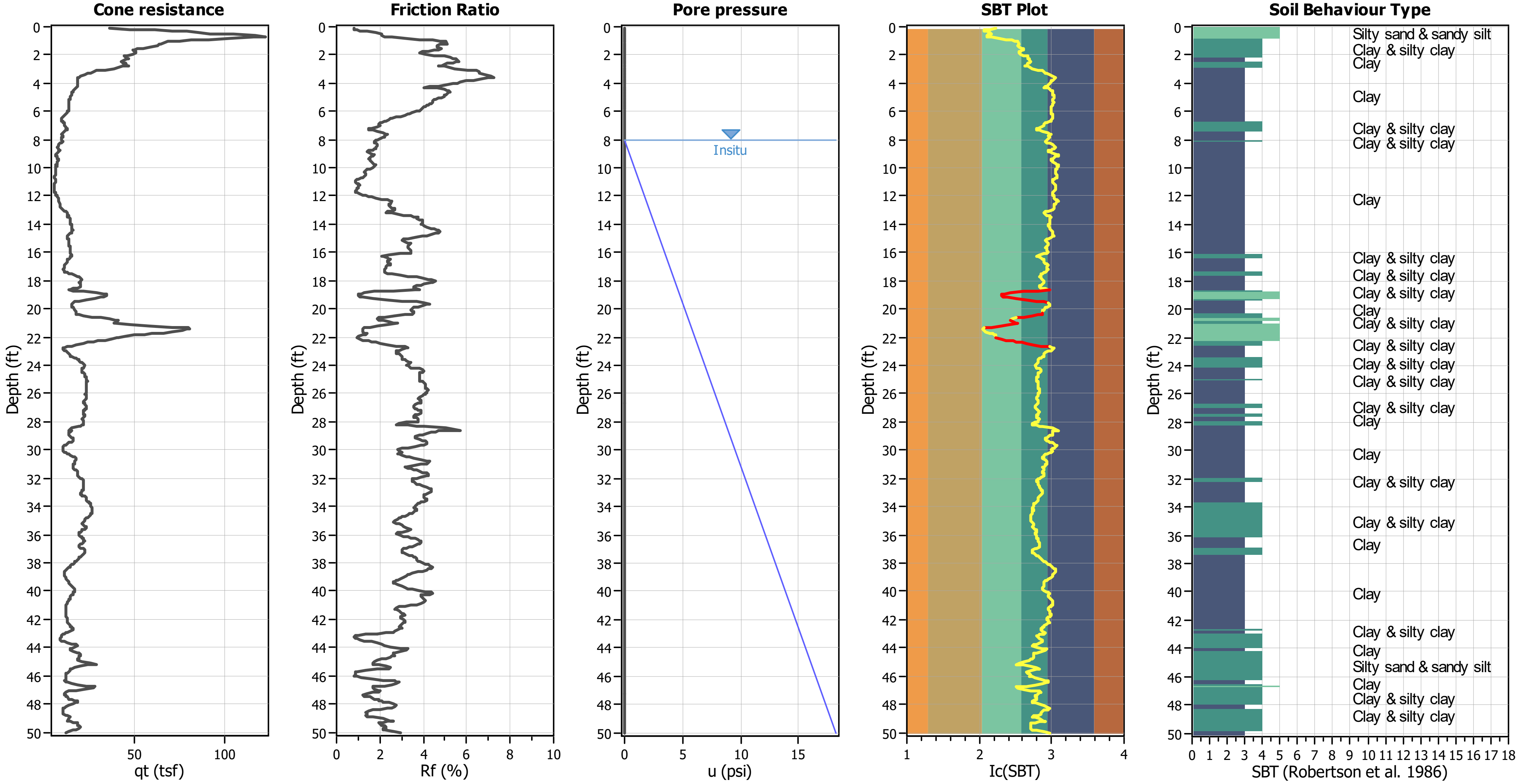






Zone A_1: Cyclic liquefaction likely depending on size and duration of cyclic loading
Zone A_2: Cyclic liquefaction and strength loss likely depending on loading and ground geometry
Zone B: Liquefaction and post-earthquake strength loss unlikely, check cyclic softening
Zone C: Cyclic liquefaction and strength loss possible depending on soil plasticity, brittleness/sensitivity, strain to peak undrained strength and ground geometry

CPT basic interpretation plots



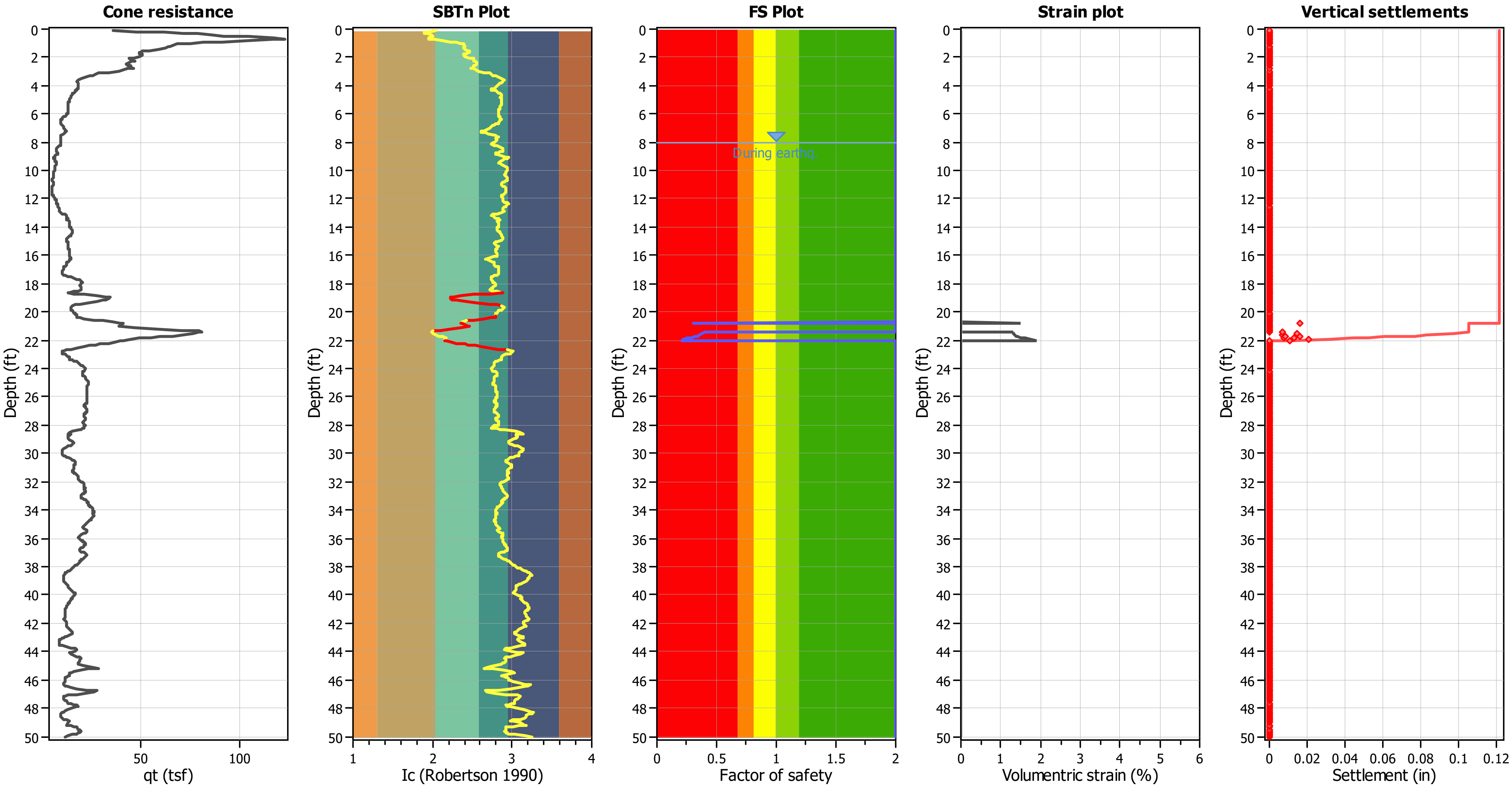
Input parameters and analysis data

Analysis method:	NCEER (1998)	Depth to water table (erthq.):	8.00 ft	Fill weight:	N/A
Fines correction method:	NCEER (1998)	Average results interval:	3	Transition detect. applied:	Yes
Points to test:	Based on Ic value	Ic cut-off value:	2.60	K_σ applied:	Yes
Earthquake magnitude M_w:	7.00	Unit weight calculation:	Based on SBT	Clay like behavior applied:	Sands only
Peak ground acceleration:	0.55	Use fill:	No	Limit depth applied:	No
Depth to water table (insitu):	8.00 ft	Fill height:	N/A	Limit depth:	N/A

SBT legend

🟥 1. Sensitive fine grained	🟩 4. Clayey silt to silty	🟧 7. Gravely sand to sand
🟫 2. Organic material	🟩 5. Silty sand to sandy silt	⬛ 8. Very stiff sand to
🟦 3. Clay to silty clay	🟫 6. Clean sand to silty sand	⬜ 9. Very stiff fine grained

Estimation of post-earthquake settlements



Abbreviations

q_t:	Total cone resistance (cone resistance q_c corrected for pore water effects)
I_c:	Soil Behaviour Type Index
FS:	Calculated Factor of Safety against liquefaction
Volumentric strain:	Post-liquefaction volumentric strain

:: Post-earthquake settlement due to soil liquefaction ::

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
8.01	64.45	2.00	0.00	0.86	0.00	8.05	63.62	2.00	0.00	0.86	0.00
8.11	62.83	2.00	0.00	0.86	0.00	8.16	62.26	2.00	0.00	0.86	0.00
8.22	61.90	2.00	0.00	0.86	0.00	8.27	61.08	2.00	0.00	0.86	0.00
8.37	59.65	2.00	0.00	0.86	0.00	8.47	58.01	2.00	0.00	0.86	0.00
8.53	57.29	2.00	0.00	0.86	0.00	8.63	57.26	2.00	0.00	0.85	0.00
8.67	57.17	2.00	0.00	0.85	0.00	8.72	56.52	2.00	0.00	0.85	0.00
8.78	55.01	2.00	0.00	0.85	0.00	8.84	53.67	2.00	0.00	0.85	0.00
8.89	52.80	2.00	0.00	0.85	0.00	8.94	52.85	2.00	0.00	0.85	0.00
9.05	52.75	2.00	0.00	0.85	0.00	9.10	52.71	2.00	0.00	0.85	0.00
9.15	52.38	2.00	0.00	0.84	0.00	9.20	52.06	2.00	0.00	0.84	0.00
9.26	51.87	2.00	0.00	0.84	0.00	9.33	52.34	2.00	0.00	0.84	0.00
9.42	53.23	2.00	0.00	0.84	0.00	9.46	53.95	2.00	0.00	0.84	0.00
9.52	54.25	2.00	0.00	0.84	0.00	9.58	53.86	2.00	0.00	0.84	0.00
9.73	53.84	2.00	0.00	0.84	0.00	9.78	53.78	2.00	0.00	0.83	0.00
9.84	54.21	2.00	0.00	0.83	0.00	9.90	54.17	2.00	0.00	0.83	0.00
9.93	53.88	2.00	0.00	0.83	0.00	9.99	52.28	2.00	0.00	0.83	0.00
10.08	50.45	2.00	0.00	0.83	0.00	10.13	48.15	2.00	0.00	0.83	0.00
10.22	47.28	2.00	0.00	0.83	0.00	10.27	46.89	2.00	0.00	0.83	0.00
10.34	47.24	2.00	0.00	0.82	0.00	10.39	47.43	2.00	0.00	0.82	0.00
10.44	47.30	2.00	0.00	0.82	0.00	10.51	46.81	2.00	0.00	0.82	0.00
10.59	45.64	2.00	0.00	0.82	0.00	10.67	44.45	2.00	0.00	0.82	0.00
10.72	43.43	2.00	0.00	0.82	0.00	10.81	42.55	2.00	0.00	0.82	0.00
10.87	41.40	2.00	0.00	0.82	0.00	10.97	40.58	2.00	0.00	0.81	0.00
11.02	40.62	2.00	0.00	0.81	0.00	11.08	41.12	2.00	0.00	0.81	0.00
11.15	41.68	2.00	0.00	0.81	0.00	11.20	41.98	2.00	0.00	0.81	0.00
11.24	41.89	2.00	0.00	0.81	0.00	11.33	41.59	2.00	0.00	0.81	0.00
11.41	41.14	2.00	0.00	0.81	0.00	11.46	40.66	2.00	0.00	0.81	0.00
11.50	40.14	2.00	0.00	0.81	0.00	11.55	39.83	2.00	0.00	0.80	0.00
11.63	39.75	2.00	0.00	0.80	0.00	11.72	39.85	2.00	0.00	0.80	0.00
11.77	41.10	2.00	0.00	0.80	0.00	11.88	43.84	2.00	0.00	0.80	0.00
11.94	47.09	2.00	0.00	0.80	0.00	11.98	49.59	2.00	0.00	0.80	0.00
12.03	51.40	2.00	0.00	0.80	0.00	12.08	54.12	2.00	0.00	0.80	0.00
12.15	58.27	2.00	0.00	0.79	0.00	12.25	62.00	2.00	0.00	0.79	0.00
12.30	64.90	2.00	0.00	0.79	0.00	12.36	66.43	2.00	0.00	0.79	0.00
12.41	67.65	2.00	0.00	0.79	0.00	12.52	68.15	2.00	0.00	0.79	0.00
12.61	68.31	2.00	0.00	0.79	0.00	12.66	68.55	2.00	0.00	0.79	0.00
12.72	69.07	2.00	0.00	0.78	0.00	12.78	70.37	2.00	0.00	0.78	0.00
12.83	71.97	2.00	0.00	0.78	0.00	12.88	73.70	2.00	0.00	0.78	0.00
12.93	75.69	2.00	0.00	0.78	0.00	13.05	76.39	2.00	0.00	0.78	0.00
13.09	76.33	2.00	0.00	0.78	0.00	13.15	77.16	2.00	0.00	0.78	0.00
13.19	81.13	2.00	0.00	0.78	0.00	13.31	86.35	2.00	0.00	0.77	0.00
13.35	90.74	2.00	0.00	0.77	0.00	13.41	94.33	2.00	0.00	0.77	0.00
13.49	96.86	2.00	0.00	0.77	0.00	13.53	99.41	2.00	0.00	0.77	0.00
13.59	101.50	2.00	0.00	0.77	0.00	13.65	103.69	2.00	0.00	0.77	0.00
13.73	105.02	2.00	0.00	0.77	0.00	13.84	105.38	2.00	0.00	0.77	0.00
13.88	105.42	2.00	0.00	0.76	0.00	13.97	106.07	2.00	0.00	0.76	0.00
14.02	107.19	2.00	0.00	0.76	0.00	14.06	108.78	2.00	0.00	0.76	0.00
14.13	110.10	2.00	0.00	0.76	0.00	14.19	112.31	2.00	0.00	0.76	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
14.28	114.66	2.00	0.00	0.76	0.00	14.33	117.05	2.00	0.00	0.76	0.00
14.37	118.54	2.00	0.00	0.76	0.00	14.44	119.26	2.00	0.00	0.76	0.00
14.55	118.63	2.00	0.00	0.75	0.00	14.59	116.72	2.00	0.00	0.75	0.00
14.64	113.10	2.00	0.00	0.75	0.00	14.75	108.50	2.00	0.00	0.75	0.00
14.81	103.51	2.00	0.00	0.75	0.00	14.85	99.51	2.00	0.00	0.75	0.00
14.90	95.91	2.00	0.00	0.75	0.00	14.99	93.35	2.00	0.00	0.75	0.00
15.07	91.32	2.00	0.00	0.74	0.00	15.12	90.83	2.00	0.00	0.74	0.00
15.17	90.86	2.00	0.00	0.74	0.00	15.23	92.04	2.00	0.00	0.74	0.00
15.33	93.46	2.00	0.00	0.74	0.00	15.39	94.69	2.00	0.00	0.74	0.00
15.43	94.91	2.00	0.00	0.74	0.00	15.53	94.84	2.00	0.00	0.74	0.00
15.60	95.06	2.00	0.00	0.74	0.00	15.65	95.56	2.00	0.00	0.73	0.00
15.70	96.24	2.00	0.00	0.73	0.00	15.76	96.55	2.00	0.00	0.73	0.00
15.82	96.66	2.00	0.00	0.73	0.00	15.92	96.60	2.00	0.00	0.73	0.00
15.96	96.87	2.00	0.00	0.73	0.00	16.02	97.11	2.00	0.00	0.73	0.00
16.09	90.92	2.00	0.00	0.73	0.00	16.18	82.80	2.00	0.00	0.73	0.00
16.23	76.46	2.00	0.00	0.72	0.00	16.30	77.45	2.00	0.00	0.72	0.00
16.36	79.83	2.00	0.00	0.72	0.00	16.45	79.81	2.00	0.00	0.72	0.00
16.50	79.39	2.00	0.00	0.72	0.00	16.55	78.41	2.00	0.00	0.72	0.00
16.63	77.34	2.00	0.00	0.72	0.00	16.67	76.49	2.00	0.00	0.72	0.00
16.79	76.19	2.00	0.00	0.72	0.00	16.82	75.71	2.00	0.00	0.71	0.00
16.89	74.60	2.00	0.00	0.71	0.00	16.94	72.83	2.00	0.00	0.71	0.00
17.02	71.42	2.00	0.00	0.71	0.00	17.07	70.29	2.00	0.00	0.71	0.00
17.20	69.37	2.00	0.00	0.71	0.00	17.25	68.78	2.00	0.00	0.71	0.00
17.34	69.62	2.00	0.00	0.71	0.00	17.38	71.18	2.00	0.00	0.71	0.00
17.43	73.53	2.00	0.00	0.70	0.00	17.49	77.33	2.00	0.00	0.70	0.00
17.53	83.44	2.00	0.00	0.70	0.00	17.60	92.77	2.00	0.00	0.70	0.00
17.69	101.42	2.00	0.00	0.70	0.00	17.73	111.19	2.00	0.00	0.70	0.00
17.83	117.19	2.00	0.00	0.70	0.00	17.88	122.28	2.00	0.00	0.70	0.00
17.95	123.89	2.00	0.00	0.70	0.00	17.99	125.14	2.00	0.00	0.70	0.00
18.09	123.19	2.00	0.00	0.69	0.00	18.18	120.98	2.00	0.00	0.69	0.00
18.24	117.42	2.00	0.00	0.69	0.00	18.29	115.13	2.00	0.00	0.69	0.00
18.35	112.19	2.00	0.00	0.69	0.00	18.39	108.57	2.00	0.00	0.69	0.00
18.49	105.63	2.00	0.00	0.69	0.00	18.54	102.28	2.00	0.00	0.69	0.00
18.60	99.42	2.00	0.00	0.68	0.00	18.65	94.58	2.00	0.00	0.68	0.00
18.70	86.60	2.00	0.00	0.68	0.00	18.79	78.69	2.00	0.00	0.68	0.00
18.86	74.33	2.00	0.00	0.68	0.00	18.92	73.93	2.00	0.00	0.68	0.00
18.97	73.11	2.00	0.00	0.68	0.00	19.06	71.56	2.00	0.00	0.68	0.00
19.11	71.86	2.00	0.00	0.68	0.00	19.18	74.96	2.00	0.00	0.67	0.00
19.23	82.52	2.00	0.00	0.67	0.00	19.39	90.72	2.00	0.00	0.67	0.00
19.44	98.45	2.00	0.00	0.67	0.00	19.49	102.93	2.00	0.00	0.67	0.00
19.57	104.82	2.00	0.00	0.67	0.00	19.67	105.46	2.00	0.00	0.67	0.00
19.72	103.42	2.00	0.00	0.67	0.00	19.81	101.08	2.00	0.00	0.66	0.00
19.85	98.65	2.00	0.00	0.66	0.00	19.90	97.59	2.00	0.00	0.66	0.00
20.05	97.24	2.00	0.00	0.66	0.00	20.10	98.20	2.00	0.00	0.66	0.00
20.15	99.76	2.00	0.00	0.66	0.00	20.19	101.10	2.00	0.00	0.66	0.00
20.23	102.22	2.00	0.00	0.66	0.00	20.28	102.24	2.00	0.00	0.66	0.00
20.38	101.59	2.00	0.00	0.65	0.00	20.43	98.83	2.00	0.00	0.65	0.00
20.54	95.70	2.00	0.00	0.65	0.00	20.58	92.42	2.00	0.00	0.65	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
20.63	91.77	2.00	0.00	0.65	0.00	20.67	95.27	2.00	0.00	0.65	0.00
20.76	101.39	0.31	1.50	0.65	0.02	20.83	108.05	2.00	0.00	0.65	0.00
20.88	113.80	2.00	0.00	0.65	0.00	20.98	117.86	2.00	0.00	0.64	0.00
21.02	120.69	2.00	0.00	0.64	0.00	21.07	119.12	2.00	0.00	0.64	0.00
21.21	118.34	2.00	0.00	0.64	0.00	21.27	120.16	2.00	0.00	0.64	0.00
21.31	120.72	2.00	0.00	0.64	0.00	21.36	120.67	2.00	0.00	0.64	0.00
21.42	119.76	2.00	0.00	0.64	0.00	21.47	117.19	0.40	1.31	0.64	0.01
21.56	114.07	0.38	1.33	0.63	0.01	21.60	110.12	0.35	1.37	0.63	0.01
21.69	107.00	0.34	1.40	0.63	0.02	21.74	104.01	0.32	1.43	0.63	0.01
21.79	99.31	0.30	1.48	0.63	0.01	21.85	89.79	0.26	1.61	0.63	0.01
21.95	80.16	0.22	1.76	0.63	0.02	22.00	73.38	0.20	1.89	0.63	0.01
22.07	73.05	2.00	0.00	0.63	0.00	22.13	73.71	2.00	0.00	0.62	0.00
22.22	75.69	2.00	0.00	0.62	0.00	22.26	78.23	2.00	0.00	0.62	0.00
22.34	79.23	2.00	0.00	0.62	0.00	22.39	79.90	2.00	0.00	0.62	0.00
22.44	80.38	2.00	0.00	0.62	0.00	22.52	81.34	2.00	0.00	0.62	0.00
22.61	82.04	2.00	0.00	0.62	0.00	22.65	81.54	2.00	0.00	0.62	0.00
22.71	79.21	2.00	0.00	0.62	0.00	22.81	76.11	2.00	0.00	0.61	0.00
22.86	74.22	2.00	0.00	0.61	0.00	22.94	73.49	2.00	0.00	0.61	0.00
22.99	74.70	2.00	0.00	0.61	0.00	23.08	76.31	2.00	0.00	0.61	0.00
23.13	78.60	2.00	0.00	0.61	0.00	23.21	80.50	2.00	0.00	0.61	0.00
23.25	82.37	2.00	0.00	0.61	0.00	23.33	83.93	2.00	0.00	0.60	0.00
23.37	86.15	2.00	0.00	0.60	0.00	23.46	87.99	2.00	0.00	0.60	0.00
23.50	90.19	2.00	0.00	0.60	0.00	23.56	92.10	2.00	0.00	0.60	0.00
23.63	94.38	2.00	0.00	0.60	0.00	23.69	97.12	2.00	0.00	0.60	0.00
23.79	99.65	2.00	0.00	0.60	0.00	23.84	101.33	2.00	0.00	0.60	0.00
23.94	101.63	2.00	0.00	0.59	0.00	23.98	101.30	2.00	0.00	0.59	0.00
24.02	102.19	2.00	0.00	0.59	0.00	24.16	103.74	2.00	0.00	0.59	0.00
24.20	105.99	2.00	0.00	0.59	0.00	24.25	107.54	2.00	0.00	0.59	0.00
24.29	108.72	2.00	0.00	0.59	0.00	24.41	109.54	2.00	0.00	0.59	0.00
24.47	109.77	2.00	0.00	0.59	0.00	24.52	109.73	2.00	0.00	0.58	0.00
24.55	109.32	2.00	0.00	0.58	0.00	24.66	109.50	2.00	0.00	0.58	0.00
24.72	110.13	2.00	0.00	0.58	0.00	24.78	111.21	2.00	0.00	0.58	0.00
24.82	111.83	2.00	0.00	0.58	0.00	24.98	111.98	2.00	0.00	0.58	0.00
25.04	111.96	2.00	0.00	0.58	0.00	25.09	112.72	2.00	0.00	0.57	0.00
25.14	113.50	2.00	0.00	0.57	0.00	25.18	114.38	2.00	0.00	0.57	0.00
25.25	114.54	2.00	0.00	0.57	0.00	25.30	114.66	2.00	0.00	0.57	0.00
25.33	114.75	2.00	0.00	0.57	0.00	25.45	114.68	2.00	0.00	0.57	0.00
25.47	114.78	2.00	0.00	0.57	0.00	25.54	114.81	2.00	0.00	0.57	0.00
25.60	115.03	2.00	0.00	0.57	0.00	25.69	115.36	2.00	0.00	0.56	0.00
25.74	115.66	2.00	0.00	0.56	0.00	25.82	115.23	2.00	0.00	0.56	0.00
25.94	114.32	2.00	0.00	0.56	0.00	25.99	113.52	2.00	0.00	0.56	0.00
26.04	112.96	2.00	0.00	0.56	0.00	26.10	112.39	2.00	0.00	0.56	0.00
26.16	111.27	2.00	0.00	0.56	0.00	26.26	110.38	2.00	0.00	0.55	0.00
26.30	109.75	2.00	0.00	0.55	0.00	26.35	109.43	2.00	0.00	0.55	0.00
26.42	109.04	2.00	0.00	0.55	0.00	26.46	108.62	2.00	0.00	0.55	0.00
26.51	108.34	2.00	0.00	0.55	0.00	26.61	107.88	2.00	0.00	0.55	0.00
26.66	107.25	2.00	0.00	0.55	0.00	26.71	106.09	2.00	0.00	0.55	0.00
26.78	105.21	2.00	0.00	0.55	0.00	26.93	104.80	2.00	0.00	0.54	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
26.98	105.30	2.00	0.00	0.54	0.00	27.05	105.66	2.00	0.00	0.54	0.00
27.09	105.89	2.00	0.00	0.54	0.00	27.14	106.34	2.00	0.00	0.54	0.00
27.21	107.03	2.00	0.00	0.54	0.00	27.32	107.33	2.00	0.00	0.54	0.00
27.36	106.75	2.00	0.00	0.54	0.00	27.45	105.28	2.00	0.00	0.53	0.00
27.52	103.82	2.00	0.00	0.53	0.00	27.58	102.80	2.00	0.00	0.53	0.00
27.62	102.35	2.00	0.00	0.53	0.00	27.67	102.28	2.00	0.00	0.53	0.00
27.71	102.47	2.00	0.00	0.53	0.00	27.78	102.71	2.00	0.00	0.53	0.00
27.84	103.15	2.00	0.00	0.53	0.00	27.89	103.87	2.00	0.00	0.53	0.00
27.98	104.55	2.00	0.00	0.53	0.00	28.03	96.59	2.00	0.00	0.52	0.00
28.15	90.92	2.00	0.00	0.52	0.00	28.20	87.80	2.00	0.00	0.52	0.00
28.24	95.10	2.00	0.00	0.52	0.00	28.30	99.45	2.00	0.00	0.52	0.00
28.35	101.39	2.00	0.00	0.52	0.00	28.42	102.52	2.00	0.00	0.52	0.00
28.48	101.44	2.00	0.00	0.52	0.00	28.59	99.57	2.00	0.00	0.52	0.00
28.61	96.86	2.00	0.00	0.52	0.00	28.72	93.53	2.00	0.00	0.51	0.00
28.77	89.71	2.00	0.00	0.51	0.00	28.81	87.15	2.00	0.00	0.51	0.00
28.90	84.82	2.00	0.00	0.51	0.00	28.95	84.66	2.00	0.00	0.51	0.00
29.04	85.14	2.00	0.00	0.51	0.00	29.11	87.11	2.00	0.00	0.51	0.00
29.17	88.57	2.00	0.00	0.51	0.00	29.21	90.94	2.00	0.00	0.50	0.00
29.31	92.13	2.00	0.00	0.50	0.00	29.37	92.08	2.00	0.00	0.50	0.00
29.43	90.58	2.00	0.00	0.50	0.00	29.47	87.42	2.00	0.00	0.50	0.00
29.59	83.61	2.00	0.00	0.50	0.00	29.64	79.31	2.00	0.00	0.50	0.00
29.69	76.35	2.00	0.00	0.50	0.00	29.74	73.07	2.00	0.00	0.50	0.00
29.85	70.00	2.00	0.00	0.49	0.00	29.90	67.24	2.00	0.00	0.49	0.00
29.96	66.02	2.00	0.00	0.49	0.00	30.00	65.71	2.00	0.00	0.49	0.00
30.05	66.75	2.00	0.00	0.49	0.00	30.18	68.30	2.00	0.00	0.49	0.00
30.22	69.88	2.00	0.00	0.49	0.00	30.27	71.23	2.00	0.00	0.49	0.00
30.32	73.95	2.00	0.00	0.49	0.00	30.39	78.12	2.00	0.00	0.49	0.00
30.49	82.13	2.00	0.00	0.48	0.00	30.53	86.16	2.00	0.00	0.48	0.00
30.59	89.85	2.00	0.00	0.48	0.00	30.65	93.31	2.00	0.00	0.48	0.00
30.75	95.10	2.00	0.00	0.48	0.00	30.80	95.95	2.00	0.00	0.48	0.00
30.86	95.49	2.00	0.00	0.48	0.00	30.96	94.47	2.00	0.00	0.48	0.00
31.01	90.73	2.00	0.00	0.47	0.00	31.06	86.54	2.00	0.00	0.47	0.00
31.16	82.66	2.00	0.00	0.47	0.00	31.20	81.81	2.00	0.00	0.47	0.00
31.28	82.83	2.00	0.00	0.47	0.00	31.33	84.67	2.00	0.00	0.47	0.00
31.37	87.45	2.00	0.00	0.47	0.00	31.45	90.31	2.00	0.00	0.47	0.00
31.51	93.58	2.00	0.00	0.47	0.00	31.60	96.11	2.00	0.00	0.46	0.00
31.64	98.42	2.00	0.00	0.46	0.00	31.73	99.29	2.00	0.00	0.46	0.00
31.77	99.30	2.00	0.00	0.46	0.00	31.86	98.31	2.00	0.00	0.46	0.00
31.91	96.94	2.00	0.00	0.46	0.00	31.98	95.94	2.00	0.00	0.46	0.00
32.03	95.27	2.00	0.00	0.46	0.00	32.09	95.27	2.00	0.00	0.46	0.00
32.19	95.66	2.00	0.00	0.45	0.00	32.26	96.31	2.00	0.00	0.45	0.00
32.30	97.20	2.00	0.00	0.45	0.00	32.39	98.04	2.00	0.00	0.45	0.00
32.44	99.06	2.00	0.00	0.45	0.00	32.48	100.68	2.00	0.00	0.45	0.00
32.57	102.79	2.00	0.00	0.45	0.00	32.61	105.13	2.00	0.00	0.45	0.00
32.75	106.45	2.00	0.00	0.44	0.00	32.79	106.86	2.00	0.00	0.44	0.00
32.83	106.52	2.00	0.00	0.44	0.00	32.88	105.21	2.00	0.00	0.44	0.00
32.97	103.46	2.00	0.00	0.44	0.00	33.02	101.41	2.00	0.00	0.44	0.00
33.12	100.24	2.00	0.00	0.44	0.00	33.18	100.10	2.00	0.00	0.44	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
33.23	100.89	2.00	0.00	0.44	0.00	33.28	102.65	2.00	0.00	0.44	0.00
33.38	104.54	2.00	0.00	0.43	0.00	33.43	106.25	2.00	0.00	0.43	0.00
33.49	107.05	2.00	0.00	0.43	0.00	33.54	106.82	2.00	0.00	0.43	0.00
33.63	106.29	2.00	0.00	0.43	0.00	33.69	105.64	2.00	0.00	0.43	0.00
33.74	105.17	2.00	0.00	0.43	0.00	33.80	104.37	2.00	0.00	0.43	0.00
33.89	104.40	2.00	0.00	0.43	0.00	33.97	104.17	2.00	0.00	0.42	0.00
34.06	103.94	2.00	0.00	0.42	0.00	34.11	103.49	2.00	0.00	0.42	0.00
34.17	103.82	2.00	0.00	0.42	0.00	34.23	104.45	2.00	0.00	0.42	0.00
34.29	104.48	2.00	0.00	0.42	0.00	34.33	103.92	2.00	0.00	0.42	0.00
34.39	103.09	2.00	0.00	0.42	0.00	34.46	101.39	2.00	0.00	0.42	0.00
34.54	99.50	2.00	0.00	0.41	0.00	34.59	97.23	2.00	0.00	0.41	0.00
34.72	94.98	2.00	0.00	0.41	0.00	34.75	92.30	2.00	0.00	0.41	0.00
34.81	90.10	2.00	0.00	0.41	0.00	34.86	88.35	2.00	0.00	0.41	0.00
34.92	85.99	2.00	0.00	0.41	0.00	35.03	83.46	2.00	0.00	0.41	0.00
35.07	81.66	2.00	0.00	0.41	0.00	35.13	81.53	2.00	0.00	0.40	0.00
35.18	81.92	2.00	0.00	0.40	0.00	35.24	84.20	2.00	0.00	0.40	0.00
35.34	87.04	2.00	0.00	0.40	0.00	35.38	89.80	2.00	0.00	0.40	0.00
35.44	90.99	2.00	0.00	0.40	0.00	35.55	91.86	2.00	0.00	0.40	0.00
35.61	92.55	2.00	0.00	0.40	0.00	35.65	91.70	2.00	0.00	0.40	0.00
35.73	88.31	2.00	0.00	0.39	0.00	35.81	83.58	2.00	0.00	0.39	0.00
35.87	79.78	2.00	0.00	0.39	0.00	35.91	78.46	2.00	0.00	0.39	0.00
35.97	78.77	2.00	0.00	0.39	0.00	36.03	81.33	2.00	0.00	0.39	0.00
36.14	84.34	2.00	0.00	0.39	0.00	36.17	88.07	2.00	0.00	0.39	0.00
36.23	90.58	2.00	0.00	0.39	0.00	36.29	94.01	2.00	0.00	0.38	0.00
36.40	96.29	2.00	0.00	0.38	0.00	36.44	97.86	2.00	0.00	0.38	0.00
36.49	97.60	2.00	0.00	0.38	0.00	36.59	96.33	2.00	0.00	0.38	0.00
36.66	94.21	2.00	0.00	0.38	0.00	36.71	91.68	2.00	0.00	0.38	0.00
36.75	89.22	2.00	0.00	0.38	0.00	36.84	87.29	2.00	0.00	0.38	0.00
36.91	86.06	2.00	0.00	0.37	0.00	36.97	85.72	2.00	0.00	0.37	0.00
37.02	86.16	2.00	0.00	0.37	0.00	37.12	86.74	2.00	0.00	0.37	0.00
37.19	87.03	2.00	0.00	0.37	0.00	37.24	86.90	2.00	0.00	0.37	0.00
37.28	86.92	2.00	0.00	0.37	0.00	37.38	87.54	2.00	0.00	0.37	0.00
37.44	88.47	2.00	0.00	0.37	0.00	37.50	89.18	2.00	0.00	0.36	0.00
37.55	89.33	2.00	0.00	0.36	0.00	37.61	88.95	2.00	0.00	0.36	0.00
37.70	88.30	2.00	0.00	0.36	0.00	37.75	87.19	2.00	0.00	0.36	0.00
37.89	86.04	2.00	0.00	0.36	0.00	37.93	85.06	2.00	0.00	0.36	0.00
37.98	85.05	2.00	0.00	0.36	0.00	38.08	85.08	2.00	0.00	0.35	0.00
38.14	84.51	2.00	0.00	0.35	0.00	38.24	83.50	2.00	0.00	0.35	0.00
38.28	82.09	2.00	0.00	0.35	0.00	38.35	80.62	2.00	0.00	0.35	0.00
38.41	78.60	2.00	0.00	0.35	0.00	38.46	75.76	2.00	0.00	0.35	0.00
38.55	72.83	2.00	0.00	0.35	0.00	38.61	70.20	2.00	0.00	0.35	0.00
38.67	68.45	2.00	0.00	0.34	0.00	38.72	66.77	2.00	0.00	0.34	0.00
38.82	65.51	2.00	0.00	0.34	0.00	38.87	64.65	2.00	0.00	0.34	0.00
38.94	64.44	2.00	0.00	0.34	0.00	38.99	64.53	2.00	0.00	0.34	0.00
39.14	64.81	2.00	0.00	0.34	0.00	39.20	65.12	2.00	0.00	0.34	0.00
39.25	65.35	2.00	0.00	0.33	0.00	39.30	65.41	2.00	0.00	0.33	0.00
39.36	65.41	2.00	0.00	0.33	0.00	39.41	65.43	2.00	0.00	0.33	0.00
39.48	65.93	2.00	0.00	0.33	0.00	39.52	68.25	2.00	0.00	0.33	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
39.68	71.36	2.00	0.00	0.33	0.00	39.74	75.23	2.00	0.00	0.33	0.00
39.83	77.77	2.00	0.00	0.32	0.00	39.87	80.53	2.00	0.00	0.32	0.00
39.93	82.83	2.00	0.00	0.32	0.00	40.04	84.99	2.00	0.00	0.32	0.00
40.09	86.29	2.00	0.00	0.32	0.00	40.14	86.46	2.00	0.00	0.32	0.00
40.22	84.58	2.00	0.00	0.32	0.00	40.27	82.12	2.00	0.00	0.32	0.00
40.31	79.57	2.00	0.00	0.32	0.00	40.36	78.34	2.00	0.00	0.32	0.00
40.48	77.61	2.00	0.00	0.31	0.00	40.53	77.19	2.00	0.00	0.31	0.00
40.58	76.95	2.00	0.00	0.31	0.00	40.62	76.39	2.00	0.00	0.31	0.00
40.69	75.65	2.00	0.00	0.31	0.00	40.77	74.10	2.00	0.00	0.31	0.00
40.88	71.97	2.00	0.00	0.31	0.00	40.95	69.44	2.00	0.00	0.31	0.00
40.99	66.91	2.00	0.00	0.31	0.00	41.09	64.56	2.00	0.00	0.30	0.00
41.14	62.21	2.00	0.00	0.30	0.00	41.24	60.99	2.00	0.00	0.30	0.00
41.30	60.48	2.00	0.00	0.30	0.00	41.35	60.89	2.00	0.00	0.30	0.00
41.40	61.60	2.00	0.00	0.30	0.00	41.47	62.32	2.00	0.00	0.30	0.00
41.56	62.93	2.00	0.00	0.30	0.00	41.61	63.21	2.00	0.00	0.29	0.00
41.66	63.22	2.00	0.00	0.29	0.00	41.71	63.29	2.00	0.00	0.29	0.00
41.77	62.20	2.00	0.00	0.29	0.00	41.82	63.19	2.00	0.00	0.29	0.00
41.92	64.24	2.00	0.00	0.29	0.00	41.97	66.38	2.00	0.00	0.29	0.00
42.04	66.39	2.00	0.00	0.29	0.00	42.10	66.11	2.00	0.00	0.29	0.00
42.14	65.96	2.00	0.00	0.29	0.00	42.20	65.91	2.00	0.00	0.28	0.00
42.26	66.23	2.00	0.00	0.28	0.00	42.33	66.93	2.00	0.00	0.28	0.00
42.44	67.69	2.00	0.00	0.28	0.00	42.48	68.30	2.00	0.00	0.28	0.00
42.53	69.65	2.00	0.00	0.28	0.00	42.63	70.84	2.00	0.00	0.28	0.00
42.67	71.64	2.00	0.00	0.28	0.00	42.73	69.35	2.00	0.00	0.28	0.00
42.89	65.46	2.00	0.00	0.27	0.00	42.93	61.27	2.00	0.00	0.27	0.00
42.98	56.39	2.00	0.00	0.27	0.00	43.03	50.92	2.00	0.00	0.27	0.00
43.08	44.12	2.00	0.00	0.27	0.00	43.14	39.62	2.00	0.00	0.27	0.00
43.20	37.22	2.00	0.00	0.27	0.00	43.29	36.04	2.00	0.00	0.27	0.00
43.33	35.82	2.00	0.00	0.27	0.00	43.39	36.22	2.00	0.00	0.26	0.00
43.45	38.48	2.00	0.00	0.26	0.00	43.53	41.45	2.00	0.00	0.26	0.00
43.58	47.60	2.00	0.00	0.26	0.00	43.68	53.93	2.00	0.00	0.26	0.00
43.74	60.15	2.00	0.00	0.26	0.00	43.80	63.85	2.00	0.00	0.26	0.00
43.84	66.40	2.00	0.00	0.26	0.00	43.94	68.25	2.00	0.00	0.26	0.00
44.06	69.51	2.00	0.00	0.25	0.00	44.11	69.98	2.00	0.00	0.25	0.00
44.19	70.29	2.00	0.00	0.25	0.00	44.24	71.04	2.00	0.00	0.25	0.00
44.36	71.82	2.00	0.00	0.25	0.00	44.41	72.85	2.00	0.00	0.25	0.00
44.46	73.55	2.00	0.00	0.25	0.00	44.51	73.81	2.00	0.00	0.25	0.00
44.56	73.74	2.00	0.00	0.24	0.00	44.62	72.39	2.00	0.00	0.24	0.00
44.72	70.82	2.00	0.00	0.24	0.00	44.77	68.44	2.00	0.00	0.24	0.00
44.84	65.41	2.00	0.00	0.24	0.00	44.89	62.27	2.00	0.00	0.24	0.00
44.99	63.18	2.00	0.00	0.24	0.00	45.10	66.56	2.00	0.00	0.24	0.00
45.16	69.61	2.00	0.00	0.23	0.00	45.21	70.08	2.00	0.00	0.23	0.00
45.25	69.86	2.00	0.00	0.23	0.00	45.32	69.30	2.00	0.00	0.23	0.00
45.38	66.50	2.00	0.00	0.23	0.00	45.47	62.57	2.00	0.00	0.23	0.00
45.52	55.54	2.00	0.00	0.23	0.00	45.63	49.14	2.00	0.00	0.23	0.00
45.69	43.05	2.00	0.00	0.23	0.00	45.74	41.09	2.00	0.00	0.22	0.00
45.78	40.66	2.00	0.00	0.22	0.00	45.85	40.33	2.00	0.00	0.22	0.00
45.91	39.83	2.00	0.00	0.22	0.00	46.00	38.89	2.00	0.00	0.22	0.00

:: Post-earthquake settlement due to soil liquefaction :: (continued)

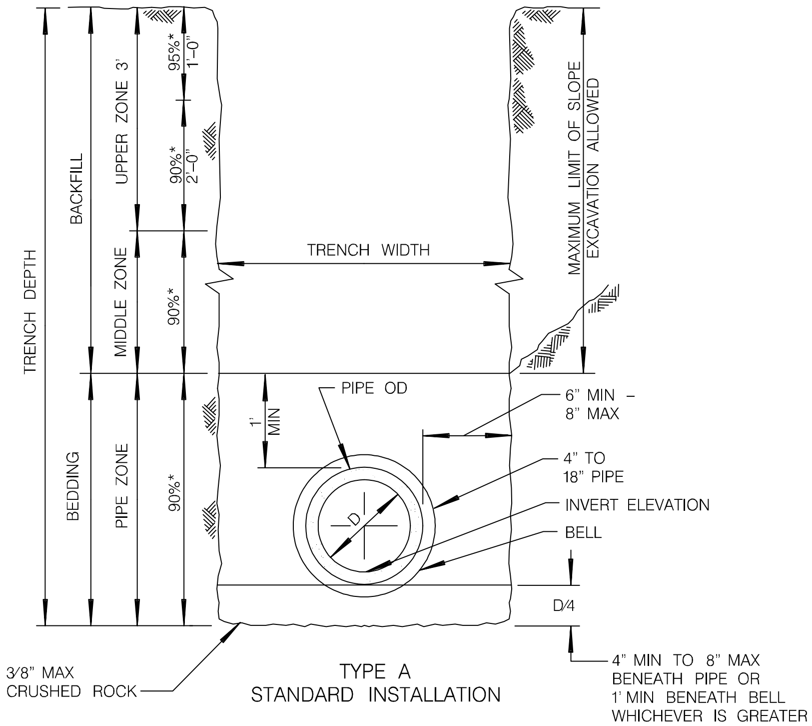
Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)	Depth (ft)	$Q_{tn,cs}$	FS	e_v (%)	DF	Settlement (in)
46.05	40.52	2.00	0.00	0.22	0.00	46.17	43.12	2.00	0.00	0.22	0.00
46.21	49.16	2.00	0.00	0.22	0.00	46.31	53.29	2.00	0.00	0.22	0.00
46.36	57.08	2.00	0.00	0.21	0.00	46.40	59.12	2.00	0.00	0.21	0.00
46.50	61.16	2.00	0.00	0.21	0.00	46.54	65.48	2.00	0.00	0.21	0.00
46.65	69.42	2.00	0.00	0.21	0.00	46.71	71.86	2.00	0.00	0.21	0.00
46.76	71.09	2.00	0.00	0.21	0.00	46.80	69.15	2.00	0.00	0.21	0.00
46.87	67.54	2.00	0.00	0.21	0.00	46.92	64.56	2.00	0.00	0.20	0.00
47.03	60.75	2.00	0.00	0.20	0.00	47.08	55.63	2.00	0.00	0.20	0.00
47.14	51.99	2.00	0.00	0.20	0.00	47.20	48.27	2.00	0.00	0.20	0.00
47.29	45.27	2.00	0.00	0.20	0.00	47.34	43.23	2.00	0.00	0.20	0.00
47.38	43.28	2.00	0.00	0.20	0.00	47.44	44.40	2.00	0.00	0.20	0.00
47.51	48.82	2.00	0.00	0.19	0.00	47.64	52.51	2.00	0.00	0.19	0.00
47.64	57.02	2.00	0.00	0.19	0.00	47.74	59.72	2.00	0.00	0.19	0.00
47.81	62.88	2.00	0.00	0.19	0.00	47.86	64.55	2.00	0.00	0.19	0.00
47.90	66.27	2.00	0.00	0.19	0.00	48.01	65.54	2.00	0.00	0.19	0.00
48.12	62.59	2.00	0.00	0.18	0.00	48.22	57.85	2.00	0.00	0.18	0.00
48.27	53.96	2.00	0.00	0.18	0.00	48.32	51.22	2.00	0.00	0.18	0.00
48.38	47.78	2.00	0.00	0.18	0.00	48.44	44.81	2.00	0.00	0.18	0.00
48.53	42.90	2.00	0.00	0.18	0.00	48.58	42.10	2.00	0.00	0.18	0.00
48.65	42.46	2.00	0.00	0.18	0.00	48.70	43.53	2.00	0.00	0.17	0.00
48.80	45.06	2.00	0.00	0.17	0.00	48.84	46.31	2.00	0.00	0.17	0.00
48.91	48.57	2.00	0.00	0.17	0.00	48.97	52.05	2.00	0.00	0.17	0.00
49.06	55.80	2.00	0.00	0.17	0.00	49.18	57.90	2.00	0.00	0.17	0.00
49.23	58.96	2.00	0.00	0.17	0.00	49.24	60.10	2.00	0.00	0.17	0.00
49.31	60.29	2.00	0.00	0.16	0.00	49.35	61.32	2.00	0.00	0.16	0.00
49.52	62.91	2.00	0.00	0.16	0.00	49.58	65.67	2.00	0.00	0.16	0.00
49.62	67.18	2.00	0.00	0.16	0.00	49.67	67.12	2.00	0.00	0.16	0.00
49.74	66.14	2.00	0.00	0.16	0.00	49.76	64.21	2.00	0.00	0.16	0.00
49.84	62.52	2.00	0.00	0.16	0.00	49.89	60.88	2.00	0.00	0.15	0.00
49.99	59.60	2.00	0.00	0.15	0.00	50.05	58.44	2.00	0.00	0.15	0.00

Total estimated settlement: 0.12

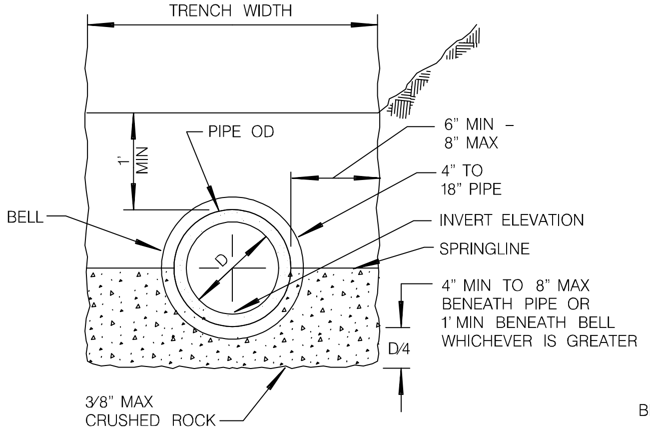
Abbreviations

$Q_{tn,cs}$:	Equivalent clean sand normalized cone resistance
FS:	Factor of safety against liquefaction
e_v (%):	Post-liquefaction volumentric strain
DF:	e_v depth weighting factor
Settlement:	Calculated settlement

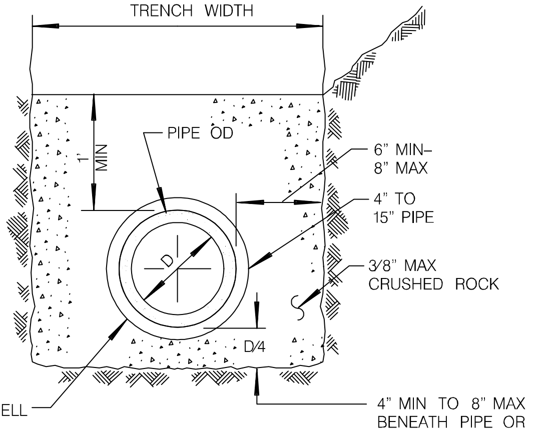
APPENDIX F



TYPE A
STANDARD INSTALLATION



TYPE B
ROCK TO SPRINGLINE



TYPE C
ROCK ENVELOPE

NOTES

1. FOR TRENCH RESURFACING IN IMPROVED STREETS, SEE STANDARD DRAWINGS SDG–107 AND SDG–108.
2. (*) INDICATES MINIMUM RELATIVE COMPACTION.
3. MINIMUM DEPTH OF COVER FROM THE TOP OF PIPE TO FINISH GRADE FOR PVC SDR 35 SEWER MAIN SHALL BE 5'. FOR SHALLOWER DEPTH, SPECIAL DESIGN IS REQUIRED. SEE SDS–101.
4. SEE TYPE A INSTALLATION FOR DETAILS NOT SHOWN FOR TYPES B AND C.
5. FOR PIPE SIZE ENCASEMENT LARGER THAN 15", MAXIMUM SIDE WALL CLEARANCE SHALL BE 12" OR AS SHOWN ON THE PLANS.
6. 6" METAL TAPE SHALL BE INSTALLED ABOVE PIPE 4" BELOW TRENCH CAP AND 12" BELOW FINISH GRADE IN UNIMPROVED STREETS.
7. 1' SAND CUSHION OR A 6" MINIMUM SAND CUSHION WITH 1" NEOPRENE PAD SHALL BE PLACED FOR CROSSINGS UTILITIES WHEN VERTICAL CLEARANCE IS 1' OR LESS. THE NEOPRENE PAD SHALL BE PLACED ON THE MOST FRAGILE UTILITY.

From: City of San Diego Standard Drawing SDS-110 (2016)

LANDMARK
Geo-Engineers and Geologists
Project No.: LE19154

Pipe Bedding and Trench Backfill Recommendations

Plate F-1

APPENDIX F – PHASE I ENVIRONMENTAL SITE ASSESSMENT, HUDSON RANCH GEOTHERMAL PLANT

Phase I ESA Report

Hudson Ranch Geothermal Plant
409 W. McDonald Road
Calipatria, California

Prepared for:

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Prepared by:

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October 2019

GS Lyon
Engineering And
Information Technology

October 25, 2019
(Revised December 2, 2019)

Mr. Jamie Manson
iCON Infrastructure Canada Inc.
155 Wellington Street West
Suite 2930
Toronto, ON M5V 3H1, Canada

Phase I Environmental Site Assessment Report
Hudson Ranch 1 Geothermal Power Plant Area
409 W. McDonald Road
Calipatria, California
GSL Report No. GS1921

Dear Mr. Manson:

We have performed a Phase I Environmental Site Assessment in general conformance with the scope and limitations of ASTM E1527-13 of the property located at 409 W. McDonald Road northwest of Calipatria, California. Any exceptions to, or deletions from, this practice are described in Section 1.4 of this report. **This assessment has revealed recognized environmental conditions (REC's) in connection with the property.**

There is potential for evaporite deposits located around the abandoned carbon dioxide wells containing potential hazardous substances. The chemical characteristics of the deposits is unknown.

We declare that, to the best of our professional knowledge and belief, we meet the definition of *Environmental Professional* as defined in §312.10 of 40 CFR §312 and we have the specific qualifications based on education, training and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed all the appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Attached is our report which describes the procedures used and results of the assessment. If you have any questions or require additional information, please do not hesitate to contact the undersigned at (760) 337-1100. We appreciate the opportunity to provide our professional review for this subject property.

Respectfully Submitted,
GS Lyon Consultants, Inc.

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APPENDICES

1.0 INTRODUCTION

1.1 Purpose

GS Lyon Consultants, Inc. was retained by Hudson Ranch Power 1, LLC to conduct a Phase I Environmental Site Assessment (ESA) for the Property (herein referred to as the subject property or subject property in this Phase I ESA Report) as a prerequisite to property transaction (purchase, sale, refinance, etc.). The subject property is located at 409 W. McDonald Road approximately 6 miles northwest of Calipatria, California. See Plate 1 in Appendix B for a Vicinity Map of the subject property.

The purpose of this Phase I Environmental Site Assessment (ESA) is to identify, to the extent feasible, recognized environmental conditions (RECs) associated with past and present activities on the subject property or in the immediate subject property vicinity in general conformance to ASTM Standard E1527-13 "*Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*" that may affect future uses of the subject property.

This report is intended to satisfy the Phase I ESA portion of "*all appropriate inquiry*" into the previous ownership and uses of the subject property as defined under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) at Title 42 of the United States Code (U.S.C.) §9601(35)(B) and in accordance with 40 Code of Federal Regulations (CFR) Part 312, Standards and Practices for All Appropriate Inquiries; Final Rule (AAI Rule).

1.2 Scope of Services

The scope of work for this ESA is in general accordance with the requirements of ASTM Standard E1527-13. This assessment included:

- Reconnaissance of the subject property and adjacent properties
- Review user-provided information
- Interviews with persons with significant knowledge of the subject property
- Review of a regulatory database report provided by a third-party vendor
- Review readily-available historical sources (including but not limited to: aerial photographs, fire insurance maps, property tax files, recorded land title records, and topographical maps)
- Prepare report of findings

1.3 Limitations

No Phase I ESA can completely eliminate uncertainty regarding the potential for RECs in connection with a property. Conformance of this assessment with ASTM Standard E1527-13 is intended to reduce, but not eliminate uncertainty regarding the potential for RECs in connection with the Subject Property. While GS Lyon has made reasonable effort to discover and interpret available historical and current information on the property within the time available, the possibility of undiscovered contamination remains. Our assessment of the subject property and surrounding areas was conducted in accordance with ASTM guidelines and the *generally accepted environmental engineering standard of practice* which existed in Imperial County, California at the time that the report was prepared. No warranty, express or implied, is made.

GS Lyon Consultants, Inc. derived the data in this report primarily from visual inspections, examination of public records and information in the public domain, informal interviews with individuals, and readily available information about the subject property. The passage of time, manifestation of latent conditions or occurrence of future events may require further exploration of the subject property, analysis of the data, and reevaluation of the findings, observations, and conclusions expressed in this report.

The findings, observations, and conclusions expressed by GS Lyon Consultants in this report are not, and should not be considered, an opinion concerning the compliance of any past or present owner or operator of the subject property with any federal, state or local law or regulation.

This report should not be relied upon after **180 days** from September 5, 2019, the date of the earliest report component, unless additional services are performed as defined in ASTM E1527-13 - Section 4.7.

1.4 Deviations or Data Gaps

ASTM Standard E1527-13 requires any significant data gaps, deviations, and deletions from the ASTM Standard to be identified and addressed in the Phase I ESA. A significant data gap would be one that affected the ability to identify a REC on the subject property or adjacent properties.

Through the course of this assessment, *data failures* or *data gaps* may have been encountered. These failures or gaps, if any, are discussed below. The following provides the opinion of the Environmental Professional as to the significance of the data gaps in terms of defining *recognized environmental conditions* at the subject property.

Data failures may or may not be significant data gaps, and the discussion also provides information pertaining to whether the data failures resulted in significant data gaps.

1.4.1 Data Failures

Data failure is a failure to achieve the historical (property use) research objectives specified in the ASTM Standard Practice even after reviewing the eight standard historical sources that are reasonably ascertainable and likely to be useful. Data failure is one type of data gap.

No *data failures w*ere encountered during this investigation.

1.4.2 Data Gaps

A *data gap* is a lack of or inability to obtain information required by the ASTM Standard Practice, despite good faith efforts by the Environmental Professional to gather such information. This could include any component of the Practice, e.g., standard environmental records, interviews, or a complete reconnaissance. A data gap by itself is not inherently significant, but if other information and/or the EP's experience raises reasonable concerns about the gap, it may be judged to be significant.

Aerial photographs and other historical records were not available at 5 year intervals as required under the ASTM E1527-13 standard. Sanborn Fire Insurance maps are also not available for the subject property due to the rural location of the subject property. This resulted in a data gap for years that records were not available regarding the area of the subject property. However, based upon other historical information reviewed and general lack of significant changes in the appearance of the subject property in the years data is available, most of the subject property has been an agricultural field or duck ponds (shallow ponds used for duck hunting) from the 1930's until 2011 when the HR1 geothermal plant was constructed. There have been exploratory geothermal wells made on the subject property in the late 1970's and 1980's, a map of the former well sites is depicted on Plate 2d, Former Well Sites. The data gap is not considered to be significant.

1.5 Significant Assumptions

In preparing this report, GS Lyon Consultants, Inc. has relied upon and presumed accurate certain information (or the absence thereof) about the subject property and adjacent properties by governmental officials and agencies, the Client, and others identified herein.

Except as otherwise stated in the report, GS Lyon Consultants has not attempted to verify the accuracy or completeness of any such information.

1.6 User Reliance

This report has been prepared on behalf of and for the exclusive use of iCON Infrastructure Canada, Inc. and Hudson Ranch Power 1, LLC for the particular subject property identified in this report, and is subject to and issued in connection with the referenced Agreement and the provisions thereof. This report should not be relied upon by any party other than the client, its legal counsel, and financial institution without the express permission of GS Lyon Consultants, Inc. Any reliance on this report by other parties shall be at such party's sole risk. Any future consultation or provision of services to third parties related to the subject property requires written authorization from Hudson Ranch Power 1, LLC. or their representatives. Any such services may be provided at GS Lyon Consultants sole discretion and under terms and conditions acceptable to GS Lyon Consultants, including potential additional compensation.

2.0 SITE DESCRIPTION

2.1 Site Location and Legal Description

The subject property (APN 020-100-044, 020-010-035, 020-010-034, and 020-010-032) is located at 409 W. McDonald Road approximately 6 miles northwest of Calipatria, California. The subject property location is depicted on Plate 1, Vicinity Map.

2.2 Current Property Use and Description

The subject property, approximately 684 acres total, currently consists of the approximately 65 acre Hudson Ranch geothermal power plant facility (plant site) located on the southern portion of the subject property on the south side of McDonald Road and the approximately 619 acre Hudson Ranch geothermal resource area (HRGRA), leased mineral rights from Magma Power Company, to the north of the power plant facility. A map of the subject property is depicted on Plate 2a, Site Map.

Plant Site: The approximately 65 acre Hudson Ranch 1 geothermal power plant facility includes raw (irrigation) water storage pond used for cooling towers and plant operations located on the east side of the power plant facility. A dry storm water retention basin located in the southeast corner of the facility. The power plant facility is located in the central portion of the plant site. A mineral extraction pilot plant is located on 8.3 acres (9.3 acres including fenced entry driveway) in the southwest portion of the plant site. The mineral extraction pilot plant was used in the past by Simbol Company to test the viability of extracting minerals from geothermal brine fluid at the HR1 plant. The minerals plant was cleaned to the requirements of the USEPA and California EPA and closed by Simbol several years ago. The pilot plant is currently being used by ES Mineral to conduct further testing of the process.

An equipment storage area (boneyard) is located on the west portion of the subject site. A concrete lined brine water storage basin with secondary containment liner and groundwater monitoring wells is located on the south side of the power generation area of the plant. A map of the Geothermal Plant Facility is depicted on Plate 2b, Site Map.

HRGRA: The approximately 619 acre Hudson Ranch geothermal resource area is owned by Magma Power Company with mineral lease to Hudson Ranch. This area is located to the north of the power plant facility (Plant Site) is bounded by McDonald Road on the south, Davis Road on the west, Pound Road on the north and an agricultural field road to the east. An old abandoned CO2 dry ice plantsite is located on 10 acres at the southeast corner of Pound and Davis Roads.

The 619 acre Geothermal Resource Area is composed of fallow agricultural land and duck ponds (for duck hunting clubs). Four active geothermal well pads are located within the resource area and depicted on Plate 2a, Site Map – Subject Property.

2.3 Adjoining Property Use

The subject property is located within an agricultural area with a geothermal development overlay northwest of Calipatria, California. Adjacent properties consist of vacant land to the east, abandoned dry duck hunting ponds to the south, active water filled duck hunting ponds and geothermal wells to the north, and vacant land adjacent to the Salton Sea, an inland saltwater lake, to the west. An algae farm (shallow circulating ponds) is located southeast of the subject property. Several carbon dioxide (CO_2) gas driven mud volcanoes, active for over 100 years, are located on a vacant parcel southwest of the HR1 Plant and on the old dry ice plant site adjacent to the northwest corner of the site.

The subject property is located adjacent to the Salton Sea (approximately ½-mile west), an inland saltwater lake with no outlet. Agricultural tailwater runoff and periodic storm water runoff supply the majority of the water in the lake. Industrial and wastewater plant outfalls from Mexicali, Baja California also flow to the Salton Sea via the New River.

2.4 Physical Site Characteristics

Topography: Topographic maps (USGS 7.5 minute Niland, CA Quadrangle) indicate that the subject property elevation is approximately 215 to 227 feet below mean sea level (MSL) or elevation 785 to 773 (local datum). The Imperial Irrigation District, which supplies power and raw (irrigation) water to the area, established local datum by equating mean sea level to El. 1000.00 feet.

Geologic Setting: The subject property is located in the Colorado Desert Physiographic province of southern California. The dominant feature of the Colorado Desert province is the Salton Trough, a geologic structural depression resulting from large-scale regional faulting. The trough is bounded on the northeast by the San Andreas Fault and the southwest by faults of the San Jacinto Fault Zone. The Salton Trough represents northward extension of the Gulf of California, which has experienced continual in-filling with both marine and non-marine sediments since the Miocene Epoch (25 million years before present). The tectonic activity that formed the trough continues at a high rate as evidenced by deformed young sedimentary deposits and high levels of historic seismicity.

The subject property is directly underlain by Holocene (0-11,000 years before present) Cahuilla Lake sediments, which consist of interbedded lenticular and tabular sand, silt, and clay. The predominant surface soil is silty clay. The Holocene lake deposits are considered to be less than 100 feet thick and are characterized by surficial clay and silt deposits with varying amounts of fine sand. The topography of the Imperial Valley is relatively flat, with few significant land features. The valley floor slopes gently to the north (less than 0.5 percent) from an elevation of sea level at Calexico to approximately 225 feet below sea level at the Salton Sea.

Soil Conditions: The U. S. Soil Conservation Service compiled a map of surface soil conditions and published a soil survey report including maps in 1980. The soil survey maps indicate that surficial deposits at the subject property and surrounding area consist predominantly of silty clay and silty clay loams of the Imperial and Imperial-Glenbar soil groups (see Appendix B). These loams are formed in sediment and alluvium of mixed origin (Colorado River overflows and fresh-water lake-bed sediments). Based on Unified Soil Classification System presented in the Soils Survey Report, the permeability of these soils is expected to be low to very low.

Groundwater Conditions: The groundwater in the vicinity of the subject property is brackish and is encountered at a depth of approximately 12 feet below the ground surface. Depth to groundwater may fluctuate due to localized geologic conditions, precipitation, irrigation, height of the Salton Sea, drainage and construction practices in the region. Based on the regional topography, groundwater flow is assumed to be generally towards the west within the subject property area. Flow directions may also vary locally in the vicinity of the subject property. Groundwater depth and quality is measured and evaluated semi-annually by Landmark Consultants, Inc. of El Centro, California at the brine pond for the HR1 Plant.

3.0 USER PROVIDED INFORMATION

In order to qualify for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the *Brownfields Amendments*), the *User* must provide the following information (if available) to the *environmental professional*. Failure to provide this information could result in a determination that *all appropriate inquiry* is not complete. The user was asked to provide information or knowledge of the following:

- Environmental cleanup liens that are filed or recorded against the subject property.
- Activity and land use limitations that are in place on the subject property or that have been filed or recorded in a registry.
- Specialized knowledge or experience of the person seeking to qualify for the LLPs.
- Relationship of the purchase price to the fair market value of the *property* if it were not contaminated.
- Commonly known or *reasonably ascertainable* information about the *property*.
- The degree of obviousness of the presence or likely presence of contamination at the *property*, and the ability to detect the contamination by appropriate investigation.
- The reason for preparation of this Phase I ESA.

A user questionnaire was provided to the user to aid in gathering information that may be pertinent to the evaluation of the subject property for environmental conditions. The completed user questionnaire is provided in Appendix I.

3.1 Title Records

GS Lyon was not provided with title records for review as part of this assessment.

3.2 Environmental Liens or Activity and Use Limitations

An environmental lien is a charge, security, or encumbrance upon the title to a property to secure the payment of a cost, damage, debt, obligation, or duty arising out of response actions, cleanup, or other remediation of hazardous substances or petroleum products upon the property. According to the User Questionnaire, Jurg Heuberger, Senior Vice President and Environmental Compliance Officer, Hudson Ranch Power 1, LLC. is not aware of any Environmental Liens or Activity and Use Limitations associated with the subject property that have been filed or recorded under federal, tribal, state or local law (Appendix I).

GS Lyon Consultants contracted Environmental Data Resources, Inc. (EDR) of Shelton, Connecticut to conduct a search of environmental liens for the subject property. According to the EDR environmental lien report, there are no environmental liens associated with the subject property. The EDR environmental lien report is included in Appendix I.

3.3 Specialized Knowledge

According to the User Questionnaire, Mr. Heuberger is not aware of any specialized knowledge or experience associated with the subject property or nearby properties.

3.4 Commonly Known or Reasonable Ascertainable Information

No information was provided by the Client regarding any commonly known or reasonably ascertainable information within the local community that is material to RECs in connection with the subject property.

3.5 Valuation Reduction for Environmental Issues

The client indicated that the valuation of this property reasonably reflects the fair market value of the property with no discounts for environmental issues.

3.6 Owner, Property Manager, and Occupant Information

The current owners of the subject property parcels are:

APN 020-100-044	Hudson Ranch Power 1, LLC	65 acres
APN 020-010-032	Magma Power Company	146 acres
APN 020-010-034	Magma Power Company	7 acres
APN 020-010-035	Magma Power Company	466 acres

3.7 Previous Reports and Other Provided Documentation

No previous reports or other pertinent documentation was provided to GS Lyon for review during the course of this assessment other than:

GS Lyon prepared a Phase I ESA report for the approximately 65 acre Hudson Ranch geothermal power plant facility in August 2019 (GSL Report No. GS1910, dated August 7, 2019. GS Lyon reviewed that report as part of this site assessment.

Mr. Jurg Heuberger, Senior Vice President of Hudson Ranch Power 1, LLC, provided a copy for our review of a Phase I Environmental Site Assessment Update for the Hudson Ranch I Geothermal Property Area, prepared by Environmental Management Associates (EMA) of Brea, California in February 2010 (EMA Report No. 1988-05, dated February 2010).

Melissa Foster of Stoel Rivers, LLP provided for our review documentation of State Well 2-14, Imperial 1-13 well and Hudson-1 well abandonment records on October 28, 2019. Ms. Foster also provided Salton Sea Scientific Drilling Project Final Report for our review on November 20, 2019.

4.0 RECORDS REVIEW

A review of historic aerial photographs (Appendix C), historic topographic maps (Appendix D), historic Sanborn Fire Insurance maps (Appendix E), governmental regulatory databases (Appendix F), other regulatory and agency databases (Appendix G), and historic telephone and city directories (Appendix H) was performed to evaluate potentially adverse environmental conditions resulting from previous ownership and uses of the subject property. The details of the review are presented in Sections 4.1 through 4.5 of this report.

4.1 Regulatory Database Review

4.1.1 Standard Environmental Record Sources

GS Lyon Consultants contracted Environmental Data Resources, Inc. (EDR) of Shelton, Connecticut which queries and maintains comprehensive environmental databases and historical information, including proprietary databases, aerial photography, topographic maps, Sanborn Maps, and city directories to generate a compilation of Federal, State and Tribal regulatory lists containing information regarding hazardous materials occurrences on or within the prescribed radii of ASTM E1527-13. The search of each database was conducted using the approximate minimum search distances from the subject property defined by the ASTM E1527-13 Standard. The purpose of the records review is to obtain and review *reasonably ascertainable* records that will help identify *recognized environmental conditions* or *historical recognized environmental conditions* in connection with the subject property.

EDR‘s Phase I ESA search package was ordered and performed on September 5, 2019. The search package included: Radius Map with Geocheck, aerial photographs, historic topographic maps, Sanborn maps, building permits, city directory, and property tax information.

The results of EDR’s search were used to evaluate if the subject property and/or properties within prescribed search distances are listed as having a past or present record of actual or potential environmental impact. Inclusion of a property in a government database list does not necessarily indicate that the property has an environmental problem.

The following is a brief synopsis of sites identified in the EDR Radius Map with Geocheck report. The government record search report is included in its entirety in Appendix F.

Federal NPL List

The Environmental Protection Agency's (EPA) National Priorities List (NPL) of uncontrolled or abandoned hazardous waste sites was reviewed for risk sites within a 1 mile radius of the subject property. The NPL identifies sites for priority cleanup and long-term care of properties under the Superfund Program that are contaminated with hazardous substances.

The database search did not identify any NPL sites within 1 mile of the subject property.

Federal CERCLIS List

The EPA's Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) listings were reviewed to determine if risks sites within ½ mile are listed for investigation. The CERCLIS database identifies hazardous waste sites that are on or proposed to be included in the NPL and sites that require investigation and possible remedial action to mitigate potential negative impacts on human health or the environment.

The CERCLIS database search did not identify any risk sites within 0.5 mile of the subject property.

Federal CERCLIS – No Further Remedial Action Planned

The EPA's CERCLIS – No Further Remedial Action Planned (NFRAP) database was reviewed to determine if risks sites within ½ mile are listed. CERCLIS NFRAP site are risk sites that have been removed from and archived from the inventory of CERCLIS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at the subject property has been completed and the EPA has determined that no further steps will be taken to list this subject property on the NPL, unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time.

This designation is for sites where no contamination was found, contamination was quickly removed without the need for the subject property to be placed on the NPL, or the contamination was not serious enough to require Federal Superfund action or NPL consideration.

The CERCLIS – NFRAP database search did not identify any risk sites within ½ mile of the subject property.

Federal RCRA List

The Federal Resource Conservation Recovery Act (RCRA) Notifiers List was reviewed to determine if RCRA treatment, storage or disposal sites (TSD) are located within 1 mile of the subject property. The RCRA Correction Action Sites List (CORRACTS) is maintained for risk sites which are undergoing "a corrective action". A corrective action order is issued when there has been a release of hazardous waste constituents into the environment from a RCRA facility.

The RCRA and RCRA CORRACTS database searches did not identify any RCRA TSD or RCRA CORRACTS risk sites within ½ mile of the subject property.

The RCRA regulated hazardous waste generator notifiers list was reviewed to determine if RCRA generator facilities are located on or adjoining the subject property. No RCRA generator facilities within ¼ mile of the subject property were identified in the database.

The Hudson Ranch 1 geothermal power plant is not identified in the governmental records search as a RCRA facility, but the facility does handle hazardous material, both in oil and oily rags, and in brine filter cake. According the HR 1 personnel, the oil and oily rags are handled in an approved manner by placing used oil and used oil rags into sealed 50-gallon drums which are then taken to an approved California recycling facility. The brine filter cake is tested before it leaves the site and if found to exceed STLC and/or TTLC limits of California EPA, it goes to an approved facility that can accept this type of material. If the brine filter cake is found to be below all threshold levels, then it is taken to a California approved landfill. The waste materials are currently being taken to both types of landfills, one in California and one in Arizona. All hazardous waste is manifested and tracked according to EPA regulations.

Federal ERNS List

The Federal Emergency Response Notification System (ERNS) List was reviewed to determine if reported release of oil and/or hazardous substances occurred on the subject property.

The ERNS database searches did not identify any reported releases for the subject property.

State and Tribal NPL List

The Environmental Protection Agency's (EPA) National Priorities List (NPL) of uncontrolled or abandoned hazardous waste sites was reviewed for risk sites within a 1 mile radius of the subject property. The NPL identifies sites for priority cleanup and long-term care of properties under the Superfund Program that are contaminated with hazardous substances.

The database search did not identify any NPL sites within 1 mile of the subject property.

State and Tribal Leaking Underground Storage Tank Sites

The California State Water Resources Control Board (SWRCB) maintains a list of information concerning reported leaking underground storage tanks (LUST). The LUST inventory list was reviewed to determine if any LUSTs are located within ½ mile the subject property.

The SWRCB LUST database did not identify any risk sites within ½ mile of the subject property.

State and Tribal Underground Storage Tank Sites

The California State Water Resource Control Board (SWRCB) underground storage tank (UST) inventory list was reviewed to determine if any UST's are located on or adjacent to the subject property.

The SWRCB UST database did not identify any risk sites within ¼ mile of the subject property.

Solid Waste Disposal/Landfill Facilities

The Solid Waste Disposal/Landfill Sites records typically contain an inventory of solid waste disposal facilities or landfills in a particular state. The data comes from the Integrated Waste Management Board's Solid Waste Information System (SWIS) database.

A review of the SWF/LF list database did not identify any risk sites within ½ mile of the subject property.

Unmapped (Orphan) Sites

Not all sites or facilities identified in the database records can be accurately located in relation to the Subject Property due to incomplete information being supplied to the regulatory agencies and are referred to as "orphan sites" by EDR.

The "Orphan Summary" section of the EDR Radius Map Report identified several orphan sites. Based on a drive-by reconnaissance of the Subject Property vicinity and review of location and status information provided in the database report, none of the identified orphan sites are located within the search radii for databases specified by the Standard.

One (1) orphan listing was reported. The orphan site listed is for well drilling operations conducted in 2007 for geothermal wells north of the subject site. No violations were noted in the records.

4.1.2 Vapor Screening

GS Lyon Consultants contracted Environmental Data Resources, Inc. (EDR) to conduct a Vapor Encroachment Screening (ASTM E2600) for the subject property. The purpose of a Vapor Encroachment Screen is to evaluate the potential for the migration of vapors from *chemicals of concern (COC)* onto a property as a result of contaminated soil and groundwater on or near the property.

The subject site is predominantly agricultural land and duck hunting ponds. The only site development, other than early exploratory geothermal test wells (Plate 2d, Appendix B) is the Hudson Ranch geothermal power plant and injection/production wells. Due to the lack of historical development on the subject site, the potential for vapor encroachment from the site itself is considered nil. Vapor Encroachment Screening reviewed is included in Appendix G.

No Recognized Environmental Concern (REC) risk sites were identified in the EDR report within the specified minimum search distances. Due to the lack of reported risk sites proximal to the subject site, the potential for vapor encroachment from the adjacent properties is considered nil.

4.1.3 Additional Environmental Record Sources

California Department of Toxic Substances Control (DTSC) Records – Envirostor Database: EnviroStor is an online search and Geographic Information System tool for identifying sites that have known contamination or sites for which there may be reasons to investigate further. Public Access to EnviroStor is accessible via the DTSC Web Page located at: http://www.envirostor.dtsc.ca.gov/public/. The EnviroStor database includes the following site types: Federal Superfund sites (National Priority List); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites.

The information includes site name, site type, status, address, any restricted use (recorded deed restrictions), past use(s) that caused contamination, potential contaminants of concern, potential environmental media affected, site history, planned and completed activities. The EnviroStor database also contains current and historical information relating to Permitted and Corrective Action facilities. The EnviroStor database includes current and historical information on the following permit-related documents: facility permits; permit renewal applications; permit modifications to an existing permit; closure of hazardous waste management units (HWMUs) or entire facilities; facility corrective action (investigation and/or cleanup); and/or post-closure permits or other required post-closure activities.

The EnviroStor database was queried on September 5, 2019. A map showing the results of the query is provided in Appendix G. No reported cases were found on the subject property. No risk sites were located within 1 mile of the subject property.

California State Water Resources Control Board Records – GeoTracker Database: GeoTracker is a geographic information system (GIS) maintained by the California State Water Resources Control Board (SWRCB) that provides online access to environmental data at http://www.geotracker.swrcb.ca.gov\. GeoTracker tracks regulatory data about underground fuel tanks, fuel pipelines, and public drinking water supplies. Site information from the Spills, Leaks, Investigations, and Cleanups (SLIC) Program is also included in GeoTracker.

The GeoTracker database was queried for environmental data pertaining to the Subject property on September 5, 2019. A map showing the results of the query is provided in Appendix G. No reported cases were found on the subject property. No risk sites were located within 1 mile of the subject property.

CUPA Records Search: The Unified Program consolidates, coordinates, and makes consistent the administrative requirements, permits, inspections, and enforcement activities of six environmental and emergency response programs. Cal/EPA and other state agencies set the standards for their programs while local governments implement the standards—these local implementing agencies are called Certified Unified Program Agencies (CUPA).

The DTSC Imperial CUPA office was contacted (Veronica Lopez) by email on September 5, 2019. CUPA records were searched for environmental issues related to the subject property by GS Lyon personnel on September 10, 2019.

The CUPA records indicate that the facility stores chemicals for laboratory analysis, produces filter cake material from the withdrawal of the brine fluids, and has small fuel tanks on site. No environmental issues were noted in the CUPA records reviewed.

4.2 Historical Use Records

ASTM E1527-13 requires the environmental professional to identify all obvious uses of the property from the present back to the property's first developed use or 1940, whichever is earliest. This information is collected to identify the likelihood that past uses have led to RECs in connection with the property. This task is accomplished by reviewing standard historical sources to the extent that they are necessary, reasonably ascertainable, and likely to be useful.

These standard records include aerial photographs, fire insurance maps, property tax files, land title records, topographic maps, city directories, telephone directories, building department records, and zoning/land use records.

The general type of historical use (i.e., commercial, retail, residential, industrial, undeveloped, office) should be identified at 5-year intervals, unless the specific use of the property appears to be unchanged over a period longer than 5 years. The historical research is complete when the use is defined or when data failure occurs. Data failure occurs when all of the standard historical sources have been reviewed, yet the property use cannot be identified back to its first developed use or to 1940. Data failure is not uncommon in trying to identify the use of the property at 5-year intervals back to first use or 1940, whichever is earlier.

GS Lyon reviewed the following historical records to identify obvious uses of the subject property from the present back to the property's first developed use, or to 1940, whichever is earlier. The results of this research and data failure, if encountered, are presented in the following sections.

4.2.1 Title Records

GS Lyon was not provided with title records for review as part of this assessment.

4.2.2 Sanborn Fire Insurance Maps

Sanborn Fire Insurance Maps are large scale maps depicting the commercial, industrial, and residential sections of various cities across the United States. Since the primary use of the fire insurance maps was to assess the buildings that were being insured, the existence and location of fuel storage tanks, flammable or other potentially toxic substances, and the nature of businesses are often shown on these maps.

Due to the rural historical undeveloped nature of the subject property and vicinity for the years the Sanborn Fire Insurance Maps were available for this subject property, no maps are available for the subject property. An "Unmapped Property" letter for the Sanborn Fire Insurance Maps is included in Appendix E.

4.2.3 Aerial Photographs

Aerial photographs obtained from Environmental Data Resources (EDR) dating back to 1937 were reviewed for historical development of the subject property. Reproductions of the historical aerial photographs reviewed are included in Appendix C.

The 1937 aerial photograph shows the subject site as being agricultural fields with field roads crossing the site. There is an approximately 9 acre abandoned warm water "spa" and dry ice plant located adjacent to the northwest corner of the site.

The 1949, 1953, 1976, 1984, and 1992 aerial photographs are similar to the 1937 aerial photograph. Some of the fields were fallowed during this time period. Adjacent properties were also agricultural fields. Old carbon dioxide wells are visible in these photographs. The wells have been abandoned and are visible currently as mud pots, pools, and dried "craters".

The 2006 and 2009 aerial photographs show that some of the fields have been converted from agricultural use to duck ponds, shallow water filled ponds for duck hunting. A geothermal well has been drilled north of the HR1 Plant.

The 2012 and 2016 aerial photographs show the site as being similar to the 2009 aerial photograph except that the Hudson Ranch geothermal power plant has been constructed in the southern portion of the subject site. Additional geothermal wells have been constructed northeast of the geothermal power plant site (north of McDonald Road) and along the east-central portion of the site.

4.2.4 Street Directories

GS Lyon Consultants contracted Environmental Data Resources, Inc. (EDR) of Shelton, Connecticut to conduct a search of historic city directories for the subject property (Appendix H). City directories are used for locating individuals and businesses in a particular urban or suburban area.

City directories are generally divided into three sections: a business index, a list of resident names and addresses, the name and type of businesses (if unclear from the name). While city directory coverage is comprehensive for major cities, it may be spotty for rural and small towns.

City Directories: The Haines Criss-Cross Directories for the years 1990, 1995, 2000, 2005, 2010 and 2014 were reviewed. No listings were found for the subject property until 2014 which lists Hudson Ranch Power 1, LLC at 409 W. McDonald Road.

4.2.5 Historic Topographic Maps

Historic topographic maps (1945) USGS 15 Min. Calipatria, CA Quadrangle and the 1956, 1976, 1995, and 2012 USGS 7.5 Min. Niland, CA Quadrangle, showed the subject property being vacant and undeveloped (Appendix D). The 1956, 1976, and 1995 topographic maps show carbon dioxide wells located at the northwestern portion of the subject site.

4.2.6 Historical Telephone Directories

Telephone Directories: Telephone directories for the Imperial County, which included the County of Imperial businesses published in 1941, 1955, 1965, 1974, 1994, and 2004 were reviewed. No service stations, chemical manufacturers, petroleum manufacturers, distributors, or automotive repair facilities were noted at or in the immediate vicinity of the subject property.

4.3 Historical Use Summary

4.3.1 Summary of the Historical Use of Property

Based on a review of the historical information, the southern portion of the subject property was first developed in 2011 for industrial use as a geothermal power plant. Prior to development of the power plant, the subject property was used as duck hunting ponds and prior to that as agricultural fields. Carbon dioxide wells have been drilled in the northwest portion of the subject property (adjacent to the 10 acre abandoned dry ice plant at the southeast corner of Davis Road and Pound Road) in the 1930's and 1940's. The wells have been abandoned and are currently present as mud pots, pools, and dried "craters".

4.3.2 Summary of the Historical Use of Adjacent Properties

Historically, the properties located immediately adjacent to the subject property have been comprised of agricultural fields and duck hunting ponds. A 10 acre abandoned warm water "spa" and dry ice plant is located adjacent to the northwest corner of the subject property.

5.0 SITE RECONNAISSANCE

5.1 Methodology and Limiting Conditions

A site reconnaissance was performed by Mr. Pete LaBrucherie, a professional engineer, on September 19, 2019. The site visit consisted of a walking the perimeter of the subject property and randomly crossing the subject property. The reconnaissance included visual observations of surficial conditions at the subject property and observation of adjoining properties to the extent that they were visible from public areas. Mr. LaBrucherie was unaccompanied during the site reconnaissance.

The site reconnaissance was limited to visual and/or physical observation of the exterior and interior of the subject property and its improvements, the current uses of the property and adjoining properties, and the current condition of the property. The site visit evaluated the subject property and adjoining properties for potential hazardous materials/waste and petroleum product use, storage, disposal, or accidental release, including the following: presence of tank and drum storage; mechanical or electrical equipment likely to contain liquids; evidence of soil or pavement staining or stressed vegetation; ponds, pits, lagoons, or sumps; suspicious odors; fill and depressions; or any other condition indicative of potential contamination. The site visit did not evaluate the presence of asbestos-containing materials, radon, lead-based paint, mold, indoor air quality, or structural defects, or other non-scope items.

A site reconnaissance can be limited by weather conditions, bodies of water, adjacent buildings, or other obstacles. The weather was warm and sunny and no access limitations were placed on the site visit.

5.2 General Site Setting

The subject property, approximately 684 acres total, currently consists of the approximately 65 acre Hudson Ranch geothermal power plant facility (plant site) APN 020-100-044 located on the southern portion of the subject property on the south side of McDonald Road and the mineral leased area of approximately 619 acre Hudson Ranch geothermal resource area (HRGRA) to the north of the power plant facility. See Site Map of Subject Property Appendix B – Plate 2a.

Plant Site: The approximately 65 acre Hudson Ranch geothermal power plant facility (Appendix A, Photos 1-68) includes: fresh water pond, fresh water treatment, electrical switchyard, warehouse building, control building, wastewater treatment, storm water basin, concrete lined brine pond, hydro-blast pad, ES Mineral testing area (pilot plant), storage area, primary and secondary clarifier tanks, thickener tank, high pressure separator and turbine/generator. See Site Map of Plant Site Appendix B – Plate 2b.

HRGRA: The approximately 619 acre Hudson Ranch geothermal resource area (Appendix A, Photos 69-108) to the north of the power plant facility is bounded by McDonald Road on the south, Davis Road on the west, Pound Road on the north and an agricultural field road to the east. The 619 acres is composed of fallow agricultural land and duck ponds (for duck hunting clubs). Geothermal injection and production wells are located north of McDonald Road to the northwest and northeast of the geothermal plant site. Another geothermal well pad is located near the east-central margin of the subject site. Geothermal transport piping traverse across the resource area from the well pads to the geothermal plant facility. Several abandoned carbon dioxide wells (CO_2) that are currently craters, varying in size, are located at the northwest corner of the resource area, adjacent to the 10 acre abandoned dry ice plant site). Carbon dioxide wells can be seen on Site Map - Plate 2c and Topo Map - Plate 4 of Appendix B.

Photographs of the subject property taken on September 19, 2019 during our site reconnaissance are included in Appendix A.

5.3 Adjacent Properties

The subject property is located within an agricultural area with a geothermal development overlay northwest of Calipatria, California. Adjacent properties consist of vacant land to the east, abandoned dry duck hunting ponds to the south, active water filled duck hunting ponds and geothermal wells to the north, and vacant land to the west. An algae farm (shallow circulating ponds) is located southeast of the subject site. Several carbon dioxide (CO_2) gas driven mud volcanoes, active for over 100 years, are located on the vacant parcel southwest of the site and within the 10 acre abandoned dry ice plant site adjacent to the northwest corner of the subject site.

The subject area is located adjacent to the Salton Sea (approximately ½-mile west), an inland saltwater lake with no outlet. Agricultural tailwater runoff and periodic storm water runoff supply the majority of the water in the lake. Industrial and wastewater plant outfalls from Mexicali, Baja California also flow to the Salton Sea via the New River.

5.4 Exterior and Interior Observations

The following conditions were specifically assessed for their potential to indicate RECs and may include conditions inside or outside structures on the subject property.

5.4.1 Hazardous Substances and Petroleum Products

The facility uses and generate hazardous materials as part of the geothermal operation. Chemicals are stored on site for laboratory analysis. The extraction of the brine fluid produces filter cake (solids extracted from the brine fluid) which may contain potentially hazardous materials. Petroleum products are stored on the subject property.

5.4.2 Storage Tanks

Underground Storage Tanks (USTs) – No obvious visual evidence indicating the current presence of USTs (i.e. vent pipes, fill ports, etc.) was noted.

Aboveground Storage Tanks (ASTs) – No obvious visual evidence indicating the historical presence of ASTs (i.e. secondary containments, concrete saddles, etc.) was observed. Two fuel tanks, one diesel and one gasoline, are located within a secondary containment area and are used for fueling vehicles and equipment.

5.4.3 Odors

No obvious strong, pungent, or noxious odors were noted during the site reconnaissance. Odors from the brine pond and brine material from the belt filter area were noted.

5.4.4 Pools of Liquid

The only pool of liquid observed during the site reconnaissance was at the concrete lined brine pond.

5.4.5 Drums and Containers

GS Lyon observed multiple drums and storage containers on the subject property. These drums and containers stored petroleum-based products, chemicals, metals, acids, brine products and process water.

5.4.6 Unidentified Substance Containers

GS Lyon did not observe open or damaged containers containing unidentified substances at the subject property.

5.4.7 Suspect Polychlorinated Biphenyl (PCB) Containing Equipment

Slab mounted sealed electrical transformers owned and maintained by the Imperial Irrigation District (IID) are located within the subject property. The IID has documented that all transformers do not contain PCB's. No leaks were noted during our site visit. Potential PCB equipment such as hydraulic equipment and motor oils were observed during the site reconnaissance on the subject property.

5.5 Interior Observations

Interior observations were made at the Hudson Ranch Power 1 geothermal power plant site. The subject property has two building structures, a warehouse and control building, all constructed in 2011.

5.5.1 Heating/Cooling

Heating and cooling to the subject property structures are provided by ground-mounted HVAC systems.

5.4.2 Stains or Corrosion

Stains and/or corrosion were not observed on floors, walls, or ceiling of the subject property structures.

5.4.3 Drains and Sumps

All plant sumps drain into or are pumped and hauled to the brine pond (no offsite runoff).

5.6 Exterior Observations

5.6.1 Pits, Ponds, and Lagoons

A fresh make-up water pond is located at the northeast corner of the subject property. A concrete lined brine pond with secondary containment liner and groundwater monitoring wells is located in the south-center of the property. Numerous shallow, water filled and dry duck hunting ponds are located on the subject site.

5.6.2 Stained Soils or Pavement

No evidence of significantly stained soil or pavement was noted on the subject property. Small oil stains were observed on the asphalt near the warehouse building. There is an area on the north side of the brine pond where some brine material had spilled during transfer from the brine pond into bins for transport to an approved landfill. The spill occurred on an asphaltic concrete paved area with a sump that drains back into the brine pond.

5.6.3 Stressed Vegetation

No evidence of stressed vegetation attributed to potential contamination was noted on the subject property.

5.6.4 Solid Waste

Dumpsters and solid waste containers exist at the geothermal power plant property. Non-hazardous trash is collected by Republic Services of Imperial, California.

There were concrete and asphalt debris piles at the south end of the power plant site west of the stormwater basin. Multiple metal hazardous waste containers filled with drilling mud and metal shavings were being stored onsite. Geothermal brine is being stored within the brine pond, a temporary containment area and within hazardous waste containers. The brine fluid is re-injected into wells to maintain the operation of the closed-circuit geothermal fluids process.

Hazardous material separated from the brine at the belt filter area is transferred to hazardous waste trailers that haul the solid filter cake material offsite to a hazardous waste landfill.

5.6.5 Wastewater

Wastewater generated at the subject property is limited to sinks, toilets, etc. is processed with tertiary treatment with a small onsite wastewater treatment plant and the processed water is injected deep underground through a brine fluid injection well.

5.6.6 Wells

Groundwater monitoring wells are located around the concrete lined brine pond at the geothermal power plant site for semi-annual monitoring of groundwater by Landmark Consultants, Inc. of El Centro, California at the brine pond. A background groundwater monitoring well is located at the southwest corner of the storm water retention basin on the south margin of the subject site. Results of the semi-annual groundwater monitoring have not shown elevated levels of the constituents evaluated. The semi-annual reports are filed with the Regional Water Quality Control Board as required under the Hudson Ranch 1 Waste Discharge Requirements. A copy of the latest monitoring report (May 2019) is provided in Appendix J.

5.6.7 Septic Systems

An onsite wastewater treatment system, consisting of septic tanks, above-ground aerobic treatment pods, filtration and UV light disinfection, is present on the subject property.

The effluent from the system is discharged into the brine pond and then re-injected into the geothermal brine fluid injection wells.

5.7 Non-Scope Issues

ASTM guidelines identify non-scope issues, which are beyond the scope of a Phase I ESA as defined by ASTM. These issues may affect environmental risk at the subject property and may warrant discussion and/or assessment. Some of these non-scope issues include; asbestos-containing building materials, radon, lead-based paint, and wetlands which are discussed below.

5.7.1 Asbestos-Containing Building Materials

The potential for asbestos containing materials (ACM) existing at the subject property is very low due to the recent age (constructed in 2011) of the subject property structures.

5.7.2 Lead-Based Paint

The potential or lead based paint residues existing at the subject property is very low due recent age (constructed in 2011) of the subject property structures.

5.7.3 Radon

The subject property is located in Zone 3 as shown on the EPA Map of Radon Zones indicating a predicted average indoor radon screening level of less than 2 pCi/L; therefore, no further action is required. Radon gas is not believed to be a potential hazard at the subject property.

5.7.4 Wetlands

Wetlands are located within one (1) mile of the subject property and consist of duck habitat ponds (for recreational hunting) and the Salton Sea, a migratory birds flyway.

5.7.5 Agricultural Use

Based on our review of environmental records, historical documents, and subject property conditions, the property was in agricultural use prior to the mid 1970's. Residues of currently available pesticides and currently banned pesticides such as DDT/DDE may be present in near surface soils in limited concentrations. The concentrations of these pesticides found on other Imperial Valley agricultural sites are typically less than 25% of the current regulatory threshold limits and, at those levels, are not considered a significant environmental hazard. The presence and concentration of near surface pesticides at this subject property can be accurately characterized only by site-specific sampling and testing.

6.0 INTERVIEWS

GS Lyon interviewed various individuals familiar with the subject property, as identified to us, and/or government officials in order to evaluate historical uses and identify potential RECs existing on the subject property. The individuals interviewed were asked to provide responses in good faith and to the best of their knowledge. The following sections identify the individuals interviewed and summarize the information each provided; however, additional information provided by these individuals may be presented in other sections of this report.

6.1 Interview with Site Personnel

Dr. Charles Marston of Marston Hydro-Met, LLC who is working for Hudson Ranch Power 1, LLC, was interviewed by GS Lyon personnel on May 29, 2019. Dr. Marston was working in the minerals extraction pilot plant area and indicated that he had no information pertaining to any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the subject property; any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the subject property; or any notices from a governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.

6.2 Interview with Local Government Officials

The DTSC Imperial CUPA office was contacted (Veronica Lopez) by email on September 5, 2019. CUPA records were searched on September 10, 2019 for environmental issues related to the subject property. CUPA records indicate that the facility stores chemicals for laboratory analysis and had several tanks that store petroleum based fluids. Records indicated that in February 2018, CUPA personnel inspected the facility and minor violations were corrected by March 2018.

6.3 Interview with Senior Vice President of Hudson Ranch 1

Mr. Jurg Heuberger, property Senior Vice President, was contacted by GS Lyon personnel on October 14, 2019. Mr. Heuberger indicated that Hudson Ranch 1 handles and generates hazardous waste and fully complies with all EPA regulations, he had no information pertaining to any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the subject property; any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the subject property; or any notices from a governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.

Mr. Heuberger also provided a previous Phase 1 ESA report prepared by EMA Consultants dated February 10, 2010. He indicated that to date none of the HR1 Plant internal lab testing of the groundwater monitoring wells has indicated any release of material.

7.0 EVALUATION

7.1 Summary of Findings

The subject property is located in an area generally developed for agricultural and industrial use approximately 6 miles northwest of Calipatria, California. A portion subject property has been developed as a geothermal power plant since 2011. Prior to development of the power plant, the subject property was used as duck hunting ponds and prior to that as agricultural fields. Carbon dioxide wells have been drilled in the northwest portion of the subject property (adjacent to the 10 acre abandoned dry ice plant at southeast corner of Davis Road and Pound Road) in the 1930's and 1940's. The wells have been abandoned and are currently present as mud pots, pools, and dried "craters". Multiple former geothermal exploratory wells have been drilled within the subject property since the early 1960's. The former exploratory wells have been plugged and abandoned but there are incomplete records describing cleanup of these former wells and their respective geothermal drilling fluid containment basins.

7.2 Conclusions

GS Lyon has performed a Phase I Environmental Site Assessment in general conformance with the scope and limitations of ASTM E1527-13 of the property located 409 W. McDonald Road approximately 6 miles northwest of Calipatria, California. Any exceptions to, or deviations from, this practice are described in Section 1.4 of this Phase I ESA report. This assessment has revealed the following recognized environmental conditions (RECs) in connection with the subject property:

7.2.1 Recognized Environmental Conditions

A *recognized environmental condition (REC)* refers to the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products into structures on the property or into the ground, groundwater, or surface water of the property. The term REC includes hazardous substances and petroleum products even under conditions that might be in compliance with laws. The term is not intended to include "de minimis" conditions as defined in Section 7.2.3 of this report.

This Phase I ESA has revealed evidence of *recognized environmental conditions* in connection with the subject property.

- **There is potential for evaporite deposits located around the abandoned carbon dioxide wells containing potential hazardous substances. The chemical characteristics of the deposits is unknown.**

7.2.2 Historical Recognized Environmental Conditions

A *historical recognized environmental condition (HREC)* refers to a past *release* of any *hazardous substances* or *petroleum products* that has occurred in connection with the *property* and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the *property* to any required controls (for example, *property* use restrictions, *activity and use limitations*, *institutional controls*, or *engineering controls*).

This Phase I ESA has revealed no evidence of *historical recognized environmental conditions* in connection with the subject property.

7.2.3 Environmental Concerns and De Minimis Conditions

A *de minimis condition* is a condition that generally does not present a threat to human health or the *environment* and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be *de minimis conditions* are not *recognized environmental conditions* nor *controlled recognized environmental conditions*.

This Phase I ESA has revealed *de minimis* conditions or environmental concerns in connection with the subject property.

- **Small hydrocarbon and geothermal brine spills are apparent within the Plant Site of the Subject Property. These spills are common events for geothermal power plant facilities that Hudson Ranch 1 monitors and manages.**

7.3 Recommendations

Based on the scope of work performed for this assessment, it is our professional opinion that the RECs that have been identified are within the leased properties of the subject property. No RECs have been identified in connection with the Plant Site of the subject property. The REC's found within the geothermal resource area may require further site assessment.

8.0 REFERENCES

40 CFR 312, Standards and Practices for All Appropriate Inquiries; Final Rule, November 2005 (AAI Rule).

American Society for Testing and Materials. 2013. Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process. Designation E 1527-13. West Conshohocken, Pennsylvania. 35 pp.

Department of Toxic Substances Control. 2019. EnviroStor Database Website, http://www.envirostor.dtsc.ca.gov/public/ .

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State Water Resources Control Board. 2019. GeoTracker Database Website, http://geotracker.swrcb.ca.gov/ .

United States Department of Agriculture, Natural Resources Conservation Service, Web Soil Survey, accessed via the Internet, September 2019

United States Environmental Protection Agency, EPA Map of Radon Zones (Document EPA-402-R-93-071), accessed via the Internet, September 2019

United States Geological Survey Topographic Map 1997, 7.5 minute series

APPENDIX A

Photo 1: Looking east/northeast at the west side of the control building.

Photo 2: Looking along the south side of the control building at the HVAC units, and Argon gas cylinders.

Photo 3: Looking at waste bin on the south side of the control building that contains brine samples from the lab.

Photo 4: Looking at the secondary containment area at south side of the control building.

Photo 5: Looking at the argon gas storage area on the south side of the control building.

Photo 6: Looking southwest toward the belt filter area.

Photo 7: Looking north at the warehouse building.

Photo 8: Looking at the slightly oil stained pavement outside of the warehouse building.

Photo 9: Looking at various containers on the south side of the warehouse that contain various liquid products including those containing hydrocarbons.

Photo 10: Looking at the 5-gallon buckets on the south side of the warehouse building.

Photo 11: Looking at the secondary containment area at the southwest corner of the warehouse building.

Photo 12: Looking at the used oil containers within the secondary containment from Photo 11.

Photo 13: Looking at the sumps that are inside the secondary containment from Photo 11, these drain to the brine pond.

Photo 14: Looking at the oil staining within the secondary containment.

Photo 15: Looking at a temporary secondary containment bin along the west wall of the secondary containment area from Photo 11.

Photo 16: Looking south from the south side of the warehouse at the sumps within the paved area, the sumps drain to the brine pond.

Photo 17: Looking north into the shop (east) portion of the warehouse building.

Photo 18: Looking at the petroleum based products stored along the north wall of the shop in the warehouse building.

Photo 19: Looking at the spill cleanup buckets in the shop (east) portion of the warehouse building.

Photo 20: Looking northwest into the receiving (west) portion of the warehouse building.

Photo 21: Looking at petroleum-based products stored inside a room within the west portion of the warehouse building.

Photo 22: Looking east toward the warehouse building from the storage area of the Plant Site.

Photo 23: Looking at used empty liquid storage containers located within the storage area of the Plant Site.

Photo 24: Looking south from the storage area of the Plant Site.

Photo 25: Looking at empty unused 55-gallon drums within the storage area of the Plant Site, and a Republic trash roll off bin.

Photo 26: Looking at scrap metal located within the storage area of the Plant Site.

Photo 27: Looking at the electrical wire spools located within the storage area of the Plant Site.

Photo 28: Looking southwest across the storage area of the Plant Site.

Photo 29: Looking southeast across the Plant Site from the northwest corner.

Photo 30: Looking south along the west boundary of the Plant Site.

Photo 31: Looking at multiple used empty liquid containers located near southwest corner of the Plant Site.

Photo 32: Looking north from the southwest corner of the Plant Site.

Photo 33: Looking east from the southwest corner of the Plant Site.

Photo 34: Looking at container with drilling mud with metal shavings located within the storage area of the Plant Site.

Photo 35: Looking at multiple hazardous waste containers that contain drilling mud with metal shavings within the storage area of the Plant Site.

Photo 36: Looking at diesel and gasoline fuel tanks and pumps located just northeast of the ES Mineral Test area within the Plant Site.

Photo 37: Looking at the drain within the fuel tank secondary containment area, this sump drains to the brine pond.

Photo 38: Looking at the ES Mineral Test area within the Plant Site, the area is bounded by concrete containment.

Photo 39: Looking at the southeast corner of the ES Mineral Test area at the electrical transformer and the process water tank.

Photo 40: Looking within the southern portion of the ES Mineral Test area at various liquid containers/tanks. The blue tanks are all labeled empty. Containment curb around this area and floor drains that are connected to the brine pond.

Photo 41: Looking at multiple used empty liquid containers located along the west side of the ES Mineral Test area.

Photo 42: Looking at small hydrocarbon spill within the secondary containment at the west portion of the ES Mineral Test area of the Plant Site.

Photo 43: Looking at the drain within the ES Mineral Test area that drains into the brine pond.

Photo 44: Looking at the north end of the ES Mineral Test area.

Photo 45: Looking at the northeast corner of the ES Mineral Test area with the steam and geothermal brine lines entering the area through the trench.

Photo 46: Looking east along the trench from the ES Mineral Test area toward the brine pond.

Photo 47: Looking north at the west end of the brine pond. The belt filter area and clarifiers can be seen in the distance.

Photo 48: Looking east/northeast at the brine pond and the cooling tower in the distance within the Plant Site.

Photo 49: Looking southeast toward the southern boundary of the Plant Site.

Photo 50: Looking at an asphalt debris pile at the southwest corner of the stormwater retention basin within the Plant Site.

Photo 51: Looking north along the west side of the stormwater retention basin at a concrete debris pile.

Photo 52: Looking north at the make-up water pond located in the northeast corner of the Plant Site.

Photo 53: Looking northwest from the southeast corner of the make-up water pond toward the cooling tower and geothermal power plant.

Photo 54: Looking west at the geothermal power plant from the west side of the make-up water pond.

Photo 55: Looking northwest at the electrical substation located along the northern boundary of the Plant Site

Photo 56: Looking at fresh water treatment system located at the west side of the make-up water pond.

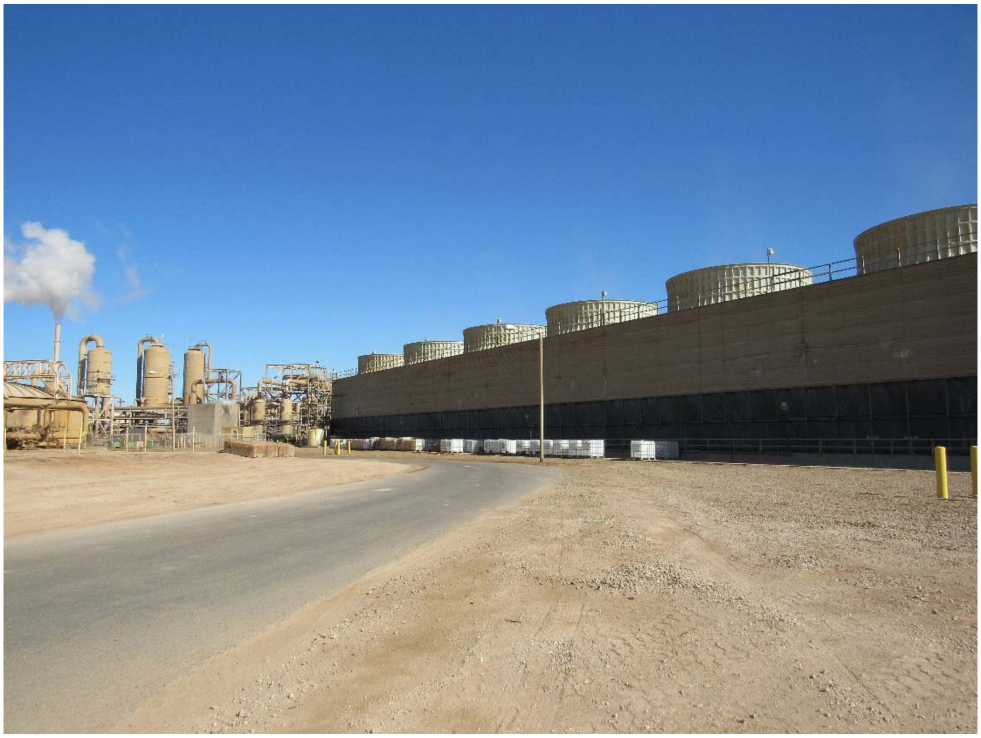


Photo 57: Looking at multiple cooling tower chemical storage containers at the west side of the cooling tower.

Photo 58a: Looking at brine pond extraction spill within the asphalt containment on the north side of the brine pond near the east end.

Photo 58b: 10/16/19 spillage shown in photo 58a was within asphalt containment area, the liquid drained to the sump and pumped back to brine pond.

Photo 59: Looking at the sump on the north side of the brine pond. The area had recent leakage of brine during extraction into green bins, all contained and sump pumped back into brine pond.

Photo 60: Looking west at the geothermal power plant from the west side of the cooling tower.

Photo 61: Looking northwest at the primary clarifier from the west side of the cooling tower.

Photo 62: Looking at the waste treatment system are at the northwest corner of the cooling tower. The effluent from the waste treatment system gets reinjected with the brine into the reinjection wells.

Photo 63: Looking at multiple pumps that are typical within the geothermal power plant and within a secondary containment berm.

Photo 64: Looking east at the hydro blast pad, this area drains into the brine pond.

Photo 65: Looking at the trailers parked on the west side of the belt filter, hazardous waste from the belt filter is disposed of in these covered trailers and removed from the site to a hazardous waste facility.

Photo 66: Looking at the belt filter area with trailer being loaded.

Photo 67: Looking east from the east side of the belt filter area toward the geothermal power plant.

Photo 68: Looking within the belt filter area.

Photo 69: Looking north along the west boundary of the subject property from corner of Davis & Mc Donald Roads.

Photo 70: Looking east from Davis Road toward the Geothermal Well Pad on the north side of Mc Donald Road.

Photo 71: Looking at one of the three wells located at the southwestern well pad of the subject property, see site map (Plate 2a).

Photo 72: Looking east at the pipe crossing road that runs east and west along the north side of Mc Donald Road.

Photo 73: Looking at a secondary containment bin located under the vales at the pipe crossing road.

Photo 74: Looking north across the portion of the subject property north of Mc Donald Road.

Photo 75: Looking northeast across the portion of the subject property north of Mc Donald Road.

Photo 76: Looking at the southeast well pad just north of the northeast corner of the Geothermal Plant Facility.

Photo 77: Looking at one of the well located at the well pad from photo 76.

Photo 78: Looking GEO906 geothermal treatment liquid container located at the well pad.

Photo 79: Looking north across the portion of the subject site north of Mc Donald Road.

Photo 80: Looking at the geothermal pipeline that extends from the geothermal plant to the well pads.

Photo 81: Looking at the Imperial Irrigation Districts pole mounted electrical transformer and water pump located at the subject property north of Mc Donald southeast corner.

Photo 82: Looking west at the northeast well pad along the east boundary of the subject property.

Photo 83: Looking south from the northeast well pad.

Photo 84: Looking west along the south side of Hazard Road that bisects the north portion of the subject property.

Photo 85: Looking south at the subject property from the south side of Hazard Road.

Photo 86: Looking south across the subject property toward the Geothermal Plant Facility from the south side of Hazard Road.

Photo 87: Looking at some hay bales, wood pallets and PVC pipe stored on the subject property south side of Hazard Road.

Photo 88: Looking north from the corner of Hazard Road and the west boundary of the subject site.

Photo 89: Looking north across the subject property from the north side of Hazard Road.

Photo 90: Looking north across the subject property from the north side of Hazard Road.

Photo 91: Looking north across the subject property from the north side of Hazard Road.

Photo 92: Looking northeast across the subject property from the north side of Hazard Road.

Photo 93: Looking west from the northeast corner of the subject property.

Photo 94: Looking south across the subject property from the east side of the north boundary.

Photo 95: Looking south across the subject property from the north boundary.

Photo 96: Looking at a travel trailer within one of the Duck Clubs along the north boundary of the subject property.

Photo 97: Looking south across the subject property from the north boundary.

Photo 98: Looking east from the north side of the west boundary of the subject property toward the unoccupied northwest well pad.

Photo 99: Looking east from the north side of the west boundary of the subject property.

Photo 100: Looking south along the west boundary of the subject property.

Photo 101: Looking at an abandoned carbon dioxide well at the northwest corner of the subject property.

Photo 102: Looking south along the west boundary of the subject property.

Photo 103: Looking south along the west boundary of the subject property.

Photo 104: Looking south along the west boundary of the subject property.

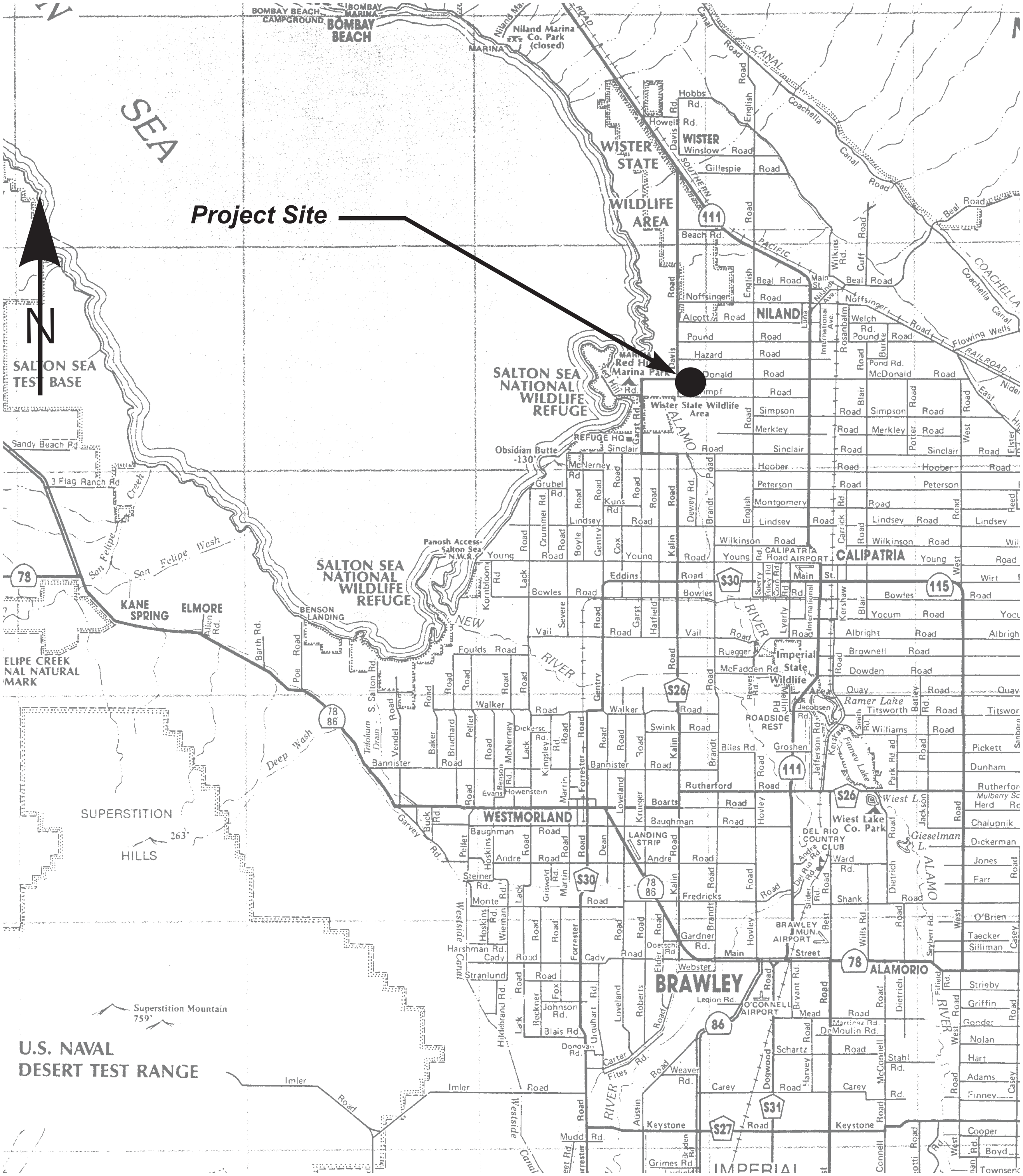
Photo 105: Looking south along the west boundary of the subject property.

Photo 106: Looking south along the west boundary of the subject property.

Photo 107: Looking south along the west boundary of the subject property.

Photo 108: Looking south along the west boundary of the subject property.

APPENDIX B

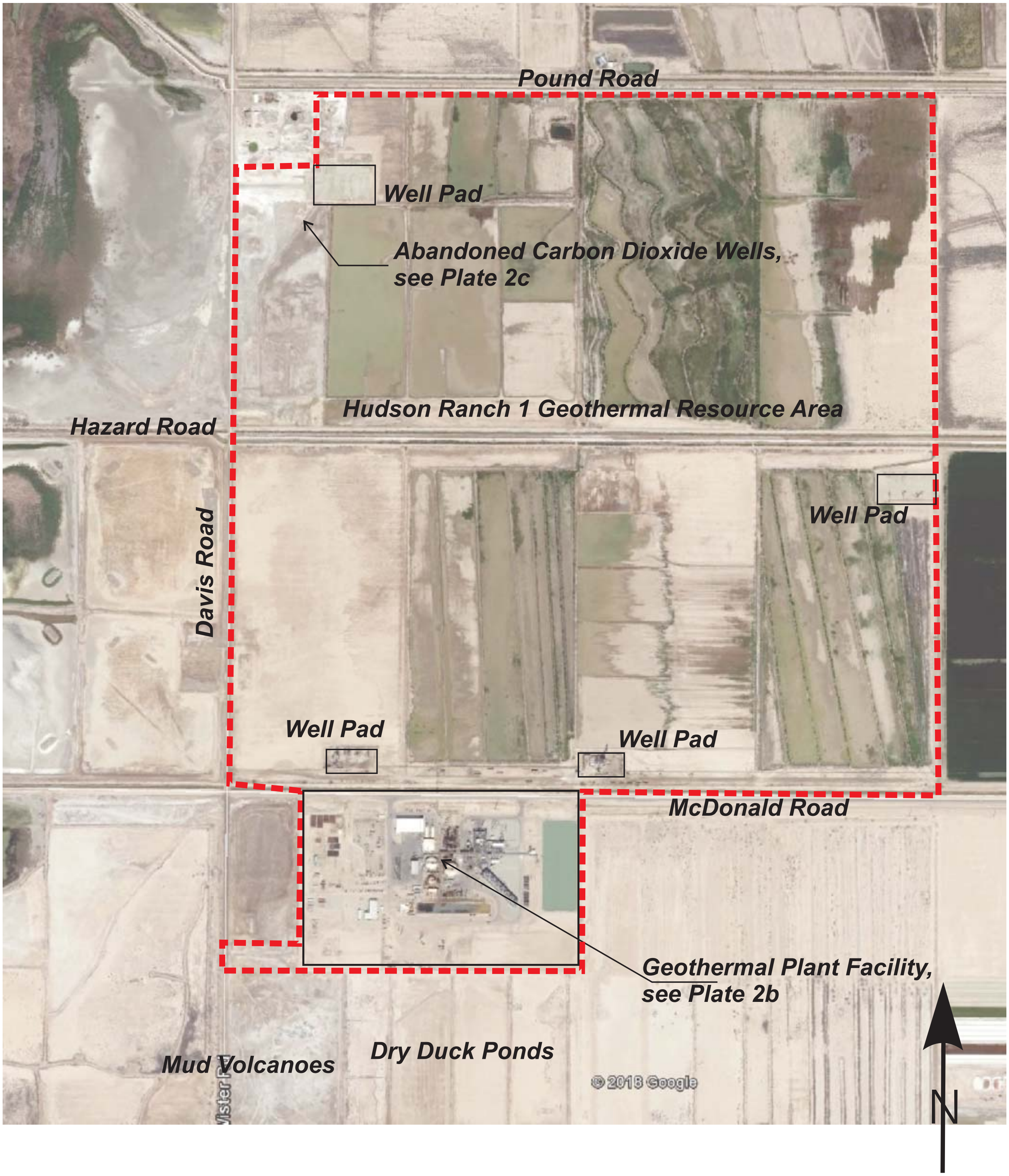


GS Lyon

Project No.: GS1921

Vicinity Map

Plate 1

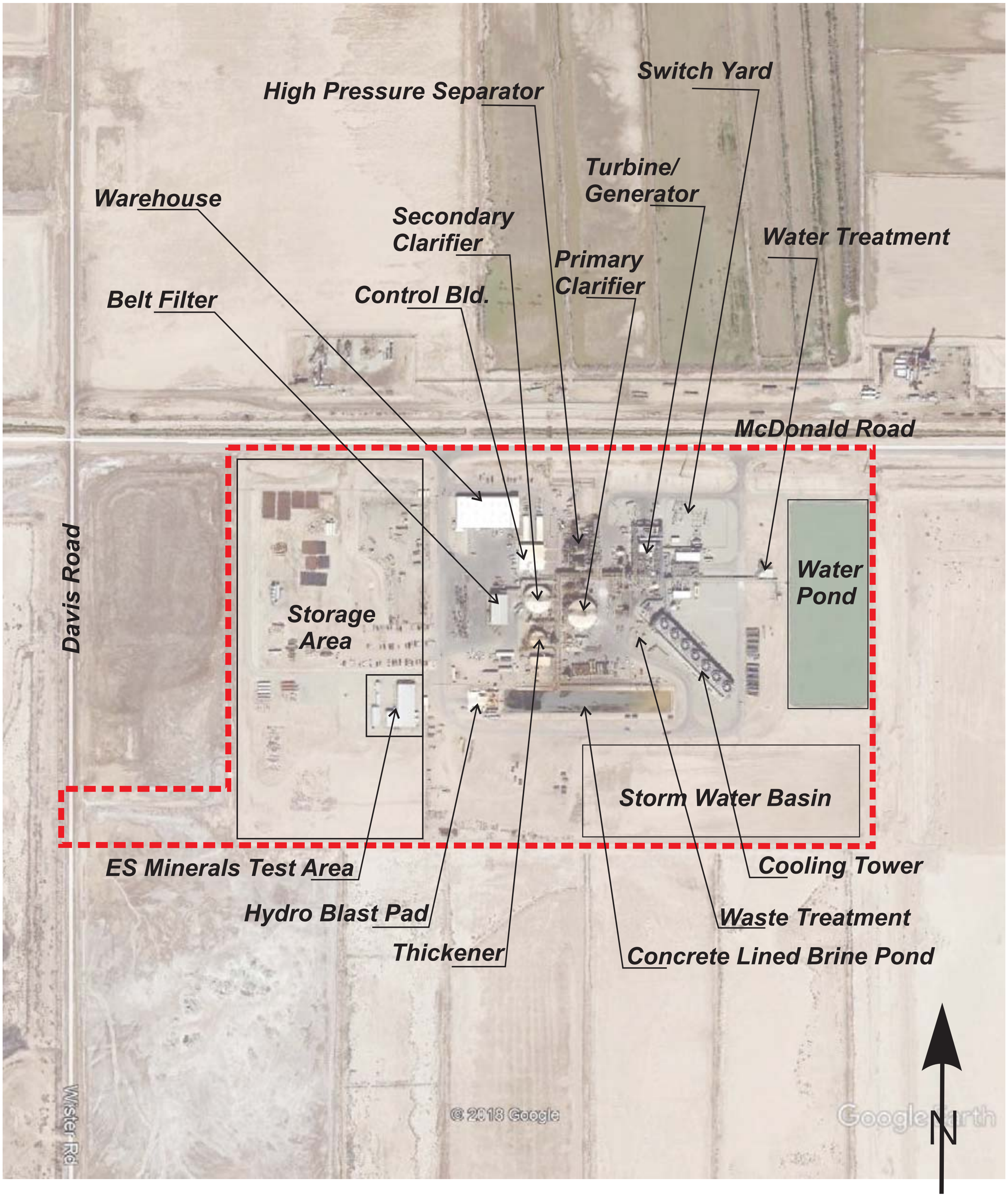


GS Lyon

Project No.: GS1921

Site Map - Subject Property

Plate
2a

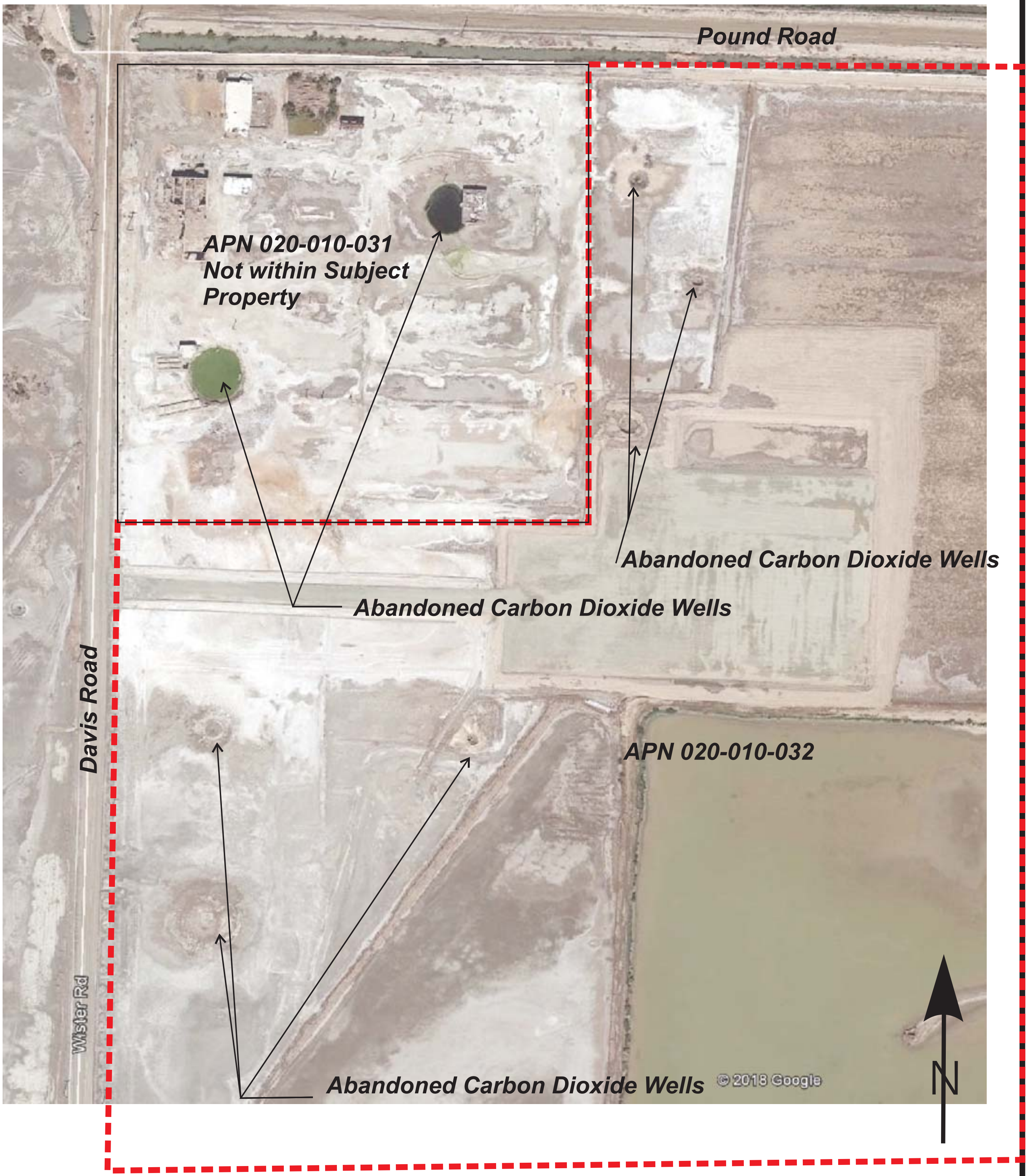


GS Lyon

Project No.: GS1921

Site Map - Geothermal Power Plant Facility (Plant Site)

Plate 2b

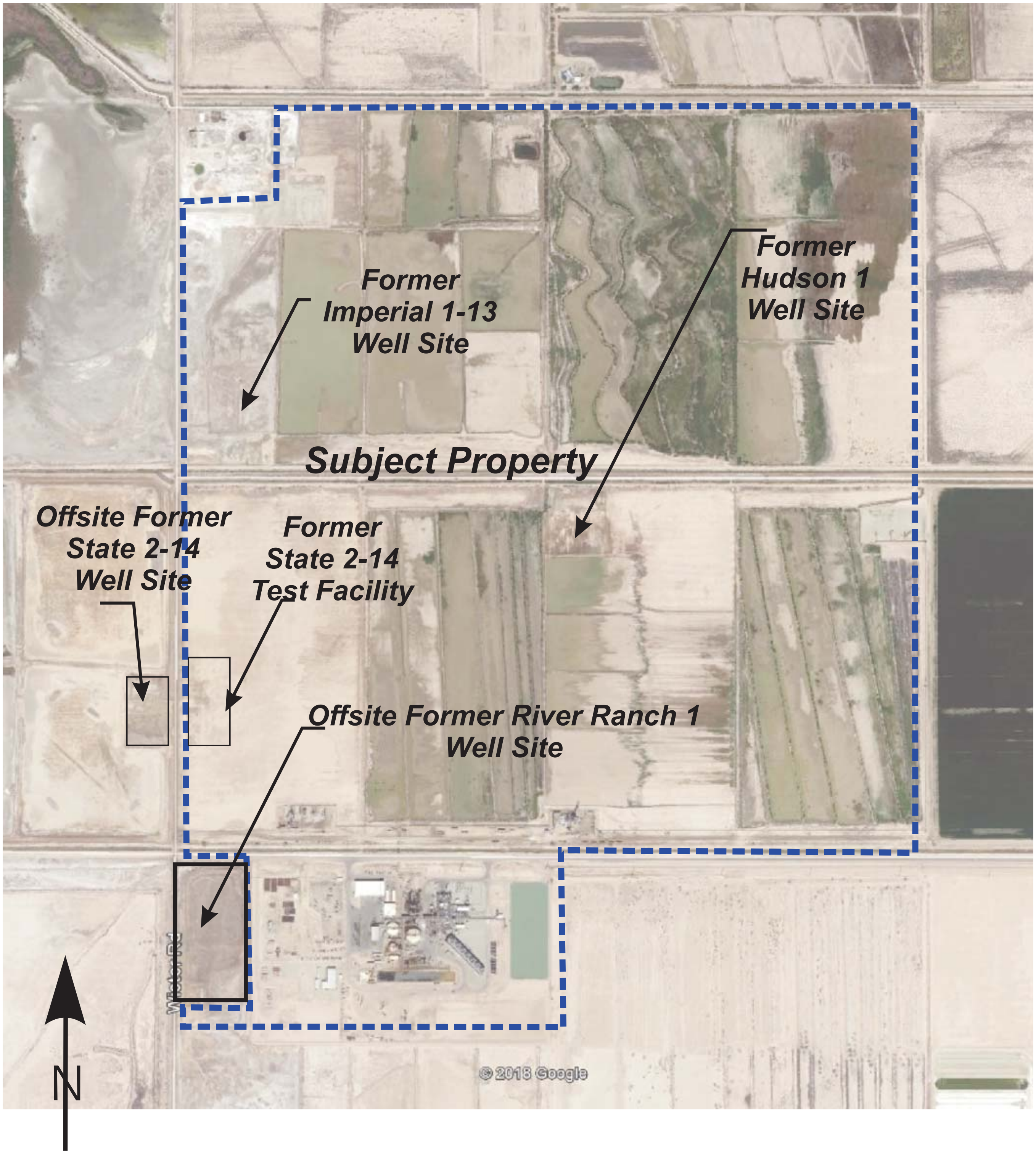


GS Lyon

Project No.: GS1921

Site Map - Northwest Corner of Subject Property

Plate 2c

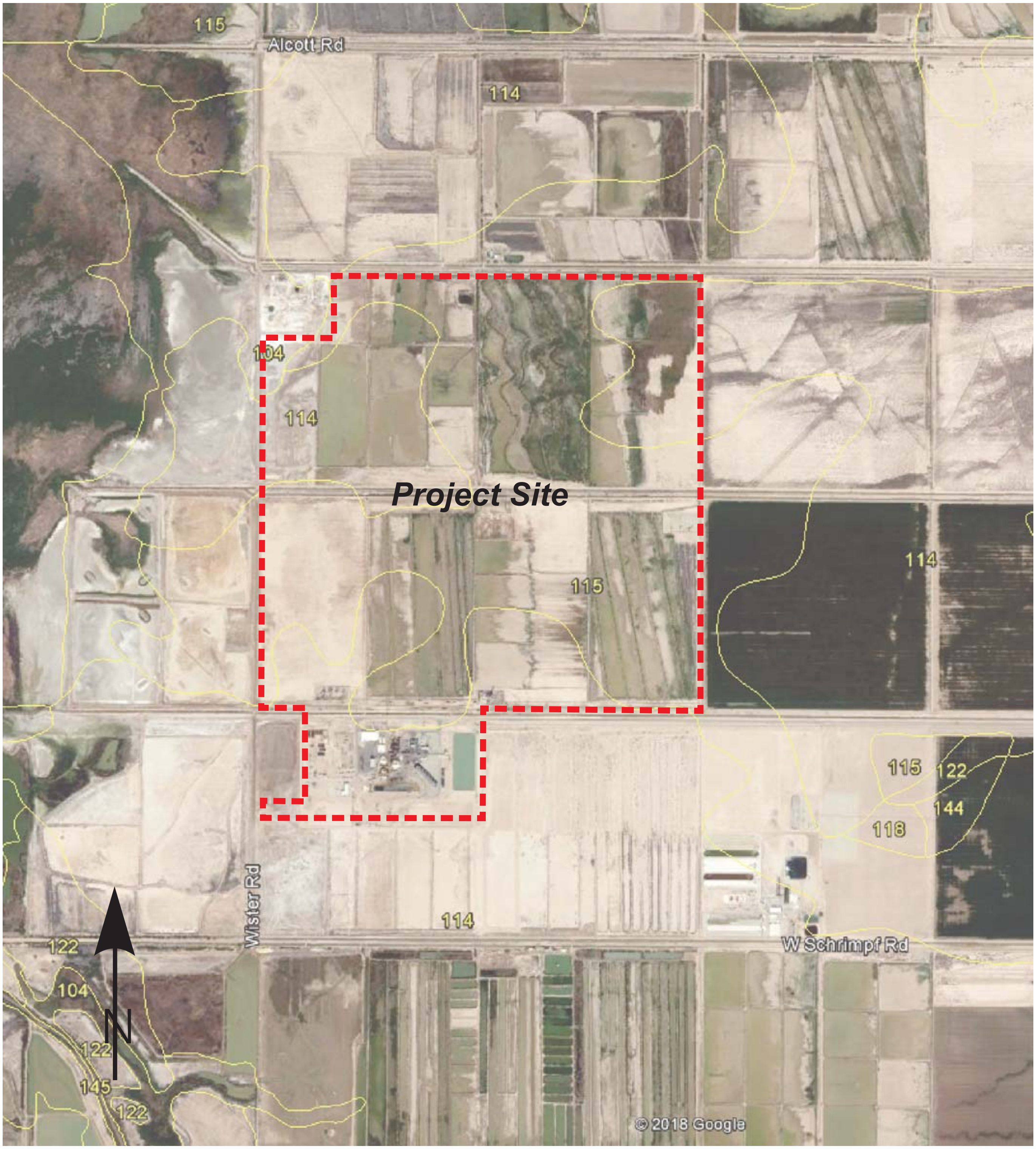


GS Lyon

Project No.: GS1921

Former Well Sites

Plate
2d



GSLyon

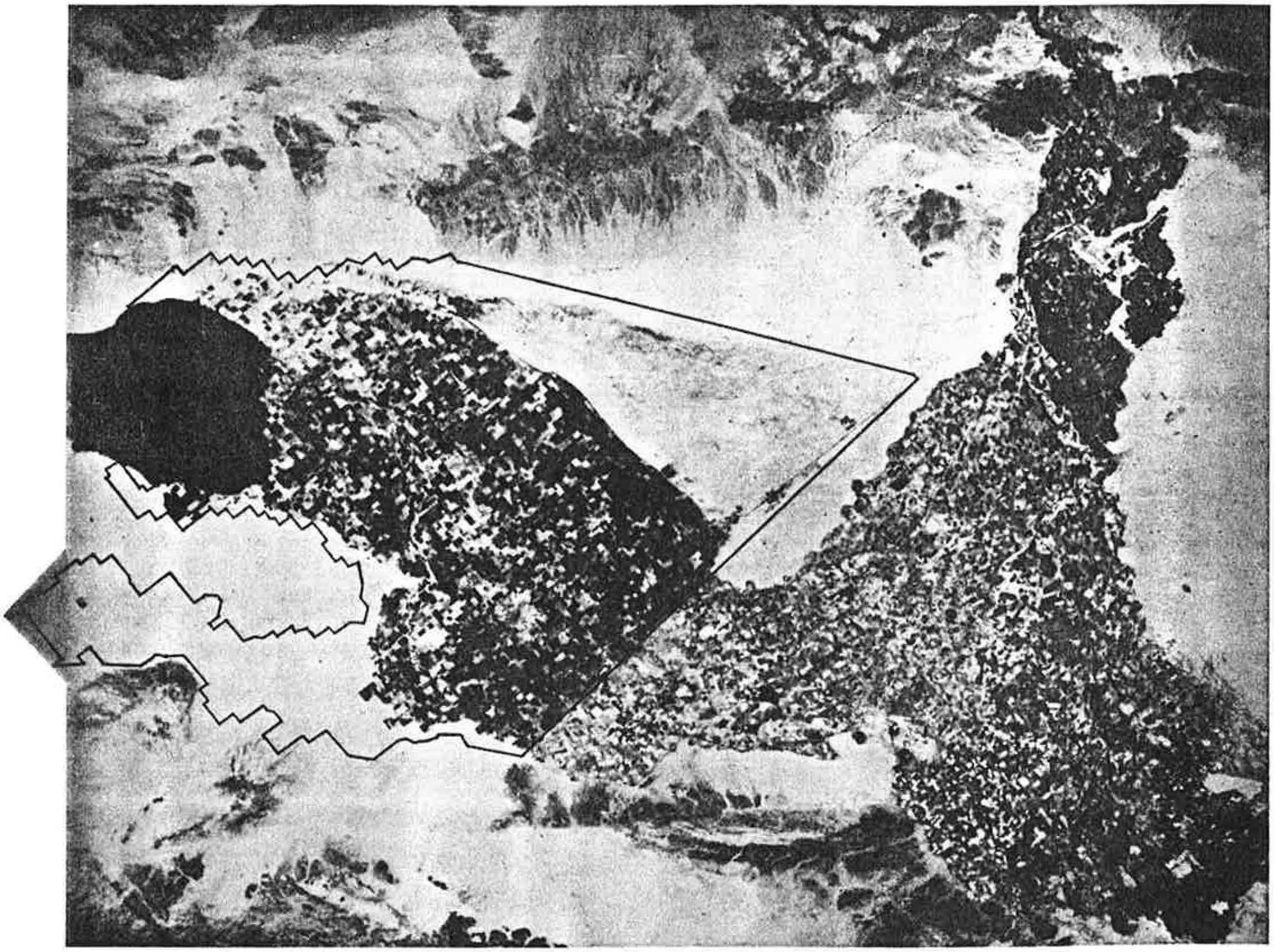
Project No.: GS1921

Soil Survey Map

Plate
3

Soil Survey of

IMPERIAL COUNTY
CALIFORNIA
IMPERIAL VALLEY AREA



United States Department of Agriculture Soil Conservation Service
in cooperation with
University of California Agricultural Experiment Station
and
Imperial Irrigation District

TABLE 11.--ENGINEERING INDEX PROPERTIES

[The symbol > means more than. Absence of an entry indicates that data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
100	0-13	Loamy fine sand	SM	A-2	0	100	100	75-85	10-30	---	NP
Antho	13-60	Sandy loam, fine sandy loam.	SM	A-2, A-4	0	90-100	75-95	50-60	15-40	---	NP
101*:											
Antho	0-8	Loamy fine sand	SM	A-2	0	100	100	75-85	10-30	---	NP
	8-60	Sandy loam, fine sandy loam.	SM	A-2, A-4	0	90-100	75-95	50-60	15-40	---	NP
Superstition	0-6	Fine sand	SM	A-2	0	100	95-100	70-85	15-25	---	NP
	6-60	Loamy fine sand, fine sand, sand.	SM	A-2	0	100	95-100	70-85	15-25	---	NP
102*. Badland											
103	0-10	Gravelly sand	SP, SP-SM	A-1, A-2	0-5	60-90	50-85	30-55	0-10	---	NP
Carsitas	10-60	Gravelly sand, gravelly coarse sand, sand.	SP, SP-SM	A-1	0-5	60-90	50-85	25-50	0-10	---	NP
104* Fluvaquents											
105	0-13	Clay loam	CL	A-6	0	100	100	90-100	70-95	35-45	15-30
Glenbar	13-60	Clay loam, silty clay loam.	CL	A-6	0	100	100	90-100	70-95	35-45	15-30
106	0-13	Clay loam	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
Glenbar	13-60	Clay loam, silty clay loam.	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
107*	0-13	Loam	ML, CL-ML, CL	A-4	0	100	100	100	70-80	20-30	NP-10
Glenbar											
	13-60	Clay loam, silty clay loam.	CL	A-6, A-7	0	100	100	95-100	75-95	35-45	15-30
108	0-14	Loam	ML	A-4	0	100	100	85-100	55-95	25-35	NP-10
Holtville	14-22	Clay, silty clay	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	22-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	65-85	25-35	NP-10
109	0-17	Silty clay	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
Holtville	17-24	Clay, silty clay	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	24-35	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	65-85	25-35	NP-10
	35-60	Loamy very fine sand, loamy fine sand.	SM, ML	A-2, A-4	0	100	100	75-100	20-55	---	NP
110	0-17	Silty clay	CH, CL	A-7	0	100	100	95-100	85-95	40-65	20-35
Holtville	17-24	Clay, silty clay	CH, CL	A-7	0	100	100	95-100	85-95	40-65	20-35
	24-35	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	55-85	25-35	NP-10
	35-60	Loamy very fine sand, loamy fine sand.	SM, ML	A-2, A-4	0	100	100	75-100	20-55	---	NP

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
111*:											
Holtville	0-10	Silty clay loam	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	10-22	Clay, silty clay	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
	22-60	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	65-85	25-35	NP-10
Imperial	0-12	Silty clay loam	CL	A-7	0	100	100	100	85-95	40-50	10-20
	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
112 Imperial	0-12	Silty clay	CH	A-7	0	100	100	100	85-95	50-70	25-45
	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
113 Imperial	0-12	Silty clay	CH	A-7	0	100	100	100	85-95	50-70	25-45
	12-60	Silty clay, clay, silty clay loam.	CH	A-7	0	100	100	100	85-95	50-70	25-45
114 Imperial	0-12	Silty clay	CH	A-7	0	100	100	100	85-95	50-70	25-45
	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
115*:											
Imperial	0-12	Silty clay loam	CL	A-7	0	100	100	100	85-95	40-50	10-20
	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
Glenbar	0-13	Silty clay loam	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
	13-60	Clay loam, silty clay loam.	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
116*:											
Imperial	0-13	Silty clay loam	CL	A-7	0	100	100	100	85-95	40-50	10-20
	13-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
Glenbar	0-13	Silty clay loam	CL	A-6, A-7	0	100	100	90-100	70-95	35-45	15-25
	13-60	Clay loam, silty clay loam.	CL	A-6	0	100	100	90-100	70-95	35-45	15-30
117, 118 Indio	0-12	Loam	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
	12-72	Stratified loamy very fine sand to silt loam.	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
119*:											
Indio	0-12	Loam	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
	12-72	Stratified loamy very fine sand to silt loam.	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
Vint	0-10	Loamy fine sand	SM	A-2	0	95-100	95-100	70-80	25-35	---	NP
	10-60	Loamy sand, loamy fine sand.	SM	A-2	0	95-100	95-100	70-80	20-30	---	NP
120* Laveen	0-12	Loam	ML, CL-ML	A-4	0	100	95-100	75-85	55-65	20-30	NP-10
	12-60	Loam, very fine sandy loam.	ML, CL-ML	A-4	0	95-100	85-95	70-80	55-65	15-25	NP-10

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

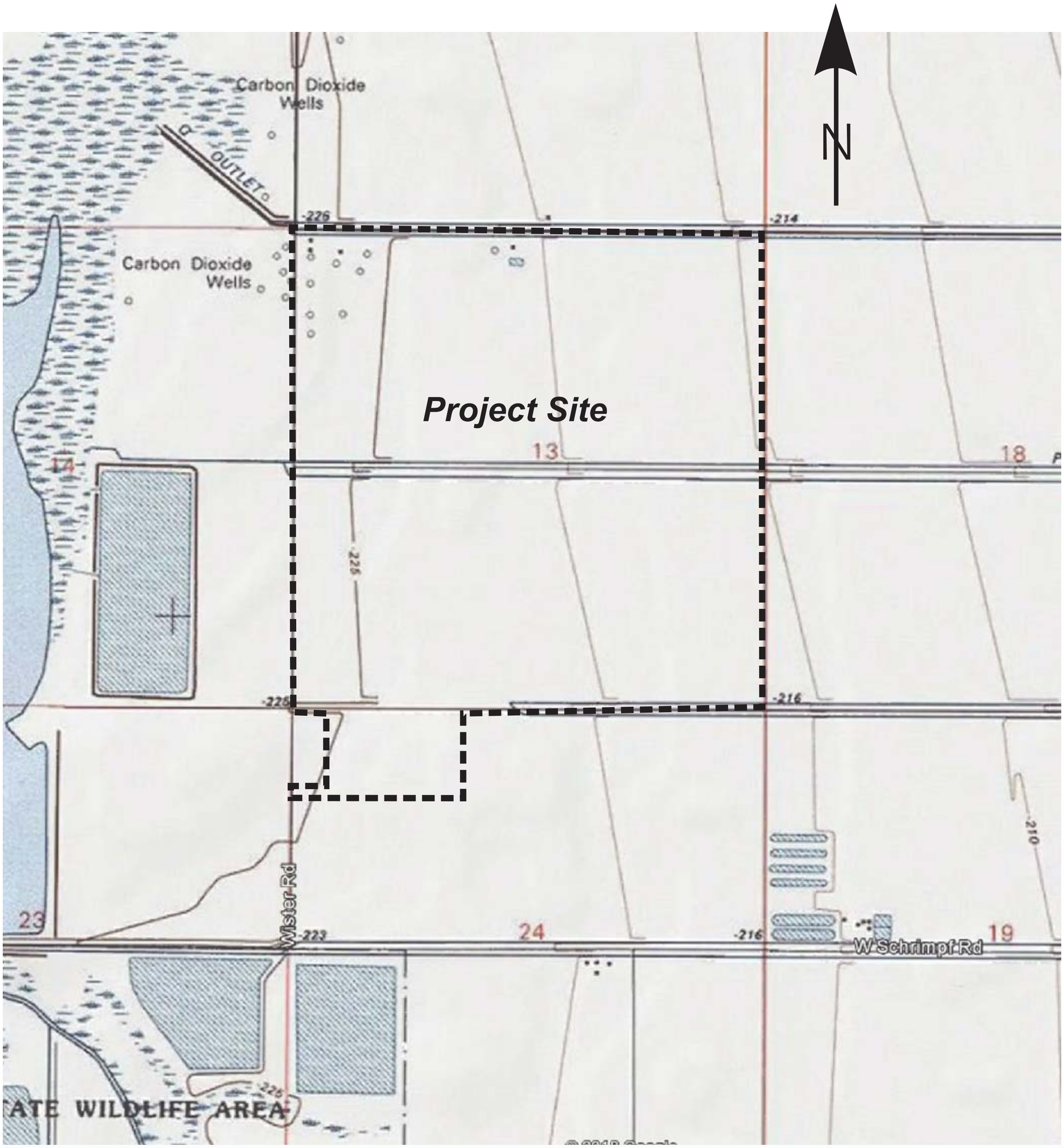
Soil name and map symbol	Depth	USDA texture	Classification		Frag- ments > 3 inches	Percentage passing sieve number--				Liquid limit	Plas- ticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
121 Meloland	0-12	Fine sand	SM, SP-SM	A-2, A-3	0	95-100	90-100	75-100	5-30	---	NP
	12-26	Stratified loamy fine sand to silt loam.	ML	A-4	0	100	100	90-100	50-65	25-35	NP-10
	26-71	Clay, silty clay, silty clay loam.	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-40
122 Meloland	0-12	Very fine sandy loam.	ML	A-4	0	95-100	95-100	95-100	55-85	25-35	NP-10
	12-26	Stratified loamy fine sand to silt loam.	ML	A-4	0	100	100	90-100	50-70	25-35	NP-10
	26-71	Clay, silty clay, silty clay loam.	CH, CL	A-7	0	100	100	95-100	85-95	40-65	20-40
123*:											
Meloland	0-12	Loam	ML	A-4	0	95-100	95-100	95-100	55-85	25-35	NP-10
	12-26	Stratified loamy fine sand to silt loam.	ML	A-4	0	100	100	90-100	50-70	25-35	NP-10
	26-38	Clay, silty clay, silty clay loam.	CH, CL	A-7	0	100	100	95-100	85-95	40-65	20-40
	38-60	Stratified silt loam to loamy fine sand.	SM, ML	A-4	0	100	100	75-100	35-55	25-35	NP-10
Holtville	0-12	Loam	ML	A-4	0	100	100	85-100	55-95	25-35	NP-10
	12-24	Clay, silty clay	CH, CL	A-7	0	100	100	95-100	85-95	40-65	20-35
	24-36	Silt loam, very fine sandy loam.	ML	A-4	0	100	100	95-100	55-85	25-35	NP-10
	36-60	Loamy very fine sand, loamy fine sand.	SM, ML	A-2, A-4	0	100	100	75-100	20-55	---	NP
124, 125 Niland	0-23	Gravelly sand	SM, SP-SM	A-2, A-3	0	90-100	70-95	50-65	5-25	---	NP
	23-60	Silty clay, clay, clay loam.	CL, CH	A-7	0	100	100	85-100	80-95	40-65	20-40
126 Niland	0-23	Fine sand	SM, SP-SM	A-2, A-3	0	90-100	90-100	50-65	5-25	---	NP
	23-60	Silty clay	CL, CH	A-7	0	100	100	85-100	80-95	40-65	20-40
127 Niland	0-23	Loamy fine sand	SM	A-2	0	90-100	90-100	50-65	15-30	---	NP
	23-60	Silty clay	CL, CH	A-7	0	100	100	85-100	80-95	40-65	20-40
128*:											
Niland	0-23	Gravelly sand	SM, SP-SM	A-2, A-3	0	90-100	70-95	50-65	5-25	---	NP
	23-60	Silty clay, clay, clay loam.	CL, CH	A-7	0	100	100	85-100	80-100	40-65	20-40
Imperial	0-12	Silty clay	CH	A-7	0	100	100	100	85-95	50-70	25-45
	12-60	Silty clay loam, silty clay, clay.	CH	A-7	0	100	100	100	85-95	50-70	25-45
129*: Pits											
130, 131 Rositas	0-27	Sand	SP-SM	A-3, A-1, A-2	0	100	80-100	40-70	5-15	---	NP
	27-60	Sand, fine sand, loamy sand.	SM, SP-SM	A-3, A-2, A-1	0	100	80-100	40-85	5-30	---	NP

See footnote at end of table.

TABLE 11.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
132, 133, 134, 135- Rositas	0-9	Fine sand	SM	A-3, A-2	0	100	80-100	50-80	10-25	---	NP
	9-60	Sand, fine sand, loamy sand.	SM, SP-SM	A-3, A-2, A-1	0	100	80-100	40-85	5-30	---	NP
136 Rositas	0-4	Loamy fine sand	SM	A-1, A-2	0	100	80-100	40-85	10-35	---	NP
	4-60	Sand, fine sand, loamy sand.	SM, SP-SM	A-3, A-2, A-1	0	100	80-100	40-85	5-30	---	NP
137 Rositas	0-12	Silt loam	ML	A-4	0	100	100	90-100	70-90	20-30	NP-5
	12-60	Sand, fine sand, loamy sand.	SM, SP-SM	A-3, A-2, A-1	0	100	80-100	40-85	5-30	---	NP
138*:											
Rositas	0-4	Loamy fine sand	SM	A-1, A-2	0	100	80-100	40-85	10-35	---	NP
	4-60	Sand, fine sand, loamy sand.	SM, SP-SM	A-3, A-2, A-1	0	100	80-100	40-85	5-30	---	NP
Superstition	0-6	Loamy fine sand	SM	A-2	0	100	95-100	70-85	15-25	---	NP
	6-60	Loamy fine sand, fine sand, sand.	SM	A-2	0	100	95-100	70-85	15-25	---	NP
139 Superstition	0-6	Loamy fine sand	SM	A-2	0	100	95-100	70-85	15-25	---	NP
	6-60	Loamy fine sand, fine sand, sand.	SM	A-2	0	100	95-100	70-85	15-25	---	NP
140*: Torriorthents											
Rock outcrop											
141*: Torriorthents											
Orthids											
142 Vint	0-10	Loamy very fine sand.	SM, ML	A-4	0	100	100	85-95	40-65	15-25	NP-5
	10-60	Loamy fine sand	SM	A-2	0	95-100	95-100	70-80	20-30	---	NP
143 Vint	0-12	Fine sandy loam	ML, CL-ML, SM, SM-SC	A-4	0	100	100	75-85	45-55	15-25	NP-5
	12-60	Loamy sand, loamy fine sand.	SM	A-2	0	95-100	95-100	70-80	20-30	---	NP
144*:											
Vint	0-10	Very fine sandy loam.	SM, ML	A-4	0	100	100	85-95	40-65	15-25	NP-5
	10-40	Loamy fine sand	SM	A-2	0	95-100	95-100	70-80	20-30	---	NP
	40-60	Silty clay	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35
Indio	0-12	Very fine sandy loam.	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
	12-40	Stratified loamy very fine sand to silt loam.	ML	A-4	0	95-100	95-100	85-100	75-90	20-30	NP-5
	40-72	Silty clay	CL, CH	A-7	0	100	100	95-100	85-95	40-65	20-35

* See description of the map unit for composition and behavior characteristics of the map unit.



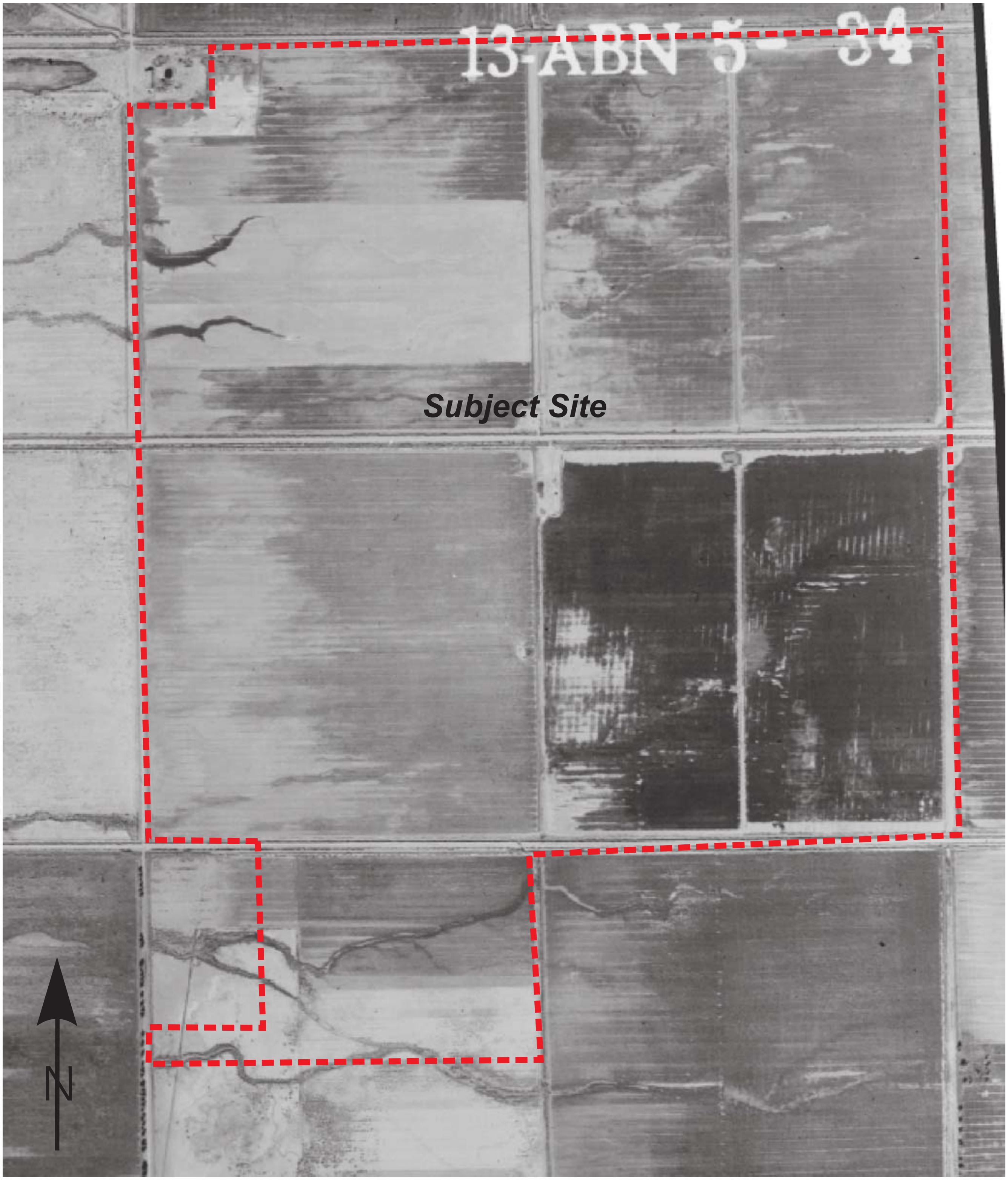
GS Lyon

Project No.: GS1921

Topographic Map

Plate 4

APPENDIX C

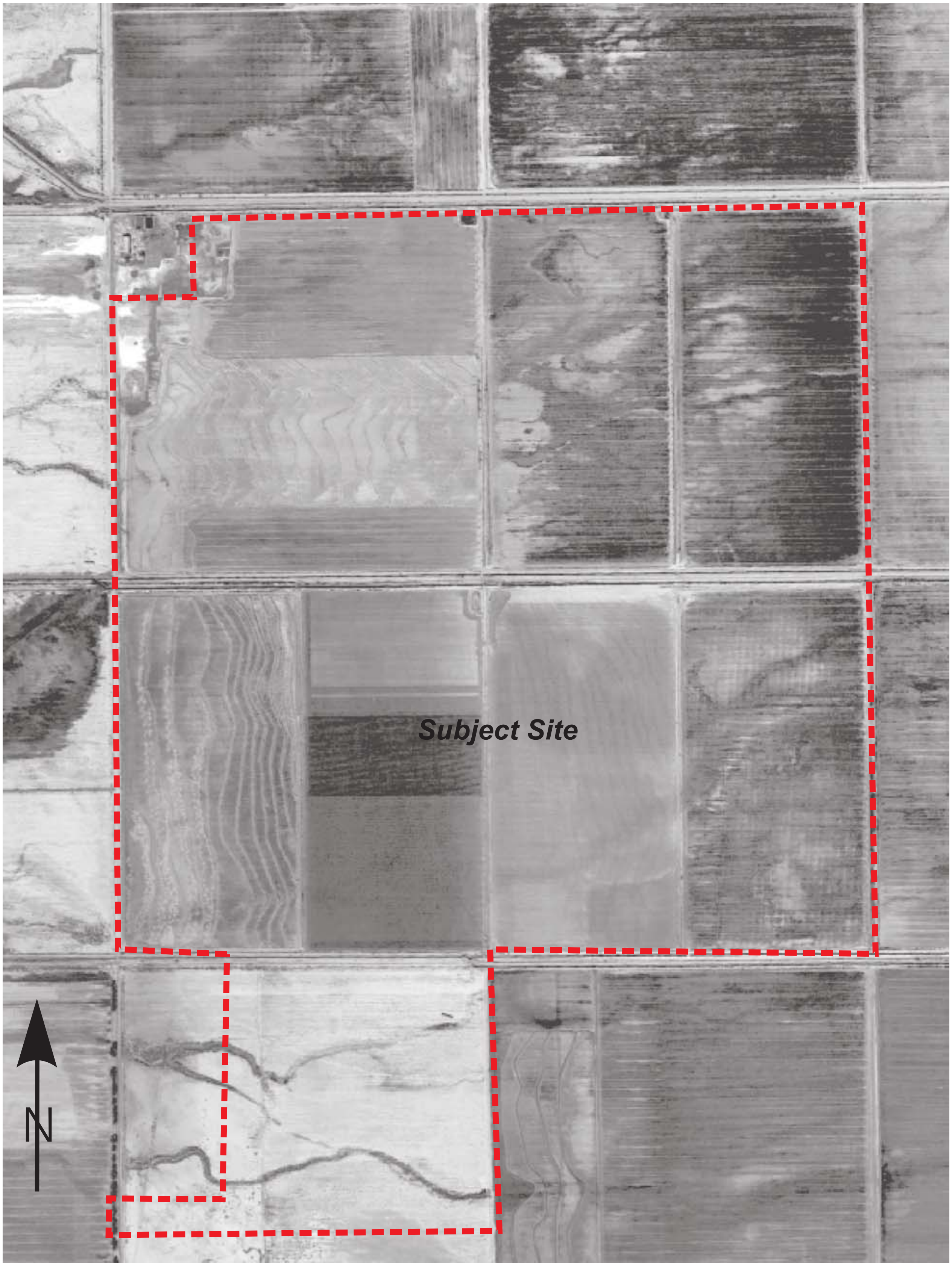


GS Lyon

Project No.: GS1921

1937 Aerial Photograph

Plate
5

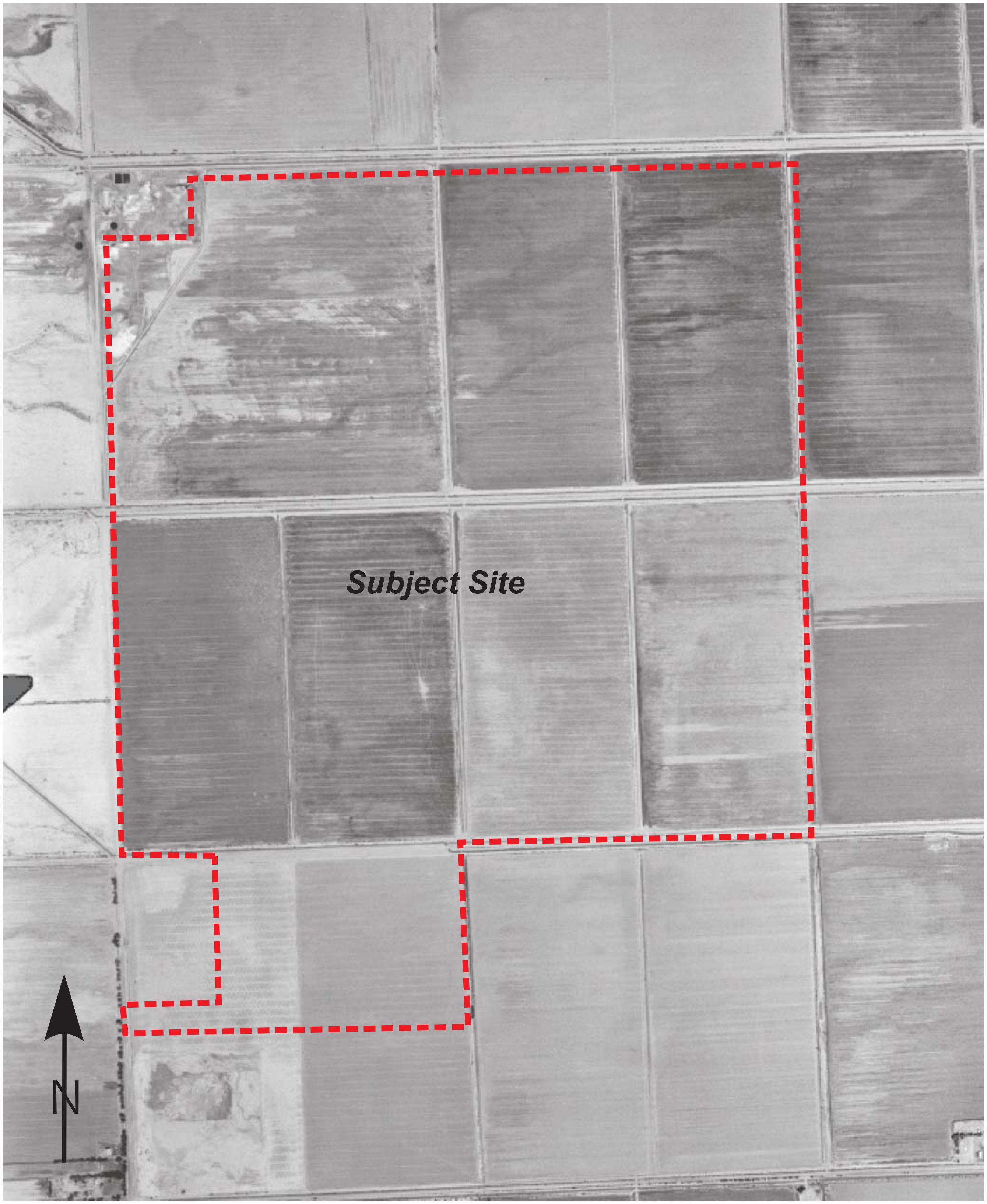


GS Lyon

Project No.: GS1921

1949 Aerial Photograph

Plate
6

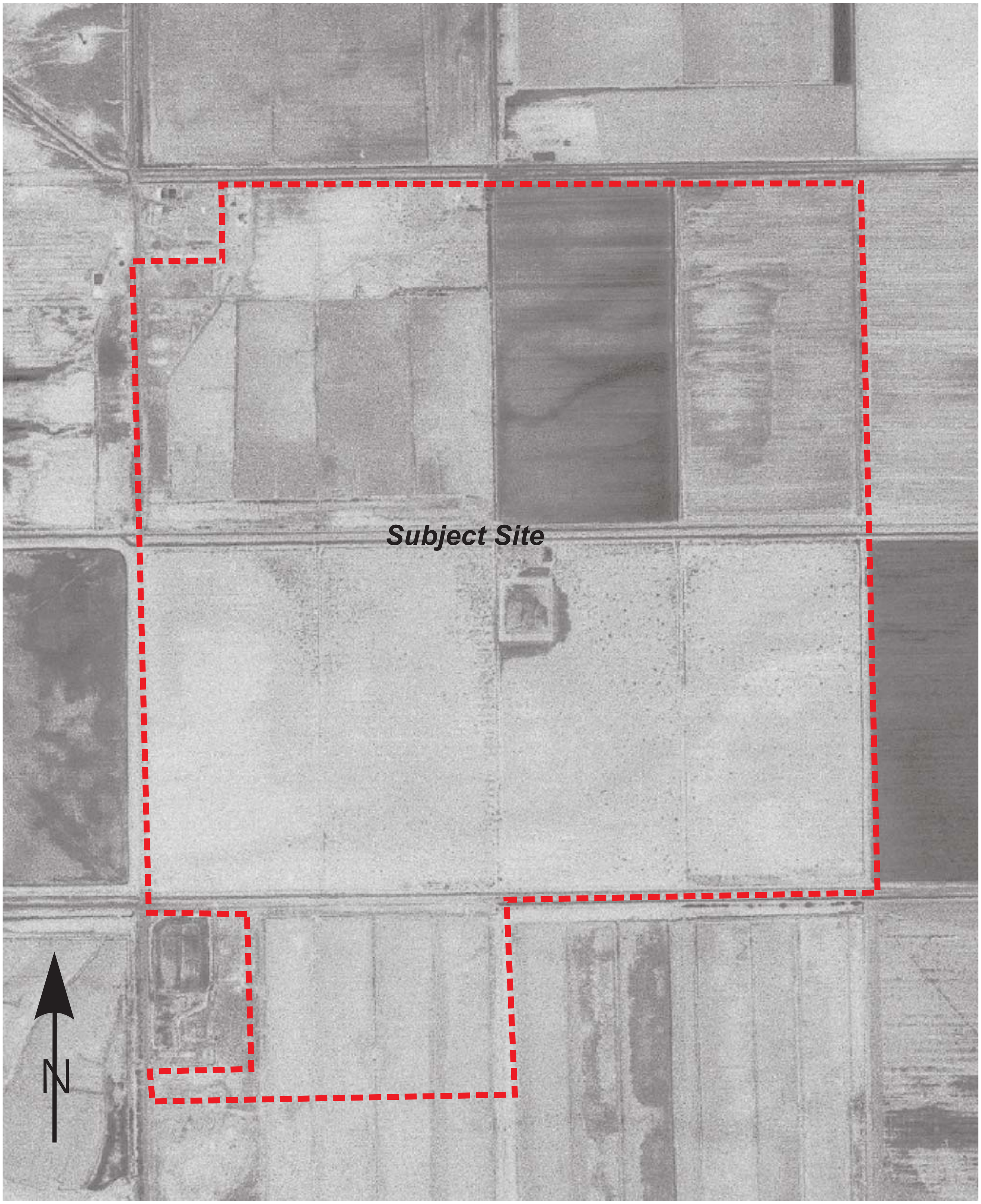


GS Lyon

Project No.: GS1921

1953 Aerial Photograph

Plate
7

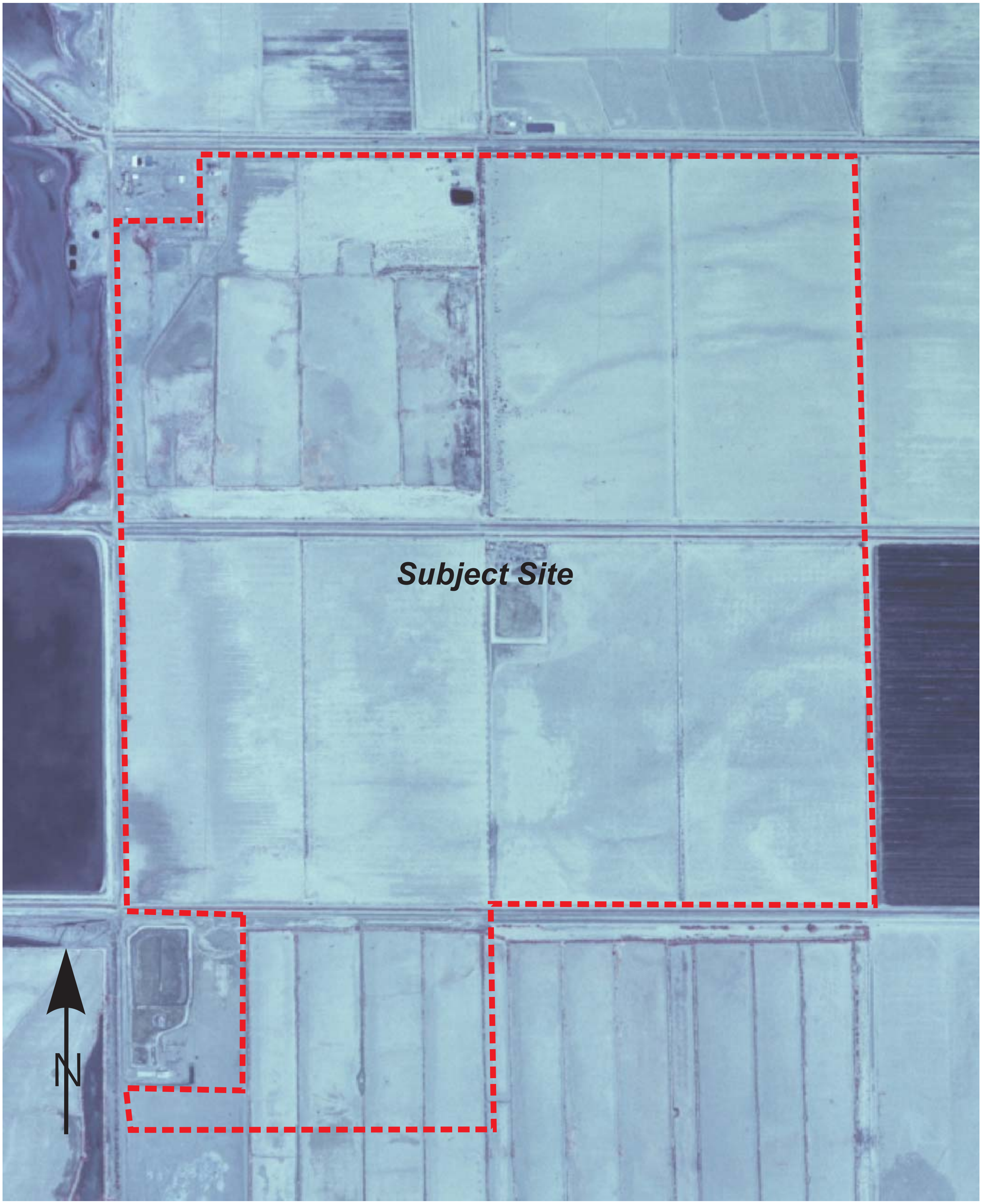


GS Lyon

Project No.: GS1921

1976 Aerial Photograph

Plate
8



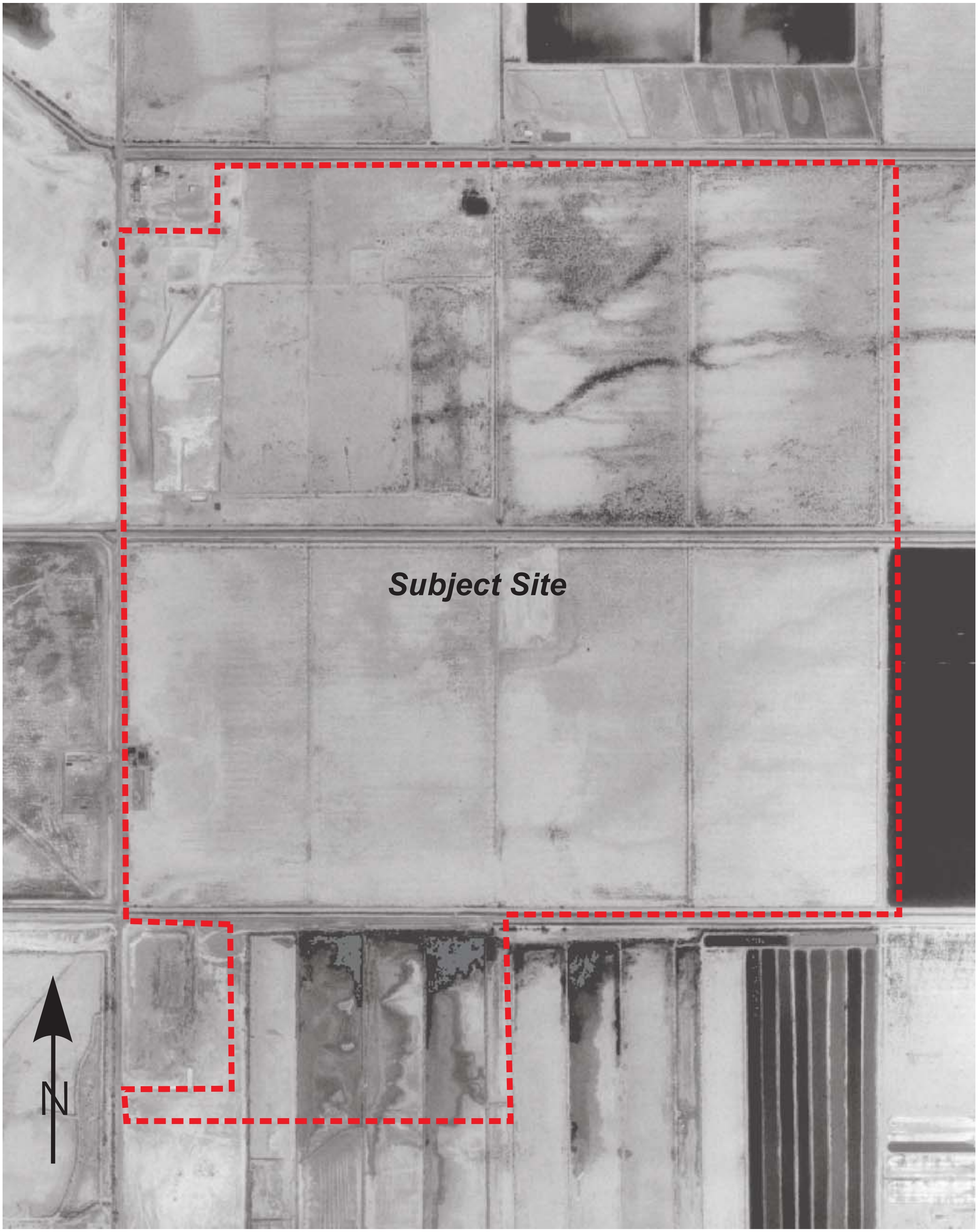
GS Lyon

Project No.: GS1921

1984 Aerial Photograph

Plate

9

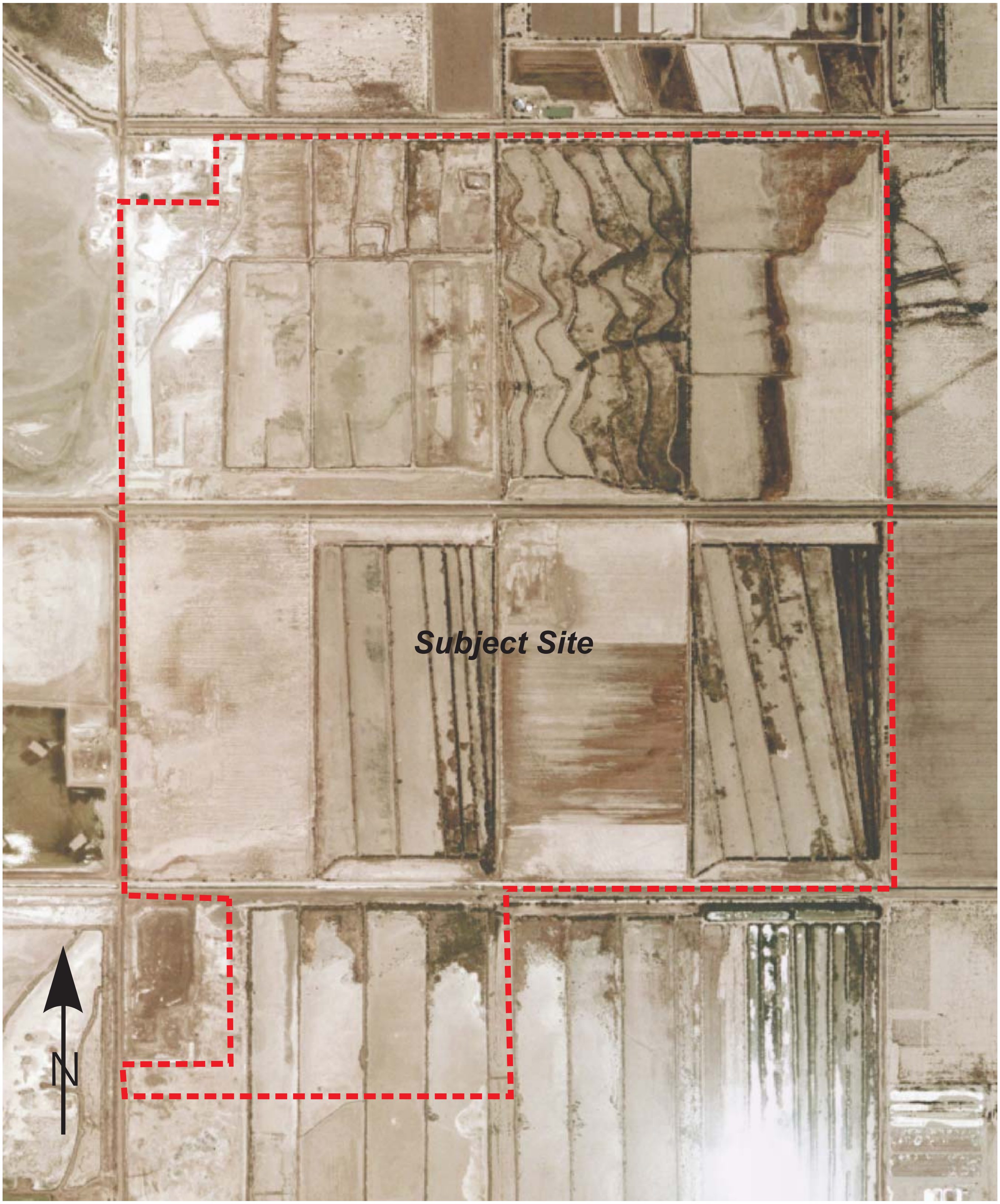


GS Lyon

Project No.: GS1921

1992 Aerial Photograph

Plate 10

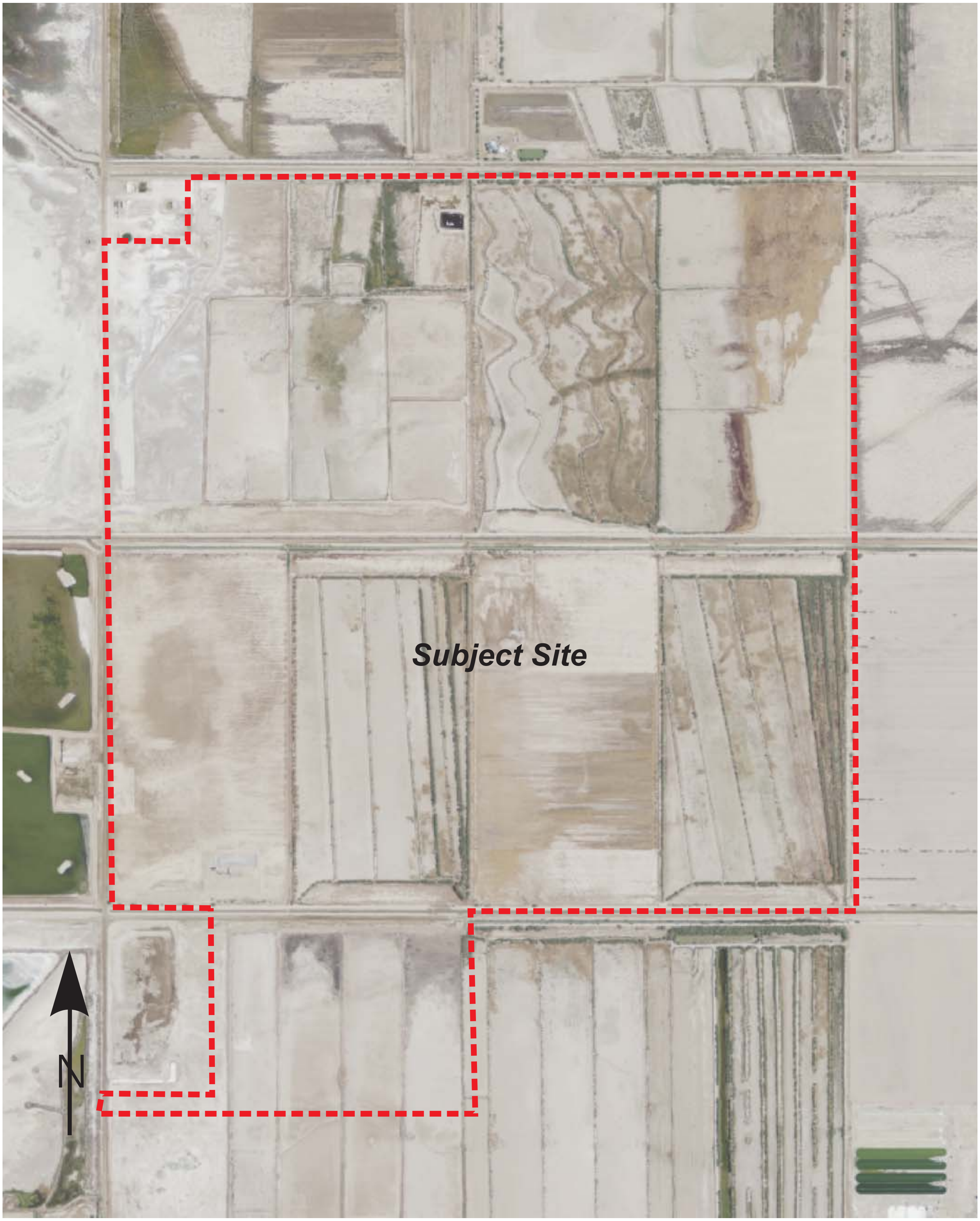


GS Lyon

Project No.: GS1921

2006 Aerial Photograph

Plate 11

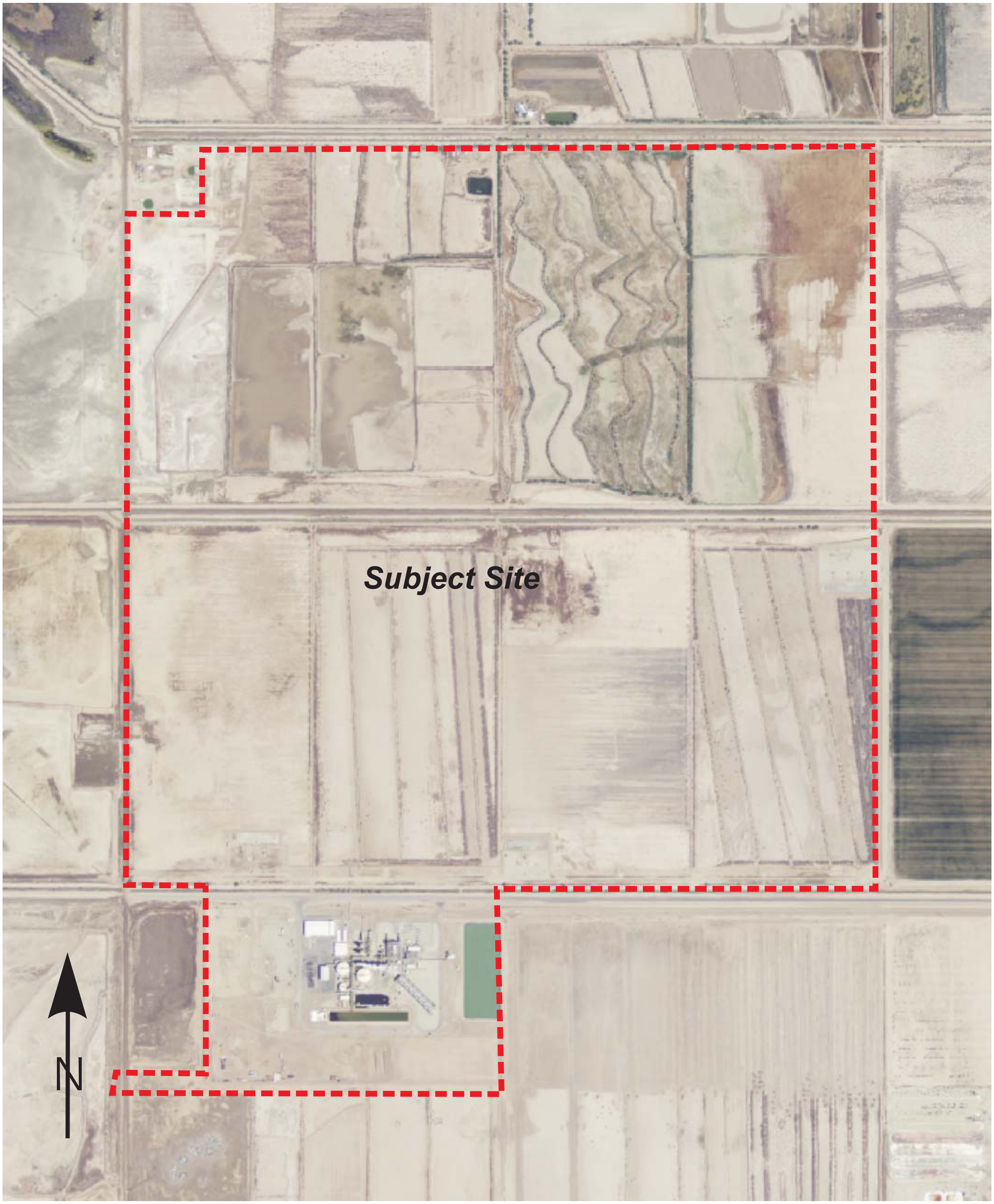


GS Lyon

Project No.: GS1921

2009 Aerial Photograph

Plate
12

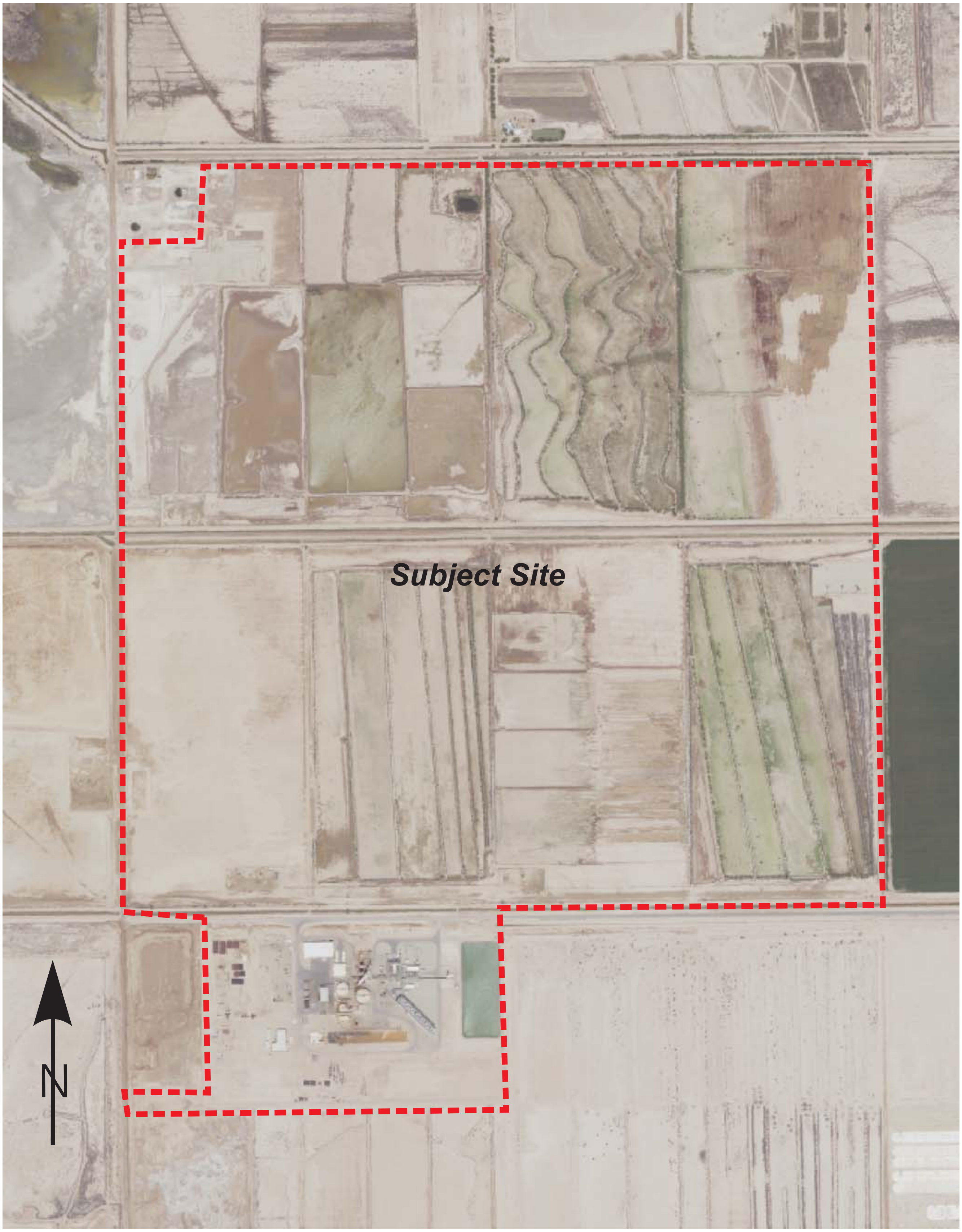


GS Lyon

Project No.: GS1921

2012 Aerial Photograph

Plate
13



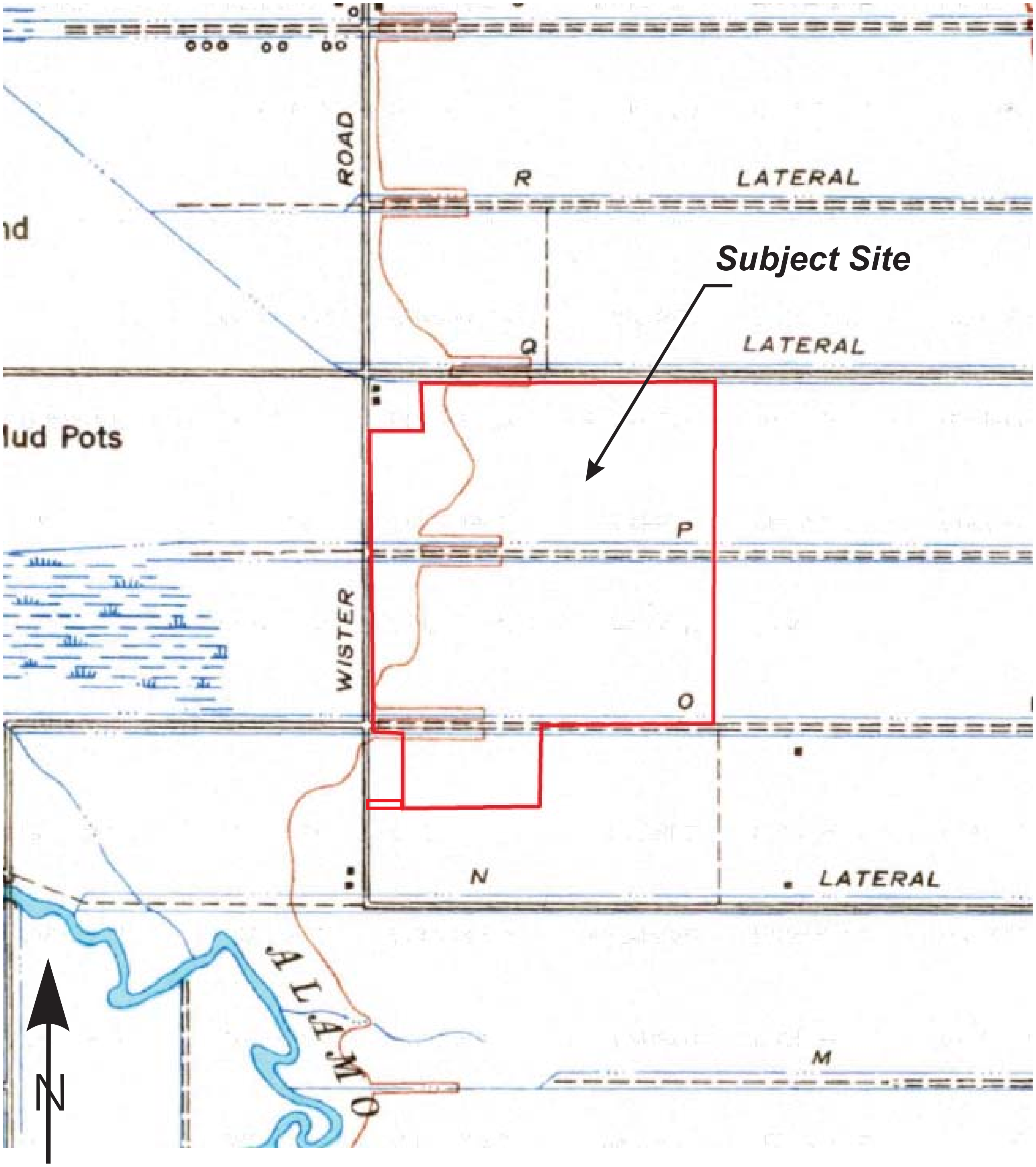
GS Lyon

Project No.: GS1921

2016 Aerial Photograph

Plate 14

APPENDIX D

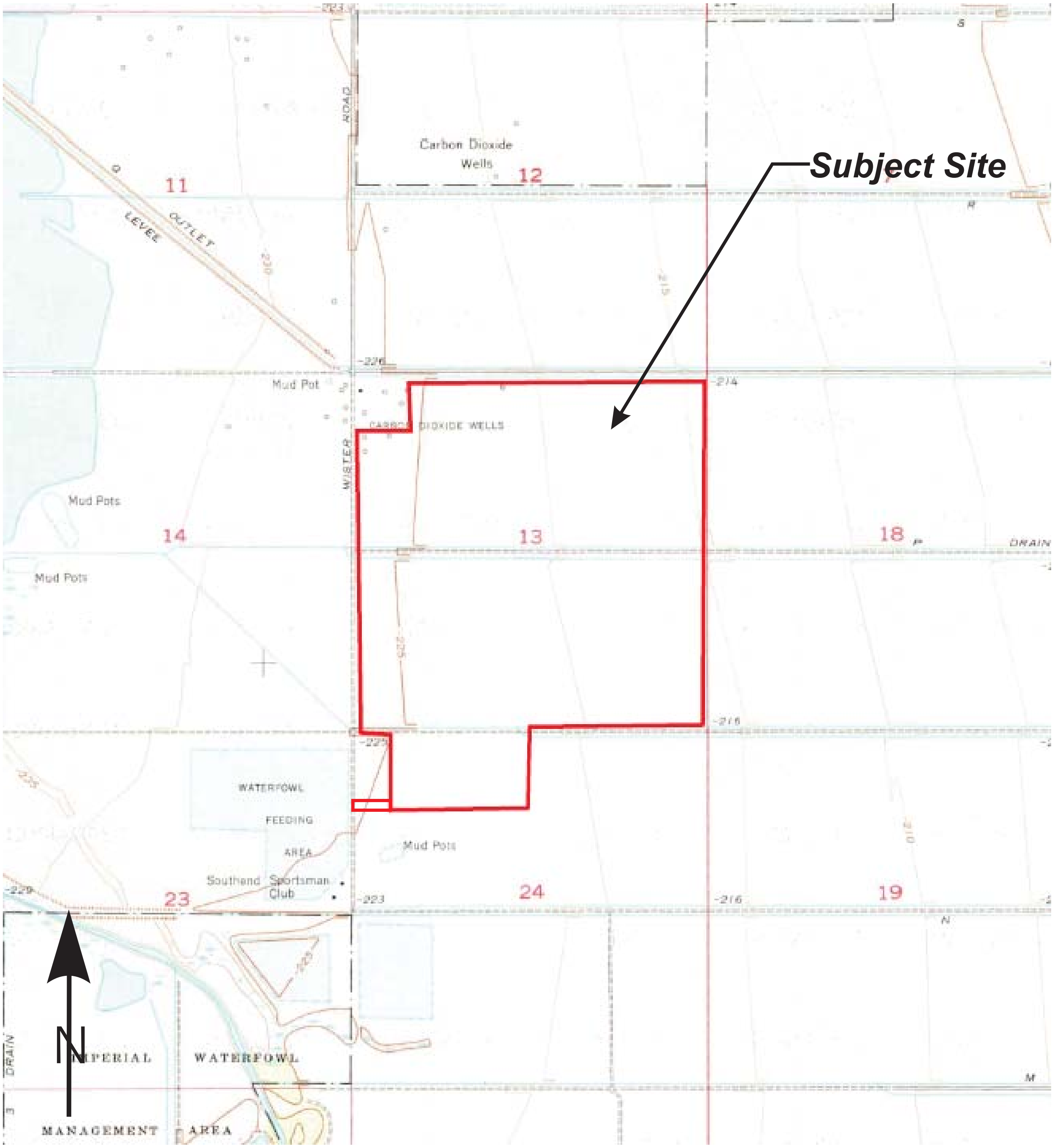


GS Lyon

Project No.: GS1921

1945 Historical Topographic Map

Plate
15



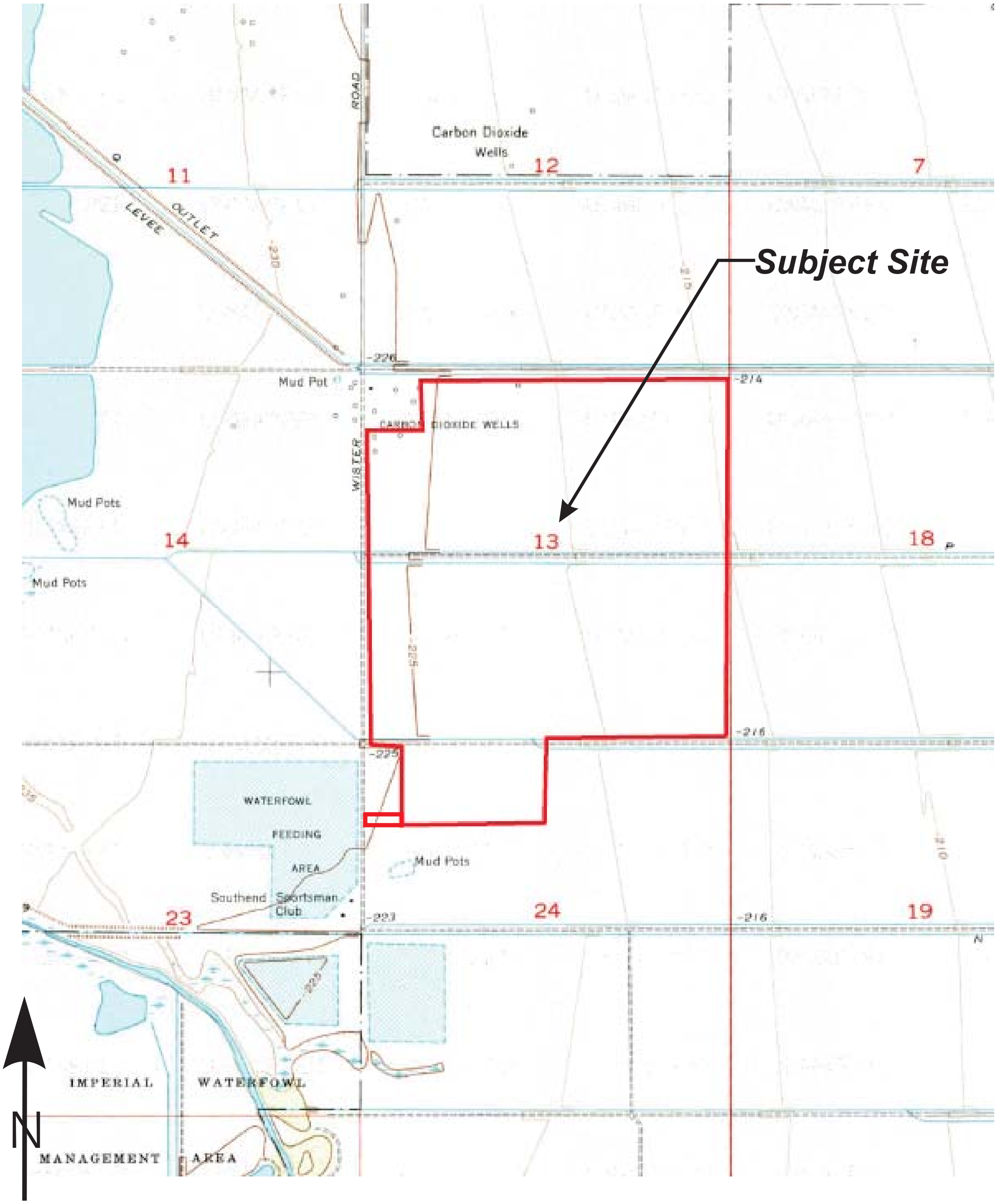
GS Lyon

Project No.: GS1921

1956 Historical Topographic Map

Plate

16

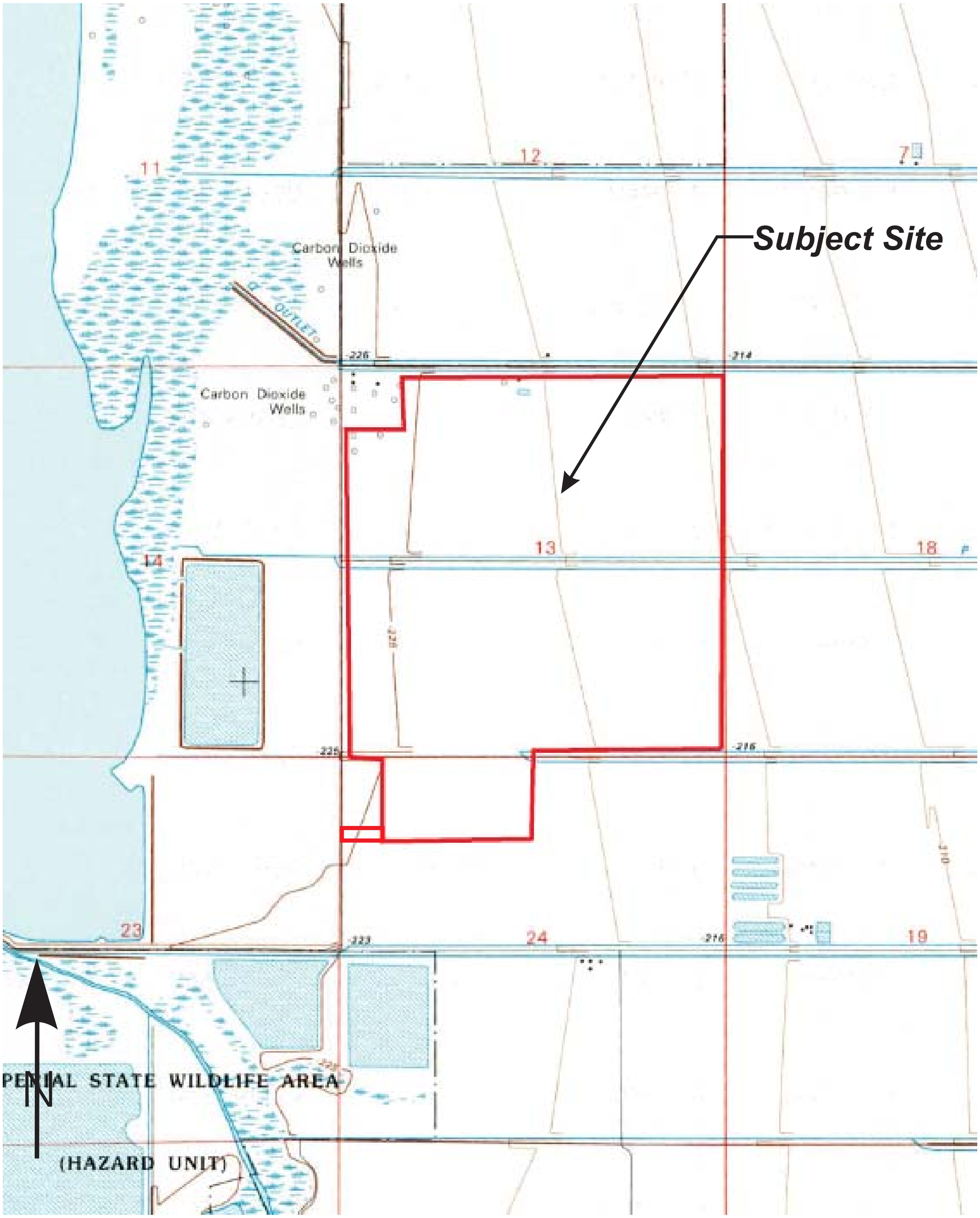


GS Lyon

Project No.: GS1921

1976 Historical Topographic Map

Plate
17

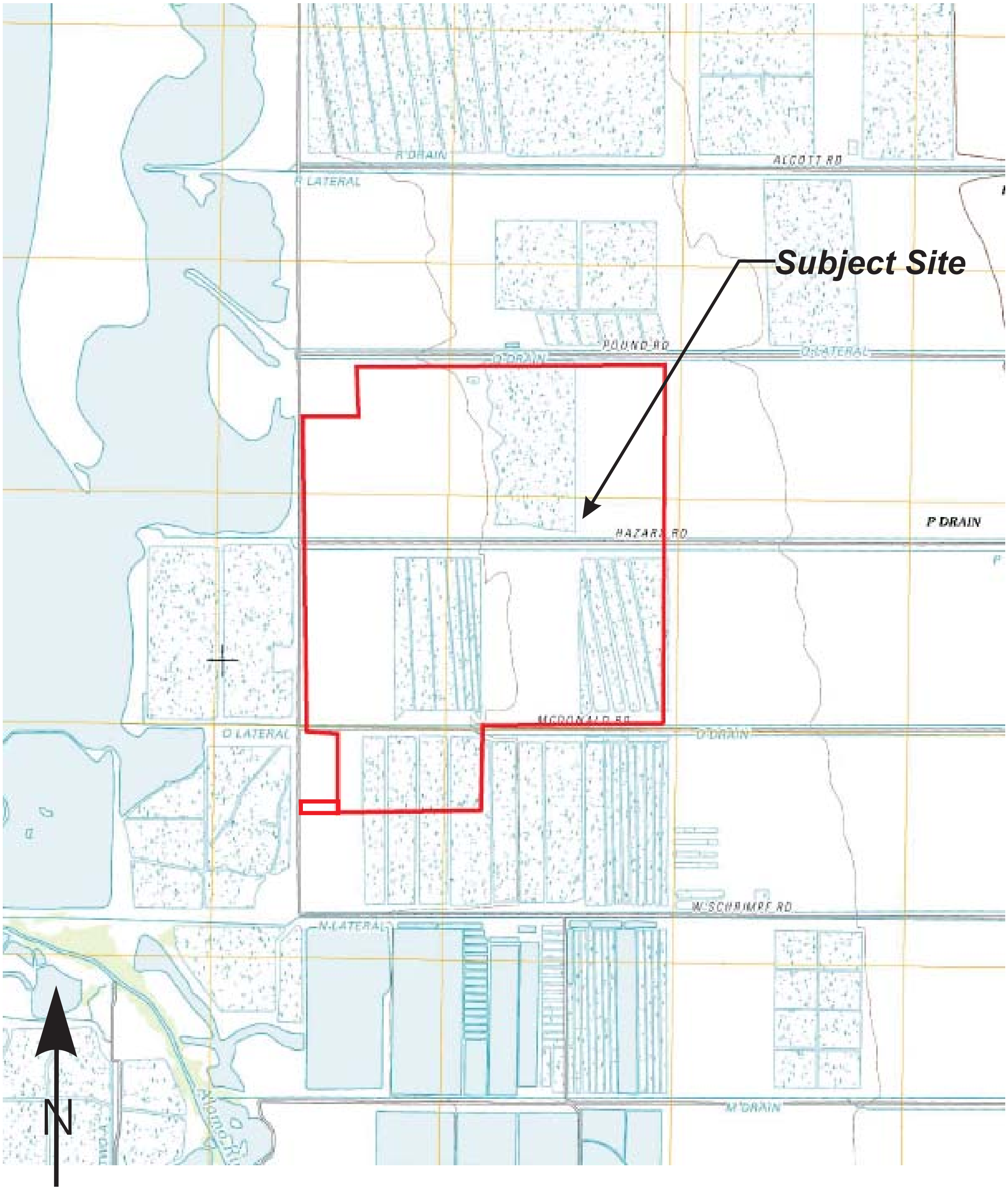


GS Lyon

Project No.: GS1921

1995 Historical Topographic Map

Plate
18



GS Lyon

Project No.: GS1921

2012 Historical Topographic Map

Plate
19

Hudson Ranch 1
409 W McDonald Road
Niland, CA 92257

Inquiry Number: 5779291.3
September 05, 2019

Certified Sanborn® Map Report

EDR®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

09/05/19

Site Name:

Hudson Ranch 1
409 W McDonald Road
Niland, CA 92257
EDR Inquiry # 5779291.3

Client Name:

GS Lyon Consultants
780 N. Fourth Street
El Centro, CA 92243
Contact: Pete Labrucherie

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by GS Lyon Consultants were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # 36D8-4B47-90C4

PO # GS1921

Project Hudson Ranch 1 Geothermal

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: 36D8-4B47-90C4

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

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APPENDIX F

Hudson Ranch 1
409 W McDonald Road
Niland, CA 92257

Inquiry Number: 5779291.2s
September 05, 2019

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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SECTION **PAGE**

GEOCHECK ADDENDUM

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

409 W MCDONALD ROAD
NILAND, CA 92257

COORDINATES

Latitude (North):	33.2115000 - 33˚ 12' 41.40''
Longitude (West):	115.5715880 - 115˚ 34' 17.71''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	633125.5
UTM Y (Meters):	3675451.5
Elevation:	218 ft. below sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5639770 NILAND, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140606
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
409 W MCDONALD ROAD
NILAND, CA 92257

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION

NO MAPPED SITES FOUND

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL	National Priority List
Proposed NPL	Proposed National Priority List Sites
NPL LIENS	Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL	National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY	Federal Facility Site Information listing
SEMS	Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE	Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS	Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF	RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG	RCRA - Large Quantity Generators
RCRA-SQG	RCRA - Small Quantity Generators
RCRA-CESQG	RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS	Land Use Control Information System
US ENG CONTROLS	Engineering Controls Sites List

US INST CONTROL	Sites with Institutional Controls

Federal ERNS list

ERNS	Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE	State Response Sites

State- and tribal - equivalent CERCLIS

ENVIROSTOR	EnviroStor Database

State and tribal landfill and/or solid waste disposal site lists

SWF/LF	Solid Waste Information System

State and tribal leaking storage tank lists

LUST	Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST	Leaking Underground Storage Tanks on Indian Land
CPS-SLIC	Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST	Underground Storage Tank Listing
UST	Active UST Facilities
AST	Aboveground Petroleum Storage Tank Facilities
INDIAN UST	Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

VCP	Voluntary Cleanup Program Properties
INDIAN VCP	Voluntary Cleanup Priority Listing

State and tribal Brownfields sites

BROWNFIELDS	Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS	A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT	Waste Management Unit Database
SWRCY	Recycler Database
HAULERS	Registered Waste Tire Haulers Listing
INDIAN ODI	Report on the Status of Open Dumps on Indian Lands
ODI	Open Dump Inventory
DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations

IHS OPEN DUMPS	Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL	Delisted National Clandestine Laboratory Register
HIST Cal-Sites	Historical Calsites Database
SCH	School Property Evaluation Program
CDL	Clandestine Drug Labs
CERS HAZ WASTE	CERS HAZ WASTE
Toxic Pits	Toxic Pits Cleanup Act Sites
US CDL	National Clandestine Laboratory Register
PFAS	PFAS Contamination Site Location Listing

Local Lists of Registered Storage Tanks

SWEEPS UST	SWEEPS UST Listing
HIST UST	Hazardous Substance Storage Container Database
CA FID UST	Facility Inventory Database
CERS TANKS	California Environmental Reporting System (CERS) Tanks

Local Land Records

LIENS	Environmental Liens Listing
LIENS 2	CERCLA Lien Information
DEED	Deed Restriction Listing

Records of Emergency Release Reports

HMIRS	Hazardous Materials Information Reporting System
CHMIRS	California Hazardous Material Incident Report System
LDS	Land Disposal Sites Listing
MCS	Military Cleanup Sites Listing
SPILLS 90	SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated
FUDS	Formerly Used Defense Sites
DOD	Department of Defense Sites
SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR	Financial Assurance Information
EPA WATCH LIST	EPA WATCH LIST
2020 COR ACTION	2020 Corrective Action Program List
TSCA	Toxic Substances Control Act
TRIS	Toxic Chemical Release Inventory System
SSTS	Section 7 Tracking Systems
ROD	Records Of Decision
RMP	Risk Management Plans
RAATS	RCRA Administrative Action Tracking System
PRP	Potentially Responsible Parties
PADS	PCB Activity Database System
ICIS	Integrated Compliance Information System
FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS	Material Licensing Tracking System

EXECUTIVE SUMMARY

COAL ASH DOE	Steam-Electric Plant Operation Data
COAL ASH EPA	Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER	PCB Transformer Registration Database
RADINFO	Radiation Information Database
HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS	Incident and Accident Data
CONSENT	Superfund (CERCLA) Consent Decrees
INDIAN RESERV	Indian Reservations
FUSRAP	Formerly Utilized Sites Remedial Action Program
UMTRA	Uranium Mill Tailings Sites
LEAD SMELTERS	Lead Smelter Sites
US AIRS	Aerometric Information Retrieval System Facility Subsystem
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
DOCKET HWC	Hazardous Waste Compliance Docket Listing
UXO	Unexploded Ordnance Sites
ECHO	Enforcement & Compliance History Information
FUELS PROGRAM	EPA Fuels Program Registered Listing
CA BOND EXP. PLAN	Bond Expenditure Plan
Cortese	"Cortese" Hazardous Waste & Substances Sites List
CUPA Listings	CUPA Resources List
DRYCLEANERS	Cleaner Facilities
EMI	Emissions Inventory Data
ENF	Enforcement Action Listing
Financial Assurance	Financial Assurance Information Listing
HAZNET	Facility and Manifest Data
ICE	ICE
HIST CORTESE	Hazardous Waste & Substance Site List
HWP	EnviroStor Permitted Facilities Listing
HWT	Registered Hazardous Waste Transporter Database
MINES	Mines Site Location Listing
MWMP	Medical Waste Management Program Listing
NPDES	NPDES Permits Listing
PEST LIC	Pesticide Regulation Licenses Listing
PROC	Certified Processors Database
Notify 65	Proposition 65 Records
UIC	UIC Listing
UIC GEO	UIC GEO (GEOTRACKER)
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List
MILITARY PRIV SITES	MILITARY PRIV SITES (GEOTRACKER)
PROJECT	PROJECT (GEOTRACKER)
WDR	Waste Discharge Requirements Listing
CIWQS	California Integrated Water Quality System
CERS	CERS
NON-CASE INFO	NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS	OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS	PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT	SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants

EXECUTIVE SUMMARY

EDR Hist Auto	EDR Exclusive Historical Auto Stations
EDR Hist Cleaner	EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF	Recovered Government Archive Solid Waste Facilities List
RGA LUST	Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were not identified.

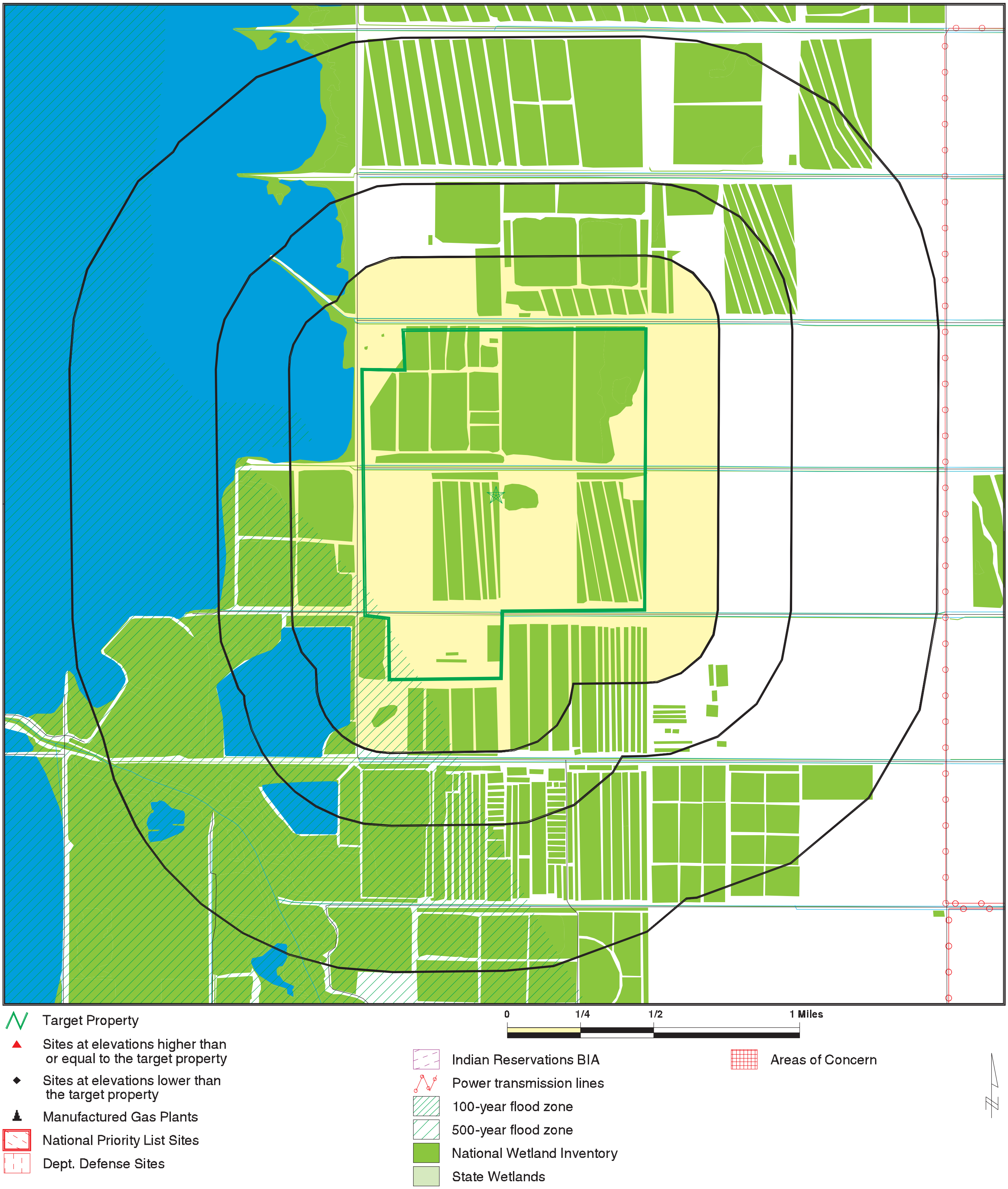
Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
HUDSON RANCH I GEOTHERMAL PRODUCTI	CIWQS

OVERVIEW MAP - 5779291.2S

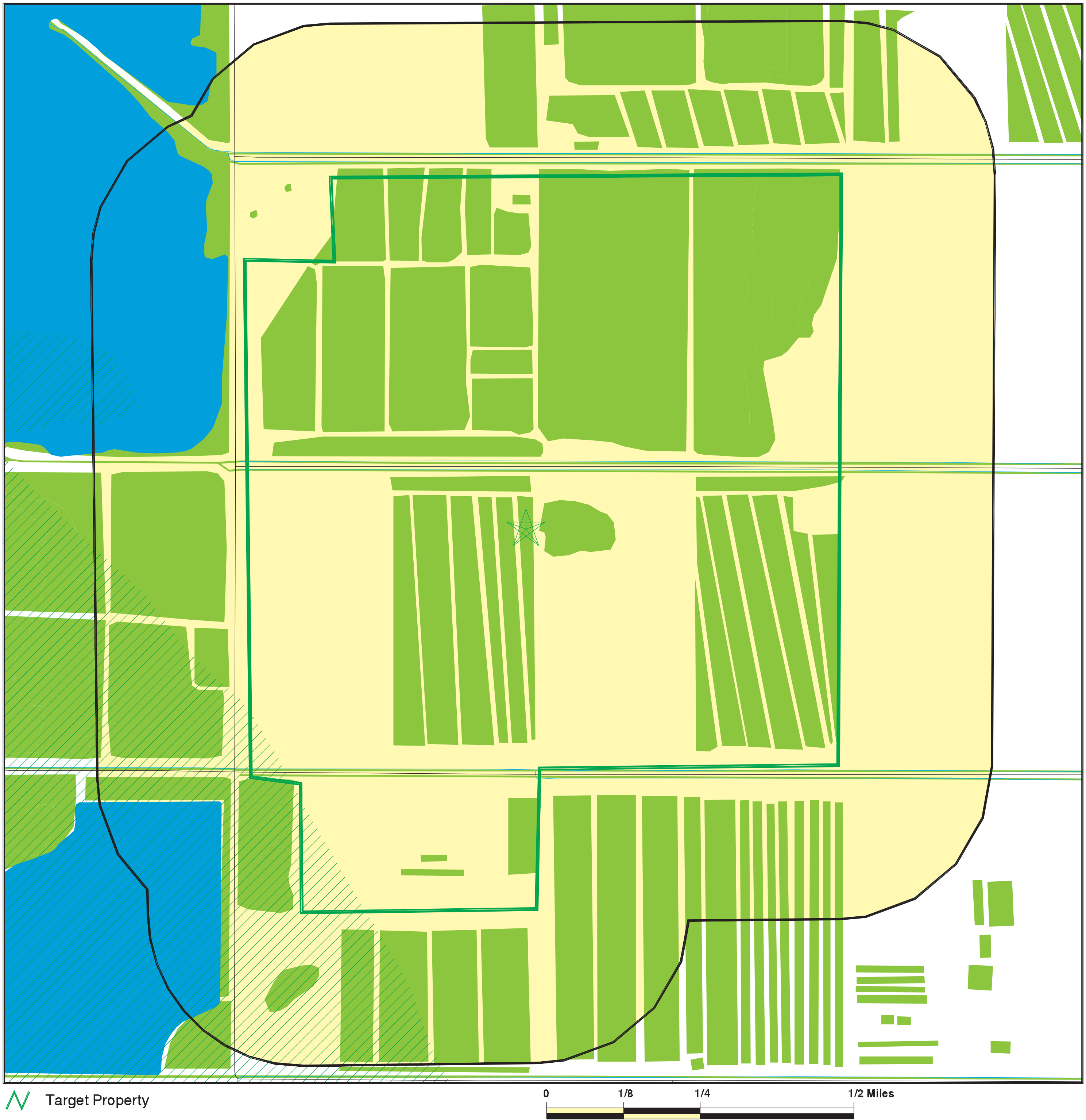


This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Hudson Ranch 1
ADDRESS: 409 W McDonald Road
Niland CA 92257
LAT/LONG: 33.2115 / 115.571588

CLIENT: GS Lyon Consultants
CONTACT: Pete Labrucherie
INQUIRY #: 5779291.2s
DATE: September 05, 2019 8:23 pm

DETAIL MAP - 5779291.2S



- Target Property
- ▲ Sites at elevations higher than or equal to the target property
- ◆ Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- ▨ National Priority List Sites
- ▨ Dept. Defense Sites
- ▨ Indian Reservations BIA
- ▨ 100-year flood zone
- ▨ 500-year flood zone
- 🟩 National Wetland Inventory
- 🟩 State Wetlands
- ▦ Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Hudson Ranch 1
ADDRESS: 409 W McDonald Road
Niland CA 92257
LAT/LONG: 33.2115 / 115.571588

CLIENT: GS Lyon Consultants
CONTACT: Pete Labrucherie
INQUIRY #: 5779291.2s
DATE: September 05, 2019 8:27 pm

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	0	NR	0
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	0	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
VCP	0.500		0	0	0	NR	NR	0
INDIAN VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	0.001		0	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	0.001		0	NR	NR	NR	NR	0
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
CERS TANKS	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
RGA LF	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	0	0	0	0	0	0

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

MAP FINDINGS

Map ID Direction Distance Elevation	Site	Database(s)	EDR ID Number EPA ID Number

NO SITES FOUND

Count: 1 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
CALIPATRIA	S121645096	HUDSON RANCH I GEOTHERMAL PRODUCTI	DAVIS RD & MCDONALD RD INTERSE	92233	CIWQS

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 07/19/2019
Date Data Arrived at EDR: 07/30/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 35

Source: EPA
Telephone: N/A
Last EDR Contact: 07/30/2019
Next Scheduled EDR Contact: 10/14/2019
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 3
Telephone 215-814-5418

EPA Region 4
Telephone 404-562-8033

EPA Region 5
Telephone 312-886-6686

EPA Region 10
Telephone 206-553-8665

EPA Region 6
Telephone: 214-655-6659

EPA Region 7
Telephone: 913-551-7247

EPA Region 8
Telephone: 303-312-6774

EPA Region 9
Telephone: 415-947-4246

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 07/19/2019
Date Data Arrived at EDR: 07/30/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 35

Source: EPA
Telephone: N/A
Last EDR Contact: 07/30/2019
Next Scheduled EDR Contact: 10/14/2019
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991	Source: EPA
Date Data Arrived at EDR: 02/02/1994	Telephone: 202-564-4267
Date Made Active in Reports: 03/30/1994	Last EDR Contact: 08/15/2011
Number of Days to Update: 56	Next Scheduled EDR Contact: 11/28/2011
	Data Release Frequency: No Update Planned

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 07/19/2019	Source: EPA
Date Data Arrived at EDR: 07/30/2019	Telephone: N/A
Date Made Active in Reports: 09/03/2019	Last EDR Contact: 07/30/2019
Number of Days to Update: 35	Next Scheduled EDR Contact: 10/14/2019
	Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 04/03/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 04/05/2019	Telephone: 703-603-8704
Date Made Active in Reports: 05/14/2019	Last EDR Contact: 07/03/2019
Number of Days to Update: 39	Next Scheduled EDR Contact: 10/14/2019
	Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 07/19/2019	Source: EPA
Date Data Arrived at EDR: 07/30/2019	Telephone: 800-424-9346
Date Made Active in Reports: 09/03/2019	Last EDR Contact: 07/30/2019
Number of Days to Update: 35	Next Scheduled EDR Contact: 10/28/2019
	Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 07/19/2019
Date Data Arrived at EDR: 07/30/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 35

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 07/30/2019
Next Scheduled EDR Contact: 10/28/2019
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/26/2019
Next Scheduled EDR Contact: 10/07/2019
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/26/2019
Next Scheduled EDR Contact: 10/07/2019
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/17/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/26/2019
Next Scheduled EDR Contact: 10/07/2019
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 03/25/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/27/2019	Telephone: (415) 495-8895
Date Made Active in Reports: 04/17/2019	Last EDR Contact: 06/26/2019
Number of Days to Update: 21	Next Scheduled EDR Contact: 10/07/2019
	Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/25/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/27/2019	Telephone: (415) 495-8895
Date Made Active in Reports: 04/17/2019	Last EDR Contact: 06/26/2019
Number of Days to Update: 21	Next Scheduled EDR Contact: 10/07/2019
	Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 08/13/2019	Source: Department of the Navy
Date Data Arrived at EDR: 08/20/2019	Telephone: 843-820-7326
Date Made Active in Reports: 08/26/2019	Last EDR Contact: 08/07/2019
Number of Days to Update: 6	Next Scheduled EDR Contact: 11/25/2019
	Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 08/19/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 08/20/2019	Telephone: 703-603-0695
Date Made Active in Reports: 08/26/2019	Last EDR Contact: 08/20/2019
Number of Days to Update: 6	Next Scheduled EDR Contact: 12/09/2019
	Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 08/19/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 08/20/2019	Telephone: 703-603-0695
Date Made Active in Reports: 08/26/2019	Last EDR Contact: 08/20/2019
Number of Days to Update: 6	Next Scheduled EDR Contact: 12/09/2019
	Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 03/25/2019
Date Data Arrived at EDR: 03/26/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 36

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 06/26/2019
Next Scheduled EDR Contact: 10/07/2019
Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 04/29/2019
Date Data Arrived at EDR: 04/30/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 58

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 07/31/2019
Next Scheduled EDR Contact: 11/11/2019
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 04/29/2019
Date Data Arrived at EDR: 04/30/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 58

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 07/31/2019
Next Scheduled EDR Contact: 11/11/2019
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inventory of solid waste disposal facilities or landfills. These may be active or inactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 05/13/2019
Date Data Arrived at EDR: 05/14/2019
Date Made Active in Reports: 07/17/2019
Number of Days to Update: 64

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 08/13/2019
Next Scheduled EDR Contact: 11/25/2019
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 7: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004	Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Date Data Arrived at EDR: 02/26/2004	Telephone: 760-776-8943
Date Made Active in Reports: 03/24/2004	Last EDR Contact: 08/01/2011
Number of Days to Update: 27	Next Scheduled EDR Contact: 11/14/2011
	Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks

California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005	Source: California Regional Water Quality Control Board Santa Ana Region (8)
Date Data Arrived at EDR: 02/15/2005	Telephone: 909-782-4496
Date Made Active in Reports: 03/28/2005	Last EDR Contact: 08/15/2011
Number of Days to Update: 41	Next Scheduled EDR Contact: 11/28/2011
	Data Release Frequency: No Update Planned

LUST REG 9: Leaking Underground Storage Tank Report

Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001	Source: California Regional Water Quality Control Board San Diego Region (9)
Date Data Arrived at EDR: 04/23/2001	Telephone: 858-637-5595
Date Made Active in Reports: 05/21/2001	Last EDR Contact: 09/26/2011
Number of Days to Update: 28	Next Scheduled EDR Contact: 01/09/2012
	Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)

Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/10/2019	Source: State Water Resources Control Board
Date Data Arrived at EDR: 06/11/2019	Telephone: see region list
Date Made Active in Reports: 08/05/2019	Last EDR Contact: 06/11/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 09/23/2019
	Data Release Frequency: Quarterly

LUST REG 6V: Leaking Underground Storage Tank Case Listing

Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005	Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Date Data Arrived at EDR: 06/07/2005	Telephone: 760-241-7365
Date Made Active in Reports: 06/29/2005	Last EDR Contact: 09/12/2011
Number of Days to Update: 22	Next Scheduled EDR Contact: 12/26/2011
	Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004	Source: California Regional Water Quality Control Board Los Angeles Region (4)
Date Data Arrived at EDR: 09/07/2004	Telephone: 213-576-6710
Date Made Active in Reports: 10/12/2004	Last EDR Contact: 09/06/2011
Number of Days to Update: 35	Next Scheduled EDR Contact: 12/19/2011
	Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 6L: Leaking Underground Storage Tank Case Listing

For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/17/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 07/29/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 10/10/2018
Date Data Arrived at EDR: 03/08/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 54

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 07/29/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/16/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 07/29/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 02/19/2019
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/29/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 09/24/2018
Date Data Arrived at EDR: 03/12/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 50

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 07/23/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land

A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 10/13/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 07/29/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land

Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 10/12/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 07/29/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 11/01/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 07/29/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

CPS-SLIC: Statewide SLIC Cases (GEOTRACKER)

Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/10/2019
Date Data Arrived at EDR: 06/11/2019
Date Made Active in Reports: 08/05/2019
Number of Days to Update: 55

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/11/2019
Next Scheduled EDR Contact: 09/23/2019
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: No Update Planned

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 6L: SLIC Sites

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36

Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11

Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: No Update Planned

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing

A listing of all FEMA owned underground storage tanks.

Date of Government Version: 05/15/2017
Date Data Arrived at EDR: 05/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 136

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 08/26/2019
Next Scheduled EDR Contact: 10/21/2019
Data Release Frequency: Varies

MILITARY UST SITES: Military UST Sites (GEOTRACKER)

Military ust sites

Date of Government Version: 06/10/2019
Date Data Arrived at EDR: 06/11/2019
Date Made Active in Reports: 07/24/2019
Number of Days to Update: 43

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/11/2019
Next Scheduled EDR Contact: 09/23/2019
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases

UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 06/10/2019
Date Data Arrived at EDR: 06/12/2019
Date Made Active in Reports: 07/23/2019
Number of Days to Update: 41

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 06/12/2019
Next Scheduled EDR Contact: 09/23/2019
Data Release Frequency: Varies

UST: Active UST Facilities

Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 06/10/2019
Date Data Arrived at EDR: 06/11/2019
Date Made Active in Reports: 07/23/2019
Number of Days to Update: 42

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 06/11/2019
Next Scheduled EDR Contact: 09/23/2019
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities

A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69

Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 06/17/2019
Next Scheduled EDR Contact: 09/30/2019
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 11/07/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 07/29/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/16/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 08/05/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 11/01/2018
Date Data Arrived at EDR: 03/07/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 55

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 07/29/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 10/12/2018	Source: EPA Region 5
Date Data Arrived at EDR: 03/07/2019	Telephone: 312-886-6136
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 07/29/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 11/05/2019
	Data Release Frequency: Varies

INDIAN UST R4: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 09/24/2018	Source: EPA Region 4
Date Data Arrived at EDR: 03/12/2019	Telephone: 404-562-9424
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 07/23/2019
Number of Days to Update: 50	Next Scheduled EDR Contact: 11/04/2019
	Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 10/17/2018	Source: EPA Region 10
Date Data Arrived at EDR: 03/07/2019	Telephone: 206-553-2857
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 07/29/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 11/04/2019
	Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 10/10/2018	Source: EPA Region 9
Date Data Arrived at EDR: 03/08/2019	Telephone: 415-972-3368
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 07/29/2019
Number of Days to Update: 54	Next Scheduled EDR Contact: 11/04/2019
	Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 10/03/2018	Source: EPA, Region 1
Date Data Arrived at EDR: 03/07/2019	Telephone: 617-918-1313
Date Made Active in Reports: 05/01/2019	Last EDR Contact: 07/29/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 11/04/2019
	Data Release Frequency: Varies

State and tribal voluntary cleanup sites

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008	Source: EPA, Region 7
Date Data Arrived at EDR: 04/22/2008	Telephone: 913-551-7365
Date Made Active in Reports: 05/19/2008	Last EDR Contact: 04/20/2009
Number of Days to Update: 27	Next Scheduled EDR Contact: 07/20/2009
	Data Release Frequency: Varies

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 06/20/2019
Next Scheduled EDR Contact: 10/07/2019
Data Release Frequency: Varies

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 04/29/2019
Date Data Arrived at EDR: 04/30/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 58

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 07/31/2019
Next Scheduled EDR Contact: 11/11/2019
Data Release Frequency: Quarterly

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing

A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 06/24/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/21/2019
Number of Days to Update: 57

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 06/25/2019
Next Scheduled EDR Contact: 10/07/2019
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 06/03/2019
Date Data Arrived at EDR: 06/04/2019
Date Made Active in Reports: 08/26/2019
Number of Days to Update: 83

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 06/04/2019
Next Scheduled EDR Contact: 09/30/2019
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database

Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30

Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 07/25/2019
Next Scheduled EDR Contact: 11/11/2019
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 06/11/2019
Date Data Arrived at EDR: 06/12/2019
Date Made Active in Reports: 08/15/2019
Number of Days to Update: 64

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/12/2019
Next Scheduled EDR Contact: 09/23/2019
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 03/26/2019
Date Data Arrived at EDR: 03/27/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 34

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 08/07/2019
Next Scheduled EDR Contact: 11/25/2019
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands
Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 07/25/2019
Next Scheduled EDR Contact: 11/11/2019
Data Release Frequency: Varies

ODI: Open Dump Inventory
An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations
A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 07/19/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land
A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 08/02/2019
Next Scheduled EDR Contact: 11/11/2019
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 06/11/2019
Date Data Arrived at EDR: 06/13/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/21/2019
Next Scheduled EDR Contact: 12/09/2019
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 04/29/2019
Date Data Arrived at EDR: 04/30/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 58

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 07/31/2019
Next Scheduled EDR Contact: 11/11/2019
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/12/2018
Date Made Active in Reports: 08/06/2018
Number of Days to Update: 55

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 07/08/2019
Next Scheduled EDR Contact: 10/21/2019
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 08/14/2019
Date Data Arrived at EDR: 08/14/2019
Date Made Active in Reports: 08/21/2019
Number of Days to Update: 7

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 08/14/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Quarterly

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 06/11/2019
Date Data Arrived at EDR: 06/13/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 82

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/21/2019
Next Scheduled EDR Contact: 12/09/2019
Data Release Frequency: Quarterly

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 06/28/2019
Date Data Arrived at EDR: 06/28/2019
Date Made Active in Reports: 07/24/2019
Number of Days to Update: 26

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/28/2019
Next Scheduled EDR Contact: 09/23/2019
Data Release Frequency: Varies

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990’s. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database

A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 12/04/2018
Date Data Arrived at EDR: 12/06/2018
Date Made Active in Reports: 12/14/2018
Number of Days to Update: 8

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 08/21/2019
Next Scheduled EDR Contact: 12/09/2019
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database

The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing

Aboveground storage tank sites

Date of Government Version: 09/11/2018
Date Data Arrived at EDR: 09/12/2018
Date Made Active in Reports: 10/11/2018
Number of Days to Update: 29

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 07/31/2019
Next Scheduled EDR Contact: 11/18/2019
Data Release Frequency: Varies

CA FID UST: Facility Inventory Database

The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CERS TANKS: California Environmental Reporting System (CERS) Tanks

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 08/14/2019
Date Data Arrived at EDR: 08/14/2019
Date Made Active in Reports: 08/21/2019
Number of Days to Update: 7

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 08/14/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Quarterly

Local Land Records

LIENS: Environmental Liens Listing

A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 06/05/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/09/2019
Number of Days to Update: 64

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/28/2019
Next Scheduled EDR Contact: 12/16/2019
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information

A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 07/30/2019
Date Data Arrived at EDR: 07/30/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 35

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 07/30/2019
Next Scheduled EDR Contact: 10/14/2019
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 06/04/2019	Source: DTSC and SWRCB
Date Data Arrived at EDR: 06/04/2019	Telephone: 916-323-3400
Date Made Active in Reports: 08/08/2019	Last EDR Contact: 09/04/2019
Number of Days to Update: 65	Next Scheduled EDR Contact: 12/16/2019
	Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 03/25/2019	Source: U.S. Department of Transportation
Date Data Arrived at EDR: 03/26/2019	Telephone: 202-366-4555
Date Made Active in Reports: 05/14/2019	Last EDR Contact: 06/26/2019
Number of Days to Update: 49	Next Scheduled EDR Contact: 10/07/2019
	Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 05/15/2019	Source: Office of Emergency Services
Date Data Arrived at EDR: 06/24/2019	Telephone: 916-845-8400
Date Made Active in Reports: 08/21/2019	Last EDR Contact: 07/26/2019
Number of Days to Update: 58	Next Scheduled EDR Contact: 11/04/2019
	Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/10/2019	Source: State Water Qualilty Control Board
Date Data Arrived at EDR: 06/11/2019	Telephone: 866-480-1028
Date Made Active in Reports: 08/05/2019	Last EDR Contact: 06/11/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 09/23/2019
	Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 06/10/2019	Source: State Water Resources Control Board
Date Data Arrived at EDR: 06/11/2019	Telephone: 866-480-1028
Date Made Active in Reports: 07/24/2019	Last EDR Contact: 06/11/2019
Number of Days to Update: 43	Next Scheduled EDR Contact: 09/23/2019
	Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012	Source: FirstSearch
Date Data Arrived at EDR: 01/03/2013	Telephone: N/A
Date Made Active in Reports: 02/22/2013	Last EDR Contact: 01/03/2013
Number of Days to Update: 50	Next Scheduled EDR Contact: N/A
	Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 03/25/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/27/2019	Telephone: (415) 495-8895
Date Made Active in Reports: 04/17/2019	Last EDR Contact: 06/26/2019
Number of Days to Update: 21	Next Scheduled EDR Contact: 10/07/2019
	Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 05/15/2019	Source: U.S. Army Corps of Engineers
Date Data Arrived at EDR: 05/21/2019	Telephone: 202-528-4285
Date Made Active in Reports: 08/08/2019	Last EDR Contact: 08/23/2019
Number of Days to Update: 79	Next Scheduled EDR Contact: 12/02/2019
	Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005	Source: USGS
Date Data Arrived at EDR: 11/10/2006	Telephone: 888-275-8747
Date Made Active in Reports: 01/11/2007	Last EDR Contact: 07/09/2019
Number of Days to Update: 62	Next Scheduled EDR Contact: 10/21/2019
	Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005	Source: U.S. Geological Survey
Date Data Arrived at EDR: 02/06/2006	Telephone: 888-275-8747
Date Made Active in Reports: 01/11/2007	Last EDR Contact: 07/10/2019
Number of Days to Update: 339	Next Scheduled EDR Contact: 10/21/2019
	Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017	Source: Environmental Protection Agency
Date Data Arrived at EDR: 02/03/2017	Telephone: 615-532-8599
Date Made Active in Reports: 04/07/2017	Last EDR Contact: 08/16/2019
Number of Days to Update: 63	Next Scheduled EDR Contact: 11/25/2019
	Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 03/25/2019	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/26/2019	Telephone: 202-566-1917
Date Made Active in Reports: 05/07/2019	Last EDR Contact: 06/26/2019
Number of Days to Update: 42	Next Scheduled EDR Contact: 10/07/2019
	Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013	Source: Environmental Protection Agency
Date Data Arrived at EDR: 03/21/2014	Telephone: 617-520-3000
Date Made Active in Reports: 06/17/2014	Last EDR Contact: 08/05/2019
Number of Days to Update: 88	Next Scheduled EDR Contact: 11/18/2019
	Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 09/30/2017	Source: Environmental Protection Agency
Date Data Arrived at EDR: 05/08/2018	Telephone: 703-308-4044
Date Made Active in Reports: 07/20/2018	Last EDR Contact: 08/09/2019
Number of Days to Update: 73	Next Scheduled EDR Contact: 11/18/2019
	Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016	Source: EPA
Date Data Arrived at EDR: 06/21/2017	Telephone: 202-260-5521
Date Made Active in Reports: 01/05/2018	Last EDR Contact: 06/18/2019
Number of Days to Update: 198	Next Scheduled EDR Contact: 09/30/2019
	Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 01/10/2018
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 2

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/23/2019
Next Scheduled EDR Contact: 12/02/2019
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 09/30/2018
Date Data Arrived at EDR: 04/24/2019
Date Made Active in Reports: 08/08/2019
Number of Days to Update: 106

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/26/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 07/19/2019
Date Data Arrived at EDR: 07/30/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 35

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 07/30/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 04/25/2019
Date Data Arrived at EDR: 05/02/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 07/22/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/18/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 07/30/2019
Next Scheduled EDR Contact: 11/18/2019
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 03/20/2019
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 34

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 07/12/2019
Next Scheduled EDR Contact: 10/21/2019
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 07/03/2019
Next Scheduled EDR Contact: 10/21/2019
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25

Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: No Update Planned

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 06/20/2019
Date Data Arrived at EDR: 06/20/2019
Date Made Active in Reports: 08/08/2019
Number of Days to Update: 49

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 09/04/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COAL ASH DOE: Steam-Electric Plant Operation Data

A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 06/07/2019
Next Scheduled EDR Contact: 09/16/2019
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List

A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 09/03/2019
Next Scheduled EDR Contact: 12/16/2019
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database

The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 05/24/2017
Date Data Arrived at EDR: 11/30/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 15

Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 08/09/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

RADINFO: Radiation Information Database

The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 04/02/2019
Date Data Arrived at EDR: 04/02/2019
Date Made Active in Reports: 05/14/2019
Number of Days to Update: 42

Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 07/01/2019
Next Scheduled EDR Contact: 10/14/2019
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing

A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing

A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 04/01/2019
Date Data Arrived at EDR: 04/30/2019
Date Made Active in Reports: 08/08/2019
Number of Days to Update: 100

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 07/31/2019
Next Scheduled EDR Contact: 11/11/2019
Data Release Frequency: Quarterly

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 30

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 07/08/2019
Next Scheduled EDR Contact: 10/21/2019
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 06/26/2019
Next Scheduled EDR Contact: 10/07/2019
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 07/10/2019
Next Scheduled EDR Contact: 10/21/2019
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 07/30/2019
Next Scheduled EDR Contact: 11/18/2019
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 06/23/2017
Date Data Arrived at EDR: 10/11/2017
Date Made Active in Reports: 11/03/2017
Number of Days to Update: 23

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 08/21/2019
Next Scheduled EDR Contact: 12/02/2019
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 07/19/2019
Date Data Arrived at EDR: 07/30/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 35

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 07/30/2019
Next Scheduled EDR Contact: 10/14/2019
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 05/03/2019
Date Data Arrived at EDR: 05/29/2019
Date Made Active in Reports: 08/08/2019
Number of Days to Update: 71

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 08/27/2019
Next Scheduled EDR Contact: 12/09/2019
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 08/30/2019
Next Scheduled EDR Contact: 12/09/2019
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 08/30/2019
Next Scheduled EDR Contact: 12/09/2019
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 03/27/2019
Date Data Arrived at EDR: 03/28/2019
Date Made Active in Reports: 05/01/2019
Number of Days to Update: 34

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 08/27/2019
Next Scheduled EDR Contact: 09/23/2019
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and ’pointers’ to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 05/03/2019
Date Data Arrived at EDR: 06/05/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 90

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 09/04/2019
Next Scheduled EDR Contact: 12/16/2019
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 07/26/2018
Date Made Active in Reports: 10/05/2018
Number of Days to Update: 71

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 08/21/2019
Next Scheduled EDR Contact: 12/09/2019
Data Release Frequency: Varies

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 01/17/2019
Date Made Active in Reports: 04/01/2019
Number of Days to Update: 74

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 07/15/2019
Next Scheduled EDR Contact: 10/28/2019
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 04/07/2019
Date Data Arrived at EDR: 04/09/2019
Date Made Active in Reports: 05/23/2019
Number of Days to Update: 44

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 07/09/2019
Next Scheduled EDR Contact: 10/21/2019
Data Release Frequency: Quarterly

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 05/20/2019
Date Data Arrived at EDR: 05/21/2019
Date Made Active in Reports: 08/08/2019
Number of Days to Update: 79

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 08/20/2019
Next Scheduled EDR Contact: 12/02/2019
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 06/24/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/21/2019
Number of Days to Update: 57

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 06/25/2019
Next Scheduled EDR Contact: 10/07/2019
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing

list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/14/2019
Date Made Active in Reports: 07/17/2019
Number of Days to Update: 64

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 08/15/2019
Next Scheduled EDR Contact: 11/25/2019
Data Release Frequency: Varies

CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 04/18/2019
Date Data Arrived at EDR: 04/19/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 11

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 07/31/2019
Next Scheduled EDR Contact: 11/18/2019
Data Release Frequency: Varies

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner’s agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/28/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 55

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 08/28/2019
Next Scheduled EDR Contact: 12/16/2019
Data Release Frequency: Annually

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 03/19/2019
Date Data Arrived at EDR: 03/22/2019
Date Made Active in Reports: 04/09/2019
Number of Days to Update: 18

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 08/21/2019
Next Scheduled EDR Contact: 12/09/2019
Data Release Frequency: Varies

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 06/03/2019
Date Data Arrived at EDR: 06/04/2019
Date Made Active in Reports: 08/08/2019
Number of Days to Update: 65

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 08/28/2019
Next Scheduled EDR Contact: 12/16/2019
Data Release Frequency: Varies

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 06/24/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 59

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 06/24/2019
Next Scheduled EDR Contact: 09/30/2019
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 11/01/2018
Date Data Arrived at EDR: 11/02/2018
Date Made Active in Reports: 12/13/2018
Number of Days to Update: 41

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 07/18/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 07/19/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 05/15/2019
Date Data Arrived at EDR: 05/16/2019
Date Made Active in Reports: 07/18/2019
Number of Days to Update: 63

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 08/07/2019
Next Scheduled EDR Contact: 11/25/2019
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 05/29/2019
Date Made Active in Reports: 07/22/2019
Number of Days to Update: 54

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 07/12/2019
Next Scheduled EDR Contact: 10/21/2019
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 05/20/2019
Date Data Arrived at EDR: 05/21/2019
Date Made Active in Reports: 07/18/2019
Number of Days to Update: 58

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 08/20/2019
Next Scheduled EDR Contact: 12/02/2019
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing

Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 05/20/2019
Date Data Arrived at EDR: 05/21/2019
Date Made Active in Reports: 07/18/2019
Number of Days to Update: 58

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/20/2019
Next Scheduled EDR Contact: 12/02/2019
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database

A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 04/08/2019
Date Data Arrived at EDR: 04/09/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 51

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 07/09/2019
Next Scheduled EDR Contact: 10/21/2019
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing

A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 06/10/2019
Date Data Arrived at EDR: 06/11/2019
Date Made Active in Reports: 08/15/2019
Number of Days to Update: 65

Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 06/11/2019
Next Scheduled EDR Contact: 09/23/2019
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing

The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 05/17/2019	Source: Department of Public Health
Date Data Arrived at EDR: 06/04/2019	Telephone: 916-558-1784
Date Made Active in Reports: 08/09/2019	Last EDR Contact: 09/04/2019
Number of Days to Update: 66	Next Scheduled EDR Contact: 12/16/2019
	Data Release Frequency: Varies

NPDES: NPDES Permits Listing

A listing of NPDES permits, including stormwater.

Date of Government Version: 05/13/2019	Source: State Water Resources Control Board
Date Data Arrived at EDR: 05/14/2019	Telephone: 916-445-9379
Date Made Active in Reports: 07/17/2019	Last EDR Contact: 08/13/2019
Number of Days to Update: 64	Next Scheduled EDR Contact: 11/25/2019
	Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing

A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 06/04/2019	Source: Department of Pesticide Regulation
Date Data Arrived at EDR: 06/04/2019	Telephone: 916-445-4038
Date Made Active in Reports: 08/09/2019	Last EDR Contact: 09/04/2019
Number of Days to Update: 66	Next Scheduled EDR Contact: 12/16/2019
	Data Release Frequency: Quarterly

PROC: Certified Processors Database

A listing of certified processors.

Date of Government Version: 06/11/2019	Source: Department of Conservation
Date Data Arrived at EDR: 06/12/2019	Telephone: 916-323-3836
Date Made Active in Reports: 08/15/2019	Last EDR Contact: 06/12/2019
Number of Days to Update: 64	Next Scheduled EDR Contact: 09/23/2019
	Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records

Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 06/17/2019	Source: State Water Resources Control Board
Date Data Arrived at EDR: 06/18/2019	Telephone: 916-445-3846
Date Made Active in Reports: 08/22/2019	Last EDR Contact: 06/17/2019
Number of Days to Update: 65	Next Scheduled EDR Contact: 09/30/2019
	Data Release Frequency: No Update Planned

UIC: UIC Listing

A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 04/27/2018	Source: Deaprtment of Conservation
Date Data Arrived at EDR: 06/13/2018	Telephone: 916-445-2408
Date Made Active in Reports: 07/17/2018	Last EDR Contact: 08/20/2019
Number of Days to Update: 34	Next Scheduled EDR Contact: 09/23/2019
	Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 06/10/2019
Date Data Arrived at EDR: 06/11/2019
Date Made Active in Reports: 07/24/2019
Number of Days to Update: 43

Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/11/2019
Next Scheduled EDR Contact: 09/23/2019
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water boards review found that more than one-third of the region’s active disposal pits are operating without permission.

Date of Government Version: 05/08/2018
Date Data Arrived at EDR: 07/11/2018
Date Made Active in Reports: 09/13/2018
Number of Days to Update: 64

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 07/12/2019
Next Scheduled EDR Contact: 10/21/2019
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9

Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 08/14/2019
Next Scheduled EDR Contact: 12/02/2019
Data Release Frequency: No Update Planned

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13

Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 06/19/2019
Next Scheduled EDR Contact: 10/07/2019
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 06/10/2019
Date Data Arrived at EDR: 06/11/2019
Date Made Active in Reports: 07/24/2019
Number of Days to Update: 43

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/11/2019
Next Scheduled EDR Contact: 09/23/2019
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 06/10/2019
Date Data Arrived at EDR: 06/11/2019
Date Made Active in Reports: 07/24/2019
Number of Days to Update: 43

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/11/2019
Next Scheduled EDR Contact: 09/23/2019
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing
In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 06/11/2019
Date Data Arrived at EDR: 06/12/2019
Date Made Active in Reports: 08/15/2019
Number of Days to Update: 64

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 06/12/2019
Next Scheduled EDR Contact: 09/23/2019
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/04/2019
Date Made Active in Reports: 08/08/2019
Number of Days to Update: 65

Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 09/04/2019
Next Scheduled EDR Contact: 12/16/2019
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 08/14/2019
Date Data Arrived at EDR: 08/14/2019
Date Made Active in Reports: 08/21/2019
Number of Days to Update: 7

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 08/14/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 06/10/2019
Date Data Arrived at EDR: 06/11/2019
Date Made Active in Reports: 07/24/2019
Number of Days to Update: 43

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/11/2019
Next Scheduled EDR Contact: 09/23/2019
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 06/10/2019
Date Data Arrived at EDR: 06/11/2019
Date Made Active in Reports: 07/24/2019
Number of Days to Update: 43

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/11/2019
Next Scheduled EDR Contact: 09/23/2019
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)

Produced water ponds sites

Date of Government Version: 06/10/2019
Date Data Arrived at EDR: 06/11/2019
Date Made Active in Reports: 07/24/2019
Number of Days to Update: 43

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/11/2019
Next Scheduled EDR Contact: 09/23/2019
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)

Sampling point - public sites

Date of Government Version: 06/10/2019
Date Data Arrived at EDR: 06/11/2019
Date Made Active in Reports: 07/24/2019
Number of Days to Update: 43

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/11/2019
Next Scheduled EDR Contact: 09/23/2019
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)

Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 06/10/2019
Date Data Arrived at EDR: 06/11/2019
Date Made Active in Reports: 07/24/2019
Number of Days to Update: 43

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/11/2019
Next Scheduled EDR Contact: 09/23/2019
Data Release Frequency: Varies

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 07/08/2019
Next Scheduled EDR Contact: 10/21/2019
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 04/10/2019
Date Data Arrived at EDR: 04/11/2019
Date Made Active in Reports: 06/20/2019
Number of Days to Update: 70

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 08/14/2019
Next Scheduled EDR Contact: 04/24/2047
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List

Cupa Facility List

Date of Government Version: 06/27/2019
Date Data Arrived at EDR: 06/28/2019
Date Made Active in Reports: 07/24/2019
Number of Days to Update: 26

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 08/28/2019
Next Scheduled EDR Contact: 12/16/2019
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: CUPA Facility Listing

Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 07/08/2019
Next Scheduled EDR Contact: 10/21/2019
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing

Cupa Facility Listing

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/02/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 27

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 06/24/2019
Next Scheduled EDR Contact: 10/07/2019
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List

Cupa facility list.

Date of Government Version: 05/17/2019
Date Data Arrived at EDR: 05/21/2019
Date Made Active in Reports: 07/18/2019
Number of Days to Update: 58

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 08/14/2019
Next Scheduled EDR Contact: 11/18/2019
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List

List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 05/22/2019
Date Data Arrived at EDR: 05/23/2019
Date Made Active in Reports: 07/18/2019
Number of Days to Update: 56

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 07/26/2019
Next Scheduled EDR Contact: 11/11/2019
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List

Cupa Facility list

Date of Government Version: 02/20/2019
Date Data Arrived at EDR: 05/01/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 29

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 07/25/2019
Next Scheduled EDR Contact: 11/11/2019
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List

CUPA facility list.

Date of Government Version: 06/05/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 07/23/2019
Number of Days to Update: 47

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 07/26/2019
Next Scheduled EDR Contact: 11/11/2019
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 04/10/2019
Date Data Arrived at EDR: 04/11/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 19

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 06/26/2019
Next Scheduled EDR Contact: 10/14/2019
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: CUPA Facility List

Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 07/19/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List

CUPA facility list.

Date of Government Version: 12/11/2018
Date Data Arrived at EDR: 12/13/2018
Date Made Active in Reports: 01/15/2019
Number of Days to Update: 33

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 08/19/2019
Next Scheduled EDR Contact: 12/02/2019
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List

Cupa facility list.

Date of Government Version: 04/24/2019
Date Data Arrived at EDR: 04/25/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 63

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 07/19/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List

Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 08/14/2019
Next Scheduled EDR Contact: 12/02/2019
Data Release Frequency: Varies

KERN COUNTY:

UST KERN: Underground Storage Tank Sites & Tank Listing

Kern County Sites and Tanks Listing.

Date of Government Version: 05/06/2019
Date Data Arrived at EDR: 05/07/2019
Date Made Active in Reports: 07/16/2019
Number of Days to Update: 70

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 07/31/2019
Next Scheduled EDR Contact: 11/18/2019
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: CUPA Facility List

A listing of sites included in the county’s Certified Unified Program Agency database. California’s Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 05/16/2019
Date Data Arrived at EDR: 05/17/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 13

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 08/14/2019
Next Scheduled EDR Contact: 12/02/2019
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List

Cupa facility list

Date of Government Version: 05/30/2019
Date Data Arrived at EDR: 05/31/2019
Date Made Active in Reports: 07/23/2019
Number of Days to Update: 53

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 07/15/2019
Next Scheduled EDR Contact: 10/28/2019
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List

Cupa facility list

Date of Government Version: 01/17/2019
Date Data Arrived at EDR: 01/18/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 46

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 07/19/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County

San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206

Source: N/A
Telephone: N/A
Last EDR Contact: 06/17/2019
Next Scheduled EDR Contact: 09/30/2019
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List

Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 05/13/2019
Date Data Arrived at EDR: 05/16/2019
Date Made Active in Reports: 07/18/2019
Number of Days to Update: 63

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 07/08/2019
Next Scheduled EDR Contact: 10/21/2019
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities

Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/15/2019
Date Data Arrived at EDR: 04/16/2019
Date Made Active in Reports: 06/21/2019
Number of Days to Update: 66

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 07/17/2019
Next Scheduled EDR Contact: 10/28/2019
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills

Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2019
Date Data Arrived at EDR: 01/15/2019
Date Made Active in Reports: 03/07/2019
Number of Days to Update: 51

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 07/12/2019
Next Scheduled EDR Contact: 10/28/2019
Data Release Frequency: Varies

LOS ANGELES AST: Active & Inactive AST Inventory

A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 06/25/2019
Next Scheduled EDR Contact: 10/07/2019
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

LOS ANGELES CO LF METHANE: Methane Producing Landfills

This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 04/30/2012	Source: Los Angeles County Department of Public Works
Date Data Arrived at EDR: 04/17/2019	Telephone: 626-458-6973
Date Made Active in Reports: 05/29/2019	Last EDR Contact: 07/19/2019
Number of Days to Update: 42	Next Scheduled EDR Contact: 10/28/2019
	Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory

A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019	Source: Los Angeles Fire Department
Date Data Arrived at EDR: 06/25/2019	Telephone: 213-978-3800
Date Made Active in Reports: 08/22/2019	Last EDR Contact: 06/25/2019
Number of Days to Update: 58	Next Scheduled EDR Contact: 10/07/2019
	Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory

A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 06/01/2019	Source: Los Angeles Fire Department
Date Data Arrived at EDR: 06/25/2019	Telephone: 213-978-3800
Date Made Active in Reports: 08/22/2019	Last EDR Contact: 06/25/2019
Number of Days to Update: 58	Next Scheduled EDR Contact: 10/07/2019
	Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List

Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 07/15/2019	Source: Community Health Services
Date Data Arrived at EDR: 07/17/2019	Telephone: 323-890-7806
Date Made Active in Reports: 08/05/2019	Last EDR Contact: 07/17/2019
Number of Days to Update: 19	Next Scheduled EDR Contact: 10/28/2019
	Data Release Frequency: Annually

UST EL SEGUNDO: City of El Segundo Underground Storage Tank

Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017	Source: City of El Segundo Fire Department
Date Data Arrived at EDR: 04/19/2017	Telephone: 310-524-2236
Date Made Active in Reports: 05/10/2017	Last EDR Contact: 07/12/2019
Number of Days to Update: 21	Next Scheduled EDR Contact: 10/28/2019
	Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank

Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019	Source: City of Long Beach Fire Department
Date Data Arrived at EDR: 04/23/2019	Telephone: 562-570-2563
Date Made Active in Reports: 06/27/2019	Last EDR Contact: 07/19/2019
Number of Days to Update: 65	Next Scheduled EDR Contact: 11/04/2019
	Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 04/04/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 07/19/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 05/28/2019
Date Data Arrived at EDR: 05/30/2019
Date Made Active in Reports: 08/05/2019
Number of Days to Update: 67

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 08/14/2019
Next Scheduled EDR Contact: 12/02/2019
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 06/26/2019
Next Scheduled EDR Contact: 10/14/2019
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 05/29/2019
Date Data Arrived at EDR: 05/30/2019
Date Made Active in Reports: 07/22/2019
Number of Days to Update: 53

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 08/14/2019
Next Scheduled EDR Contact: 12/02/2019
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 05/23/2019
Date Data Arrived at EDR: 05/30/2019
Date Made Active in Reports: 07/22/2019
Number of Days to Update: 53

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 08/21/2019
Next Scheduled EDR Contact: 09/09/2019
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing

CUPA Program listing from the Environmental Health Division.

Date of Government Version: 02/05/2019
Date Data Arrived at EDR: 02/07/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 26

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 06/28/2019
Next Scheduled EDR Contact: 10/14/2019
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: Sites With Reported Contamination

A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/21/2019
Next Scheduled EDR Contact: 12/09/2019
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites

Underground storage tank sites located in Napa county.

Date of Government Version: 02/21/2019
Date Data Arrived at EDR: 02/22/2019
Date Made Active in Reports: 03/08/2019
Number of Days to Update: 14

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/21/2019
Next Scheduled EDR Contact: 12/09/2019
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List

CUPA facility list.

Date of Government Version: 05/20/2019
Date Data Arrived at EDR: 05/21/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 9

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 07/25/2019
Next Scheduled EDR Contact: 11/11/2019
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups

Petroleum and non-petroleum spills.

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/09/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 21

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/05/2019
Next Scheduled EDR Contact: 11/18/2019
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups

Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/09/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 21

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/05/2019
Next Scheduled EDR Contact: 11/18/2019
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 04/02/2019
Date Data Arrived at EDR: 05/07/2019
Date Made Active in Reports: 07/16/2019
Number of Days to Update: 70

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 08/05/2019
Next Scheduled EDR Contact: 11/18/2019
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 06/03/2019
Date Data Arrived at EDR: 06/04/2019
Date Made Active in Reports: 08/12/2019
Number of Days to Update: 69

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 08/28/2019
Next Scheduled EDR Contact: 12/16/2019
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 07/19/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/12/2019
Date Made Active in Reports: 04/30/2019
Number of Days to Update: 18

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/17/2019
Next Scheduled EDR Contact: 09/30/2019
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 04/11/2019
Date Data Arrived at EDR: 04/12/2019
Date Made Active in Reports: 06/20/2019
Number of Days to Update: 69

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/17/2019
Next Scheduled EDR Contact: 09/30/2019
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 05/06/2019	Source: Sacramento County Environmental Management
Date Data Arrived at EDR: 06/28/2019	Telephone: 916-875-8406
Date Made Active in Reports: 08/22/2019	Last EDR Contact: 06/28/2019
Number of Days to Update: 55	Next Scheduled EDR Contact: 10/14/2019
	Data Release Frequency: Quarterly

ML SACRAMENTO: Master Hazardous Materials Facility List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 02/06/2019	Source: Sacramento County Environmental Management
Date Data Arrived at EDR: 04/02/2019	Telephone: 916-875-8406
Date Made Active in Reports: 06/20/2019	Last EDR Contact: 06/28/2019
Number of Days to Update: 79	Next Scheduled EDR Contact: 10/14/2019
	Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List

Cupa facility list

Date of Government Version: 03/11/2019	Source: San Benito County Environmental Health
Date Data Arrived at EDR: 03/13/2019	Telephone: N/A
Date Made Active in Reports: 04/30/2019	Last EDR Contact: 07/16/2019
Number of Days to Update: 48	Next Scheduled EDR Contact: 11/18/2019
	Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 05/31/2019	Source: San Bernardino County Fire Department Hazardous Materials Division
Date Data Arrived at EDR: 05/31/2019	Telephone: 909-387-3041
Date Made Active in Reports: 07/22/2019	Last EDR Contact: 08/05/2019
Number of Days to Update: 52	Next Scheduled EDR Contact: 11/18/2019
	Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment ’H’ permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 06/04/2019	Source: Hazardous Materials Management Division
Date Data Arrived at EDR: 06/04/2019	Telephone: 619-338-2268
Date Made Active in Reports: 08/08/2019	Last EDR Contact: 09/04/2019
Number of Days to Update: 65	Next Scheduled EDR Contact: 12/16/2019
	Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 04/18/2018
Date Data Arrived at EDR: 04/24/2018
Date Made Active in Reports: 06/19/2018
Number of Days to Update: 56

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 07/19/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing

A listing of all LOP release sites that are or were under the County of San Diego’s jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 04/24/2019
Date Data Arrived at EDR: 04/25/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 63

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 07/19/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

SAN DIEGO CO SAM: Environmental Case Listing

The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24

Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 08/28/2019
Next Scheduled EDR Contact: 12/16/2019
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

LUST SAN FRANCISCO: Local Oversite Facilities

A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10

Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 07/31/2019
Next Scheduled EDR Contact: 11/18/2019
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information

Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/05/2018
Date Data Arrived at EDR: 11/06/2018
Date Made Active in Reports: 12/14/2018
Number of Days to Update: 38

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 07/31/2019
Next Scheduled EDR Contact: 11/18/2019
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST

A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 06/17/2019
Next Scheduled EDR Contact: 09/30/2019
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 05/20/2019	Source: San Luis Obispo County Public Health Department
Date Data Arrived at EDR: 05/21/2019	Telephone: 805-781-5596
Date Made Active in Reports: 07/18/2019	Last EDR Contact: 08/14/2019
Number of Days to Update: 58	Next Scheduled EDR Contact: 12/02/2019
	Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 08/06/2019	Source: San Mateo County Environmental Health Services Division
Date Data Arrived at EDR: 08/14/2019	Telephone: 650-363-1921
Date Made Active in Reports: 08/15/2019	Last EDR Contact: 08/14/2019
Number of Days to Update: 1	Next Scheduled EDR Contact: 09/23/2019
	Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019	Source: San Mateo County Environmental Health Services Division
Date Data Arrived at EDR: 03/29/2019	Telephone: 650-363-1921
Date Made Active in Reports: 05/29/2019	Last EDR Contact: 06/10/2019
Number of Days to Update: 61	Next Scheduled EDR Contact: 09/23/2019
	Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011	Source: Santa Barbara County Public Health Department
Date Data Arrived at EDR: 09/09/2011	Telephone: 805-686-8167
Date Made Active in Reports: 10/07/2011	Last EDR Contact: 08/14/2019
Number of Days to Update: 28	Next Scheduled EDR Contact: 12/02/2019
	Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 05/16/2019	Source: Department of Environmental Health
Date Data Arrived at EDR: 05/23/2019	Telephone: 408-918-1973
Date Made Active in Reports: 07/18/2019	Last EDR Contact: 08/14/2019
Number of Days to Update: 56	Next Scheduled EDR Contact: 12/02/2019
	Data Release Frequency: Varies

HIST LUST SANTA CLARA: HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005	Source: Santa Clara Valley Water District
Date Data Arrived at EDR: 03/30/2005	Telephone: 408-265-2600
Date Made Active in Reports: 04/21/2005	Last EDR Contact: 03/23/2009
Number of Days to Update: 22	Next Scheduled EDR Contact: 06/22/2009
	Data Release Frequency: No Update Planned

LUST SANTA CLARA: LOP Listing

A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13

Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 08/21/2019
Next Scheduled EDR Contact: 12/09/2019
Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities

Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 05/19/2019
Date Data Arrived at EDR: 05/23/2019
Date Made Active in Reports: 07/22/2019
Number of Days to Update: 60

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 07/31/2019
Next Scheduled EDR Contact: 11/18/2019
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: CUPA Facility List

CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 08/14/2019
Next Scheduled EDR Contact: 12/02/2019
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: CUPA Facility List

Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 08/14/2019
Next Scheduled EDR Contact: 12/02/2019
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks

A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 08/28/2019
Next Scheduled EDR Contact: 12/16/2019
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks

Underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 07/23/2019
Number of Days to Update: 47

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 08/28/2019
Next Scheduled EDR Contact: 12/16/2019
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 06/18/2019	Source: County of Sonoma Fire & Emergency Services Department
Date Data Arrived at EDR: 06/25/2019	Telephone: 707-565-1174
Date Made Active in Reports: 07/24/2019	Last EDR Contact: 06/19/2019
Number of Days to Update: 29	Next Scheduled EDR Contact: 10/07/2019
	Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 04/03/2019	Source: Department of Health Services
Date Data Arrived at EDR: 04/11/2019	Telephone: 707-565-6565
Date Made Active in Reports: 04/30/2019	Last EDR Contact: 06/19/2019
Number of Days to Update: 19	Next Scheduled EDR Contact: 10/07/2019
	Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 12/11/2018	Source: Stanislaus County Department of Ennvironmental Protection
Date Data Arrived at EDR: 12/13/2018	Telephone: 209-525-6751
Date Made Active in Reports: 01/15/2019	Last EDR Contact: 07/15/2019
Number of Days to Update: 33	Next Scheduled EDR Contact: 10/28/2019
	Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 06/03/2019	Source: Sutter County Environmental Health Services
Date Data Arrived at EDR: 06/04/2019	Telephone: 530-822-7500
Date Made Active in Reports: 07/23/2019	Last EDR Contact: 08/28/2019
Number of Days to Update: 49	Next Scheduled EDR Contact: 12/16/2019
	Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 05/20/2019	Source: Tehama County Department of Environmental Health
Date Data Arrived at EDR: 05/21/2019	Telephone: 530-527-8020
Date Made Active in Reports: 07/18/2019	Last EDR Contact: 07/31/2019
Number of Days to Update: 58	Next Scheduled EDR Contact: 11/18/2019
	Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 04/24/2019
Date Data Arrived at EDR: 04/25/2019
Date Made Active in Reports: 06/28/2019
Number of Days to Update: 64

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 07/19/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 05/09/2019
Date Data Arrived at EDR: 05/10/2019
Date Made Active in Reports: 07/17/2019
Number of Days to Update: 68

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 08/05/2019
Next Scheduled EDR Contact: 11/18/2019
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 07/31/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 03/26/2019
Date Data Arrived at EDR: 04/25/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 63

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 07/22/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Quarterly

LF VENTURA: Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/26/2019
Next Scheduled EDR Contact: 10/14/2019
Data Release Frequency: No Update Planned

LUST VENTURA: Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 08/07/2019
Next Scheduled EDR Contact: 11/25/2019
Data Release Frequency: No Update Planned

MED WASTE VENTURA: Medical Waste Program List

To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 03/26/2019
Date Data Arrived at EDR: 04/25/2019
Date Made Active in Reports: 05/30/2019
Number of Days to Update: 35

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 07/22/2019
Next Scheduled EDR Contact: 11/04/2019
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List

Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 06/10/2019
Date Data Arrived at EDR: 06/12/2019
Date Made Active in Reports: 07/24/2019
Number of Days to Update: 42

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/12/2019
Next Scheduled EDR Contact: 09/23/2019
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report

Underground storage tank sites located in Yolo county.

Date of Government Version: 06/26/2019
Date Data Arrived at EDR: 06/28/2019
Date Made Active in Reports: 07/31/2019
Number of Days to Update: 33

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 06/26/2019
Next Scheduled EDR Contact: 10/14/2019
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List

CUPA facility listing for Yuba County.

Date of Government Version: 05/03/2019
Date Data Arrived at EDR: 05/07/2019
Date Made Active in Reports: 07/16/2019
Number of Days to Update: 70

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 07/25/2019
Next Scheduled EDR Contact: 11/11/2019
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data

Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 05/14/2019
Date Data Arrived at EDR: 05/14/2019
Date Made Active in Reports: 08/05/2019
Number of Days to Update: 83

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 08/07/2019
Next Scheduled EDR Contact: 11/25/2019
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2018	Source: Department of Environmental Protection
Date Data Arrived at EDR: 04/10/2019	Telephone: N/A
Date Made Active in Reports: 05/16/2019	Last EDR Contact: 07/09/2019
Number of Days to Update: 36	Next Scheduled EDR Contact: 10/21/2019
	Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data

Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 01/01/2019	Source: Department of Environmental Conservation
Date Data Arrived at EDR: 05/01/2019	Telephone: 518-402-8651
Date Made Active in Reports: 06/21/2019	Last EDR Contact: 07/29/2019
Number of Days to Update: 51	Next Scheduled EDR Contact: 11/11/2019
	Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 12/31/2017	Source: Department of Environmental Protection
Date Data Arrived at EDR: 10/23/2018	Telephone: 717-783-8990
Date Made Active in Reports: 11/27/2018	Last EDR Contact: 07/15/2019
Number of Days to Update: 35	Next Scheduled EDR Contact: 10/28/2019
	Data Release Frequency: Annually

RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 12/31/2017	Source: Department of Environmental Management
Date Data Arrived at EDR: 02/23/2018	Telephone: 401-222-2797
Date Made Active in Reports: 04/09/2018	Last EDR Contact: 08/16/2019
Number of Days to Update: 45	Next Scheduled EDR Contact: 12/02/2019
	Data Release Frequency: Annually

WI MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 05/31/2018	Source: Department of Natural Resources
Date Data Arrived at EDR: 06/19/2019	Telephone: N/A
Date Made Active in Reports: 09/03/2019	Last EDR Contact: 06/10/2019
Number of Days to Update: 76	Next Scheduled EDR Contact: 09/23/2019
	Data Release Frequency: Annually

Oil/Gas Pipelines

Source: PennWell Corporation

Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data

Source: PennWell Corporation

This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.
Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.
Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.
Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.
Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.
Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

HUDSON RANCH 1
409 W MCDONALD ROAD
NILAND, CA 92257

TARGET PROPERTY COORDINATES

Latitude (North):	33.2115 - 33˚ 12’ 41.40’’
Longitude (West):	115.571588 - 115˚ 34’ 17.72’’
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	633125.5
UTM Y (Meters):	3675451.5
Elevation:	218 ft. below sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5639770 NILAND, CA
Version Date:	2012

EDR’s GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principle investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

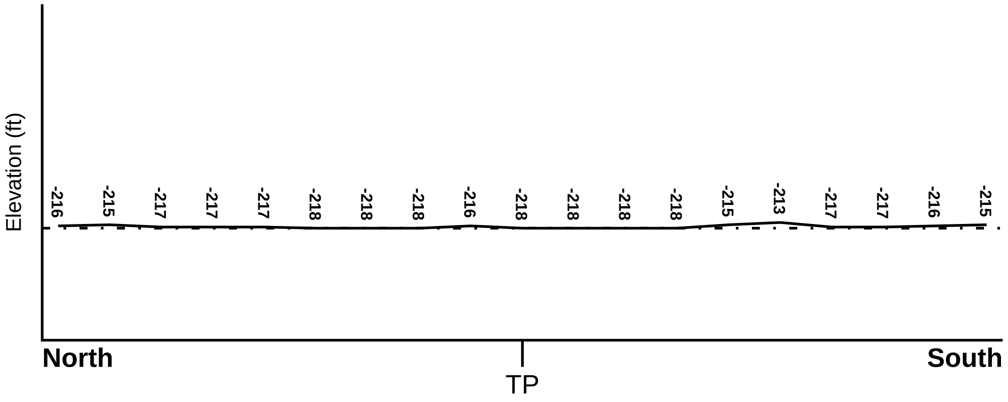
TOPOGRAPHIC INFORMATION

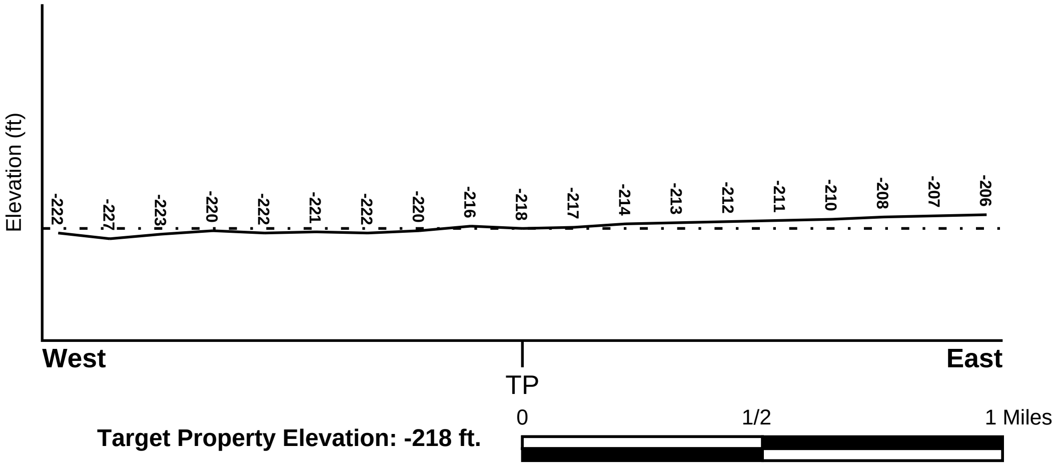
Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General West

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES





Target Property Elevation: -218 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06025C0725C	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
Not Reported	

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
NILAND	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

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* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

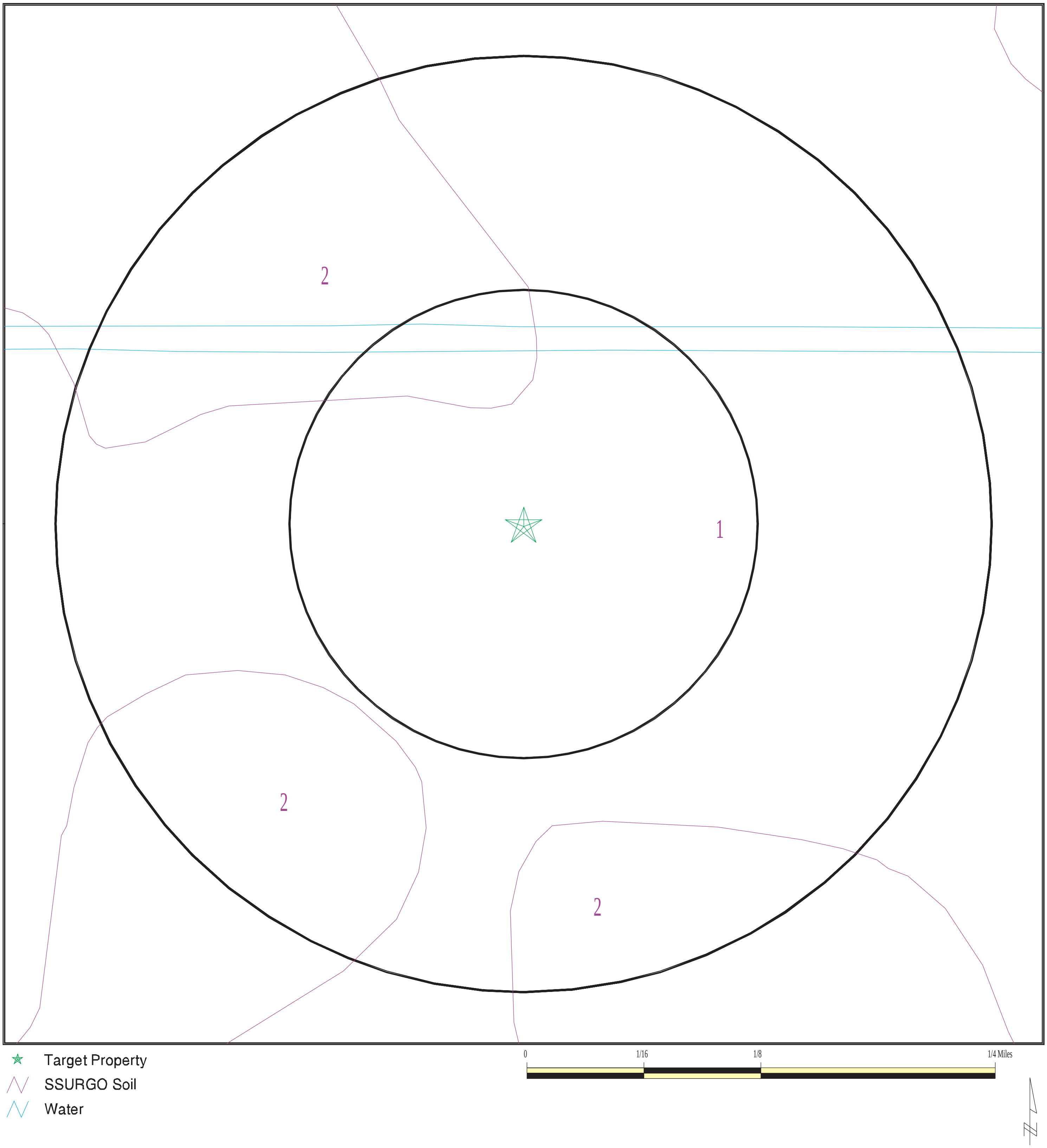
GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT		GEOLOGIC AGE IDENTIFICATION	
Era:	Cenozoic	Category:	Stratifed Sequence
System:	Quaternary		
Series:	Quaternary		
Code:	Q *(decoded above as Era, System & Series)*		

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 5779291.2s



SITE NAME:	Hudson Ranch 1	CLIENT:	GS Lyon Consultants
ADDRESS:	409 W McDonald Road Niland CA 92257	CONTACT:	Pete Labrucherie
		INQUIRY #:	5779291.2s
LAT/LONG:	33.2115 / 115.571588	DATE:	September 05, 2019 8:28 pm

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name:	Imperial
Soil Surface Texture:	silty clay loam
Hydrologic Group:	Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.
Soil Drainage Class:	Moderately well drained
Hydric Status: Not hydric	
Corrosion Potential - Uncoated Steel:	High
Depth to Bedrock Min:	> 0 inches
Depth to Watertable Min:	> 122 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	
Layer	**Upper**	**Lower**	**Soil Texture Class**	**AASHTO Group**	**Unified Soil**		**Soil Reaction (pH)**
1	0 inches	11 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 4 Min: 1.4	Max: 8.4 Min: 7.9
2	11 inches	59 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 4 Min: 1.4	Max: 8.4 Min: 7.9

Soil Map ID: 2

Soil Component Name:	Imperial
Soil Surface Texture:	silty clay
Hydrologic Group:	Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.
Soil Drainage Class:	Moderately well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 122 inches

Soil Layer Information

	Boundary			Classification			
Layer	**Upper**	**Lower**	**Soil Texture Class**	**AASHTO Group**	**Unified Soil**	**Saturated hydraulic conductivity micro m/sec**	**Soil Reaction (pH)**
1	0 inches	11 inches	silty clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 4 Min: 1.4	Max: 8.4 Min: 7.9
2	11 inches	59 inches	silty clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 4 Min: 1.4	Max: 8.4 Min: 7.9

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	USGS40000130533	0 - 1/8 Mile NE
2	USGS40000130659	1/2 - 1 Mile NW
3	USGS40000130423	1/2 - 1 Mile SW
4	USGS40000130416	1/2 - 1 Mile SE

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

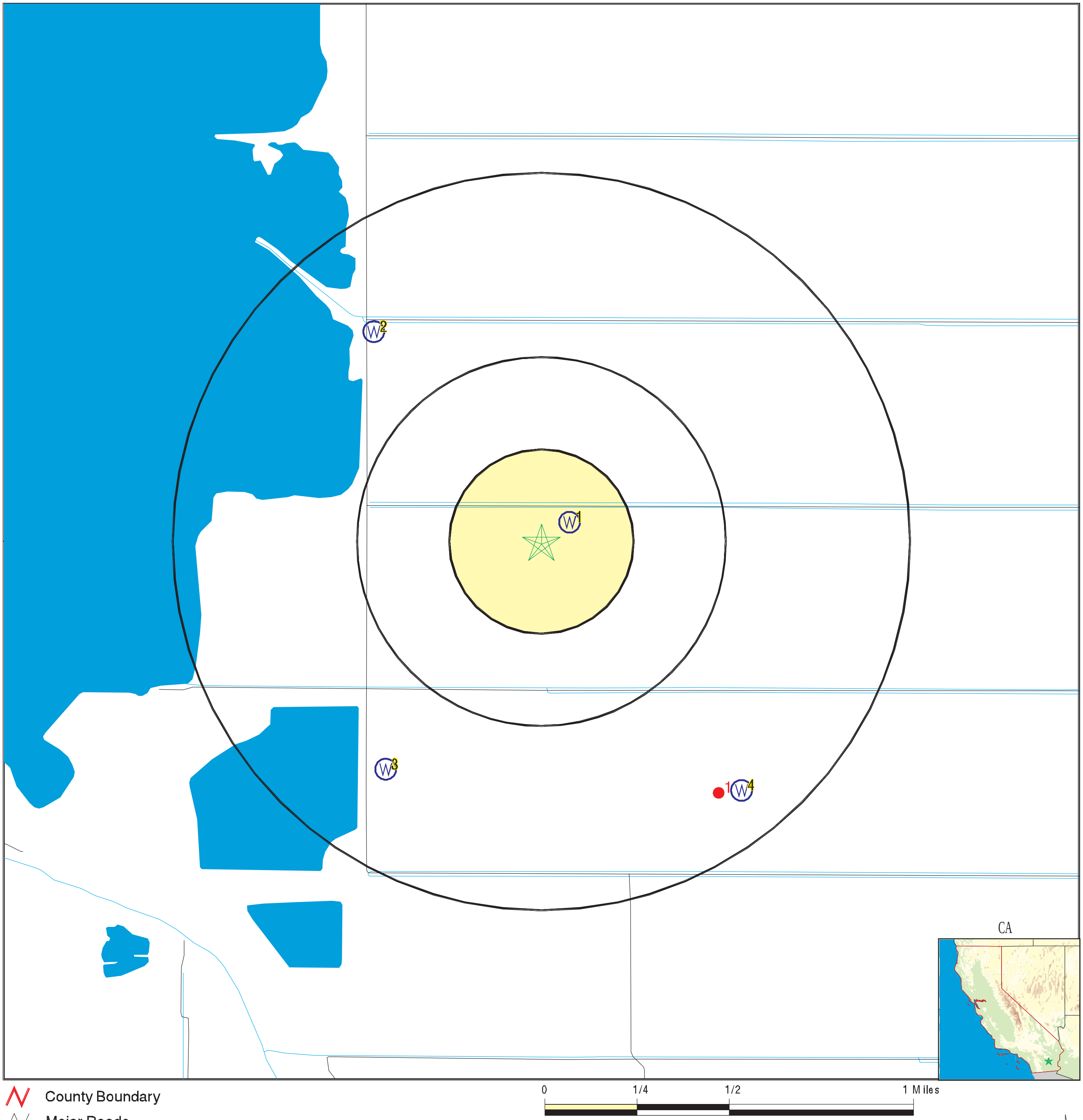
MAP ID	WELL ID	LOCATION FROM TP
No Wells Found		

OTHER STATE DATABASE INFORMATION

STATE OIL/GAS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	CAOG13000005011	1/2 - 1 Mile SE

PHYSICAL SETTING SOURCE MAP - 5779291.2s



- Ⳗ County Boundary
- ⳗ Major Roads
- ⳗ Contour Lines
- ⳗ Earthquake Fault Lines
- ◎ Earthquake epicenter, Richter 5 or greater
- Ⓦ Water Wells
- Ⓟ Public Water Supply Wells
- ● Cluster of Multiple Icons

- ↑ Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- ● Oil, gas or related wells

No contour lines were detected within this map area.

SITE NAME:	Hudson Ranch 1	CLIENT:	GS Lyon Consultants
ADDRESS:	409 W McDonald Road Niland CA 92257	CONTACT:	Pete Labrucherie
		INQUIRY #:	5779291.2s
LAT/LONG:	33.2115 / 115.571588	DATE:	September 05, 2019 8:28 pm

Map ID Direction Distance Elevation	Database	EDR ID Number
1 **NE** **0 - 1/8 Mile** **Higher**	**FED USGS**	**USGS40000130533**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	011S013E13K001S	Type:	Well
Description:	Not Reported	HUC:	18100200
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Basin and Range basin-fill aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Map ID Direction Distance Elevation	Database	EDR ID Number
2 **NW** **1/2 - 1 Mile** **Lower**	**FED USGS**	**USGS40000130659**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	011S013E13D002S	Type:	Well
Description:	Not Reported	HUC:	18100200
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Basin and Range basin-fill aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Map ID Direction Distance Elevation	Database	EDR ID Number
3 **SW** **1/2 - 1 Mile** **Lower**	**FED USGS**	**USGS40000130423**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	011S013E24D001S	Type:	Well
Description:	Not Reported	HUC:	18100200
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Basin and Range basin-fill aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Map ID Direction Distance Elevation	Database	EDR ID Number
4 **SE** **1/2 - 1 Mile** **Higher**	**FED USGS**	**USGS40000130416**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	011S014E19E001S	Type:	Well
Description:	Not Reported	HUC:	18100200
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Basin and Range basin-fill aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Map ID Direction Distance	Database	EDR ID Number
1 **SE** **1/2 - 1 Mile**	**OIL_GAS**	**CAOG13000005011**

API #:	0402500012	Well #:	1
Well Status:	Idle	Well Type:	OG
Operator Name:	J. P. Chandler & Lee Staton		
Lease Name:	Lease by J. P. Chandler & Lee Staton		
Field Name:	Any Field	Area Name:	Any Area
GIS Source:	hud	Confidential Well:	N
Directionally Drilled:	N	SPUD Date:	07/15/1935

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

Federal EPA Radon Zone for IMPERIAL County: 3

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for IMPERIAL COUNTY, CA

Number of sites tested: 2

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	1.450 pCi/L	100%	0%	0%
Living Area - 2nd Floor	Not Reported	Not Reported	Not Reported	Not Reported
Basement	Not Reported	Not Reported	Not Reported	Not Reported

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish and Wildlife
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^R Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
The fault lines displayed on EDR’s Topographic map are digitized quaternary fault lines prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California’s Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

OTHER

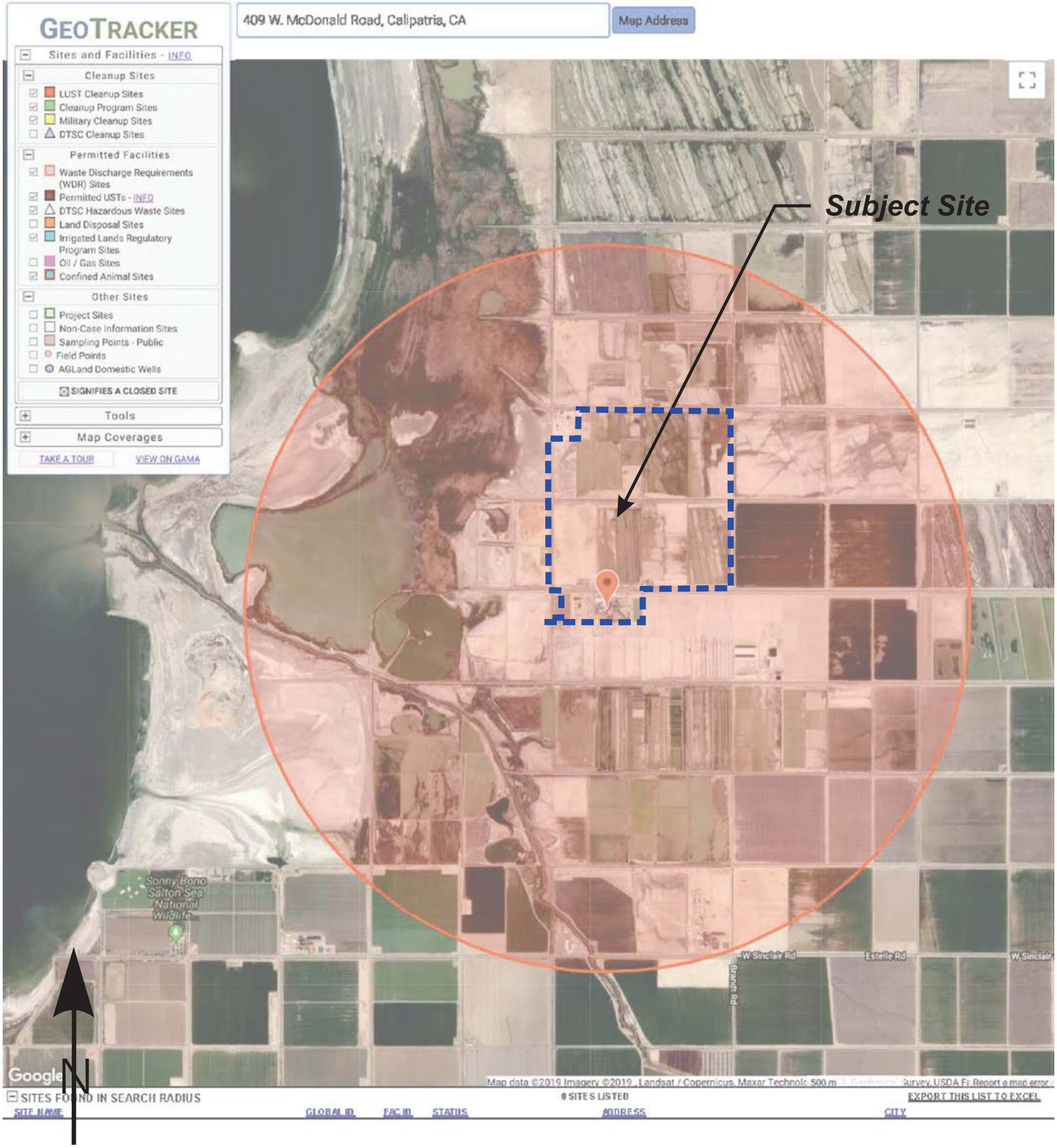
Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR’s Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California’s Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

APPENDIX G



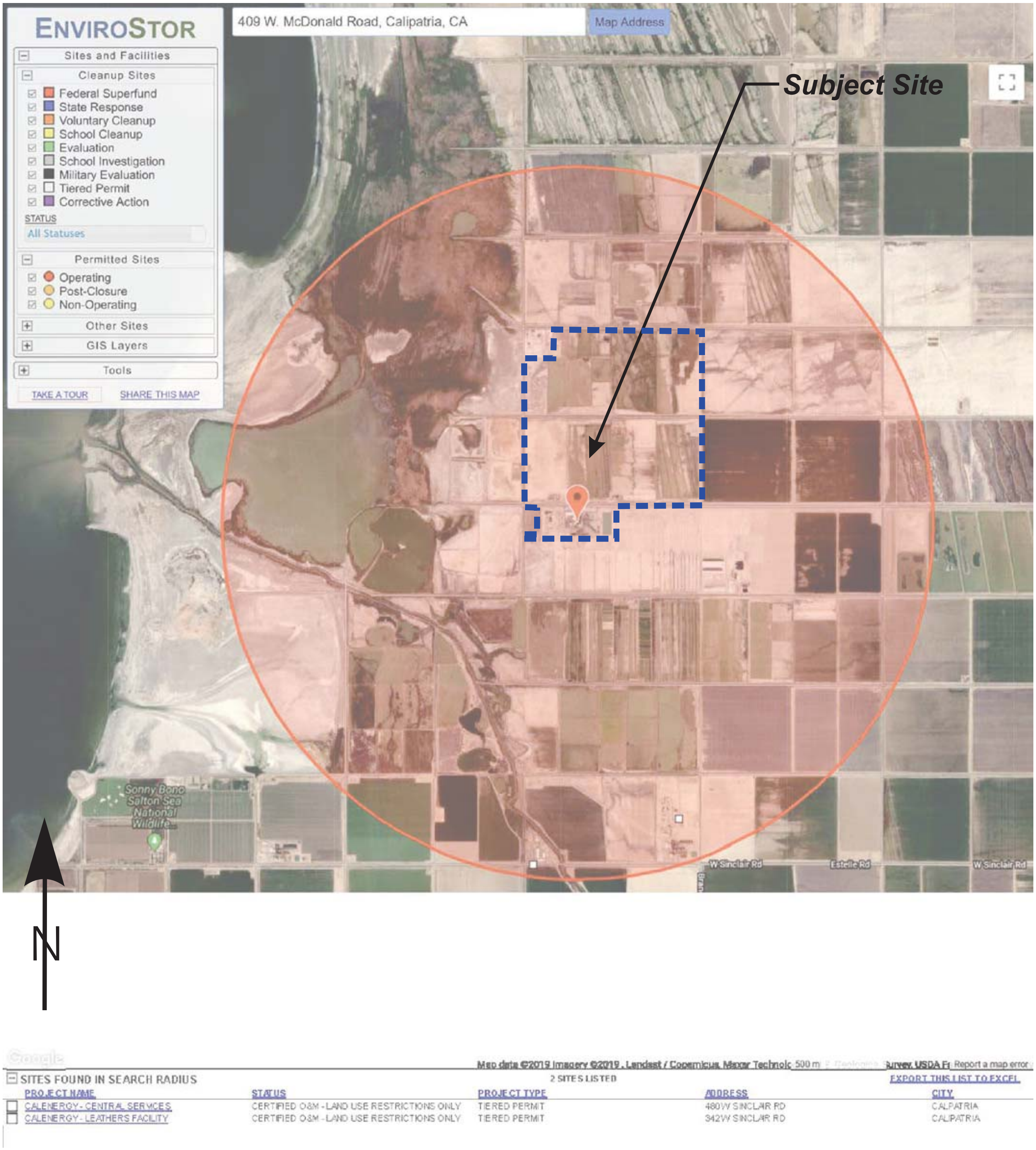
GS Lyon

Project No.: GS1921

Geotracker Map

Plate

20



SITES FOUND IN SEARCH RADIUS

2 SITES LISTED

EXPORT THIS LIST TO EXCEL

	PROJECT NAME	STATUS	PROJECT TYPE	ADDRESS	CITY
☐	CALENERGY - CENTRAL SERVICES	CERTIFIED O&M - LAND USE RESTRICTIONS ONLY	TIERED PERMIT	480 W SINCLAIR RD	CALPATRIA
☐	CALENERGY - LEATHERS FACILITY	CERTIFIED O&M - LAND USE RESTRICTIONS ONLY	TIERED PERMIT	342 W SINCLAIR RD	CALIPATRIA

GS Lyon

Project No.: GS1921

Envirostor Map

Plate

21

Hudson Ranch 1
409 W McDonald Road
Niland, CA 92257

Inquiry Number: 5779291.2s
October 1, 2019

EDR Vapor Encroachment Screen

Prepared using EDR's Vapor Encroachment Worksheet

EDR® Environmental Data Resources Inc

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

TABLE OF CONTENTS

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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The EDR Vapor Encroachment Worksheet enables EDR's customers to make certain online modifications that effects maps, text and calculations contained in this Report. As a result, maps, text and calculations contained in this Report may have been so modified. EDR has not taken any action to verify any such modifications, and this report and the findings set forth herein must be read in light of this fact. Environmental Data Resources shall not be responsible for any customer's decision to include or not include in any final report any records determined to be within the relevant minimum search distances.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by EDR. The report was designed to assist parties seeking to meet the search requirements of the ASTM Standard Practice for Assessment of Vapor Encroachment into Structures on Property Involved in Real Estate Transactions (E 2600).

STANDARD ENVIRONMENTAL RECORDS	**Default Area of Concern (Miles)***	**property**	**1/10**	**> 1/10**
Federal NPL site list	1.0	0	0	0
Federal Delisted NPL site list	1.0	0	0	0
Federal CERCLIS list	0.5	0	0	0
Federal CERCLIS NFRAP site list	0.5	0	0	0
Federal RCRA CORRACTS facilities list	1.0	0	0	0
Federal RCRA non-CORRACTS TSD facilities list	0.5	0	0	0
Federal RCRA generators list	0.25	0	0	0
Federal institutional controls / engineering controls registries	0.5	0	0	0
Federal ERNS list	0.001	0	0	-
State- and tribal - equivalent NPL	1.0	0	0	0
State- and tribal - equivalent CERCLIS	1.0	0	0	0
State and tribal landfill and/or solid waste disposal site lists	0.5	0	0	0
State and tribal leaking storage tank lists	0.5	0	0	0
State and tribal registered storage tank lists	0.25	0	0	0
State and tribal institutional control / engineering control registries	not searched	-	-	-
State and tribal voluntary cleanup sites	0.5	0	0	0
State and tribal Brownfields sites	0.5	0	0	0

ADDITIONAL ENVIRONMENTAL RECORDS				
Local Brownfield lists	0.5	0	0	0
Local Lists of Landfill / Solid Waste Disposal Sites	0.5	0	0	0
Local Lists of Hazardous waste / Contaminated Sites	1.0	0	0	0
Local Lists of Registered Storage Tanks	0.25	0	0	0
Local Land Records	0.5	0	0	0
Records of Emergency Release Reports	0.5	0	0	0
Other Ascertainable Records	1.0	0	0	0

EDR HIGH RISK HISTORICAL RECORDS				
EDR Exclusive Records	1.0	0	0	0
Exclusive Recovered Govt. Archives	0.001	0	0	-

EXECUTIVE SUMMARY

EDR RECOVERED GOVERNMENT ARCHIVES

EDR Exclusive Records	1.0	0	0	0
Exclusive Recovered Govt. Archives	0.001	0	0	-

*The Default Area of Concern may be adjusted by the environmental professional using experience and professional judgement. Each category may include several databases, and each database may have a different distance. A list of individual databases is provided at the back of this report.

EXECUTIVE SUMMARY

TARGET PROPERTY INFORMATION

ADDRESS

HUDSON RANCH 1
409 W MCDONALD ROAD
NILAND, CA 92257

COORDINATES

Latitude (North):	33.2115 - 33˚ 12´ 41.393738˝
Longitude (West):	115.571588 - 115˚ 34´ 17.711792˝
Elevation:	-218 ft. below sea level

EXECUTIVE SUMMARY

SEARCH RESULTS

Unmappable (orphan) sites are not considered in the foregoing analysis.

STANDARD ENVIRONMENTAL RECORDS

Name	Address	Dist/Dir	Map ID	Page
Not Reported				

ADDITIONAL ENVIRONMENTAL RECORDS

Name	Address	Dist/Dir	Map ID	Page
Not Reported				

EDR HIGH RISK HISTORICAL RECORDS

Name	Address	Dist/Dir	Map ID	Page
Not Reported				

EDR RECOVERED GOVERNMENT ARCHIVES

Name	Address	Dist/Dir	Map ID	Page
Not Reported				

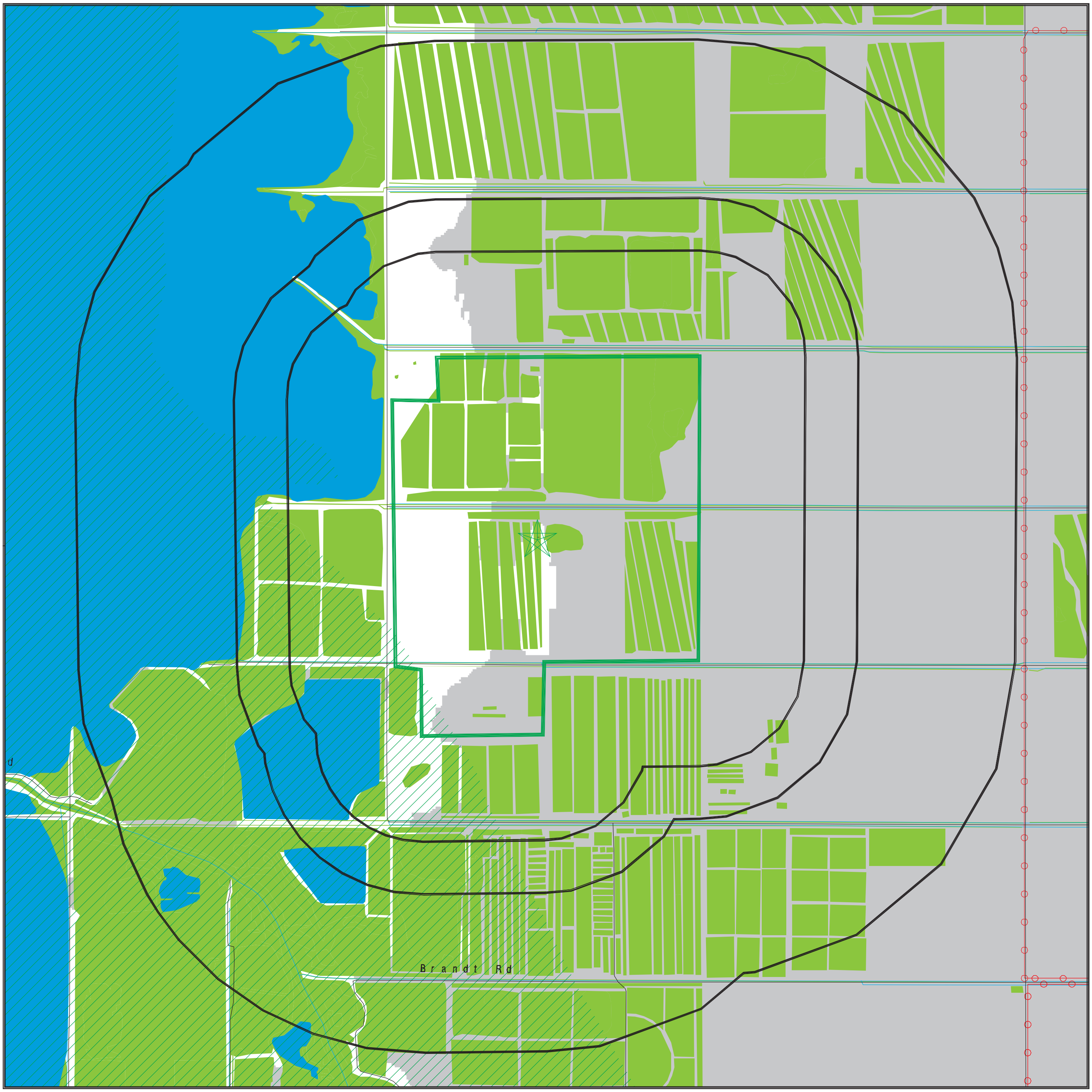
PRIMARY MAP - 5779291.2S

- ⋀⋁ Target Property
- ▲ Sites at elevations higher than or equal to the target property
- ◆ Sites at elevations lower than the target property
- ♟ Manufactured Gas Plants
- 🟥 National Priority List Sites
- ▦ Dept. Defense Sites
- ▨ Indian Reservations BIA
- ▨ 100-year flood zone
- ▨ 500-year flood zone
- 🟩 National Wetland Inventory
- 🟩 State Wetlands
- ▦ Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Hudson Ranch 1	CLIENT:	GS Lyon Consultants
ADDRESS:	409 W McDonald Road Niland CA 92257	CONTACT:	Pete Labrucherie
		INQUIRY #:	5779291.2s
LAT/LONG:	33.2115 / 115.571588	DATE:	September 05, 2019 8:25 pm

SECONDARY MAP - 5779291.2S



- Target Property
- ▲ Sites at elevations higher than or equal to the target property
- ◆ Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- ▨ 100-year flood zone
- ▨ 500-year flood zone
- 🟩 National Wetland Inventory
- State Wetlands
- Upgradient Area
- ▦ Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME: Hudson Ranch 1
ADDRESS: 409 W McDonald Road
Niland CA 92257
LAT/LONG: 33.2115 / 115.571588

CLIENT: GS Lyon Consultants
CONTACT: Pete Labrucherie
INQUIRY #: 5779291.2s
DATE: September 05, 2019 8:22 pm

MAP FINDINGS

LEGEND

FACILITY NAME **FACILITY ADDRESS, CITY, ST, ZIP**			EDR SITE ID NUMBER
◆ **MAP ID#**	Direction Distance Range Relative Elevation	(Distance feet / miles) Feet Above Sea Level	ASTM 2600 Record Sources found in this report. Each database searched has been assigned to one or more categories. For detailed information about categorization, see the section of the report Records Searched and Currency.
Worksheet:			
Comments: Comments may be added on the online Vapor Encroachment Worksheet.			

DATABASE ACRONYM: Applicable categories (A hoverbox with database description).

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
ENVIRONMENTAL RECORDS						
Federal NPL site list						
US	NPL	National Priority List	EPA	07/19/2019	07/30/2019	09/03/2019
US	Proposed NPL	Proposed National Priority List Sites	EPA	07/19/2019	07/30/2019	09/03/2019
US	NPL LIENS	Federal Superfund Liens	EPA	10/15/1991	02/02/1994	03/30/1994
Federal CERCLIS list						
US	SEMS	Superfund Enterprise Management System	EPA	07/19/2019	07/30/2019	09/03/2019
Federal RCRA CORRACTS facilities list						
US	CORRACTS	Corrective Action Report	EPA	03/25/2019	03/27/2019	04/17/2019
Federal RCRA TSD facilities list						
US	RCRA-TSDF	RCRA - Treatment, Storage and Disposal	Environmental Protection Agency	03/25/2019	03/27/2019	04/17/2019
Federal RCRA generators list						
US	RCRA-LQG	RCRA - Large Quantity Generators	Environmental Protection Agency	03/25/2019	03/27/2019	04/17/2019
US	RCRA-SQG	RCRA - Small Quantity Generators	Environmental Protection Agency	03/25/2019	03/27/2019	04/17/2019
US	RCRA-CESQG	RCRA - Conditionally Exempt Small Quantity Generators	Environmental Protection Agency	03/25/2019	03/27/2019	04/17/2019
Federal institutional controls / engineering controls registries						
US	LUCIS	Land Use Control Information System	Department of the Navy	08/13/2019	08/20/2019	08/26/2019
US	US ENG CONTROLS	Engineering Controls Sites List	Environmental Protection Agency	08/19/2019	08/20/2019	08/26/2019
US	US INST CONTROL	Sites with Institutional Controls	Environmental Protection Agency	08/19/2019	08/20/2019	08/26/2019
Federal ERNS list						
US	ERNS	Emergency Response Notification System	National Response Center, United States Coast	03/25/2019	03/26/2019	05/01/2019
State and tribal - equivalent NPL						
CA	RESPONSE	State Response Sites	Department of Toxic Substances Control	04/29/2019	04/30/2019	06/27/2019
State and tribal - equivalent CERCLIS						
CA	ENVIROSTOR	EnviroStor Database	Department of Toxic Substances Control	04/29/2019	04/30/2019	06/27/2019
State and tribal landfill / solid waste disposal						
CA	SWF/LF (SWIS)	Solid Waste Information System	Department of Resources Recycling and Recover	05/13/2019	05/14/2019	07/17/2019
State and tribal leaking storage tank lists						
CA	LUST REG 7	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	02/26/2004	02/26/2004	03/24/2004
CA	LUST REG 8	Leaking Underground Storage Tanks	California Regional Water Quality Control Boa	02/14/2005	02/15/2005	03/28/2005
CA	LUST REG 9	Leaking Underground Storage Tank Report	California Regional Water Quality Control Boa	03/01/2001	04/23/2001	05/21/2001
CA	LUST REG 5	Leaking Underground Storage Tank Database	California Regional Water Quality Control Boa	07/01/2008	07/22/2008	07/31/2008
CA	LUST REG 4	Underground Storage Tank Leak List	California Regional Water Quality Control Boa	09/07/2004	09/07/2004	10/12/2004
CA	LUST REG 3	Leaking Underground Storage Tank Database	California Regional Water Quality Control Boa	05/19/2003	05/19/2003	06/02/2003
CA	LUST REG 2	Fuel Leak List	California Regional Water Quality Control Boa	09/30/2004	10/20/2004	11/19/2004

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	LUST REG 6L	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	09/09/2003	09/10/2003	10/07/2003
CA	LUST REG 6V	Leaking Underground Storage Tank Case Listing	California Regional Water Quality Control Boa	06/07/2005	06/07/2005	06/29/2005
CA	LUST REG 1	Active Toxic Site Investigation	California Regional Water Quality Control Boa	02/01/2001	02/28/2001	03/29/2001
CA	LUST	Leaking Underground Fuel Tank Report (GEOTRACKER)	State Water Resources Control Board	06/10/2019	06/11/2019	08/05/2019
US	INDIAN LUST R10	Leaking Underground Storage Tanks on Indian Land	EPA Region 10	10/17/2018	03/07/2019	05/01/2019
US	INDIAN LUST R9	Leaking Underground Storage Tanks on Indian Land	Environmental Protection Agency	10/10/2018	03/08/2019	05/01/2019
US	INDIAN LUST R8	Leaking Underground Storage Tanks on Indian Land	EPA Region 8	10/16/2018	03/07/2019	05/01/2019
US	INDIAN LUST R6	Leaking Underground Storage Tanks on Indian Land	EPA Region 6	11/01/2018	03/07/2019	05/01/2019
US	INDIAN LUST R4	Leaking Underground Storage Tanks on Indian Land	EPA Region 4	09/24/2018	03/12/2019	05/01/2019
US	INDIAN LUST R1	Leaking Underground Storage Tanks on Indian Land	EPA Region 1	10/13/2018	03/07/2019	05/01/2019
US	INDIAN LUST R5	Leaking Underground Storage Tanks on Indian Land	EPA, Region 5	10/12/2018	03/07/2019	05/01/2019
US	INDIAN LUST R7	Leaking Underground Storage Tanks on Indian Land	EPA Region 7	02/19/2019	03/07/2019	05/01/2019
CA	CPS-SLIC	Statewide SLIC Cases (GEOTRACKER)	State Water Resources Control Board	06/10/2019	06/11/2019	08/05/2019
CA	SLIC REG 1	Active Toxic Site Investigations	California Regional Water Quality Control Boa	04/03/2003	04/07/2003	04/25/2003
CA	SLIC REG 2	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board San Fran	09/30/2004	10/20/2004	11/19/2004
CA	SLIC REG 3	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Regional Water Quality Control Boa	05/18/2006	05/18/2006	06/15/2006
CA	SLIC REG 4	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Region Water Quality Control Board Los Angele	11/17/2004	11/18/2004	01/04/2005
CA	SLIC REG 5	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board Central	04/01/2005	04/05/2005	04/21/2005
CA	SLIC REG 6V	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	Regional Water Quality Control Board, Victorv	05/24/2005	05/25/2005	06/16/2005
CA	SLIC REG 6L	SLIC Sites	California Regional Water Quality Control Boa	09/07/2004	09/07/2004	10/12/2004
CA	SLIC REG 7	SLIC List	California Regional Quality Control Board, Co	11/24/2004	11/29/2004	01/04/2005
CA	SLIC REG 8	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Region Water Quality Control Board	04/03/2008	04/03/2008	04/14/2008
CA	SLIC REG 9	Spills, Leaks, Investigation & Cleanup Cost Recovery Listing	California Regional Water Quality Control Boa	09/10/2007	09/11/2007	09/28/2007
State and tribal registered storage tank lists						
CA	UST	Active UST Facilities	SWRCB	06/10/2019	06/11/2019	07/23/2019
CA	MILITARY UST SITES	Military UST Sites (GEOTRACKER)	State Water Resources Control Board	06/10/2019	06/11/2019	07/24/2019
CA	UST CLOSURE	Proposed Closure of Underground Storage Tank (UST) Cases	State Water Resources Control Board	06/10/2019	06/12/2019	07/23/2019
CA	UST MENDOCINO	Mendocino County UST Database	Department of Public Health	12/04/2018	12/06/2018	12/14/2018
CA	AST	Aboveground Petroleum Storage Tank Facilities	California Environmental Protection Agency	07/06/2016	07/12/2016	09/19/2016
US	INDIAN UST R1	Underground Storage Tanks on Indian Land	EPA, Region 1	10/03/2018	03/07/2019	05/01/2019
US	INDIAN UST R10	Underground Storage Tanks on Indian Land	EPA Region 10	10/17/2018	03/07/2019	05/01/2019
US	INDIAN UST R9	Underground Storage Tanks on Indian Land	EPA Region 9	10/10/2018	03/08/2019	05/01/2019
US	INDIAN UST R8	Underground Storage Tanks on Indian Land	EPA Region 8	10/16/2018	03/07/2019	05/01/2019
US	INDIAN UST R7	Underground Storage Tanks on Indian Land	EPA Region 7	11/07/2018	03/07/2019	05/01/2019
US	INDIAN UST R4	Underground Storage Tanks on Indian Land	EPA Region 4	09/24/2018	03/12/2019	05/01/2019
US	INDIAN UST R5	Underground Storage Tanks on Indian Land	EPA Region 5	10/12/2018	03/07/2019	05/01/2019
US	INDIAN UST R6	Underground Storage Tanks on Indian Land	EPA Region 6	11/01/2018	03/07/2019	05/01/2019
US	FEMA UST	Underground Storage Tank Listing	FEMA	05/15/2017	05/30/2017	10/13/2017

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
State and tribal voluntary cleanup sites						
CA	VCP	Voluntary Cleanup Program Properties	Department of Toxic Substances Control	04/29/2019	04/30/2019	06/27/2019
US	INDIAN VCP R7	Voluntary Cleanup Priority Lisitng	EPA, Region 7	03/20/2008	04/22/2008	05/19/2008
US	INDIAN VCP R1	Voluntary Cleanup Priority Listing	EPA, Region 1	07/27/2015	09/29/2015	02/18/2016
State and tribal Brownfields sites						
CA	BROWNFIELDS	Considered Brownfieds Sites Listing	State Water Resources Control Board	06/24/2019	06/25/2019	08/21/2019
Other Records						
US	CONSENT	Superfund (CERCLA) Consent Decrees	Department of Justice, Consent Decree Library	03/31/2019	04/23/2019	05/23/2019
US	ROD	Records Of Decision	EPA	07/19/2019	07/30/2019	09/03/2019
US	LIENS 2	CERCLA Lien Information	Environmental Protection Agency	07/30/2019	07/30/2019	09/03/2019
CA	HIST CAL-SITES	Calsites Database	Department of Toxic Substance Control	08/08/2005	08/03/2006	08/24/2006
US	DEBRIS REGION 9	Torres Martinez Reservation Illegal Dump Site Locations	EPA, Region 9	01/12/2009	05/07/2009	09/21/2009
CA	SWRCY	Recycler Database	Department of Conservation	06/11/2019	06/12/2019	08/15/2019
CA	CA FID UST	Facility Inventory Database	California Environmental Protection Agency	10/31/1994	09/05/1995	09/29/1995
CA	HIST UST	Hazardous Substance Storage Container Database	State Water Resources Control Board	10/15/1990	01/25/1991	02/12/1991
CA	SAN FRANCISCO AST	Aboveground Storage Tank Site Listing	San Francisco County Department of Public Hea	09/11/2018	09/12/2018	10/11/2018
CA	SWEEPS UST	SWEEPS UST Listing	State Water Resources Control Board	06/01/1994	07/07/2005	08/11/2005
US	LEAD SMELTER 1	Lead Smelter Sites	Environmental Protection Agency	07/19/2019	07/30/2019	09/03/2019
US	LEAD SMELTER 2	Lead Smelter Sites	American Journal of Public Health	04/05/2001	10/27/2010	12/02/2010
US	2020 COR ACTION	2020 Corrective Action Program List	Environmental Protection Agency	09/30/2017	05/08/2018	07/20/2018
US	US HIST CDL	National Clandestine Laboratory Register	Drug Enforcement Administration	06/11/2019	06/13/2019	09/03/2019
US	PCB TRANSFORMER	PCB Transformer Registration Database	Environmental Protection Agency	05/24/2017	11/30/2017	12/15/2017
US	FUSRAP	Formerly Utilized Sites Remedial Action Program	Department of Energy	08/08/2017	09/11/2018	09/14/2018
US	EPA WATCH LIST	EPA WATCH LIST	Environmental Protection Agency	08/30/2013	03/21/2014	06/17/2014
US	US AIRS MINOR	Air Facility System Data	EPA	10/12/2016	10/26/2016	02/03/2017
US	US AIRS (AFS)	Aerometric Information Retrieval System Facility Subsystem (	EPA	10/12/2016	10/26/2016	02/03/2017
US	COAL ASH DOE	Steam-Electric Plant Operation Data	Department of Energy	12/31/2005	08/07/2009	10/22/2009
US	COAL ASH EPA	Coal Combustion Residues Surface Impoundments List	Environmental Protection Agency	07/01/2014	09/10/2014	10/20/2014
US	SCRD DRYCLEANERS	State Coalition for Remediation of Drycleaners Listing	Environmental Protection Agency	01/01/2017	02/03/2017	04/07/2017
US	US FIN ASSUR	Financial Assurance Information	Environmental Protection Agency	03/25/2019	03/26/2019	05/07/2019
US	Delisted NPL	National Priority List Deletions	EPA	07/19/2019	07/30/2019	09/03/2019
US	SEMS-ARCHIVE	Superfund Enterprise Management System Archive	EPA	07/19/2019	07/30/2019	09/03/2019
US	RCRA NonGen / NLR	RCRA - Non Generators / No Longer Regulated	Environmental Protection Agency	03/25/2019	03/27/2019	04/17/2019
US	HMIRS	Hazardous Materials Information Reporting System	U.S. Department of Transportation	03/25/2019	03/26/2019	05/14/2019
US	DOT OPS	Incident and Accident Data	Department of Transporation, Office of Pipeli	04/01/2019	04/30/2019	08/08/2019
US	US CDL	Clandestine Drug Labs	Drug Enforcement Administration	06/11/2019	06/13/2019	09/03/2019
US	US BROWNFIELDS	A Listing of Brownfields Sites	Environmental Protection Agency	06/03/2019	06/04/2019	08/26/2019
US	DOD	Department of Defense Sites	USGS	12/31/2005	11/10/2006	01/11/2007
US	FEDLAND	Federal and Indian Lands	U.S. Geological Survey	12/31/2005	02/06/2006	01/11/2007
US	FUDS	Formerly Used Defense Sites	U.S. Army Corps of Engineers	05/15/2019	05/21/2019	08/08/2019
US	UMTRA	Uranium Mill Tailings Sites	Department of Energy	06/23/2017	10/11/2017	11/03/2017
US	ODI	Open Dump Inventory	Environmental Protection Agency	06/30/1985	08/09/2004	09/17/2004
US	US MINES	Mines Master Index File	Department of Labor, Mine Safety and Health A	05/03/2019	05/29/2019	08/08/2019
US	US MINES 2	Ferrous and Nonferrous Metal Mines Database Listing	USGS	12/05/2005	02/29/2008	04/18/2008

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
US	US MINES 3	Active Mines & Mineral Plants Database Listing	USGS	04/14/2011	06/08/2011	09/13/2011
US	PRP	Potentially Responsible Parties	EPA	04/11/2019	04/18/2019	05/23/2019
US	TRIS	Toxic Chemical Release Inventory System	EPA	12/31/2016	01/10/2018	01/12/2018
US	TSCA	Toxic Substances Control Act	EPA	12/31/2016	06/21/2017	01/05/2018
US	FTTS	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA/Office of Prevention, Pesticides and Toxi	04/09/2009	04/16/2009	05/11/2009
US	FTTS INSP	FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fu	EPA	04/09/2009	04/16/2009	05/11/2009
US	HIST FTTS	FIFRA/TSCA Tracking System Administrative Case Listing	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	HIST FTTS INSP	FIFRA/TSCA Tracking System Inspection & Enforcement Case Lis	Environmental Protection Agency	10/19/2006	03/01/2007	04/10/2007
US	SSTS	Section 7 Tracking Systems	EPA	09/30/2018	04/24/2019	08/08/2019
US	ICIS	Integrated Compliance Information System	Environmental Protection Agency	11/18/2016	11/23/2016	02/10/2017
US	PADS	PCB Activity Database System	EPA	03/20/2019	04/10/2019	05/14/2019
US	MLTS	Material Licensing Tracking System	Nuclear Regulatory Commission	06/20/2019	06/20/2019	08/08/2019
US	RADINFO	Radiation Information Database	Environmental Protection Agency	04/02/2019	04/02/2019	05/14/2019
US	FINDS	Facility Index System/Facility Registry System	EPA	05/03/2019	06/05/2019	09/03/2019
US	RAATS	RCRA Administrative Action Tracking System	EPA	04/17/1995	07/03/1995	08/07/1995
US	RMP	Risk Management Plans	Environmental Protection Agency	04/25/2019	05/02/2019	05/23/2019
US	BRS	Biennial Reporting System	EPA/NTIS	12/31/2015	02/22/2017	09/28/2017
US	PWS	Public Water System Data	EPA	12/17/2013	01/09/2014	10/15/2014
US	INDIAN RESERV	Indian Reservations	USGS	12/31/2014	07/14/2015	01/10/2017
US	INDIAN ODI	Report on the Status of Open Dumps on Indian Lands	Environmental Protection Agency	12/31/1998	12/03/2007	01/24/2008
US	IHS OPEN DUMPS	Open Dumps on Indian Land	Department of Health & Human Serivces, Indian	04/01/2014	08/06/2014	01/29/2015
US	ABANDONED MINES	Abandoned Mines	Department of Interior	03/27/2019	03/28/2019	05/01/2019
CA	CA BOND EXP. PLAN	Bond Expenditure Plan	Department of Health Services	01/01/1989	07/27/1994	08/02/1994
CA	CDL	Clandestine Drug Labs	Department of Toxic Substances Control	12/31/2017	06/12/2018	08/06/2018
CA	CHMIRS	California Hazardous Material Incident Report System	Office of Emergency Services	05/15/2019	06/24/2019	08/21/2019
CA	CORTESE	"Cortese" Hazardous Waste & Substances Sites List	CAL EPA/Office of Emergency Information	06/24/2019	06/25/2019	08/21/2019
CA	CUPA SAN FRANCISCO CO	CUPA Facility Listing	San Francisco County Department of Environmen	04/18/2019	04/19/2019	04/30/2019
CA	CUPA LIVERMORE-PLEASANTON	CUPA Facility Listing	Livermore-Pleasanton Fire Department	05/01/2019	05/14/2019	07/17/2019
CA	DEED	Deed Restriction Listing	DTSC and SWRCB	06/04/2019	06/04/2019	08/08/2019
CA	DRYCLEANERS	Cleaner Facilities	Department of Toxic Substance Control	06/04/2019	06/28/2019	08/22/2019
CA	DRYCLEAN AVAQMD	Antelope Valley Air Quality Management District Drycleaner L	Antelope Valley Air Quality Management Distri	06/03/2019	06/04/2019	08/08/2019
CA	DRYCLEAN SOUTH COAST	South Coast Air Quality Management District Drycleaner Listi	South Coast Air Quality Management District	03/19/2019	03/22/2019	04/09/2019
CA	EMI	Emissions Inventory Data	California Air Resources Board	12/31/2017	06/24/2019	08/22/2019
CA	ENF	Enforcement Action Listing	State Water Resoruces Control Board	11/01/2018	11/02/2018	12/13/2018
CA	Financial Assurance 1	Financial Assurance Information Listing	Department of Toxic Substances Control	04/22/2019	04/23/2019	06/26/2019
CA	Financial Assurance 2	Financial Assurance Information Listing	California Integrated Waste Management Board	05/15/2019	05/16/2019	07/18/2019
CA	HAULERS	Registered Waste Tire Haulers Listing	Integrated Waste Management Board	03/26/2019	03/27/2019	04/30/2019
CA	HAZNET	Facility and Manifest Data	California Environmental Protection Agency	12/31/2017	05/29/2019	07/22/2019
CA	HIST CORTESE	Hazardous Waste & Substance Site List	Department of Toxic Substances Control	04/01/2001	01/22/2009	04/08/2009
CA	HWP	EnviroStor Permitted Facilities Listing	Department of Toxic Substances Control	05/20/2019	05/21/2019	07/18/2019
CA	HWT	Registered Hazardous Waste Transporter Database	Department of Toxic Substances Control	04/08/2019	04/09/2019	05/30/2019
CA	ICE	ICE	Department of Toxic Subsances Control	05/20/2019	05/21/2019	07/18/2019
CA	LDS	Land Disposal Sites Listing (GEOTRACKER)	State Water Qualilty Control Board	06/10/2019	06/11/2019	08/05/2019
CA	LIENS	Environmental Liens Listing	Department of Toxic Substances Control	06/05/2019	06/06/2019	08/09/2019
CA	MCS	Military Cleanup Sites Listing (GEOTRACKER)	State Water Resources Control Board	06/10/2019	06/11/2019	07/24/2019
CA	MINES	Mines Site Location Listing	Department of Conservation	06/10/2019	06/11/2019	08/15/2019
CA	MWMP	Medical Waste Management Program Listing	Department of Public Health	05/17/2019	06/04/2019	08/09/2019

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	NPDES	NPDES Permits Listing	State Water Resources Control Board	05/13/2019	05/14/2019	07/17/2019
CA	PEST LIC	Pesticide Regulation Licenses Listing	Department of Pesticide Regulation	06/04/2019	06/04/2019	08/09/2019
CA	PROC	Certified Processors Database	Department of Conservation	06/11/2019	06/12/2019	08/15/2019
CA	NOTIFY 65	Proposition 65 Records	State Water Resources Control Board	06/17/2019	06/18/2019	08/22/2019
CA	SCH	School Property Evaluation Program	Department of Toxic Substances Control	04/29/2019	04/30/2019	06/27/2019
CA	SPILLS 90	SPILLS90 data from FirstSearch	FirstSearch	06/06/2012	01/03/2013	02/22/2013
CA	TOXIC PITS	Toxic Pits Cleanup Act Sites	State Water Resources Control Board	07/01/1995	08/30/1995	09/26/1995
CA	UIC	UIC Listing	Deaprtment of Conservation	04/27/2018	06/13/2018	07/17/2018
CA	WASTEWATER PITS	Oil Wastewater Pits Listing	RWQCB, Central Valley Region	05/08/2018	07/11/2018	09/13/2018
CA	WDS	Waste Discharge System	State Water Resources Control Board	06/19/2007	06/20/2007	06/29/2007
CA	WIP	Well Investigation Program Case List	Los Angeles Water Quality Control Board	07/03/2009	07/21/2009	08/03/2009
CA	WMUDS/SWAT	Waste Management Unit Database	State Water Resources Control Board	04/01/2000	04/10/2000	05/10/2000
CA	PROD WATER PONDS	Produced Water Ponds Sites (GEOTRACKER)	State Water Resources Control Board	06/10/2019	06/11/2019	07/24/2019
CA	SAMPLING POINT	Sampling Point ? Public Sites (GEOTRACKER)	State Water Resources Control Board	06/10/2019	06/11/2019	07/24/2019
CA	PROJECT	Project Sites (GEOTRACKER)	State Water Resources Control Board	06/10/2019	06/11/2019	07/24/2019
CA	UIC GEO	Underground Injection Control Sites (GEOTRACKER)	State Water Resource Control Board	06/10/2019	06/11/2019	07/24/2019
CA	CERS	CalEPA Regulated Site Portal Data	California Environmental Protection Agency	08/14/2019	08/14/2019	08/21/2019
CA	CERS HAZ WASTE	CERS HAZ WASTE	CalEPA	08/14/2019	08/14/2019	08/21/2019
CA	CERS TANKS	California Environmental Reporting System (CERS) Tanks	California Environmental Protection Agency	08/14/2019	08/14/2019	08/21/2019
CA	WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)	State Water Resources Control Board	06/10/2019	06/11/2019	07/24/2019
CA	NON-CASE INFO	Non-Case Information Sites (GEOTRACKER)	State Water Resources Control Board	06/10/2019	06/11/2019	07/24/2019
CA	MILITARY PRIV SITES	Military Privatized Sites (GEOTRACKER)	State Water Resources Control Board	06/10/2019	06/11/2019	07/24/2019
CA	CIWQS	California Integrated Water Quality System	State Water Resources Control Board	06/04/2019	06/04/2019	08/08/2019
US	DOCKET HWC	Hazardous Waste Compliance Docket Listing	Environmental Protection Agency	05/31/2018	07/26/2018	10/05/2018
US	FUELS PROGRAM	EPA Fuels Program Registered Listing	EPA	05/20/2019	05/21/2019	08/08/2019
US	UXO	Unexploded Ordnance Sites	Department of Defense	12/31/2017	01/17/2019	04/01/2019
CA	WDR	Waste Discharge Requirements Listing	State Water Resources Control Board	06/11/2019	06/12/2019	08/15/2019
CA	OTHER OIL GAS	Other Oil & Gas Projects Sites (GEOTRACKER)	State Water Resources Control Board	06/10/2019	06/11/2019	07/24/2019
US	ECHO	Enforcement & Compliance History Information	Environmental Protection Agency	04/07/2019	04/09/2019	05/23/2019
CA	PFAS	PFAS Contamination Site Location Listing	State Water Resources Control Board	06/28/2019	06/28/2019	07/24/2019

HISTORICAL USE RECORDS

US	EDR MGP	EDR Proprietary Manufactured Gas Plants	EDR, Inc.			
US	EDR Hist Auto	EDR Exclusive Historical Auto Stations	EDR, Inc.			
US	EDR Hist Cleaner	EDR Exclusive Historical Cleaners	EDR, Inc.			
CA	RGA LF	Recovered Government Archive Solid Waste Facilities List	Department of Resources Recycling and Recover		07/01/2013	01/13/2014
CA	RGA LUST	Recovered Government Archive Leaking Underground Storage Tan	State Water Resources Control Board		07/01/2013	12/30/2013

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COUNTY RECORDS

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	CS ALAMEDA	Contaminated Sites	Alameda County Environmental Health Services	01/09/2019	01/11/2019	03/05/2019
CA	UST ALAMEDA	Underground Tanks	Alameda County Environmental Health Services	04/10/2019	04/11/2019	06/20/2019
CA	CUPA AMADOR	CUPA Facility List	Amador County Environmental Health	06/27/2019	06/28/2019	07/24/2019
CA	CUPA BUTTE	CUPA Facility Listing	Public Health Department	04/21/2017	04/25/2017	08/09/2017
CA	CUPA CALVERAS	CUPA Facility Listing	Calveras County Environmental Health	05/01/2019	05/02/2019	05/29/2019
CA	CUPA COLUSA	CUPA Facility List	Health & Human Services	05/17/2019	05/21/2019	07/18/2019
CA	SL CONTRA COSTA	Site List	Contra Costa Health Services Department	05/22/2019	05/23/2019	07/18/2019
CA	CUPA DEL NORTE	CUPA Facility List	Del Norte County Environmental Health Divisio	02/20/2019	05/01/2019	05/30/2019
CA	CUPA EL DORADO	CUPA Facility List	El Dorado County Environmental Management Dep	06/05/2019	06/06/2019	07/23/2019
CA	CUPA FRESNO	CUPA Resources List	Dept. of Community Health	04/10/2019	04/11/2019	04/30/2019
CA	CUPA GLENN	CUPA Facility List	Glenn County Air Pollution Control District	01/22/2018	01/24/2018	03/14/2018
CA	CUPA HUMBOLDT	CUPA Facility List	Humboldt County Environmental Health	12/11/2018	12/13/2018	01/15/2019
CA	CUPA IMPERIAL	CUPA Facility List	San Diego Border Field Office	04/24/2019	04/25/2019	06/27/2019
CA	CUPA INYO	CUPA Facility List	Inyo County Environmental Health Services	04/02/2018	04/03/2018	06/14/2018
CA	UST KERN	Underground Storage Tank Sites & Tank Listing	Kern County Environment Health Services Depar	05/06/2019	05/07/2019	07/16/2019
CA	CUPA KINGS	CUPA Facility List	Kings County Department of Public Health	05/16/2019	05/17/2019	05/30/2019
CA	CUPA LAKE	CUPA Facility List	Lake County Environmental Health	05/30/2019	05/31/2019	07/23/2019
CA	CUPA LASSEN	CUPA Facility List	Lassen County Environmental Health	01/17/2019	01/18/2019	03/05/2019
CA	AOCONCERN	Key Areas of Concerns in Los Angeles County		03/30/2009	03/31/2009	10/23/2009
CA	HMS LOS ANGELES	HMS: Street Number List	Department of Public Works	05/13/2019	05/16/2019	07/18/2019
CA	LF LOS ANGELES	List of Solid Waste Facilities	La County Department of Public Works	04/15/2019	04/16/2019	06/21/2019
CA	LF LOS ANGELES CITY	City of Los Angeles Landfills	Engineering & Construction Division	01/01/2019	01/15/2019	03/07/2019
CA	LOS ANGELES AST	Active & Inactive AST Inventory	Los Angeles Fire Department	06/01/2019	06/25/2019	08/22/2019
CA	LOS ANGELES CO LF METHANE	Methane Producing Landfills	Los Angeles County Department of Public Works	04/30/2012	04/17/2019	05/29/2019
CA	LOS ANGELES HM	Active & Inactive Hazardous Materials Inventory	Los Angeles Fire Department	06/01/2019	06/25/2019	08/22/2019
CA	LOS ANGELES UST	Active & Inactive UST Inventory	Los Angeles Fire Department	06/01/2019	06/25/2019	08/22/2019
CA	SITE MIT LOS ANGELES	Site Mitigation List	Community Health Services	07/15/2019	07/17/2019	08/05/2019
CA	UST EL SEGUNDO	City of El Segundo Underground Storage Tank	City of El Segundo Fire Department	01/21/2017	04/19/2017	05/10/2017
CA	UST LONG BEACH	City of Long Beach Underground Storage Tank	City of Long Beach Fire Department	04/22/2019	04/23/2019	06/27/2019
CA	UST TORRANCE	City of Torrance Underground Storage Tank	City of Torrance Fire Department	04/04/2019	04/23/2019	06/27/2019
CA	CUPA MADERA	CUPA Facility List	Madera County Environmental Health	05/28/2019	05/30/2019	08/05/2019
CA	UST MARIN	Underground Storage Tank Sites	Public Works Department Waste Management	09/26/2018	10/04/2018	11/02/2018
CA	CUPA MERCED	CUPA Facility List	Merced County Environmental Health	05/29/2019	05/30/2019	07/22/2019
CA	CUPA MONO	CUPA Facility List	Mono County Health Department	05/23/2019	05/30/2019	07/22/2019
CA	CUPA MONTEREY	CUPA Facility Listing	Monterey County Health Department	02/05/2019	02/07/2019	03/05/2019
CA	LUST NAPA	Sites With Reported Contamination	Napa County Department of Environmental Manag	01/09/2017	01/11/2017	03/02/2017
CA	UST NAPA	Closed and Operating Underground Storage Tank Sites	Napa County Department of Environmental Manag	02/21/2019	02/22/2019	03/08/2019
CA	CUPA NEVADA	CUPA Facility List	Community Development Agency	05/20/2019	05/21/2019	05/30/2019
CA	IND_SITE ORANGE	List of Industrial Site Cleanups	Health Care Agency	05/01/2019	05/09/2019	05/30/2019
CA	LUST ORANGE	List of Underground Storage Tank Cleanups	Health Care Agency	05/01/2019	05/09/2019	05/30/2019
CA	UST ORANGE	List of Underground Storage Tank Facilities	Health Care Agency	04/02/2019	05/07/2019	07/16/2019
CA	MS PLACER	Master List of Facilities	Placer County Health and Human Services	06/03/2019	06/04/2019	08/12/2019
CA	CUPA PLUMAS	CUPA Facility List	Plumas County Environmental Health	03/31/2019	04/23/2019	06/26/2019
CA	LUST RIVERSIDE	Listing of Underground Tank Cleanup Sites	Department of Environmental Health	04/11/2019	04/12/2019	04/30/2019
CA	UST RIVERSIDE	Underground Storage Tank Tank List	Department of Environmental Health	04/11/2019	04/12/2019	06/20/2019

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St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date
CA	CS SACRAMENTO	Toxic Site Clean-Up List	Sacramento County Environmental Management	05/06/2019	06/28/2019	08/22/2019
CA	ML SACRAMENTO	Master Hazardous Materials Facility List	Sacramento County Environmental Management	02/06/2019	04/02/2019	06/20/2019
CA	CUPA SAN BENITO	CUPA Facility List	San Benito County Environmental Health	03/11/2019	03/13/2019	04/30/2019
CA	PERMITS SAN BERNARDINO	Hazardous Material Permits	San Bernardino County Fire Department Hazardo	05/31/2019	05/31/2019	07/22/2019
CA	HMMD SAN DIEGO	Hazardous Materials Management Division Database	Hazardous Materials Management Division	06/04/2019	06/04/2019	08/08/2019
CA	LF SAN DIEGO	Solid Waste Facilities	Department of Health Services	04/18/2018	04/24/2018	06/19/2018
CA	SAN DIEGO CO LOP	Local Oversight Program Listing	Department of Environmental Health	04/24/2019	04/25/2019	06/27/2019
CA	SAN DIEGO CO SAM	Environmental Case Listing	San Diego County Department of Environmental	03/23/2010	06/15/2010	07/09/2010
CA	LUST SAN FRANCISCO	Local Oversite Facilities	Department Of Public Health San Francisco Cou	09/19/2008	09/19/2008	09/29/2008
CA	UST SAN FRANCISCO	Underground Storage Tank Information	Department of Public Health	11/05/2018	11/06/2018	12/14/2018
CA	UST SAN JOAQUIN	San Joaquin Co. UST	Environmental Health Department	06/22/2018	06/26/2018	07/11/2018
CA	CUPA SAN LUIS OBISPO	CUPA Facility List	San Luis Obispo County Public Health Departme	05/20/2019	05/21/2019	07/18/2019
CA	BI SAN MATEO	Business Inventory	San Mateo County Environmental Health Service	08/06/2019	08/14/2019	08/15/2019
CA	LUST SAN MATEO	Fuel Leak List	San Mateo County Environmental Health Service	03/29/2019	03/29/2019	05/29/2019
CA	CUPA SANTA BARBARA	CUPA Facility Listing	Santa Barbara County Public Health Department	09/08/2011	09/09/2011	10/07/2011
CA	CUPA SANTA CLARA	Cupa Facility List	Department of Environmental Health	05/16/2019	05/23/2019	07/18/2019
CA	HIST LUST SANTA CLARA	HIST LUST - Fuel Leak Site Activity Report	Santa Clara Valley Water District	03/29/2005	03/30/2005	04/21/2005
CA	LUST SANTA CLARA	LOP Listing	Department of Environmental Health	03/03/2014	03/05/2014	03/18/2014
CA	SAN JOSE HAZMAT	Hazardous Material Facilities	City of San Jose Fire Department	05/19/2019	05/23/2019	07/22/2019
CA	CUPA SANTA CRUZ	CUPA Facility List	Santa Cruz County Environmental Health	01/21/2017	02/22/2017	05/23/2017
CA	CUPA SHASTA	CUPA Facility List	Shasta County Department of Resource Manageme	06/15/2017	06/19/2017	08/09/2017
CA	LUST SOLANO	Leaking Underground Storage Tanks	Solano County Department of Environmental Man	06/04/2019	06/06/2019	08/13/2019
CA	UST SOLANO	Underground Storage Tanks	Solano County Department of Environmental Man	06/04/2019	06/06/2019	07/23/2019
CA	CUPA SONOMA	Cupa Facility List	County of Sonoma Fire & Emergency Services De	06/18/2019	06/25/2019	07/24/2019
CA	LUST SONOMA	Leaking Underground Storage Tank Sites	Department of Health Services	04/03/2019	04/11/2019	04/30/2019
CA	CUPA STANISLAUS	CUPA Facility List	Stanislaus County Department of Ennvironmenta	12/11/2018	12/13/2018	01/15/2019
CA	UST SUTTER	Underground Storage Tanks	Sutter County Environmental Health Services	06/03/2019	06/04/2019	07/23/2019
CA	CUPA TEHAMA	CUPA Facility List	Tehama County Department of Environmental Hea	05/20/2019	05/21/2019	07/18/2019
CA	CUPA TRINITY	CUPA Facility List	Department of Toxic Substances Control	04/24/2019	04/25/2019	06/28/2019
CA	CUPA TULARE	CUPA Facility List	Tulare County Environmental Health Services D	05/09/2019	05/10/2019	07/17/2019
CA	CUPA TUOLUMNE	CUPA Facility List	Divison of Environmental Health	04/23/2018	04/25/2018	06/25/2018
CA	BWT VENTURA	Business Plan, Hazardous Waste Producers, and Operating Unde	Ventura County Environmental Health Division	03/26/2019	04/25/2019	06/27/2019
CA	LF VENTURA	Inventory of Illegal Abandoned and Inactive Sites	Environmental Health Division	12/01/2011	12/01/2011	01/19/2012
CA	LUST VENTURA	Listing of Underground Tank Cleanup Sites	Environmental Health Division	05/29/2008	06/24/2008	07/31/2008
CA	MED WASTE VENTURA	Medical Waste Program List	Ventura County Resource Management Agency	03/26/2019	04/25/2019	05/30/2019
CA	UST VENTURA	Underground Tank Closed Sites List	Environmental Health Division	06/10/2019	06/12/2019	07/24/2019
CA	UST YOLO	Underground Storage Tank Comprehensive Facility Report	Yolo County Department of Health	06/26/2019	06/28/2019	07/31/2019
CA	CUPA YUBA	CUPA Facility List	Yuba County Environmental Health Department	05/03/2019	05/07/2019	07/16/2019

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

St	Acronym	Full Name	Government Agency	Gov Date	Arvl. Date	Active Date

STREET AND ADDRESS INFORMATION

APPENDIX H

Hudson Ranch 1
409 W McDonald Road
Niland, CA 92257

Inquiry Number: 5779291.5
September 06, 2019

The EDR-City Directory Image Report

Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

TABLE OF CONTENTS

SECTION

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EXECUTIVE SUMMARY

DESCRIPTION

Environmental Data Resources, Inc.’s (EDR) City Directory Report is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR’s City Directory Report includes a search of available city directory data at 5 year intervals.

RECORD SOURCES

EDR's Digital Archive combines historical directory listings from sources such as Cole Information and Dun & Bradstreet. These standard sources of property information complement and enhance each other to provide a more comprehensive report.

EDR is licensed to reproduce certain City Directory works by the copyright holders of those works. The purchaser of this EDR City Directory Report may include it in report(s) delivered to a customer. Reproduction of City Directories without permission of the publisher or licensed vendor may be a violation of copyright.

Data by
infoUSA®

RESEARCH SUMMARY

The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	***Target Street***	***Cross Street***	***Source***
2014	☑	☐	EDR Digital Archive
2010	☐	☐	Haines Criss-Cross Directory
2005	☐	☐	Haines Criss-Cross Directory
2000	☐	☐	Haines Criss-Cross Directory
1995	☐	☐	Haines Criss-Cross Directory
1990	☐	☐	Haines Criss-Cross Directory

FINDINGS

TARGET PROPERTY STREET

409 W McDonald Road
Niland, CA 92257

W MCDONALD ST

Year	*CD Image*	*Source*	
2014	pg A1	EDR Digital Archive	
2010	-	Haines Criss-Cross Directory	Street not listed in Source
2005	-	Haines Criss-Cross Directory	Street not listed in Source
2000	-	Haines Criss-Cross Directory	Street not listed in Source
1995	-	Haines Criss-Cross Directory	Street not listed in Source
1990	-	Haines Criss-Cross Directory	Street not listed in Source

FINDINGS

CROSS STREETS

No Cross Streets Identified

City Directory Images

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

W MCDONALD ST 2014

409	HUDSON RANCH POWER I LLC

APPENDIX I

HUDSON RANCH 1
409 W MCDONALD ROAD
NILAND, CA 92257

Inquiry Number: 5779291.7S
SEPTEMBER 8, 2019

EDR Environmental Lien and AUL Search

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Environmental Lien and AUL Search

The EDR Environmental Lien Search Report provides results from a search of available current land title records for environmental cleanup liens and other activity and use limitations, such as engineering controls and institutional controls.

A network of professional, trained researchers, following established procedures, uses client supplied address information to:

- search for parcel information and/or legal description;
- search for ownership information;
- research official land title documents recorded at jurisdictional agencies such as recorders' offices, registries of deeds, county clerks' offices, etc.;
- access a copy of the deed;
- search for environmental encumbering instrument(s) associated with the deed;
- provide a copy of any environmental encumbrance(s) based upon a review of key words in the instrument(s) (title, parties involved, and description); and
- provide a copy of the deed or cite documents reviewed.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EDR Environmental Lien and AUL Search

TARGET PROPERTY INFORMATION

ADDRESS

HUDSON RANCH 1
409 W MCDONALD ROAD
NILAND, CA 92257

RESEARCH SOURCE

Source 1:	IMPERIAL COUNTY RECORDER'S OFFICE
Source 2:	CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
Source 3:	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

PROPERTY INFORMATION

Deed 1

Type of Deed:	GRANT DEED
Title is vested in:	ROGER J LAWRENCE AND JOYCE L LAWRENCE
Title received from:	PAMELA J LAWRENCE
Date Executed:	02/11/2013
Date Recorded:	02/13/2013
Book:	NA
Page:	NA
Volume:	NA
Instrument#:	2013003559
Docket:	NA
Land Record Comments:	NA
Miscellaneous Comments:	NA

Legal Description:	AS RECORDED IN THE DEED ATTACHED.
Current Owner:	ROGER J LAWRENCE AND JOYCE L LAWRENCE
Property Identifiers:	020-010-032-000
Comments:	NA

EDR Environmental Lien and AUL Search

ENVIRONMENTAL LIEN

Environmental Lien: Found ☐ Not Found ☒

If Found:

1st Party:	NA
2nd Party:	NA
Dated:	NA
Recorded:	NA
Book:	NA
Page:	NA
Docket:	NA
Volume:	NA
Instrument #:	NA
Comments:	NA
Miscellaneous:	NA

OTHER ACTIVITY AND USE LIMITATIONS (AULS)

Other AUL's: Found ☐ Not Found ☒

If Found:

1st Party:	NA
2nd Party:	NA
Dated:	NA
Recorded:	NA
Book:	NA
Page:	NA
Docket:	NA
Volume:	NA
Instrument #:	NA
Comments:	NA
Miscellaneous:	NA

EDR Environmental Lien and AUL Search

MISCELLANEOUS

Type of Instrument: NONE IDENTIFIED
First Party:
Second Party:
Date Executed:
Date Recorded:
Instrument #:
Book:
Page:
Comments:

DEED EXHIBIT

RECORDING REQUESTED BY
EWING JOHNSON & GRAVES

WHEN RECORDED RETURN TO
Roger J Lawrence
28571 Rd P
Dolores, CO 81323
APN 020-010-032-000

Recorded in Official Records, IMPERIAL COUNTY

CHUCK STOREY
COUNTY CLERK/RECORDER

P Public

02/13/2013
03 54 PM
IsabelVargas

Doc# **2013003569**

$R0000035956$

Titles 1	Pages 2
Fees	28 00
Taxes	5 50
Other	0 00
PAID	33 50

GRANT DEED

The Undersigned Grantor(s) Declare(s) DOCUMENTARY TRANSFER TAX $ 5 50 , CITY TRANSFER TAX $0 00,
[X] computed on the consideration or full value of property conveyed, OR
[ ] computed on the consideration or full value less value of liens and/or encumbrances remaining at time of sale,
[XX] unincorporated area, [ ] City of , and

FOR A VALUABLE CONSIDERATION, receipt of which is hereby acknowledged,

Pamela J Lawrence

hereby GRANTS to

Roger J Lawrence and Joyce L Lawrence, husband and wife as joint tenants

the following described property in the County of IMPERIAL, State of **California**

All oil, gas, minerals, precious metals, other hydro carbon substances and natural steam and steam power therefrom, in, on and under the following described property

The Northwest Quarter of Section 13, Township 11 South, Range 13 East, S B M , in an unincorporated area of the County of Imperial, State of California, according to the Official Plat thereof

Excepting therefrom the Northwest Quarter of the Northwest Quarter of the Northwest Quarter

Dated: 2|11|13

Pamela J. Lawrence
Pamela J. Lawrence

Mail Tax Statements To SAME AS ABOVE

2
cc
SM

CALIFORNIA ALL-PURPOSE ACKNOWLEDGMENT

CIVIL CODE § 1189

State of California
County of SAN BERNARDINO

On 2/11/13 before me, CATIE SIEGNER, NOTARY PUBLIC,
Date — Here Insert Name and Title of the Officer

personally appeared Pamela J. Lawrence
Name(s) of Signer(s)

who proved to me on the basis of satisfactory evidence to be the person(~~s~~) whose name(~~s~~) is/~~are~~ subscribed to the within instrument and acknowledged to me that ~~he~~/she/~~they~~ executed the same in ~~his~~/her/~~their~~ authorized capacity(~~ies~~), and that by ~~his~~/her/~~their~~ signature(~~s~~) on the instrument the person(~~s~~), or the entity upon behalf of which the person(~~s~~) acted, executed the instrument

CATIE SIEGNER
Commission # 1856082
Notary Public - California
San Bernardino County
My Comm. Expires Jun 28, 2013

Place Notary Seal Above

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct

WITNESS my hand and official seal.

Signature
Signature of Notary Public

OPTIONAL

Though the information below is not required by law, it may prove valuable to persons relying on the document and could prevent fraudulent removal and reattachment of this form to another document

Description of Attached Document

Title or Type of Document Grant Deed

Document Date 2/11/13 Number of Pages

Signer(s) Other Than Named Above

Capacity(ies) Claimed by Signer(s)

Signer's Name
☐ Corporate Officer — Title(s)
☐ Individual
☐ Partner — ☐ Limited ☐ General
☐ Attorney in Fact
☐ Trustee
☐ Guardian or Conservator
☐ Other

Signer Is Representing

RIGHT THUMBPRINT OF SIGNER
Top of thumb here

Signer's Name
☐ Corporate Officer — Title(s)
☐ Individual
☐ Partner — ☐ Limited ☐ General
☐ Attorney in Fact
☐ Trustee
☐ Guardian or Conservator
☐ Other

Signer Is Representing

RIGHT THUMBPRINT OF SIGNER
Top of thumb here

HUDSON RANCH 1
409 W MCDONALD ROAD
NILAND, CA 92257

Inquiry Number: 5779291.7S
SEPTEMBER 8, 2019

EDR Environmental Lien and AUL Search

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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- research official land title documents recorded at jurisdictional agencies such as recorders' offices, registries of deeds, county clerks' offices, etc.;
- access a copy of the deed;
- search for environmental encumbering instrument(s) associated with the deed;
- provide a copy of any environmental encumbrance(s) based upon a review of key words in the instrument(s) (title, parties involved, and description); and
- provide a copy of the deed or cite documents reviewed.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

Disclaimer - Copyright and Trademark Notice

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EDR Environmental Lien and AUL Search

TARGET PROPERTY INFORMATION

ADDRESS

HUDSON RANCH 1
409 W MCDONALD ROAD
NILAND, CA 92257

RESEARCH SOURCE

Source 1:	IMPERIAL COUNTY RECORDER'S OFFICE
Source 2:	CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
Source 3:	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

PROPERTY INFORMATION

Deed 1

Type of Deed:	WARRANTY DEED
Title is vested in:	FREEPORT-MCMORAN RESOURCES PARTNERS LIMITED PARTNERSHIP
Title received from:	KENNECOTT EXPLORATION (AUSTRALIA), LTD
Date Executed:	06/29/1988
Date Recorded:	06/29/1988
Book:	1606
Page:	1151
Volume:	NA
Instrument#:	88-10880
Docket:	NA
Land Record Comments:	NA
Miscellaneous Comments:	NA

Legal Description:	AS RECORDED IN THE DEED ATTACHED.
Current Owner:	FREEPORT-MCMORAN RESOURCES PARTNERS LIMITED PARTNERSHIP
Property Identifiers:	020-010-034-000
Comments:	NA

EDR Environmental Lien and AUL Search

ENVIRONMENTAL LIEN

Environmental Lien: Found ☐ Not Found ☒

If Found:

1st Party:	NA
2nd Party:	NA
Dated:	NA
Recorded:	NA
Book:	NA
Page:	NA
Docket:	NA
Volume:	NA
Instrument #:	NA
Comments:	NA
Miscellaneous:	NA

OTHER ACTIVITY AND USE LIMITATIONS (AULS)

Other AUL's: Found ☐ Not Found ☒

If Found:

1st Party:	NA
2nd Party:	NA
Dated:	NA
Recorded:	NA
Book:	NA
Page:	NA
Docket:	NA
Volume:	NA
Instrument #:	NA
Comments:	NA
Miscellaneous:	NA

EDR Environmental Lien and AUL Search

MISCELLANEOUS

Type of Instrument: NONE IDENTIFIED

First Party:

Second Party:

Date Executed:

Date Recorded:

Instrument #:

Book:

Page:

Comments:

DEED EXHIBIT

RECORDING REQUESTED BY CHICAGO TITLE COMPANY

WHEN RECORDED MAIL TO:
MORRISON & FOERSTER
345 California Street
San Francisco, California
94104-2105
ATTN: John Campbell

88-10880

BOOK 1606 PAGE 1151

DOLORES PROVENCIO
COUNTY RECORDER

JUL 5 9 45 AM '88

OFFICIAL RECORDS
IMPERIAL COUNTY, CALIF

BOOK 1606 PAGE 1151

REG	$ 5
RIF	$ 3
MC	$ 1
NR	$ —
TOTAL	$ 9

DOCUMENTARY TRANSFER TAX $ 1100.00
☒ COMPUTED ON FULL VALUE OF PROPERTY CONVEYED, OR
☐ COMPUTED ON FULL VALUE LESS LIENS & ENCUMBRANCES REMAINING THEREON AT TIME OF SALE.
Signature of Declarant or Agent determining tax - Firm Name

UNINCORPORATED

SPECIAL WARRANTY DEED

FOR A VALUABLE CONSIDERATION, receipt and sufficiency of which is hereby acknowledged, KENNECOTT EXPLORATION (AUSTRALIA), LTD., a Delaware corporation [as successor in interest to Kennecott Mining Corporation, as successor in interest to Kennecott Corporation, as successor in interest to Bear Creek Mining Company] ("Grantor"), hereby GRANTS to FREEPORT-MCMORAN RESOURCES PARTNERS LIMITED PARTNERSHIP, a Delaware limited partnership ("Grantee"), all of its right, title and interest in that certain real property located in the County of Imperial, State of California, as more particularly described in Exhibit A hereto (the "Property") EXCLUDING AND EXCEPTING therefrom all of the oil, gas, hot water, steam, steam power, thermal energy and other minerals heretofore excepted therefrom in deed to Grantor recorded September 1, 1981 in book 1474, page 321 of Official Records, in the office of the Recorder of Imperial County.

This transfer of the Property is made expressly subject to all matters of record in the offfice of the Recorder of Imperial County, California and is made by Grantor without warranty of title (express or implied) except that Grantor specially warrants that it has not heretofore conveyed the Property herein granted.

IN WITNESS WHEREOF, the undersigned has executed this Special Warranty Deed as of June 29, 1988.

KENNECOTT EXPLORATION (AUSTRALIA), LTD., a Delaware corporation, [as successor in interest to Kennecott Mining Corporation, as successor in interest to Kennecott Corporation, as successor in interest to Bear Creek Mining Company]

Mail Taxes to:

FREEPORT_MCMORAN RESOURCE
1160 N. DUTTON, SUITE 200
SANTA ROSA, CA. 95401

By ______________________

Its Sr. Vice President

STATE OF Utah)
) ss
COUNTY OF Salt Lake)

On this 24th day of June, 1988, before the undersigned, a Notary Public in and for said State of Utah, personally appeared W.F. Jokeik, personally known to me or proved to me on the basis of satisfactory evidence to be the person who executed the within instrument as the Sr. V.P. of Kennecott Exploration (Australia), Ltd., a Delaware corporation, and acknowledged to me that the corporation executed the within instrument pursuant to its by-laws or a resolution of its board of directors, and further acknowledged to me that the corporation executed the within instrument.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year last above written.

Sonya K. Burdell
Notary Public

EXHIBIT A

The following-described real property in County of Imperial, State of California:

Parcel 1: The South half, and the Northeast quarter of Section 13, Township 11 South, Range 13 East, S.B.M.
APN 020-010-35-01.
APN 020-010-34-01.

Parcel 2: The South half, and the Northeast quarter of Section 7, Township 11 South, Range 14 East, S.B.M.
APN 021-200-11-01.

Parcel 3: The Northeast quarter of Section 18, Township 11 South, Range 14 East, S.B.M.
APN 021-300-02-01.

Parcel 4: The East half of the Northwest quarter of Section 18, Township 11 South, Range 14 East, S.B.M.
APN 021-300-01-01.

Parcel 5: Lots 3 and 4, in Section 18, Township 11 South, Range 14 East, S.B.M.
APN 021-300-01-01.

HUDSON RANCH 1
409 W MCDONALD ROAD
NILAND, CA 92257

Inquiry Number: 5779291.7S
SEPTEMBER 8, 2019

EDR Environmental Lien and AUL Search

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Environmental Lien and AUL Search

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- search for parcel information and/or legal description;
- search for ownership information;
- research official land title documents recorded at jurisdictional agencies such as recorders' offices, registries of deeds, county clerks' offices, etc.;
- access a copy of the deed;
- search for environmental encumbering instrument(s) associated with the deed;
- provide a copy of any environmental encumbrance(s) based upon a review of key words in the instrument(s) (title, parties involved, and description); and
- provide a copy of the deed or cite documents reviewed.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

EDR Environmental Lien and AUL Search

TARGET PROPERTY INFORMATION

ADDRESS

HUDSON RANCH 1
409 W MCDONALD ROAD
NILAND, CA 92257

RESEARCH SOURCE

Source 1:	IMPERIAL COUNTY RECORDER'S OFFICE
Source 2:	CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
Source 3:	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

PROPERTY INFORMATION

Deed 1

Type of Deed:	GRANT DEED
Title is vested in:	HUDSON RANCH POWER I LLC
Title received from:	RIVER RANCH INC
Date Executed:	12/29/2009
Date Recorded:	12/29/2009
Book:	NA
Page:	NA
Volume:	NA
Instrument#:	2009-036047
Docket:	NA
Land Record Comments:	NA
Miscellaneous Comments:	NA

Legal Description:	AS RECORDED IN THE DEED ATTACHED.
Current Owner:	HUDSON RANCH POWER I LLC
Property Identifiers:	020-100-044-000
Comments:	NA

EDR Environmental Lien and AUL Search

ENVIRONMENTAL LIEN

Environmental Lien: Found ☐ Not Found ☒

If Found:

1st Party:	NA
2nd Party:	NA
Dated:	NA
Recorded:	NA
Book:	NA
Page:	NA
Docket:	NA
Volume:	NA
Instrument #:	NA
Comments:	NA
Miscellaneous:	NA

OTHER ACTIVITY AND USE LIMITATIONS (AULS)

Other AUL's: Found ☐ Not Found ☒

If Found:

1st Party:	NA
2nd Party:	NA
Dated:	NA
Recorded:	NA
Book:	NA
Page:	NA
Docket:	NA
Volume:	NA
Instrument #:	NA
Comments:	NA
Miscellaneous:	NA

MISCELLANEOUS

Type of Instrument: NONE IDENTIFIED

First Party:

Second Party:

Date Executed:

Date Recorded:

Instrument #:

Book:

Page:

Comments:

EDR Environmental Lien and AUL Search

DEED EXHIBIT

RECORDING REQUESTED BY
CHICAGO TITLE COMPANY

Recorded in Official Records, Imperial County
12/29/2009
9:00 AM
IV

Dolores Provencio
County Clerk / Recorder

CT Chicago Title

Doc#: 2009-036047

Titles:	1
Pages:	4
Fees	16.00
Taxes	** Conf **
Other	0.00
PAID	$16.00

RECORDING REQUESTED BY AND
WHEN RECORDED RETURN TO:

Winston & Strawn LLP
101 California Street
Suite 3900
San Francisco, CA 94111-5894
Attn: Dirk Mueller, Esq.

Mail tax statements to:

Hudson Ranch Power I
c/o Hannon Armstrong
1997 Annapolis Exchange Parkway
Suite 520
Annapolis MD 21401
Attn: Dave Watson, CFO

APN: 020-100-026

(SPACE ABOVE THIS LINE RESERVED FOR RECORDER'S USE)

The undersigned hereby declares that transfer tax is shown on separate statement.

GRANT DEED

This Grant Deed is made effective as of December 29, 2009, by RIVER RANCH INC., a California corporation, ("**Grantor**"), in favor of HUDSON RANCH POWER I LLC, a Delaware limited liability company ("**Grantee**").

WHEREAS, Grantor and Grantee (as successor in interest to Char, LLC, a Delaware limited liability company) are parties to that certain CHAR-OWNER Purchase Option Agreement ("**Purchase Option Agreement**"), dated June 29, 2007, a memorandum of Purchase Option Agreement, dated June 29, 2007 was recorded on November 29, 2007, as Instrument No. 2007-44392, and an Assignment of Option Interest, dated November 30 , 2007 was recorded on December 7, 2007 as Instrument No. 07-45333 in the Official records of Imperial County, California.

WHEREAS, pursuant to the terms of the Purchase Option Agreement, Grantor granted to Grantee an option ("**Option**") to purchase from Grantor that certain real property located in the County of Imperial, State of California, described in Exhibit A attached hereto ("**Property**") and Grantee has exercised such Option to purchase the Property pursuant to the Purchase Option Agreement.

NOW, THEREFORE, for valuable consideration, receipt of which is acknowledged, Grantor hereby grants to Grantee all of Grantor's ownership interest in and to the Property.

MAIL TAX STATEMENT AS DIRECTED ABOVE

Excepting therefrom all minerals, gases and hydrocarbon substances lying in or under said land, including without limitation all geothermal resources, as reserved by Grantor, including all rights to use the surface of the described Property as are implied by law on the date of recordation of this Grant Deed to the extent appurtenant to such mineral, gas, hydrocarbon and geothermal exception and reservation.

IN WITNESS WHEREOF, Grantor has executed this Grant Deed as of the date set forth below.

Dated as of: December 11, 2009

River Ranch Inc.,
a California corporation

By:
Name: Frederick M. Young
Its: President

State of California)
)
County of [Click and Type County])

On [Click and Type Date] before me, [Click and Type Your Name], personally appeared [Click and Type Subscriber Name], who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature of Notary Public

(Seal)

-- See attached Acknowledgment --

ACKNOWLEDGMENT

State of California)
County of Imperial)

On December 11, 2009, before me, Donna Speer, Notary Public, personally appeared **FREDERICK M. YOUNG**, who proved to me on the basis of satisfactory evidence to be the person whose name is subscribed to the within instrument and acknowledged to me that he executed the same in his authorized capacity, and that by his signature on the instrument the person, or the entity upon behalf of which the person acted, executed the same.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing is true and correct.

WITNESS my hand and official seal.

DONNA SPEER
Commission # 1711138
Notary Public - California
Imperial County
My Comm. Expires Jan 13, 2011

Signature Donna Speer

Exhibit "A"
LEGAL DESCRIPTION

Parcel 1 of Parcel Map No. 02427, in the County of Imperial, State of California, as per map recorded in Book 13, Page 39-40 of Parcel Maps in the Office of the County Recorder of Said County.

HUDSON RANCH 1
409 W MCDONALD ROAD
NILAND, CA 92257

Inquiry Number: 5779291.7S
SEPTEMBER 8, 2019

EDR Environmental Lien and AUL Search

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- provide a copy of any environmental encumbrance(s) based upon a review of key words in the instrument(s) (title, parties involved, and description); and
- provide a copy of the deed or cite documents reviewed.

Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EDR Environmental Lien and AUL Search

TARGET PROPERTY INFORMATION

ADDRESS

HUDSON RANCH 1
409 W MCDONALD ROAD
NILAND, CA 92257

RESEARCH SOURCE

Source 1:	IMPERIAL COUNTY RECORDER'S OFFICE
Source 2:	CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
Source 3:	UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

PROPERTY INFORMATION

Deed 1

Type of Deed:	GRANT DEED
Title is vested in:	MAGMA POWER COMPANY
Title received from:	FREEPORT-MCMORAN RESOURCE PARTNERS, LIMITED PARTNERSHIP
Date Executed:	10/15/1993
Date Recorded:	04/19/1994
Book:	1767
Page:	972
Volume:	NA
Instrument#:	94009376
Docket:	NA
Land Record Comments:	NA
Miscellaneous Comments:	NA

Legal Description:	AS RECORDED IN THE DEED ATTACHED.
Current Owner:	MAGMA POWER COMPANY
Property Identifiers:	020-010-035-000
Comments:	NA

EDR Environmental Lien and AUL Search

ENVIRONMENTAL LIEN

Environmental Lien: Found ☐ Not Found ☒

If Found:

1st Party:	NA
2nd Party:	NA
Dated:	NA
Recorded:	NA
Book:	NA
Page:	NA
Docket:	NA
Volume:	NA
Instrument #:	NA
Comments:	NA
Miscellaneous:	NA

OTHER ACTIVITY AND USE LIMITATIONS (AULS)

Other AUL's: Found ☐ Not Found ☒

If Found:

1st Party:	NA
2nd Party:	NA
Dated:	NA
Recorded:	NA
Book:	NA
Page:	NA
Docket:	NA
Volume:	NA
Instrument #:	NA
Comments:	NA
Miscellaneous:	NA

EDR Environmental Lien and AUL Search

MISCELLANEOUS

Type of Instrument: NONE IDENTIFIED

First Party:

Second Party:

Date Executed:

Date Recorded:

Instrument #:

Book:

Page:

Comments:

DEED EXHIBIT

94009376

DOLORES PROVENCIO
COUNTY RECORDER
BOOK 1767 PAGE 972
'94 APR 19 PM 2 31
OFFICIAL RECORDS
IMPERIAL COUNTY, CA

Recording Requested By and
When Recorded Mail To:

MAGMA POWER COMPANY
c/o Latham & Watkins
701 "B" Street, Suite 2100
San Diego, California 92101
Attn: Joseph A. Bevash, Esq.

5+2+1

REG	$ 8
REF	$ 3
MC	$ 1
NL	$ —
TOTAL	12

P

GRANT DEED

This Deed, made effective as of the 15th day of October, 1993, is made by FREEPORT-MCMORAN RESOURCE PARTNERS, LIMITED PARTNERSHIP, a Delaware limited partnership ("Grantor") to MAGMA POWER COMPANY, a Nevada corporation ("Grantee"), whose address is 4365 Executive Drive, Suite 900, San Diego, California 92121, pursuant to that certain Purchase and Sale Agreement entered between Grantor and Grantee dated October 1, 1993.

FOR GOOD AND VALUABLE CONSIDERATION, the receipt and sufficiency of which are hereby acknowledged, Grantor hereby grants to Grantee all of its right, title and interest in and to the real property described in Exhibit "1" attached to and incorporated in this Grant Deed.

IN WITNESS WHEREOF, GRANTOR has caused its corporate name to be affixed hereto and this Grant Deed to be duly executed by its authorized officers on the date first written above.

FREEPORT-MCMORAN RESOURCE PARTNERS,
LIMITED PARTNERSHIP,
a Delaware limited partnership

By: FREEPORT-MCMORAN INC., a Delaware corporation,
its Administrative Managing General Partner

By: ____________________

Its: Senior Vice President

DOCUMENTARY TRANSFER TAX $ 994.95
☐ COMPUTED ON FULL VALUE OF PROPERTY CONVEYED, OR
☐ COMPUTED ON FULL VALUE LESS LIENS & ENCUMBRANCES REMAINING THEREON AT TIME OF SALE

Signature of Declarant or Agent determining tax - Firm Name

UNINCORPORATED

MAGMA\FREEPORT\PURCH.5

ACKNOWLEDGEMENT

STATE OF LOUISIANA)
) ss.
PARISH OF ORLEANS)

On October 15, 1993, before me BRAINERD S. MONTGOMERY personally appeared CHARLES W. GOODYEAR, SR. VICE PRESIDENT, FREEPORT-McMoRan INC., personally known to me (or proved to me on the basis of satisfactory evidence) to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s) or the entity upon behalf of which the person(s) acted, executed the instrument.

WITNESS my hand and official seal.

Signature

My Commission is Issued for Life

BRAINERD S. MONTGOMERY
Embossed hereon is my Orleans Parish,
State of La. Notary Public Seal
My Commission is issued for life

EXHIBIT "1"
to
GRANT DEED

Description of Real Property

Attached to and hereby made a part of that certain Grant Deed dated October 15, 1993, between Freeport-McMoRan Resource Partners, Limited Partnership to Magma Power Company.

HUDSON RANCH, CA 4001-003

Property commonly known as Hudson Ranch and more particularly described as follows:

Parcel 1: 020-010-35-01	The South half, and the Northeast quarter of Section 13, Township 11 South, Range 13 East, S.B.M.
Parcel 2: 020-200-11-01	The South half, and the Northeast quarter of Section 7, Township 11 South, Range 14 East, S.B.M.
Parcel 3: 021-300-02-01	The Northeast quarter of Section 18, Township 11 South, Range 14 East, S.B.M.
Parcel 4: 021-300-01-01	The East half of Northwest quarter of Section 18, Township 11 South, Range 14 East, S.B.M.
Parcel 5: 021-300-01-01	Lots 3 and 4, in Section 18, Township 11 South, Range 14 East, S.B.M.

Conveyed to Freeport-McMoRan Resource Partners, Limited Partnership, a Delaware limited partnership, by Special Warranty Deed dated June 29, 1988, recorded as Document No. 88-10820, in Book 1606 at Page 1151, Official Records, Imperial County, California.

APPENDIX J

Groundwater Monitoring Report – May 2019

Hudson Ranch 1 Geothermal Plant – Brine Pond
409 West McDonald Road
Calipatria, CA

Prepared for:

Hudson Ranch 1 Power
409 W. McDonald Road
Calipatria, CA 92233

LANDMARK
Geo-Engineers and Geologists

Prepared by:

Landmark Consultants, Inc.
780 N. 4th Street
El Centro, CA 92243
(760) 370-3000

May 2019

LANDMARK
Geo-Engineers and Geologists

780 N. 4th Street
El Centro, CA 92243
(760) 370-3000
(760) 337-8900 fax

77-948 Wildcat Drive
Palm Desert, CA 92211
(760) 360-0665
(760) 360-0521 fax

May 8, 2019

Ms. Maricruz Leon
Hudson Ranch Power 1, LLC
409 W. McDonald Road
Calipatria, CA 92233

Groundwater Monitoring
Hudson Ranch 1 Geothermal Power Plant Brine Pond
(APN 020-100-044)
Calipatria, California
LCI Project No. LE18069

Dear Ms. Leon:

Landmark Consultants, Inc. installed groundwater monitoring wells for the Brine Pond in July 2011 at the Hudson Ranch No. 1 Geothermal Power Plant located at 409 West McDonald Road about 1.5 miles west of English Road northwest of Calipatria, California (Portion N½, NW¼, Section 24, T11S–R13E, SBM). Initial sampling and testing of groundwater quality was performed in October 2011 prior to any discharges to the Brine Pond (see LCI Report No. LE11049, dated November 28, 2011). The following report provides the results of the April 2019 groundwater sampling and testing event of the Brine Pond groundwater monitoring wells.

Groundwater Sampling

Prior to the April 2019 groundwater sampling, the depth to water and total depth of the wells were measured using an electronic water level sensor. Wells were then purged on April 15, 2019 using a power pump. The wells were purged dry and did not return to a minimum of 80% of the original casing volume by the end of the day. Therefore, groundwater samples were collected on April 17, 2019 after a sufficient volume of water was present in the screened wells.

Groundwater samples obtained from the wells were collected using a disposable bailer. During sampling, groundwater was monitored for pH, temperature, specific conductivity, and turbidity. The physical parameters are reported in Table 1.

Table 1: Groundwater Physical Parameters at Time of Sampling

Well Number	Temp (ºF)	Conductivity (µS)	Turbidity (NTU)	pH	Depth to Groundwater (ft)
MW-1	85.3	11.2	32	6.11	18.0
MW-2	91.6	10.6	88	7.04	18.8
MW-3	86.2	11.4	278	6.03	15.8
MW-4	83.7	11.6	26	6.84	14.4
MW-5	84.7	11.5	201	6.46	15.7
MW-6	86.7	11.8	388	6.36	16.6
MW-7 (*)	81.5	11.2	221	6.04	12.2

(*) Background well location

The groundwater samples were collected and stored in properly preserved, laboratory-provided containers. After collection, the groundwater samples were stored in an ice-chilled cooler for transport to a Cal-EPA certified analytical laboratory under chain-of-custody procedures. The groundwater samples were analyzed in the laboratory for this semi-annual sampling event in compliance with the California Regional Water Quality Control Board Waste Discharge Requirements (WDR) issued to the Hudson Ranch No. 1 geothermal plant, for the following:

- Total Dissolved Solids (TDS) by EPA Method 160.1
- pH by EPA Method 150.1
- Total petroleum hydrocarbons (TPH) by EPA Method 8015M
- Oil and Grease by Method 1664-HEM
- CCR Title 22 metals (As, Ba, Cd, Pb, and Zn) by EPA Methods 200.7 or 6010B

Laboratory Analysis

The groundwater samples were delivered under chain of custody protocol to Enviro—Chem, Inc. in Pomona, California on April 17, 2019 for analysis for Total Petroleum Hydrocarbons (Method EPA 8015M), Oil & Grease (1664-HEM), Total Dissolved Solids (EPA Method 160.1), pH (EPA Method 150.1), and CCR Title 22 Metals (EPA Methods 6010B and 7470A). Enviro–Chem is accredited by the State Health Department in California. Enviro–Chem provided a detailed report of the analytical results and Quality Control/Quality Assurance results after completion of the testing procedures. The analytical reports provided by the laboratory are provided in Appendix B (Oil & Grease, TDS, pH, TPH, and Title 22 Metals).

Summary of Laboratory Test Results

Analysis of the groundwater at the project site indicated non-detectable levels of petroleum hydrocarbons and Oil & Grease. The groundwater has high total dissolved solids (TDS) concentrations (29,700 to 48,600 mg/L) and is of non-beneficial use (brackish) in the Calipatria and Niland area. pH levels ranged from 6.1 to 6.9 which is similar to the field test results. The samples contained non-detectable levels of mercury, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, lead, molybdenum, nickel, silver, and vanadium except as noted below:

Monitoring Well	Metal	Concentration
MW-1	Arsenic	0.010 mg/L
MW-2	Arsenic	0.011 mg/L
	Chromium	0.022 mg/L
MW-4	Molybdenum	0.011 mg/L
MW-5	Mercury	0.0007 mg/L

Detectable levels of copper, nickel and selenium were found in six (6) of the seven (7) samples. The levels of copper ranged from non-detect to 0.042 mg/L, the levels of nickel ranged from non-detect to 0.140 mg/L, and the levels of selenium ranged from non-detect to 0.162 mg/L. Detectable levels of zinc were found in all seven (7) samples. The levels of zinc ranged from 0.020 to 0.082 mg/L. A summary of the prior and current semi-annual test results are provided in Appendix C for each monitoring well.

If you should have any questions regarding the findings within this report, please feel free to contact the undersigned at (760) 370-3000.

Respectfully Submitted,
Landmark Consultants, Inc.

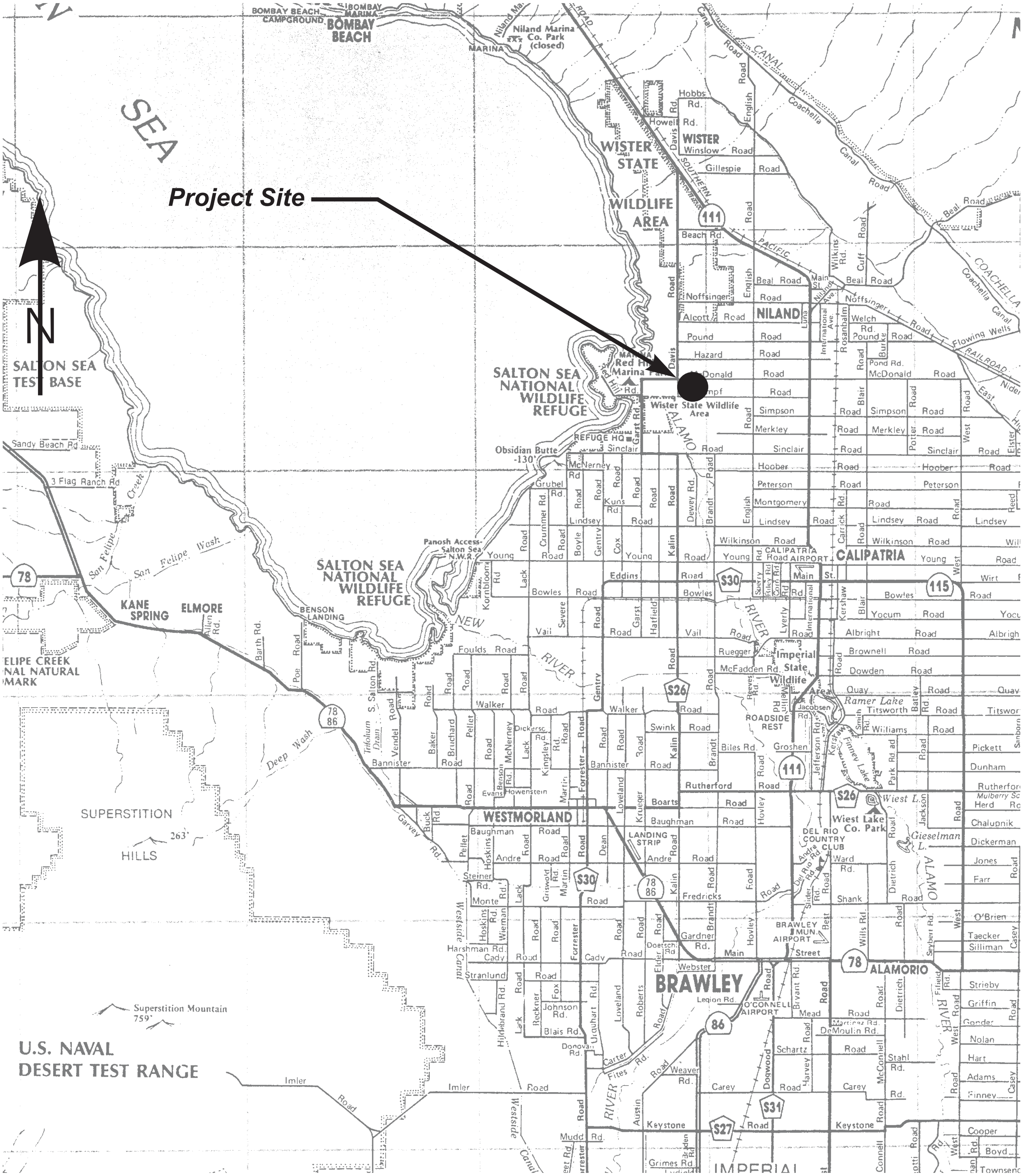
Steven K. Williams, PG, CEG
Senior Engineering Geologist

STEVEN K. WILLIAMS
CERTIFIED ENGINEERING GEOLOGIST
CEG 2261

Peter E. La Brucherie, PE
Project Engineer

PETER E. LABRUCHERIE
No. 84812
CIVIL

APPENDIX A

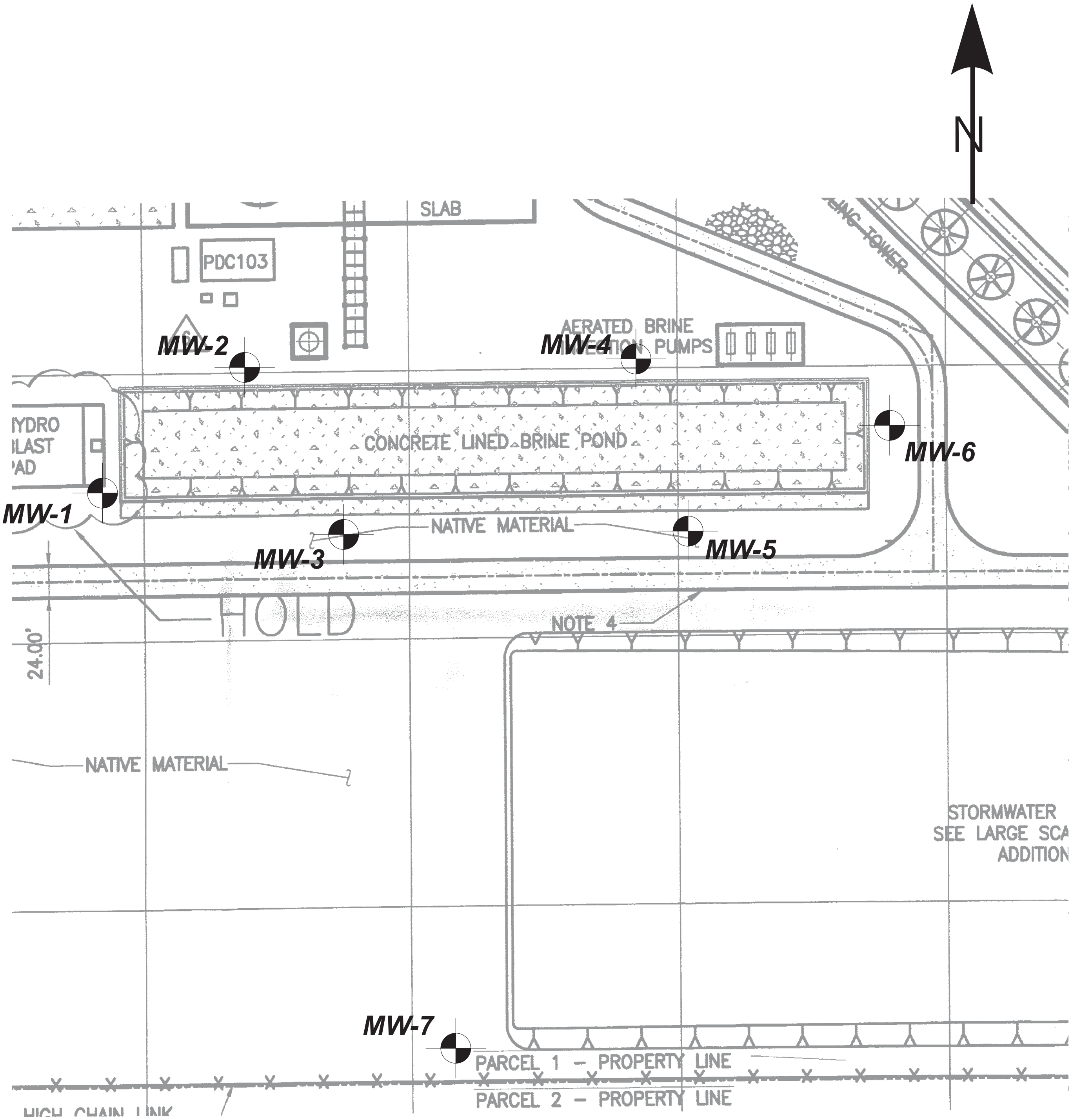


LANDMARK
Geo-Engineers and Geologists

Project No.: LE19065

Vicinity Map

Plate A-1



LANDMARK
Geo-Engineers and Geologists

Project No.: LE19065

Groundwater Monitoring Well Location Map

Plate
A-2

APPENDIX B

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **Landmark Consultants, Inc.**
780 N. 4th Street, El Centro, CA 92243
Tel(760)370-3000 E-Mail: SWilliams@Landmark-CA.com

PROJECT: **HR1 Brine Ponds / LE19065**
SAMPLING DATE: 04/17/19
MATRIX: WATER
REPORT TO: MR. STEVEN K. WILLIAMS

DATE RECEIVED: 04/17/19
DATE ANALYZED: 04/18/19
DATE REPORTED: 04/22/19

C4-C10 HYDROCARBONS
METHOD: EPA 5030B/8015B
UNIT: ug/L = MICROGRAM PER LITER = PPB

SAMPLE I.D.	LAB I.D.	C4-C10 RESULT	DF
MW-1	190417-13	ND	1
MW-2	190417-14	ND	1
MW-3	190417-15	ND	1
MW-4	190417-16	ND	1
MW-5	190417-17	ND	1
MW-6	190417-18	ND	1
MW-7	190417-19	ND	1
Method Blank	---	ND	1
	PQL	50.0	

COMMENTS
C4-C10 = GASOLINE RANGE
PQL = PRACTICAL QUANTITATION LIMIT
DF = DILUTION FACTOR
ACTUAL DETECTION LIMIT = PQL X DF
ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

Data Reviewed and Approved by:____________________
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro Chem, Inc

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909)590-5905 Fax (909)590-5907

Gas/BTEX QC

Date Analyzed: 4/18/2019 **Units:** ug/L (PPB)

Matrix: **WATER/VAPOR**

Matrix Spike (MS)/Matrix Spike Duplicate (MSD)

Spiked Sample Lab I.D.: 190417-13 MS/MSD

Analyte	S.R.	spk conc	MS	%REC	MSD	%REC	%RPD	ACP %REC	ACP %RPD
Gasoline Range	0	500	504	101%	507	101%	1%	**75-125**	**<20%**

LCS STD RECOVERY:

Analyte	spk conc	LCS	% REC	ACP
Gasoline Range	500	494	99%	**75-125**

Surrogate Recovery	ACP %REC	%REC	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample I.D.		MB	190417-13	190417-14	190417-15	190417-16	190417-17	190417-18	190417-19
BFB	70-130	115%	134*%	132*%	127%	126%	128%	130%	125%

Surrogate Recovery	ACP %REC	%REC	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample I.D.									
BFB	70-130								

Surrogate Recovery	ACP %REC	%REC	%REC	%REC	%REC	%REC
Sample I.D.						
BFB	70-130					

S.R. = Sample Result
spk conc = Spike Concentration
%REC = Percent Recovery
ACP %RPD = Acceptable Percent RPD Range
ACP %REC = Acceptable Percent Recovery Range

** = Surrogate fail due to matrix interference (If marked)*

Note: ***LCS, MS, MSD are in control therefore results are in control.***

Analyzed and Reviewed By: ____________

Final Reviewer: ____________

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **Landmark Consultants, Inc.**
780 N. 4th Street, El Centro, CA 92243
Tel(760)370-3000 E-Mail: SWilliams@Landmark-CA.com

PROJECT: **HR1 Brine Ponds / LE19065**

DATE RECEIVED: 04/17/19
SAMPLING DATE: 04/17/19
DATE EXTRACTED: 04/17/19
MATRIX: WATER
DATE ANALYZED: 04/18/19
REPORT TO: MR. STEVEN K. WILLIAMS
DATE REPORTED: 04/22/19

C10-C28 HYDROCARBONS
METHOD: EPA 8015B
UNIT: ug/L = MICROGRAM PER LITER = PPB

SAMPLE I.D.	LAB I.D.	C10-C28 RESULT	DF
MW-1	190417-13	ND	1
MW-2	190417-14	ND	1
MW-3	190417-15	ND	1
MW-4	190417-16	ND	1
MW-5	190417-17	ND	1
MW-6	190417-18	ND	1
MW-7	190417-19	ND	1
Method Blank	---	ND	1
	PQL	**500**	

COMMENTS
C10-C28 = DIESEL RANGE
PQL = PRACTICAL QUANTITATION LIMIT
DF = DILUTION FACTOR
ACTUAL DETECTION LIMIT = PQL X DF
ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

Data Reviewed and Approved by:
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro Chem, Inc

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909)590-5905 Fax (909)590-5907

8015B QA/QC Report

Date Analyzed: 4/18/2019 **Units:** ug/L (PPB)

Matrix: **Water/Liquid**

Matrix Spike (MS)/Matrix Spike Duplicate (MSD)

Spiked Sample Lab I.D.: 190416-21 MS/MSD

Analyte	SR	spk conc	MS	%MS	MSD	%MSD	%RPD	ACP %MS	ACP RPD
C10-C28 RANGE	0	12000	9090	76%	10000	83%	10%	75-125	0-20%

LCS STD RECOVERY:

Analyte	spk conc	LCS	% REC	ACP
C10-C28 RANGE	12000	11600	97%	75-125

Analyzed and Reviewed by: ______________

Final Reviewer: ______________

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **Landmark Consultants, Inc.**
780 N. 4th Street, El Centro, CA 92243
Tel(760)370-3000 E-Mail: SWilliams@Landmark-CA.com

PROJECT: **HR1 Brine Ponds / LE19065**
SAMPLING DATE: 04/17/19
DATE RECEIVED: 04/17/19
MATRIX: WATER
DATE ANALYZED: 04/17-22/19
REPORT TO: MR. STEVEN K. WILLIAMS
DATE REPORTED: 04/22/19

SAMPLE I.D.: **MW-1**
LAB I.D.: 190417-13

PARAMETER	UNIT	SAMPLE RESULT	PQL	DF	TEST METHOD
OIL & GREASE	mg/L	ND	1	1	EPA 1664A
pH	pH UNITS	6.12	---	--	SM 4500-H^+B
SOLIDS, TOTAL DISSOLVED	mg/L	48000	1	4	SM 2540C

COMMENTS:
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Non-Detected or below the Actual Detection Limit
mg/L = Milligram per liter = PPM

DATA REVIEWED AND APPROVED BY:
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

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Tel(760)370-3000 E-Mail: SWilliams@Landmark-CA.com

PROJECT: **HR1 Brine Ponds / LE19065**
SAMPLING DATE: 04/17/19
MATRIX: WATER
REPORT TO: MR. STEVEN K. WILLIAMS
DATE RECEIVED: 04/17/19
DATE ANALYZED: 04/17-22/19
DATE REPORTED: 04/22/19

SAMPLE I.D.: **MW-2**
LAB I.D.: 190417-14

PARAMETER	UNIT	SAMPLE RESULT	PQL	DF	TEST METHOD
OIL & GREASE	mg/L	ND	1	1	EPA 1664A
pH	pH UNITS	6.80	---	--	SM 4500-H$^+$B
SOLIDS, TOTAL DISSOLVED	mg/L	48600	1	4	SM 2540C

COMMENTS:
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Non-Detected or below the Actual Detection Limit
mg/L = Milligram per liter = PPM

DATA REVIEWED AND APPROVED BY:
CAL-DHS ELAP CERTIFICATE No.: 1555

LABORATORY REPORT

CUSTOMER: **Landmark Consultants, Inc.**
780 N. 4th Street, El Centro, CA 92243
Tel(760)370-3000 E-Mail: SWilliams@Landmark-CA.com

PROJECT: **HR1 Brine Ponds / LE19065**
SAMPLING DATE: 04/17/19
MATRIX: WATER
REPORT TO: MR. STEVEN K. WILLIAMS
DATE RECEIVED: 04/17/19
DATE ANALYZED: 04/17-22/19
DATE REPORTED: 04/22/19

SAMPLE I.D.: **MW-3**
LAB I.D.: 190417-15

PARAMETER	UNIT	SAMPLE RESULT	PQL	DF	TEST METHOD
OIL & GREASE	mg/L	ND	1	1	EPA 1664A
pH	pH UNITS	6.14	---	--	SM 4500-H$^+$B
SOLIDS, TOTAL DISSOLVED	mg/L	37500	1	4	SM 2540C

COMMENTS:
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Non-Detected or below the Actual Detection Limit
mg/L = Milligram per liter = PPM

DATA REVIEWED AND APPROVED BY:
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro – Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **Landmark Consultants, Inc.**
780 N. 4th Street, El Centro, CA 92243
Tel(760)370-3000 E-Mail: SWilliams@Landmark-CA.com

PROJECT: **HR1 Brine Ponds / LE19065**
SAMPLING DATE: 04/17/19
DATE RECEIVED: 04/17/19
MATRIX: WATER
DATE ANALYZED: 04/17-22/19
REPORT TO: MR. STEVEN K. WILLIAMS
DATE REPORTED: 04/22/19

SAMPLE I.D.: **MW-4**
LAB I.D.: 190417-16

PARAMETER	UNIT	SAMPLE RESULT	PQL	DF	TEST METHOD
OIL & GREASE	mg/L	ND	1	1	EPA 1664A
pH	pH UNITS	6.88	---	--	SM 4500-H^+B
SOLIDS, TOTAL DISSOLVED	mg/L	44600	1	4	SM 2540C

COMMENTS:
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Non-Detected or below the Actual Detection Limit
mg/L = Milligram per liter = PPM

DATA REVIEWED AND APPROVED BY:
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro - Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

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780 N. 4th Street, El Centro, CA 92243
Tel(760)370-3000 E-Mail: SWilliams@Landmark-CA.com

PROJECT: **HR1 Brine Ponds / LE19065**
SAMPLING DATE: 04/17/19
MATRIX: WATER
REPORT TO: MR. STEVEN K. WILLIAMS
DATE RECEIVED: 04/17/19
DATE ANALYZED: 04/17-22/19
DATE REPORTED: 04/22/19

SAMPLE I.D.: **MW-5**
LAB I.D.: 190417-17

PARAMETER	**UNIT**	**SAMPLE RESULT**	**PQL**	**DF**	**TEST METHOD**
OIL & GREASE	mg/L	ND	1	1	EPA 1664A
pH	pH UNITS	6.61	---	--	SM 4500-H^+B
SOLIDS, TOTAL DISSOLVED	mg/L	29700	1	4	SM 2540C

COMMENTS:
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Non-Detected or below the Actual Detection Limit
mg/L = Milligram per liter = PPM

DATA REVIEWED AND APPROVED BY:________________
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro - Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **Landmark Consultants, Inc.**
780 N. 4th Street, El Centro, CA 92243
Tel(760)370-3000 E-Mail: SWilliams@Landmark-CA.com

PROJECT: **HR1 Brine Ponds / LE19065**
SAMPLING DATE: 04/17/19
MATRIX: WATER
REPORT TO: MR. STEVEN K. WILLIAMS
DATE RECEIVED: 04/17/19
DATE ANALYZED: 04/17-22/19
DATE REPORTED: 04/22/19

SAMPLE I.D.: **MW-6**
LAB I.D.: 190417-18

PARAMETER	UNIT	SAMPLE RESULT	PQL	DF	TEST METHOD
OIL & GREASE	mg/L	ND	1	1	EPA 1664A
pH	pH UNITS	6.59	---	--	SM 4500-H$^+$B
SOLIDS, TOTAL DISSOLVED	mg/L	36100	1	4	SM 2540C

COMMENTS:
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Non-Detected or below the Actual Detection Limit
mg/L = Milligram per liter = PPM

DATA REVIEWED AND APPROVED BY:
CAL-DHS ELAP CERTIFICATE No.: 1555

LABORATORY REPORT

CUSTOMER: **Landmark Consultants, Inc.**
780 N. 4th Street, El Centro, CA 92243
Tel(760)370-3000 E-Mail: SWilliams@Landmark-CA.com

PROJECT: **HR1 Brine Ponds / LE19065**
SAMPLING DATE: 04/17/19
DATE RECEIVED: 04/17/19
MATRIX: WATER
DATE ANALYZED: 04/17-22/19
REPORT TO: MR. STEVEN K. WILLIAMS
DATE REPORTED: 04/22/19

SAMPLE I.D.: **MW-7**
LAB I.D.: 190417-19

PARAMETER	UNIT	SAMPLE RESULT	PQL	DF	TEST METHOD
OIL & GREASE	mg/L	ND	1	1	EPA 1664A
pH	pH UNITS	6.61	---	--	SM 4500-H+B
SOLIDS, TOTAL DISSOLVED	mg/L	31700	1	4	SM 2540C

COMMENTS:
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Non-Detected or below the Actual Detection Limit
mg/L = Milligram per liter = PPM

DATA REVIEWED AND APPROVED BY: ________________
CAL-DHS ELAP CERTIFICATE No.: 1555

METHOD BLANK REPORT

CUSTOMER: **Landmark Consultants, Inc.**
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PROJECT: **HR1 Brine Ponds / LE19065**
SAMPLING DATE: 04/17/19
MATRIX: WATER
REPORT TO: MR. STEVEN K. WILLIAMS
DATE RECEIVED: 04/17/19
DATE ANALYZED: 04/17-22/19
DATE REPORTED: 04/22/19

METHOD BLANK FOR LAB I.D.: 190417-13 THROUGH -19

PARAMETER	UNIT	SAMPLE RESULT	PQL	DF	TEST METHOD
OIL & GREASE	mg/L	ND	1	1	EPA 413.2
SOLIDS, TOTAL DISSOLVED	mg/L	ND	1	1	SM 2540C

COMMENTS:
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Non-Detected or below the Actual Detection Limit
mg/L = Milligram per liter = PPM

DATA REVIEWED AND APPROVED BY:________________
CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro-Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766
Tel (909)590-5905 Fax (909)590-5907

Matrix: WATER/LIQUID

QA/QC Report

Analysis	Units	Date Analyzed	Sample I.D.	S.R.	Duplicate	% RPD	ACP %RPD
Alkalinity	mg/L	4/12/2019	190412-43	143	141	1.41%	0-20
Residual Chlorine	mg/L					0.00%	0-20
EC/SC	umhos/cm					0.00%	0-20
pH	pH units	4/17/2019	190417-19	6.61	6.63	0.30%	0-20
TDS	mg/L	4/19/2019	190417-19	31676	31800	0.39%	0-20
TSS	mg/L	4/17/2019	190415-23	54	55	1.83%	0-20
Turbidity	mg/L					0.00%	0-20
%Moisture	%					0.00%	0-20
DENSITY	ohms					0.00%	0-20
Settleable Solid	mL/L/hr					0.00%	0-20
Resistivity	ohms					0.00%	0-20
Carbon Dioxide	mg CO_2/L					0.00%	0-20

%RPD = Relative Percent Difference **ACP %RPD** = Acceptable Relative Percent Difference

Analysis	Units	Date Analyzed	Sample I.D.	Spk Conc	S.R.	ACP %RPD	ACP %RC	MS	MS %RC	MSD	MSD %RC	% RPD
Acidity	mg/L				0	0-20	80-120					#VALUE!
Ammonia as N	mg/L			5.00	0.00	0-20	80-120					#VALUE!
Chloride	mg/L	4/19/2019	LCS1/2	20.0	0.00	0-20	80-120	17.0	85%	18.0	90%	5.0%
COD	mg/L	4/17/2019	LCS1/2	500	0.0	0-20	80-120	450	90%	460	92%	2.0%
CR VI	mg/L			0.400	0.00	0-20	80-120					#VALUE!
Cyanide	mg/L	4/18/2019	LCS1/2	0.200	0.00	0-20	80-120	0.171	86%	0.168	84%	1.5%
Fluoride	mg/L	4/18/2019	LCS1/2	1.00	0.00	0-20	80-120	0.979	98%	0.871	87%	10.8%
MBAS	mg/L			0.600	0.00	0-20	80-120					#VALUE!
Nitrate as N	mg/L	4/11/2019	LCS1/2	0.400	0.00	0-20	80-120	0.343	86%	0.359	90%	4.0%
Nitrite as N	mg/L	4/11/2019	190411-43	0.400	0.00	0-20	80-120	0.374	94%	0.379	95%	1.3%
EPA 1664A	mg/L			20.0	0.0	0-20	80-120					#VALUE!
OIL & GREASE 413.2	mg/L			20.00	0.00	0-20	80-120					#VALUE!
Phenolics	mg/L			0.500	0.00	0-20	80-120					#VALUE!
Sulfate	mg/L	4/19/2019	190416-49	20.0	37.80	0-20	80-120	55.0	86%	55.8	90%	4.0%
Dissolved Sulfide	mg/L	4/17/2019	190416-42	0.300	0.00	0-20	80-120	0.255	85%	0.261	87%	2.0%
Total Sulfide	mg/L			0.300	0.00	0-20	80-120					#VALUE!
TRPH	mg/L			20.00	0.00	0-20	80-120					#VALUE!

S.R. = Sample Results **%RC** = Percent Recovery **ACP %RC** = Acceptable Percent Recovery **Spk Conc** = Spike Concentration

Analyst Signature: Wp

Final Reviewer:

Enviro-Chem, Inc.
1214 E. Lexington Avenue, Pomona, CA 91766
Tel (909)590-5905 Fax (909)590-5907

Matrix: WATER/LIQUID

QA/QC Report

Analysis	Units	Date Analyzed	Sample I.D.	S.R.	Duplicate	% RPD	ACP %RPD
Alkalinity	mg/L					0.00%	0-20
Residual Chlorine	mg/L					0.00%	0-20
EC/SC	umhos/cm					0.00%	0-20
pH	pH units					0.00%	0-20
TDS	mg/L					0.00%	0-20
TSS	mg/L					0.00%	0-20
Turbidity	mg/L					0.00%	0-20
%Moisture	%					0.00%	0-20
DENSITY	ohms					0.00%	0-20
Settleable Solid	mL/L/hr					0.00%	0-20
Resistivity	ohms					0.00%	0-20
Carbon Dioxide	mg CO_2/L					0.00%	0-20

%RPD = Relative Percent Difference **ACP %RPD** = Acceptable Relative Percent Difference

Analysis	Units	Date Analyzed	Sample I.D.	Spk Conc	S.R.	ACP %RPD	ACP %RC	MS	MS %RC	MSD	MSD %RC	% RPD
Acidity	mg/L				0	0-20	80-120					#VALUE!
Ammonia as N	mg/L			5.00	0.000	0-20	80-120					#VALUE!
Chloride	mg/L			20.0	0.00	0-20	80-120					#VALUE!
COD	mg/L			500	0.0	0-20	80-120					#VALUE!
CR VI	mg/L			0.400	0.00	0-20	80-120					#VALUE!
Cyanide	mg/L			0.200	0.00	0-20	80-120					#VALUE!
Fluoride	mg/L			1.00	0.00	0-20	80-120					#VALUE!
MBAS	mg/L			0.600	0.00	0-20	80-120					#VALUE!
Nitrate as N	mg/L			0.400	0.095	0-20	80-120					#VALUE!
Nitrite as N	mg/L			0.400	0.00	0-20	80-120					#VALUE!
EPA 1664A	mg/L	4/22/2019	LCS1/2	20.0	0.0	0-20	80-120	17.6	88%	16.8	84%	4.0%
OIL & GREASE 413.2	mg/L			20.0	0.00	0-20	80-120					#VALUE!
Phenolics	mg/L			0.500	0.00	0-20	80-120					#VALUE!
Sulfate	mg/L			20.0	0.00	0-20	80-120					#VALUE!
Dissolved Sulfide	mg/L			0.300	0.00	0-20	80-120					#VALUE!
Total Sulfide	mg/L			0.300	0.00	0-20	80-120					#VALUE!
TRPH	mg/L			20.00	0.00	0-20	80-120					#VALUE!

S.R. = Sample Results **%RC** = Percent Recovery **ACP %RC** = Acceptable Percent Recovery **Spk Conc** = Spike Concentration

Analyst Signature: ____________

Final Reviewer: ____________

Enviro – Chem, Inc.
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LABORATORY REPORT

CUSTOMER: **Landmark Consultants, Inc.**
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Tel(760)370-3000 E-Mail: SWilliams@Landmark-CA.com

PROJECT: **HR1 Brine Ponds / LE19065**
SAMPLING DATE:04/17/19
MATRIX:WATER
REPORT TO:MR. STEVEN K. WILLIAMS

DATE RECEIVED:04/17/19
DATE ANALYZED:04/18/19
DATE REPORTED:04/22/19

SAMPLE I.D.: **MW-1**
LAB I.D.: 190417-13

TOTAL METALS ANALYSIS
UNIT: mg/L = MILLIGRAM PER LITER = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	EPA METHOD
Antimony(Sb)	ND	0.02	1	200.7
Arsenic(As)	0.010	0.01	1	200.7
Barium(Ba)	ND	0.10	1	200.7
Beryllium(Be)	ND	0.01	1	200.7
Cadmium(Cd)	ND	0.01	1	200.7
Chromium(Cr)	ND	0.01	1	200.7
Cobalt(Co)	ND	0.02	1	200.7
Copper(Cu)	0.038	0.02	1	200.7
Lead(Pb)	ND	0.01	1	200.7
Mercury(Hg)	ND	0.0005	1	245.1
Molybdenum(Mo)	ND	0.1	1	200.7
Nickel(Ni)	0.134	0.05	1	200.7
Selenium(Se)	0.050	0.02	1	200.7
Silver(Ag)	ND	0.02	1	200.7
Thallium(Tl)	ND	0.02	1	200.7
Vanadium(V)	ND	0.1	1	200.7
Zinc(Zn)	0.066	0.01	1	200.7

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection limit or non-detected

Data Reviewed and Approved by:________________
CAL-DHS ELAP CERTIFICATE No.: 1555

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PROJECT: **HR1 Brine Ponds / LE19065**
SAMPLING DATE: 04/17/19
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DATE ANALYZED: 04/18/19
REPORT TO: MR. STEVEN K. WILLIAMS
DATE REPORTED: 04/22/19

SAMPLE I.D.: **MW-2**
LAB I.D.: 190417-14

TOTAL METALS ANALYSIS
UNIT: mg/L = MILLIGRAM PER LITER = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	EPA METHOD
Antimony(Sb)	ND	0.02	1	200.7
Arsenic(As)	0.011	0.01	1	200.7
Barium(Ba)	ND	0.10	1	200.7
Beryllium(Be)	ND	0.01	1	200.7
Cadmium(Cd)	ND	0.01	1	200.7
Chromium(Cr)	0.022	0.01	1	200.7
Cobalt(Co)	ND	0.02	1	200.7
Copper(Cu)	0.042	0.02	1	200.7
Lead(Pb)	ND	0.01	1	200.7
Mercury(Hg)	ND	0.0005	1	245.1
Molybdenum(Mo)	ND	0.1	1	200.7
Nickel(Ni)	0.140	0.05	1	200.7
Selenium(Se)	0.162	0.02	1	200.7
Silver(Ag)	ND	0.02	1	200.7
Thallium(Tl)	ND	0.02	1	200.7
Vanadium(V)	ND	0.1	1	200.7
Zinc(Zn)	0.043	0.01	1	200.7

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection limit or non-detected

Data Reviewed and Approved by:
CAL-DHS ELAP CERTIFICATE No.: 1555

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PROJECT: **HR1 Brine Ponds / LE19065**
SAMPLING DATE: 04/17/19
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REPORT TO: MR. STEVEN K. WILLIAMS
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DATE REPORTED: 04/22/19

SAMPLE I.D.: **MW-3**
LAB I.D.: 190417-15

TOTAL METALS ANALYSIS
UNIT: mg/L = MILLIGRAM PER LITER = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	EPA METHOD
Antimony(Sb)	ND	0.02	1	200.7
Arsenic(As)	ND	0.01	1	200.7
Barium(Ba)	ND	0.10	1	200.7
Beryllium(Be)	ND	0.01	1	200.7
Cadmium(Cd)	ND	0.01	1	200.7
Chromium(Cr)	ND	0.01	1	200.7
Cobalt(Co)	ND	0.02	1	200.7
Copper(Cu)	0.035	0.02	1	200.7
Lead(Pb)	ND	0.01	1	200.7
Mercury(Hg)	ND	0.0005	1	245.1
Molybdenum(Mo)	ND	0.1	1	200.7
Nickel(Ni)	0.135	0.05	1	200.7
Selenium(Se)	0.042	0.02	1	200.7
Silver(Ag)	ND	0.02	1	200.7
Thallium(Tl)	ND	0.02	1	200.7
Vanadium(V)	ND	0.1	1	200.7
Zinc(Zn)	0.082	0.01	1	200.7

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection limit or non-detected

Data Reviewed and Approved by:
CAL-DHS ELAP CERTIFICATE No.: 1555

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REPORT TO: MR. STEVEN K. WILLIAMS
DATE REPORTED: 04/22/19

SAMPLE I.D.: **MW-4**
LAB I.D.: 190417-16

TOTAL METALS ANALYSIS
UNIT: mg/L = MILLIGRAM PER LITER = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	EPA METHOD
Antimony(Sb)	ND	0.02	1	200.7
Arsenic(As)	ND	0.01	1	200.7
Barium(Ba)	ND	0.10	1	200.7
Beryllium(Be)	ND	0.01	1	200.7
Cadmium(Cd)	ND	0.01	1	200.7
Chromium(Cr)	ND	0.01	1	200.7
Cobalt(Co)	ND	0.02	1	200.7
Copper(Cu)	0.027	0.02	1	200.7
Lead(Pb)	ND	0.01	1	200.7
Mercury(Hg)	ND	0.0005	1	245.1
Molybdenum(Mo)	0.110	0.1	1	200.7
Nickel(Ni)	0.098	0.05	1	200.7
Selenium(Se)	0.062	0.02	1	200.7
Silver(Ag)	ND	0.02	1	200.7
Thallium(Tl)	ND	0.02	1	200.7
Vanadium(V)	ND	0.1	1	200.7
Zinc(Zn)	0.020	0.01	1	200.7

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection limit or non-detected

Data Reviewed and Approved by:
CAL-DHS ELAP CERTIFICATE No.: 1555

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SAMPLING DATE: 04/17/19
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DATE REPORTED: 04/22/19

SAMPLE I.D.: **MW-5**
LAB I.D.: 190417-17

TOTAL METALS ANALYSIS
UNIT: mg/L = MILLIGRAM PER LITER = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	EPA METHOD
Antimony(Sb)	ND	0.02	1	200.7
Arsenic(As)	ND	0.01	1	200.7
Barium(Ba)	ND	0.10	1	200.7
Beryllium(Be)	ND	0.01	1	200.7
Cadmium(Cd)	ND	0.01	1	200.7
Chromium(Cr)	ND	0.01	1	200.7
Cobalt(Co)	ND	0.02	1	200.7
Copper(Cu)	ND	0.02	1	200.7
Lead(Pb)	ND	0.01	1	200.7
Mercury(Hg)	0.0007	0.0005	1	245.1
Molybdenum(Mo)	ND	0.1	1	200.7
Nickel(Ni)	0.086	0.05	1	200.7
Selenium(Se)	0.025	0.02	1	200.7
Silver(Ag)	ND	0.02	1	200.7
Thallium(Tl)	ND	0.02	1	200.7
Vanadium(V)	ND	0.1	1	200.7
Zinc(Zn)	0.028	0.01	1	200.7

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection limit or non-detected

Data Reviewed and Approved by:____________________
CAL-DHS ELAP CERTIFICATE No.: 1555

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PROJECT: **HR1 Brine Ponds / LE19065**
SAMPLING DATE:04/17/19 DATE RECEIVED:04/17/19
MATRIX:WATER DATE ANALYZED:04/18/19
REPORT TO:MR. STEVEN K. WILLIAMS DATE REPORTED:04/22/19

SAMPLE I.D.: **MW-6** LAB I.D.: 190417-18

TOTAL METALS ANALYSIS
UNIT: mg/L = MILLIGRAM PER LITER = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	EPA METHOD
Antimony(Sb)	ND	0.02	1	200.7
Arsenic(As)	ND	0.01	1	200.7
Barium(Ba)	ND	0.10	1	200.7
Beryllium(Be)	ND	0.01	1	200.7
Cadmium(Cd)	ND	0.01	1	200.7
Chromium(Cr)	ND	0.01	1	200.7
Cobalt(Co)	ND	0.02	1	200.7
Copper(Cu)	0.022	0.02	1	200.7
Lead(Pb)	ND	0.01	1	200.7
Mercury(Hg)	ND	0.0005	1	245.1
Molybdenum(Mo)	ND	0.1	1	200.7
Nickel(Ni)	0.096	0.05	1	200.7
Selenium(Se)	0.056	0.02	1	200.7
Silver(Ag)	ND	0.02	1	200.7
Thallium(Tl)	ND	0.02	1	200.7
Vanadium(V)	ND	0.1	1	200.7
Zinc(Zn)	0.035	0.01	1	200.7

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection limit or non-detected

Data Reviewed and Approved by:__________________
CAL-DHS ELAP CERTIFICATE No.: 1555

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LABORATORY REPORT

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PROJECT: **HR1 Brine Ponds / LE19065**
SAMPLING DATE: 04/17/19
MATRIX: WATER
REPORT TO: MR. STEVEN K. WILLIAMS
DATE RECEIVED: 04/17/19
DATE ANALYZED: 04/18/19
DATE REPORTED: 04/22/19

SAMPLE I.D.: **MW-7**
LAB I.D.: 190417-19

TOTAL METALS ANALYSIS
UNIT: mg/L = MILLIGRAM PER LITER = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	EPA METHOD
Antimony(Sb)	ND	0.02	1	200.7
Arsenic(As)	ND	0.01	1	200.7
Barium(Ba)	ND	0.10	1	200.7
Beryllium(Be)	ND	0.01	1	200.7
Cadmium(Cd)	ND	0.01	1	200.7
Chromium(Cr)	ND	0.01	1	200.7
Cobalt(Co)	ND	0.02	1	200.7
Copper(Cu)	0.021	0.02	1	200.7
Lead(Pb)	ND	0.01	1	200.7
Mercury(Hg)	ND	0.0005	1	245.1
Molybdenum(Mo)	ND	0.1	1	200.7
Nickel(Ni)	0.088	0.05	1	200.7
Selenium(Se)	ND	0.02	1	200.7
Silver(Ag)	ND	0.02	1	200.7
Thallium(Tl)	ND	0.02	1	200.7
Vanadium(V)	ND	0.1	1	200.7
Zinc(Zn)	0.024	0.01	1	200.7

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection limit or non-detected

Data Reviewed and Approved by:
CAL-DHS ELAP CERTIFICATE No.: 1555

METHOD BLANK REPORT

CUSTOMER: **Landmark Consultants, Inc.**
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Tel(760)370-3000 E-Mail: SWilliams@Landmark-CA.com

PROJECT: **HR1 Brine Ponds / LE19065**
SAMPLING DATE: 04/17/19 DATE RECEIVED: 04/17/19
MATRIX: WATER DATE ANALYZED: 04/18/19
REPORT TO: MR. STEVEN K. WILLIAMS DATE REPORTED: 04/22/19

METHOD BLANK FOR LAB I.D.: 190417-13 THROUGH -19

TOTAL METALS ANALYSIS
UNIT: mg/L = MILLIGRAM PER LITER = PPM

ELEMENT ANALYZED	SAMPLE RESULT	PQL	DF	EPA METHOD
Antimony(Sb)	ND	0.02	1	200.7
Arsenic(As)	ND	0.01	1	200.7
Barium(Ba)	ND	0.10	1	200.7
Beryllium(Be)	ND	0.01	1	200.7
Cadmium(Cd)	ND	0.01	1	200.7
Chromium(Cr)	ND	0.01	1	200.7
Cobalt(Co)	ND	0.02	1	200.7
Copper(Cu)	ND	0.02	1	200.7
Lead(Pb)	ND	0.01	1	200.7
Mercury(Hg)	ND	0.0005	1	245.1
Molybdenum(Mo)	ND	0.1	1	200.7
Nickel(Ni)	ND	0.05	1	200.7
Selenium(Se)	ND	0.02	1	200.7
Silver(Ag)	ND	0.02	1	200.7
Thallium(Tl)	ND	0.02	1	200.7
Vanadium(V)	ND	0.1	1	200.7
Zinc(Zn)	ND	0.01	1	200.7

COMMENTS
DF = Dilution Factor
PQL = Practical Quantitation Limit
Actual Detection Limit = PQL X DF
ND = Below the Actual Detection limit or non-detected

Data Reviewed and Approved by:
CAL-DHS ELAP CERTIFICATE No.: 1555

QA/QC for TTLC Metals Analysis --WATER MATRIX

Matrix Spike/ Matrix Spike Duplicate/ LCS :

ANALYSIS DATE: 4/18/2019

Unit : mg/L(ppm)

Analysis	Spk.Sample BATCH ID	LCS CONC.	LCS %Rec.	LCS STATUS	*Sample Result*	Spike Conc.	MS	% Rec MS	MSD	% Rec MSD	% RPD
Arsenic(As)	190417-12	1.00	100	*PASS*	*0*	1.00	0.864	86%	0.873	87%	1%
Copper(Cu)	190417-12	1.00	89	*PASS*	*0.094*	1.00	0.891	80%	0.885	79%	1%
Zinc(Zn)	190417-12	1.00	105	*PASS*	0.032	1.00	0.950	92%	0.960	93%	1%

ANALYSIS DATE. : 4/18/2019

Analysis	Spk.Sample BATCH ID	LCS CONC.	LCS %Rec.	LCS STATUS	*Sample Result*	Spike Conc.	MS	% Rec MS	MSD	% Rec MSD	% RPD
Mercury (Hg)	190417-19	0.00250	92	*PASS*	*0.0003*	0.00250	0.00240	84%	0.00240	84%	0%

MS/MSD Status:

Analysis	%MS	%MSD	%LCS	%RPD
Arsenic(As)	*FAIL**	*FAIL**	*PASS*	*PASS*
Copper(Cu)	*PASS*	*PASS*	*PASS*	*PASS*
Zinc(Zn)	*PASS*	*PASS*	*PASS*	*PASS*
Mercury (Hg)	*PASS*	*PASS*	*PASS*	*PASS*
Accepted Range	**75 ~ 125**	**75 ~ 125**	**85 ~ 115**	**0 ~ 20**

ANALYST: ______________________

FINAL REVIEWER: ______________________

*=Fail due to matrix interference

Note:LCS is in control therefore results are in control

Enviro-Chem, Inc. Laboratories
1214 E. Lexington Avenue,
Pomona, CA 91766
Tel: (909) 590-5905 Fax: (909) 590-5907
CA-DHS ELAP CERTIFICATE #1555

Turnaround Time
0 Same Day
0 24 Hours
0 48 Hours
0 72 Hours
0 [✓ 1 Week] (Standard)
Other:

Misc./PO#

SAMPLE ID	LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	No. OF CONTAINERS	TEMPERATURE	PRESERVATION	PH, TDS	CAM 17 METALS	OIL & GREASE	DIESEL	TPH GAS					COMMENTS
MW-1	1P0417-13	4-17-19	10AM	H2O	2 VOA		HCl					X					
					2		H_2SO_4			X	X						
					1		HNO_3		X								
					1		NONE	X									
MW-2	-14				2 VOA		HCl					X					
					2		H_2SO_4			X	X						
					1		HNO_3		X								
					1		NONE	X									
MW-3	-15				2 VOA		HCl					X					
					2		H_2SO_4			X	X						
					1		HNO_3		X								
					1		NONE	X									

Analysis Required

Company Name: LANDMARK CONSULTANTS, INC.
Address: 780 N. 4th STREET
City/State/Zip: EL CENTRO / CA / 92243

Project Contact: STEVEN WILLIAMS
Tel: 760-370-3000
Fax: SWILLIAMS@LANDMARK-CA.com

Sampler's Signature:
Project Name/ID: HRI BRINE PONDS LE19065

Relinquished by:
Received by:
Date & Time: 4-17-19 13:00

Relinquished by:
Received by:
Date & Time: 4/17 15:20

Relinquished by:
Received by:
Date & Time:

Instructions for Sample Storage After Analysis:
☒ Dispose of ○ Return to Client ○ Store (30 Days)
○ Other:

CHAIN OF CUSTODY RECORD

Date: 4-17-19

WHITE WITH SAMPLE • YELLOW TO CLIENT

Page 1 of 3

Enviro-Chem, Inc. Laboratories
1214 E. Lexington Avenue,
Pomona, CA 91766
Tel: (909) 590-5905 Fax: (909) 590-5907
CA-DHS ELAP CERTIFICATE #1555

Turnaround Time
0 Same Day
0 24 Hours
0 48 Hours
0 72 Hours
0 [✓ 1 Week(Standard)]
Other:

Misc./PO#

SAMPLE ID	LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	No. OF CONTAINERS	TEMPERATURE	PRESERVATION	PH, TDS	CAM 17 METALS	OIL & GREASE	DIESEL	TPH GAS					COMMENTS
MW-4	190417.16	4-17-19		H_2O	2 VOA		HCl					X					
					2		H_2SO_4			X	X						
					1		HNO_3		X								
					1		NONE	X									
MW-5	-17				2 VOA		HCl					X					
					2		H_2SO_4			X	X						
					1		HNO_3		X								
					1		NONE	X									
MW-6	-18				2 VOA		HCl					X					
					2		H_2SO_4			X	X						
					1		HNO_3		X								
					1		NONE	X									

Analysis Required

Company Name: LANDMARK CONSULTANTS, INC.
Address: 780 N. 4th STREET
City/State/Zip: EL CENTRO / CA / 92243
Project Contact: STEVEN WILLIAMS
Tel: 760-370-3000
Fax: SWILLIAMS@LANDMARK-CA.com
Sampler's Signature:
Project Name/ID: HRI BRINE PONDS LE19065

Relinquished by:
Received by:
Date & Time: 4-17-19 3:08

Relinquished by:
Received by:
Date & Time: 4/17 15:20

Relinquished by:
Received by:
Date & Time:

Instructions for Sample Storage After Analysis:
☑ Dispose of ○ Return to Client ○ Store (30 Days)
○ Other:

CHAIN OF CUSTODY RECORD

WHITE WITH SAMPLE • YELLOW TO CLIENT

Date: 4-17-9

Page 2 of 3

Enviro-Chem, Inc. Laboratories
1214 E. Lexington Avenue,
Pomona, CA 91766
Tel: (909) 590-5905 Fax: (909) 590-5907
CA-DHS ELAP CERTIFICATE #1555

Turnaround Time
○ Same Day
○ 24 Hours
○ 48 Hours
○ 72 Hours
○ [✓ 1 Week] (Standard)
Other:

Misc./PO#

SAMPLE ID	LAB ID	SAMPLING DATE	SAMPLING TIME	MATRIX	No. OF CONTAINERS	TEMPERATURE	PRESERVATION	pH, TDS	CAM 17 METALS	OIL & GREASE	DIESEL	TPH GAS					COMMENTS
MW-7	190417-1	4-17-19		H_2O	2 VOA		HCl					X					
↓	↓	↓		↓	2		H_2SO_4			X	X						
					1		HNO_3		X								
					1		NONE	X									

Analysis Required

Company Name: LANDMARK CONSULTANTS INC.
Address: 780 N. 4th STREET
City/State/Zip: EL CENTRO / CA / 92243
Project Contact: STEVE WILLIAMS
Tel: 760-370-3000
Fax: SWILLIAMS @ LANDMARK-CA.COM
Sampler's Signature:
Project Name/ID: HRI BRINE PONDS LE19065

Relinquished by: Received by: Date & Time: 4-17-19 13:08
Relinquished by: Received by: Date & Time: 4/17 15:00
Relinquished by: Received by: Date & Time:

Instructions for Sample Storage After Analysis:
☑ Dispose of ○ Return to Client ○ Store (30 Days)
○ Other:

CHAIN OF CUSTODY RECORD

Date: 4-17-19

WHITE WITH SAMPLE • YELLOW TO CLIENT

Page 3 of 3

APPENDIX C

Groundwater Monitoring Well MW-1
Hudson Ranch 1 Brine Pond
Analytical Test Results

Analyte	Units	Nov-11	Jun-12	Nov-12	Apr-13	Oct-13	Apr-14	Oct-14	Apr-15	Oct-15	Apr-16	Oct-16	Apr-17	Oct-17	Apr-18	Oct-18	Apr-19
TPH (Gas)	µg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TPH (Diesel)	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Oil & Grease	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TDS	mg/L	**75,000**	**84,000**	**73,000**	**31,000**	**67,400**	**39,400**	**48,500**	**11,500**	**46,600**	**54,700**	**45,200**	**46,100**	**70,700**	**41,800**	**41,700**	**48,000**
pH	SU	**6.20**	**6.45**	**6.18**	**6.35**	**6.12**	**6.09**	**6.12**	**6.22**	**6.29**	**6.08**	**5.96**	**6.00**	**6.22**	**6.17**	**6.12**	**6.12**
Antimony	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Arsenic	mg/L	nd	nd	**0.13**	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.01**
Barium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Beryllium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Cadmium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chromium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Cobalt	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Copper	mg/L	nd	nd	nd	nd	nd	**0.023**	**0.026**	**0.035**	**0.025**	**0.021**	nd	**0.034**	**0.047**	**0.026**	**0.024**	**0.038**
Lead	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Molybdenum	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Nickel	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.134**
Selenium	mg/L	**0.36**	**0.26**	**0.33**	**0.061**	**0.068**	**0.071**	**0.048**	**0.061**	**0.044**	nd	**0.036**	**0.038**	**0.038**	**0.036**	**0.041**	**0.05**
Thallium	mg/L	**0.16**	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Vanadium	mg/L	nd	nd	**0.14**	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Zinc	mg/L	nd	nd	nd	**0.017**	**0.019**	**0.073**	**0.019**	**0.043**	**0.026**	**0.048**	**0.040**	**0.097**	**0.063**	**0.031**	**0.036**	**0.066**
Silver	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Mercury	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Groundwater Monitoring Well MW-2
Hudson Ranch 1 Brine Pond
Analytical Test Results

Analyte	Units	Nov-11	Jun-12	Nov-12	Apr-13	Oct-13	Apr-14	Oct-14	Apr-15	Oct-15	Apr-16	Oct-16	Apr-17	Oct-17	Apr-18	Oct-18	Apr-19
TPH (Gas)	µg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TPH (Diesel)	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Oil & Grease	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TDS	mg/L	**70,000**	**84,000**	**75,000**	**31,700**	**68,900**	**40,000**	**53,000**	**12,000**	**61,600**	**58,600**	**45,300**	**46,400**	**72,700**	**42,600**	**45,000**	**48,600**
pH	SU	**6.80**	**7.05**	**6.89**	**6.98**	**6.59**	**6.62**	**6.63**	**6.86**	**6.75**	**6.43**	**6.49**	**6.71**	**6.64**	**6.90**	**6.59**	**6.80**
Antimony	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Arsenic	mg/L	nd	nd	**0.11**	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.011**
Barium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Beryllium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Cadmium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chromium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.022**
Cobalt	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Copper	mg/L	nd	nd	nd	nd	nd	**0.026**	**0.023**	**0.027**	nd	**0.021**	nd	**0.026**	**0.035**	**0.038**	**0.032**	**0.042**
Lead	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Molybdenum	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Nickel	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.14**
Selenium	mg/L	**0.70**	**0.38**	**0.55**	**0.158**	**0.181**	**0.192**	**0.145**	**0.214**	**0.155**	**0.217**	**0.123**	**0.123**	**0.12**	**0.117**	**0.121**	**0.162**
Thallium	mg/L	**0.13**	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Vanadium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Zinc	mg/L	nd	nd	nd	nd	**0.013**	**0.075**	nd	**0.035**	**0.024**	**0.031**	**0.043**	**0.098**	**0.053**	**0.034**	**0.040**	**0.043**
Silver	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Mercury	mg/L	nd	**0.00024**	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Groundwater Monitoring Well MW-3
Hudson Ranch 1 Brine Pond
Analytical Test Results

Analyte	Units	Nov-11	Jun-12	Nov-12	Apr-13	Oct-13	Apr-14	Oct-14	Apr-15	Oct-15	Apr-16	Oct-16	Apr-17	Oct-17	Apr-18	Oct-18	Apr-19
TPH (Gas)	µg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TPH (Diesel)	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Oil & Grease	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TDS	mg/L	**53,000**	**59,000**	**53,000**	**25,000**	**72,200**	**31,200**	**39,100**	**8,890**	**47,800**	**47,300**	**36,400**	**36,900**	**53,300**	**30,400**	**32,000**	**37,500**
pH	SU	**6.30**	**6.34**	**6.22**	**6.38**	**6.14**	**6.06**	**6.03**	**6.12**	**6.27**	**6.10**	**5.98**	**6.04**	**6.10**	**6.24**	**6.15**	**6.14**
Antimony	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Arsenic	mg/L	nd	nd	**0.11**	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Barium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Beryllium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Cadmium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chromium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Cobalt	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Copper	mg/L	nd	nd	nd	nd	nd	**0.020**	nd	**0.022**	nd	nd	nd	**0.030**	**0.032**	**0.023**	nd	**0.035**
Lead	mg/L	nd	nd	nd	nd	nd	nd	nd	**0.011**	nd	**0.012**	nd	nd	nd	nd	nd	nd
Molybdenum	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Nickel	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.135**
Selenium	mg/L	**0.58**	**0.14**	**0.35**	**0.053**	**0.065**	**0.066**	**0.044**	**0.027**	**0.042**	**0.053**	nd	**0.023**	**0.02**	**nd**	nd	**0.042**
Thallium	mg/L	**0.14**	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Vanadium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Zinc	mg/L	nd	nd	nd	**0.019**	**0.018**	**0.044**	**0.016**	**0.035**	**0.021**	**0.043**	**0.037**	**0.083**	**0.061**	**0.025**	**0.023**	**0.082**
Silver	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Mercury	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Groundwater Monitoring Well MW-4
Hudson Ranch 1 Brine Pond
Analytical Test Results

Analyte	Units	Nov-11	Jun-12	Nov-12	Apr-13	Oct-13	Apr-14	Oct-14	Apr-15	Oct-15	Apr-16	Oct-16	Apr-17	Oct-17	Apr-18	Oct-18	Apr-19
TPH (Gas)	µg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TPH (Diesel)	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Oil & Grease	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TDS	mg/L	**63,000**	**75,000**	**66,000**	**30,900**	**54,900**	**37,900**	**50,300**	**11,200**	**57,200**	**56,800**	**41,600**	**43,400**	**61,800**	**36,600**	**37,100**	**44,600**
pH	SU	**7.00**	**7.22**	**7.02**	**7.10**	**6.91**	**6.84**	**6.77**	**7.07**	**6.93**	**6.59**	**6.78**	**7.01**	**6.84**	**6.99**	**6.75**	**6.88**
Antimony	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Arsenic	mg/L	nd	**0.14**	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Barium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Beryllium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Cadmium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chromium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Cobalt	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Copper	mg/L	nd	nd	nd	nd	nd	nd	**0.022**	**0.022**	nd	nd	nd	**0.025**	**0.022**	**nd**	nd	**0.027**
Lead	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Molybdenum	mg/L	nd	**0.22**	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.11**
Nickel	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.098**
Selenium	mg/L	**0.52**	**0.30**	**0.40**	**0.067**	**0.077**	**0.079**	**0.058**	**0.074**	**0.053**	**0.071**	**0.042**	**0.039**	**0.039**	**0.041**	**0.048**	**0.062**
Thallium	mg/L	**0.17**	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Vanadium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Zinc	mg/L	nd	nd	nd	nd	nd	**0.017**	nd	**0.021**	nd	**0.020**	**0.040**	**0.082**	**0.033**	**0.022**	**0.014**	**0.02**
Silver	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Mercury	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Groundwater Monitoring Well MW-5
Hudson Ranch 1 Brine Pond
Analytical Test Results

Analyte	Units	Nov-11	Jun-12	Nov-12	Apr-13	Oct-13	Apr-14	Oct-14	Apr-15	Oct-15	Apr-16	Oct-16	Apr-17	Oct-17	Apr-18	Oct-18	Apr-19
TPH (Gas)	µg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TPH (Diesel)	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	**0.634**	nd	nd	nd	nd	nd	nd	nd
Oil & Grease	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TDS	mg/L	**45,000**	**49,000**	**40,000**	**23,800**	**48,900**	**27,400**	**33,900**	**7,740**	**43,000**	**41,400**	**29,100**	**29,900**	**39,500**	**26,500**	**26,500**	**29,700**
pH	SU	**6.60**	**6.83**	**6.39**	**6.86**	**6.46**	**6.56**	**6.28**	**6.49**	**6.50**	**6.48**	**6.45**	**6.38**	**6.53**	**6.64**	**6.52**	**6.61**
Antimony	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Arsenic	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Barium	mg/L	nd	**0.059**	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Beryllium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Cadmium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chromium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Cobalt	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Copper	mg/L	nd	nd	nd	nd	nd	**0.023**	nd	nd	nd	nd	nd	nd	**0.031**	**0.028**	nd	nd
Lead	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Molybdenum	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Nickel	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.086**
Selenium	mg/L	**0.42**	**0.14**	**0.33**	**0.055**	**0.062**	**0.061**	**0.045**	**0.024**	**0.042**	**0.045**	**0.025**	**0.024**	**0.021**	**nd**	**0.026**	**0.025**
Thallium	mg/L	**0.15**	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Vanadium	mg/L	nd	**0.064**	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Zinc	mg/L	nd	nd	**0.20**	**0.011**	**0.014**	**0.030**	**0.022**	**0.039**	**0.015**	**0.044**	**0.041**	**0.055**	**0.032**	**0.031**	**0.023**	**0.028**
Silver	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Mercury	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.0007**

Groundwater Monitoring Well MW-6
Hudson Ranch 1 Brine Pond
Analytical Test Results

Analyte	Units	Nov-11	Jun-12	Nov-12	Apr-13	Oct-13	Apr-14	Oct-14	Apr-15	Oct-15	Apr-16	Oct-16	Apr-17	Oct-17	Apr-18	Oct-18	Apr-19
TPH (Gas)	µg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TPH (Diesel)	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Oil & Grease	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TDS	mg/L	**49,000**	**53,000**	**47,000**	**24,100**	**50,200**	**39,900**	**36,100**	**8,960**	**46,900**	**48,100**	**33,900**	**35,800**	**52,800**	**31,800**	**33,200**	**36,100**
pH	SU	**6.80**	**6.86**	**6.59**	**6.84**	**6.58**	**6.71**	**6.40**	**6.67**	**6.58**	**6.52**	**6.54**	**6.51**	**6.70**	**6.73**	**6.61**	**6.59**
Antimony	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Arsenic	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Barium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Beryllium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Cadmium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chromium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Cobalt	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Copper	mg/L	nd	nd	nd	nd	nd	nd	**0.023**	**0.023**	nd	nd	nd	nd	**0.039**	**0.023**	nd	**0.022**
Lead	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Molybdenum	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Nickel	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.096**
Selenium	mg/L	**0.55**	**0.15**	**0.35**	**0.054**	**0.056**	**0.071**	**0.05**	**0.067**	**0.052**	**0.074**	**0.051**	**0.045**	**0.038**	**0.043**	**0.051**	**0.056**
Thallium	mg/L	**0.10**	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Vanadium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Zinc	mg/L	nd	nd	nd	nd	nd	**0.028**	**0.028**	**0.034**	**0.018**	**0.020**	**0.034**	**0.063**	**0.053**	**0.037**	**0.034**	**0.035**
Silver	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Mercury	mg/L	nd	**0.00020**	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

Groundwater Monitoring Well MW-7
Hudson Ranch 1 Brine Pond
Analytical Test Results

Analyte	Units	Nov-11	Jun-12	Nov-12	Apr-13	Oct-13	Apr-14	Oct-14	Apr-15	Oct-15	Apr-16	Oct-16	Apr-17	Oct-17	Apr-18	Oct-18	Apr-19
TPH (Gas)	μg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TPH (Diesel)	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Oil & Grease	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
TDS	mg/L	**43,000**	**48,000**	**43,000**	**22,800**	**46,900**	**26,800**	**32,700**	**7,730**	**42,500**	**42,500**	**31,100**	**32,100**	**42,300**	**28,400**	**29,700**	**31,700**
pH	SU	**6.90**	**6.83**	**6.59**	**6.85**	**6.54**	**6.64**	**6.32**	**6.56**	**6.52**	**6.54**	**6.59**	**6.69**	**6.47**	**6.65**	**6.59**	**6.61**
Antimony	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Arsenic	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Barium	mg/L	nd	**0.051**	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Beryllium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Cadmium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Chromium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Cobalt	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Copper	mg/L	nd	nd	nd	nd	nd	nd	nd	**0.021**	nd	nd	nd	**0.038**	**0.022**	**nd**	nd	**0.021**
Lead	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Molybdenum	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Nickel	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	**0.088**
Selenium	mg/L	**0.46**	nd	**0.20**	nd	nd	nd	nd	**0.05**	nd	nd	nd	nd	nd	nd	nd	nd
Thallium	mg/L	**0.12**	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Vanadium	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Zinc	mg/L	nd	nd	nd	**0.019**	**0.019**	**0.257**	**0.018**	**0.032**	**0.021**	**0.024**	**0.041**	**0.067**	**0.025**	**0.023**	**0.014**	**0.024**
Silver	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd
Mercury	mg/L	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd	nd

APPENDIX K

GS Lyon

Jeffrey O. Lyon, PE
Principal Engineer

Education

B.S. Civil Engineering (Magna Cum Laude)
California Polytechnic University, Pomona Campus 1978

Registration

Registered Civil Engineer No. 31921, California
Registered Civil Engineer No. 16994, Arizona

Professional Experience

1987 - Present	Principal Engineer Southland Geotechnical, Inc.
1982 - 1987	Principal Engineer Lyon Engineers, Inc.
1978 - 1981	Partner/Senior Engineer Tesco Engineering
1974 - 1977	Survey Party Chief Tesco Engineering
1972 - 1973	Survey Party Chief Lyon & Associates

Summary of Experience

As Principal Engineer, Mr. Lyon is responsible for financial and technical management of all employees in Southland Geotechnical's four branch offices. Mr. Lyon has performed site investigations for residential subdivisions, geogrid-reinforced slopes, shopping centers, military airfields, roadways, administration and office buildings, elementary and high schools, goldmine mill processing facilities, hydro-electric plants, power transmission lines, electrical substations, co-generation power plants and geothermal power plants. He has provided design for drilled piers, driven piles, stone columns and floating (rigid) mats, and has performed seismic risk evaluations, ground shaking analyses, liquefaction studies and liquefaction induced settlements studies. Mr. Lyon has conducted Phase I and Phase II ESA's throughout the Imperial and Coachella Valleys for over 7 years. Mr. Lyon's experience also includes forensic investigations for foundation/structural distress to residential, commercial and educational facilities, and has performed pressure grout stabilization and lifting for distress remediation.

Selected Project Experience

- **Aten Road Improvements, Imperial, CA**

Performed Phase I environmental site assessment for improvements to Aten Road in accordance to CalTrans requirements.

- **Gateway to the Americas, Calexico, CA**

Conducted Phase I ESA, geologic hazards study and geotechnical investigation including liquefaction evaluation for 1,700 acre development associated with new Port of Entry east of Calexico

- **El Centro Magistrate Court, El Centro, CA**

Conducted geotechnical investigation and Phase I ESA for new Federal Magistrate Court building at site with soft soil conditions requiring foundation settlement analysis

- **El Centro Regional Medical Center, El Centro, CA**

Conducted Phase I ESA and geotechnical investigation for 50,000 sf, 2-story addition to the medical center's emergency room, operating rooms, and recovery rooms.

- **Brawley Union High School, Brawley, CA**

Conducted Phase II investigation for PCB and lead contamination of surficial soil and hydrocarbon contamination of subsurface soil of a property proposed for purchase.

- **EW Corporation Site, Westmorland, CA**

Conducted Phase II investigation for hydrocarbon contamination of subsurface soil of a service station site with leaking underground storage tanks prior to property purchase

- **Various Apartment Complexes, Imperial County, CA**

Conducted Phase I environmental investigation at numerous proposed apartment complex site within the Imperial Valley

- **Hwy 98 Improvements, Imperial, CA**

Performed Phase I environmental site assessment for improvements to Hwy 98 for a new intersection in accordance to CalTrans requirements.

Professional Affiliations

American Society of Civil Engineers, Member
American Society of Testing Materials, Member
American Concrete Institute, Certified Examiner
Association of Professional Firms Practicing in the Geosciences, Member

Peter LaBrucherie, PE
Staff Engineer

Education

B.S. Civil Engineering
California Polytechnic University, San Luis Obispo, 2011

M.S. Civil Engineering
California Polytechnic University, San Luis Obispo, 2012

Registration
Professional Engineer C84812, California

Professional Experience

2013 - Present	Staff Engineer GS Lyon, Inc.
2012 - 2013	Project Engineer BNBuilders.

Summary of Experience
As an Environmental Technician, Mr. LaBrucherie performs Phase I Environmental Site Assessments in Imperial County. The scope of work for these assessments typically includes site reconnaissance, review of government records pertaining to previous site uses, and preparation of a report identifying potential environmental risks.

Selected Project Experience

Seville Solar Farm, Westmorland, CA
Conducted Phase I environmental site assessment for solar project located about 9 miles northwest of Westmorland, Ca.

Clean Harbors Facility, Westmorland, CA
Conducted annual reports which included flood diversion, photo documentation and post closure for waste facility located about 5 miles west of Westmorland, Ca.

Ching Properties, Brawley, CA
Conducted Phase I environmental site assessment for vacant property located in Brawley, Ca.

Chelsea - 470 W. Wall Road, Imperial, CA
Conducted Phase I environmental site assessment for vacant property located in Imperial, Ca. Property is being proposed for apartment complex.

1409 E. Alamo Road, Holtville, CA
Conducted Phase I environmental site assessment for property (mostly vacant with some unused shop buildings and abandoned residential home) located west of Holtville, Ca.

BUSD School Site, Brawley, CA
Conducted Phase I environmental site assessment for school site proposal on a vacant property located in south Brawley, Ca.

CR&R Direct Transfer, El Centro, CA
Conducted Phase I environmental site assessment for commercial property (large warehouse and office with large laydown area) located in El Centro, Ca.

Villa Primavera Apartments, Calexico, CA
Conducted Phase I environmental site assessment for vacant property located in Calexico, Ca.

APPENDIX G – HUDSON RANCH GREENHOUSE GAS SCREENING LETTER

Ldn Consulting, Inc.

42428 Chisolm Trail, Murrieta CA 92562
www.ldnconsulting.net

phone 760-473-1253
fax 760-689-4943

June 6, 2021

Jurg Heuberger
c/o EnergySource LLC
409 W. McDonald Rd.
Calipatria, CA 92233

RE: Hudson Ranch Greenhouse Gas (GHG) Screening Letter – County if Imperial

The purpose of this GHG screening letter is to identify potential GHG impacts, if any, which may be created from the construction and operation of the proposed Hudson Ranch Mineral Extraction project. The site is located about 3 miles west-southwest of the community of Niland near the southwest corner of the existing HR1 power plant site, on Imperial County parcel APN 020-100-044 (about 65.12 acres). The proposed ATLiS plant site and associated plant facilities would be built within an existing approximately 37–acre project area, with the addition of the 15 acres located at the southeast corner of Davis Rd. and McDonald Rd. Primary highway access to the proposed plant site will be via State Highway 111.

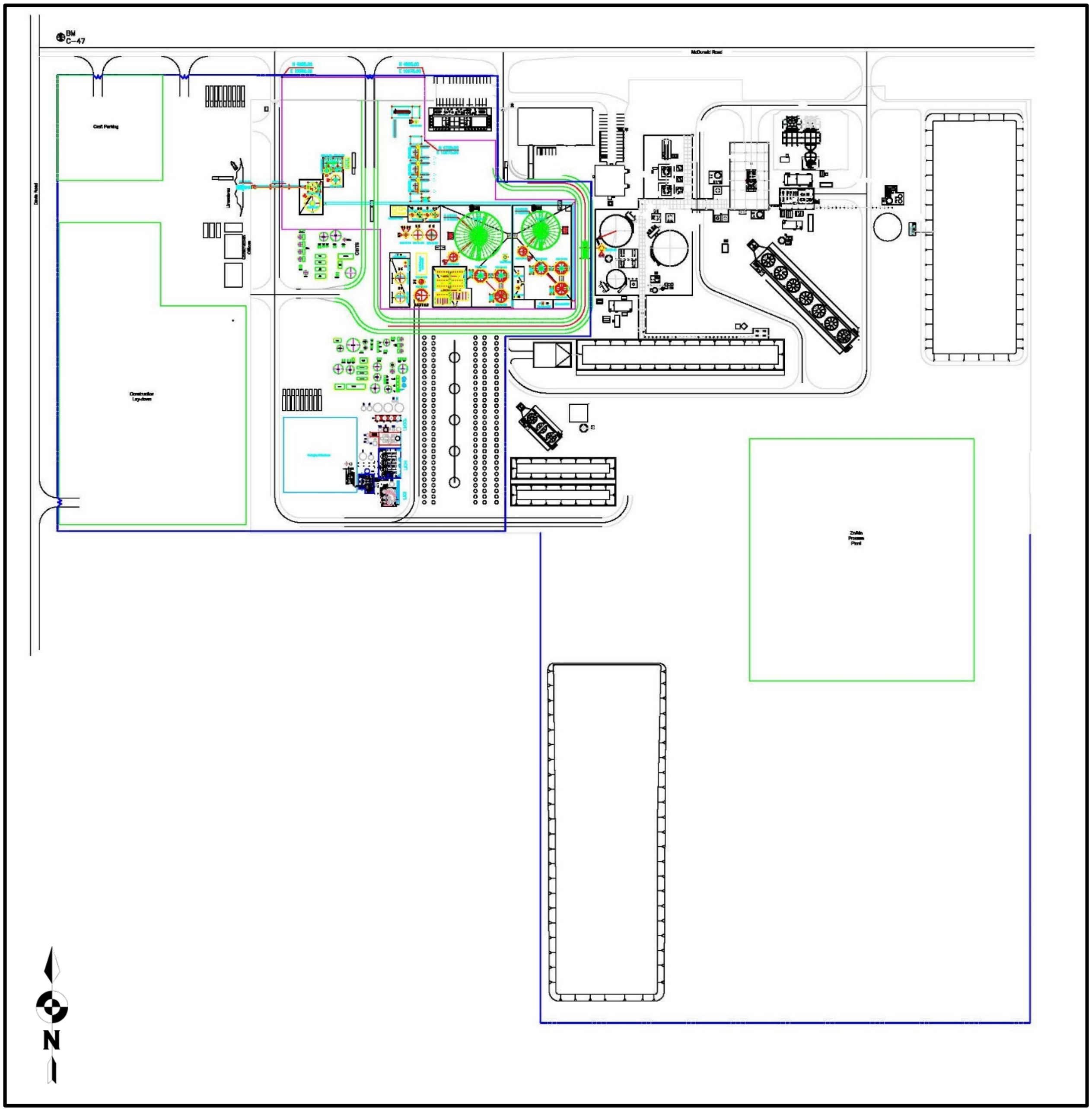
The location of the ATLiS project is on the existing HR 1 site which was previously permitted for the Geothermal Plant. The site is zoned manufacturing (medium industrial) (M2G-PE), and is located entirely within the existing Salton Sea Geothermal Overlay Zone. In addition to the actual power plant, the rest of the land has been used for lay down areas, storage areas and storm water management. The site configuration is provided in Figure 1.

The facility will process geothermal brine from HR1 to produce lithium hydroxide (LiOH), zinc (Zn), and manganese (Mn) products which will be sold commercially. The proposed Project seeks to construct and operate a facility capable of extracting and producing viable lithium (Li), Mn and Zn and other commercially viable substances from geothermal brine. The facility will include a brine supply and return pipeline system and other associated interconnection facilities, infrastructure and systems linking to the HR1 power plant as well as a shipping and receiving area. Additionally, the project would construct a primary access road from McDonald Road as well as an emergency access entrance from Davis Road. Finally, a laydown yard will be constructed with temporary offices which will be utilized during construction.

Jurg Heuberger
c/o EnergySource LLC
409 W. McDonald Rd.
Calipatria, CA 92233

Ldn Consulting, Inc.
42428 Chisolm Trail, Murrieta CA 92562
phone 760-473-1253
Fax 760-689-4943

Figure 1: Project Area Overview Map



Source: (Energy Source LLC, 2020)

Based on discussions with the Project applicant, the total combined facility area is not known at this time but would be expected to be no more than 100,000 square Feet (SF) also, paving quantities are not known at this time but would be expected to be less than 10 acres of asphalt and includes paving McDonald Road from SR-111 to English Road. The ATLiS plant site will include construction of the following buildings and structures:

- Plant offices (which will house offices and meeting rooms) [Note: offices for both plants may be incorporated into one building].
- Operations and employee facilities (which will house offices for supervisors, meeting rooms, breakroom/lunchroom, locker/shower rooms); [Note: these may all be in one building with the main offices]
- Maintenance shop, materials warehouse (which will house plant maintenance equipment and supplies, and shops such as machine, paint, welding and electronic);
- Materials warehouse (which will store equipment, reagents, etc.);
- Electrical building(s) (which will house motor control centers, electric power switchgear and metering to provide power for plant operations);
- Emergency generator building;
- Two reagent storage and preparation buildings;
- Chemical laboratory building (which will contain a wet chemistry laboratory and analytical instruments for analysis of in-process and finished products);
- Filter press sheds (which will house filter presses. Li product production building (which will house the proprietary technology for manufacturing the lithium carbonate and lithium hydroxide products);
- Li product handling, packaging and warehouse buildings (which will house the filtration and drying equipment for the Li products and bagging and palletizing of finished products);
- Manganese product handling, production, and warehouse building (which will house the filtration and drying equipment for the Mn product and bagging and palletizing of finished products);
- Zn product handling, production, and warehouse building (which will house the filtration and drying equipment for the Zn product and bagging and palletizing and storage of finished products);
- Calcium oxide (CaO) silo and slacker;
- Limestone stockpile and solution tanks
- HCL offloading and storage tank(s)
- Gate (guard) house; and
- Cooling tower
- The sewage from this plant will be processed by the HR 1 sewer treatment plant, hence no further permitting is required.

Production Plant Operations

The ATLiS plant will utilize post-secondary clarifier brine produced from the geothermal fluid management activities on the neighboring HR1 power plant site as the resource process stream for the commercial production of LiOH, Zn and Mn products.

Impurity Removal

Post heat extraction geothermal brine from the secondary clarifier of the HR1 power plant site will be transported via pipeline to the impurity removal process area on the ATLiS plant site. A nominal 7,000 gallons per minute (gpm) of the brine will be processed by the facility. This process rate is used as the basis for the estimates provided throughout this Project description, but the actual rate of brine eventually processed on the site will be optimized to take advantage of the available facilities on the HR1 and ATLiS plant sites.

Iron (Fe) and silica (SiO_2) will be removed from the brine followed by the removal of the Mn and Zn in a two-stage process. The separated Fe-SiO_2 material, and the Mn-Zn material will be dewatered in the Filter Press sheds. The mineral depleted brine will then be transported via pipeline to the Li Extraction process area.

The separated Fe-SiO_2 material will be initially managed as a waste stream. The waste material will be collected and analyzed in conformance with appropriate laboratory testing protocols to ensure that it is handled and disposed of in an appropriate manner. If and when in the future, opportunities exist to use this material, ATLiS plans to market iron-silica material as an additional product(s) to be shipped to a third party(ies) for use in other industrial processes. Based on average production rates at the target nominal process rate of 7,000 gpm, approximately 136,200 metric tons of iron-silica material will be produced annually.

Lithium Chloride Extraction

The treated brine will be fed to a Li extraction process located within the Li Extraction process area on the ATLiS plant site. This area will be outside on a concrete pad. The area will contain proprietary Li extraction media. Li from the brine will be retained on the extraction media. A lithium chloride (LiCl) product stream will be produced from the extraction process. The LiCl will be transported via pipeline from the Li Extraction area into the Li Purification process area. Impurities will be removed from the LiCl product stream and handled as nonhazardous waste. The purified LiCl will then be concentrated and transported via pipeline to a Li Product

Production Building where the materials will be processed into a usable product which will consist of a packaged palletized unit ready of shipping.

The dried Li products will be packaged, palletized, staged, and loaded into trucks for distribution in the Li Product Handling, Production and Warehouse buildings. The dried Li products will be loaded into bulk bags in a bagging station. Packaging is expected to be 1,000 kg super sacks.

Extraction of Zink and Manganese

Zn/Mn filter cake will be acid leached, separated and purified int a two-part solvent extraction process. The separated steams will each then be dried and packaged for further processing by others.

Manganese Extraction and Processing

The SiO_2-, -Fe -depleted brine from the impurity removal process will be transported to the Mn Extraction and Production Area. Mn will be precipitated from the brine into Mn oxides/hydroxides by adding reagents, then dewatered in filter presses into wet cake product. The products will be transported to the Mn Product Handling, Production and Warehouse building for further handling, packaging, and offsite shipment to market.

Product Shipping to Offsite Markets

The ATLiS plant may produce multiple products for offsite shipment to market by truck. The average annual amount of product shipped out of the plant is estimated at 19,000 metric tons of Li product 10,000 to 20,000 metric tons of Zn product(s), and up to 60,000 metric tons of Mn product(s), Products will be transported by freight truck on existing roadways to shipping distribution point(s). Other products of the production operations may be generated by the proprietary technology on the plant site and would also be shipped offsite to market by truck.

Construction

Construction activities for the project would occur over a two year period starting in 2021 and completing in 2023. The worst case construction schedule is shown in Table 1. GHG impacts related to construction and daily operations were calculated using the latest CalEEMod 2016.3.2 air quality model, which was developed by BREEZE Software for South Coast Air Quality Management District (SCAQMD) in 2017. The project construction model is provided as **Attachment A** to this letter.

Table 1: Expected Construction Equipment

Equipment Identification	Proposed Start	Proposed Complete	Quantity
Demolition	03/01/2021	03/12/2021	
Concrete/Industrial Saws			1
Excavators			3
Rubber Tired Dozers			2
Grading	03/01/2021	05/07/2021	
Graders			1
Off-Highway Trucks			7
Rollers			1
Rubber Tired Dozers			2
Scrapers			4
Tractors/Loaders/Backhoes			1
Building Construction	04/12/2021	04/07/2023	
Aerial Lifts			7
Air Compressors			4
Bore/Drill Rigs			1
Cranes			7
Excavators			2
Forklifts			7
Generator Sets			4
Off-Highway Trucks			1
Tractors/Loaders/Backhoes			13
Welders			1
Trenching	04/19/2021	10/08/2021	
Excavators			2
Off-Highway Trucks			3
Rollers			1
Skid Steer Loaders			1
Tractors/Loaders/Backhoes			3
Paving	09/30/2022	03/10/2023	
Graders			2
Pavers			1
Rollers			2
Rubber Tired Dozers			2
Tractors/Loaders/Backhoes			3
Architectural Coating	12/05/2022	03/31/2023	
Air Compressors			1

Operations

Based on the projected traffic volumes estimated by the Project Traffic Engineer, the proposed project would generate as much as 104 regular employee and miscellaneous average daily trips (ADT) and as many as 30 ADT truck trips without correcting for passenger car equivalence (PCE) once fully operational (LLG Engineers, 2020). The first full year of operations is expected in 2024 which is used for the basis of this analysis.

Operational air quality emission sources would include area sources such as landscaping, consumer products and architectural coatings during maintenance, energy sources from electrical usage, mobile sources from vehicular traffic to include trucks and passenger vehicles, solid waste from trash generation, and water uses, which are calculated within CalEEMod. Additionally, the project would purchase and use two propane powered forklifts each with rated less than 50 HP onsite. These units were also modeled within CalEEMod. Area Sources include landscaping and architectural coatings as part of regular maintenance. Energy sources would be from uses such as electricity and natural gas usage though Natural Gas usage onsite is not expected or being delivered to the site.

The project operations are both energy and water intensive and would consume 51,840 Mega Watt Hours (MWH) of electricity and 3,400 Acre Feet of water as disclosed by the project applicant. The water will be then pumped back into the Geothermal wells. CalEEMod was manually updated to include these inputs. Water will be supplied from Imperial Irrigation District canals. Utilizing CalEEMod 2016.3.2 A GHG operational model was prepared for these trip quantities and scenario and is also shown as **Attachment A** to this report.

The largest source of GHG emissions for this project would be from both water pumping and electrical usage which ultimately comes from offsite electrical resources. The project will receive electricity and water from the Imperial Irrigation District (IID). The State of California requires that utility providers provide renewable energy to their customers. Based on Senate Bill (SB) X1-2 and SB 350 make up what is known as the Renewable Portfolio Standards (RPS). Under the law, utility providers are required to maintain up to a 33% RPS in 2020 and up to 60% RPS in 2030. IID provides achieved a 48.8% RPS in 2020. In order to achieve a 60% RPS requirement by 2030, the project will require adding at least 1.12% per year.

GHG Regulations

The State of California Greenhouse Gas laws are based on the "the California Global Warming Solutions Act of 2006" (AB32), requires the California Air Resources Board (CARB) to adopt rules and regulations that would reduce GHG emissions to 1990 levels by 2020 and is outlined by the California Air Resource Board (ARB) (California Air Resource Board, 2014). As part of AB32 (Section 38562-A), the state board shall adopt greenhouse gas emission limits and emission reduction measures before January 1, 2011 and enforce these measures starting January 1, 2012. Currently, greenhouse gas emission limits for industrial projects such as the proposed project, have not been adopted by the State or Imperial County.

The California Air Pollution Control Officers Association (CAPCOA) published a white paper which suggested screening criteria of 900 metric tons (MT) of GHGs (CAPCOA, 2010). Projects creating more than 900 metric tons of GHGs generally are considered significant and would require reduction measures from business as usual with a goal of 28.3%. For purposes of this analysis in Imperial County, these screening and reduction thresholds will be utilized.

Greenhouse Gasses contributed from the proposed project are Carbon Dioxide (CO_2), Methane (CH_4), and Nitrous Oxide (N_2O). For purposes of analysis, both CH_4 and N_2O can be converted to an equivalent amount of CO_2 (CO_2e) by multiplying the calculated levels of CH_4 and N_2O by a Global Warming Potential (GWP). The U.S. Environmental Protection Agency publishes GWPs for various GHGs and reports that the GWP for CH_4 and N_2O is 21 and 310, respectively.

In addition, ICAPCD has a potential to emit rule (Rule 903) which as it pertains to GHG emissions would require additional notification requirements for stationary sources whenever a project exceeds 100 MT without considering global warming potential (ICAPCD, 2011). Should this rule be exceeded, the additional requirements will be discussed.

Project Related Construction Emissions

Construction activities for the project would occur over a two year timeframe. Utilizing the CalEEMod inputs for the model as discussed above, grading and construction of the Project will produce approximately 8,043.37 MT of CO_2e. Based on SQAQMD methodology, it is recommended to average the construction emissions over the Project life, which is assumed to be 30 years (SCAQMD, 2008). Given this, the annual construction emission for the proposed Project is 218.66 MT of CO_2e per year and is shown in Table 2.

Table 2: Proposed Project Construction CO_2e Emissions Summary MT/Year

Year	Bio-CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
2021	0.00	3,329.28	3,329.28	0.71	0.00	3,346.92
2022	0.00	3,613.71	3,613.71	0.67	0.00	3,630.35
2023	0.00	1,061.10	1,061.10	0.20	0.00	1,066.10
Total						**8,043.37**
Yearly Average Construction Emissions (Metric Tons/year over 30 years)						**268.11**

Project Related Operational Emissions

Based on the CalEEMod analysis, the proposed Project buildout would generate 16,651 MT CO_2e annually, which is shown in Table 3. These emissions include the design as identified within this report and assume all emissions are offset with renewable sources. The emissions generated do not Exceed the US EPAs reporting thresholds and would therefore not be required to annually report GHGs to the EPA. The project would exceed the 900 MT GHG screening threshold and is required to show at least a 28.3% reduction over BAU.

Table 3: Operational GHG Emissions (MT/Year)

Source	Bio-CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e (MT/Yr)
Area	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	13,961.81	13,961.81	0.33	0.07	13,991.06
Mobile	0.00	415.54	415.54	0.02	0.00	416.03
Onsite Forklifts	0.00	30.69	30.69	0.01	0.00	30.94
Stationary Emissions	0.00	20.17	20.17	0.00	0.00	20.24
Waste	14.60	0.00	14.60	0.86	0.00	36.17
Water	351.48	379.54	731.03	36.11	0.85	1,888.36
Construction Emissions						268.11
Project Total GHG Emissions						**16,650.91**
Data is presented in decimal format and may have rounding errors.						

BAU emissions for the operational year of 2024 would be appropriate. As can be seen from GHG emissions in Table 3 almost all GHG emissions are from energy usage which is entirely electrical and water conveyance which is also dependent on offsite electrical generation. Under the BAU setting it would be appropriate to utilize default IID electrical energy intensities. Table 4 below shows what emissions in 2024 would be without RPS. The model is shown as **Attachment B** to this report.

Table 4: BAU Operational GHG Emissions (MT/Year)

Source	Bio-CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e (MT/Yr)
Area	0.00	0.00	0.00	0.00	0.00	0.00
Energy	0.00	29,884.23	29,884.23	0.68	0.14	29,943.32
Mobile	0.00	415.54	415.54	0.02	0.00	416.03
Onsite Forklifts	0.00	30.69	30.69	0.01	0.00	30.94
Stationary Emissions	0.00	20.17	20.17	0.00	0.00	20.24
Waste	14.60	0.00	14.60	0.86	0.00	36.17
Water	351.48	812.39	1,163.87	36.12	0.86	2,322.02
Construction Emissions						268.11
Project (BAU) Total GHG Emissions						**32,987**
Proposed Project Emissions						**16,651**
Difference						**16,386**
Percentage Reduction over BAU (%)						**49.5**
Data is presented in decimal format and may have rounding errors.						

Based on these findings, the project would have a 49.5 percent reduction in GHG emissions when compared to the BAU scenario without RPS. Since a 28.3% reduction is required, a less than significant GHG impact is expected. Furthermore, the stationary sources would not exceed 100 MT of GHGs and would not require additional notification with respect to ICAPCD Rule 903. Finally, the proposed project has been developed to be consistent with the existing site zoning designation for industrial uses. If you have any questions, please do not hesitate to contact me directly at (760) 473-1253.

Sincerely,
Ldn Consulting, Inc.

Jeremy Louden

Attachment A: CalEEMod Model Results (Proposed Project)
Attachment B: CalEEMod Model Results (BAU)

References:

California Air Resource Board. (2014, August 5). *Assembly Bill 32 Overview*. Retrieved 2016, from http://www.arb.ca.gov/: http://www.arb.ca.gov/cc/ab32/ab32.htm

CAPCOA. (2010). *www.CAPCOA.ORG*. Retrieved 2016, from http://capcoa.org/wp-content/uploads/downloads/2010/05/CAPCOA-White-Paper.pdf

Energy Source LLC. (2020). *Altis Project Site Layout.*

ICAPCD. (2011). *Rule 903 Potential to Emit.* Retrieved from https://apcd.imperialcounty.org/wp-content/uploads/2020/05/1RULE903.pdf

LLG Engineers. (2020). *TRANSPORTATION IMPACT ANALYSIS - HUDSON RANCH MINERAL RECOVERY.*

SCAQMD. (2008). Interim CEQA GHG Significance Threshold for Stationary. Retrieved from http://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/ghgboardsynopsis.pdf?sfvrsn=2

Hudson Ranch Minerals
Imperial County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	100.00	1000sqft	27.00	100,000.00	0
Other Asphalt Surfaces	10.00	Acre	10.00	435,600.00	0
Other Non-Asphalt Surfaces	15.00	Acre	15.00	653,400.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	12
Climate Zone	15			**Operational Year**	2024
Utility Company	Imperial Irrigation District				
CO2 Intensity (lb/MWhr)	593.76	**CH4 Intensity (lb/MWhr)**	0.014	**N2O Intensity (lb/MWhr)**	0.003

1.3 User Entered Comments & Non-Default Data

Project Characteristics - https://www.iid.com/energy/renewable-energy 2020 48.8% RPS since 2030. To meet 2030 60% requirement, IID will add 11.2% by 2030 (48.8+11.2=60) or 1.12% per year (1.12%*10 years = 11.2%. For 2024 the IID Renewable should be 53.3%

Land Use - 37 acre construction site and 15 acre laydown area

Construction Phase - Construction dates estimated by Project Enegineer

Off-road Equipment - Equipment List provided by project applicant

Off-road Equipment - Equipment List provided by project applicant

Off-road Equipment - Equipment List provided by project applicant

Off-road Equipment - Equipment List provided by project applicant

Off-road Equipment - Equipment List provided by project applicant

Off-road Equipment - Equipment List provided by project applicant

Trips and VMT -

On-road Fugitive Dust - Trips use 111 and McDonald all paved except 2 miles at McDonald. prior to const. this area will be improved with 12-18" base and would have dedicated water truck. The City wants to wait to pave McDonald till contruction is complete.

Demolition -

Grading -

Architectural Coating -

Vehicle Trips - Trip Gen for Operations per TS excludes PCE adjustments 134 ADT

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Road Dust - Roadways are paved

Woodstoves -

Area Coating -

Energy Use - Energy Use - Project would consume 51,840 MWH per year

Water And Wastewater - Project will use 3,400 afy of water from IID canals.

Construction Off-road Equipment Mitigation - T4 Equipment

Operational Off-Road Equipment - 2 forklifts less than 50HP will be used onsite

Fleet Mix - Truck Trips would be 22%. Remainder of vehicles would be Passenger Cars

Stationary Sources - Emergency Generators and Fire Pumps - 50 hours per year on average would be used 80 hours on average assumed

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	11.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	20.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
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tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	70.00	10.00
tblConstructionPhase	NumDays	110.00	50.00
tblConstructionPhase	NumDays	1,110.00	520.00
tblConstructionPhase	NumDays	75.00	116.00
tblConstructionPhase	NumDays	75.00	85.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	NT24E	5.02	518.40
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24NG	15.36	0.00
tblFleetMix	HHD	0.12	0.22
tblFleetMix	LDA	0.52	0.38
tblFleetMix	LDT1	0.03	0.15
tblFleetMix	LDT2	0.16	0.10
tblFleetMix	LHD1	0.01	0.00
tblFleetMix	LHD2	4.6900e-003	0.00
tblFleetMix	MCY	5.2480e-003	0.00
tblFleetMix	MDV	0.11	0.15
tblFleetMix	MH	6.0000e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	3.6150e-003	0.00
tblFleetMix	SBUS	7.2500e-004	0.00
tblFleetMix	UBUS	1.2560e-003	0.00

tblLandUse	LotAcreage	2.30	27.00
tblOffRoadEquipment	HorsePower	84.00	15.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	7.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	7.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	13.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00

tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	365.00
tblOperationalOffRoadEquipment	OperFuelType	Diesel	CNG
tblOperationalOffRoadEquipment	OperHorsePower	89.00	50.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	2.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.014
tblProjectCharacteristics	CO2IntensityFactor	1270.9	593.76
tblProjectCharacteristics	N2OIntensityFactor	0.006	0.003
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	RoadPercentPave	50	100
tblSolidWaste	SolidWasteGenerationRate	124.00	71.92
tblVehicleTrips	ST_TR	1.50	1.34
tblVehicleTrips	SU_TR	1.50	1.34
tblVehicleTrips	WD_TR	1.50	1.34
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	IndoorWaterUseRate	23,125,000.00	1,107,894,868.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	2.0102	18.2276	15.9194	0.0374	1.0174	0.7452	1.7627	0.3406	0.6957	1.0363	0.0000	3,329.2781	3,329.2781	0.7059	0.0000	3,346.9263
2022	2.2233	17.5456	17.1288	0.0405	0.7919	0.6863	1.4782	0.2165	0.6434	0.8599	0.0000	3,613.7094	3,613.7094	0.6658	0.0000	3,630.3535
2023	1.2800	4.7132	5.0332	0.0119	0.2393	0.1841	0.4234	0.0652	0.1723	0.2375	0.0000	1,061.1026	1,061.1026	0.1998	0.0000	1,066.0982
Maximum	**2.2233**	**18.2276**	**17.1288**	**0.0405**	**1.0174**	**0.7452**	**1.7627**	**0.3406**	**0.6957**	**1.0363**	**0.0000**	**3,613.7094**	**3,613.7094**	**0.7059**	**0.0000**	**3,630.3535**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.7511	4.5156	18.1655	0.0374	0.7820	0.0507	0.8326	0.2418	0.0502	0.2920	0.0000	3,329.2754	3,329.2754	0.7059	0.0000	3,346.9236
2022	1.0743	5.2798	19.2467	0.0405	0.7919	0.0509	0.8428	0.2165	0.0503	0.2668	0.0000	3,613.7067	3,613.7067	0.6658	0.0000	3,630.3508
2023	0.9580	1.2655	5.7387	0.0119	0.2393	0.0141	0.2533	0.0652	0.0139	0.0791	0.0000	1,061.1018	1,061.1018	0.1998	0.0000	1,066.0974
Maximum	**1.0743**	**5.2798**	**19.2467**	**0.0405**	**0.7919**	**0.0509**	**0.8428**	**0.2418**	**0.0503**	**0.2920**	**0.0000**	**3,613.7067**	**3,613.7067**	**0.7059**	**0.0000**	**3,630.3508**

	ROG	NOx	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	**49.52**	**72.68**	**-13.31**	**0.00**	**11.49**	**92.84**	**47.36**	**15.87**	**92.43**	**70.10**	**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)
2	**1-28-2021**	**4-27-2021**	3.7013	0.5684
3	**4-28-2021**	**7-27-2021**	6.6029	1.7903
4	**7-28-2021**	**10-27-2021**	6.0142	1.7271
5	**10-28-2021**	**1-27-2022**	4.9995	1.5612
6	**1-28-2022**	**4-27-2022**	4.4746	1.4794
7	**4-28-2022**	**7-27-2022**	4.5258	1.4973
8	**7-28-2022**	**10-27-2022**	5.0021	1.5506
9	**10-28-2022**	**1-27-2023**	6.2269	2.0141
10	**1-28-2023**	**4-27-2023**	4.1560	1.5589
		Highest	6.6029	2.0141

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	0.5533	1.0000e-005	1.1500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2300e-003	2.2300e-003	1.0000e-005	0.0000	2.3800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	13,961.8083	13,961.8083	0.3292	0.0705	13,991.0600
Mobile	0.0762	0.7252	1.0493	4.4600e-003	0.2462	1.8600e-003	0.2481	0.0659	1.7400e-003	0.0676	0.0000	415.5387	415.5387	0.0195	0.0000	416.0257
Offroad	0.0446	0.2600	0.3276	3.5000e-004		0.0131	0.0131		0.0120	0.0120	0.0000	30.6882	30.6882	9.9300e-003	0.0000	30.9364
Stationary	0.0435	0.1234	0.1152	2.1000e-004		6.9900e-003	6.9900e-003		6.9900e-003	6.9900e-003	0.0000	20.1670	20.1670	2.8300e-003	0.0000	20.2377
Waste						0.0000	0.0000		0.0000	0.0000	14.5991	0.0000	14.5991	0.8628	0.0000	36.1687
Water						0.0000	0.0000		0.0000	0.0000	351.4839	379.5442	731.0281	36.1097	0.8543	1,888.3629
Total	**0.7175**	**1.1086**	**1.4932**	**5.0200e-003**	**0.2462**	**0.0219**	**0.2682**	**0.0659**	**0.0208**	**0.0866**	**366.0830**	**14,807.7486**	**15,173.8317**	**37.3340**	**0.9249**	**16,382.7938**

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	0.5533	1.0000e-005	1.1500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2300e-003	2.2300e-003	1.0000e-005	0.0000	2.3800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	13,961.8083	13,961.8083	0.3292	0.0705	13,991.0600
Mobile	0.0762	0.7252	1.0493	4.4600e-003	0.2462	1.8600e-003	0.2481	0.0659	1.7400e-003	0.0676	0.0000	415.5387	415.5387	0.0195	0.0000	416.0257
Offroad	0.0446	0.2600	0.3276	3.5000e-004		0.0131	0.0131		0.0120	0.0120	0.0000	30.6882	30.6882	9.9300e-003	0.0000	30.9364
Stationary	0.0435	0.1234	0.1152	2.1000e-004		6.9900e-003	6.9900e-003		6.9900e-003	6.9900e-003	0.0000	20.1670	20.1670	2.8300e-003	0.0000	20.2377
Waste						0.0000	0.0000		0.0000	0.0000	14.5991	0.0000	14.5991	0.8628	0.0000	36.1687
Water						0.0000	0.0000		0.0000	0.0000	351.4839	379.5442	731.0281	36.1097	0.8543	1,888.3629
Total	**0.7175**	**1.1086**	**1.4932**	**5.0200e-003**	**0.2462**	**0.0219**	**0.2682**	**0.0659**	**0.0208**	**0.0866**	**366.0830**	**14,807.7486**	**15,173.8317**	**37.3340**	**0.9249**	**16,382.7938**

	ROG	**NOx**	**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	3/1/2021	3/12/2021	5	10	
2	Grading	Grading	3/1/2021	5/7/2021	5	50	
3	Building Construction	Building Construction	4/12/2021	4/7/2023	5	520	
4	trenching	Trenching	4/19/2021	10/8/2021	5	125	
5	Paving	Paving	9/30/2022	3/10/2023	5	116	
6	Architectural Coating	Architectural Coating	12/5/2022	3/31/2023	5	85	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 225

Acres of Paving: 25

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 150,000; Non-Residential Outdoor: 50,000; Striped Parking Area: 65,340 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Graders	1	8.00	187	0.41
Grading	Off-Highway Trucks	7	8.00	402	0.38
Grading	Rollers	1	8.00	80	0.38
Grading	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Scrapers	4	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Aerial Lifts	7	8.00	63	0.31

Building Construction	Air Compressors	4	8.00	78	0.48
Building Construction	Bore/Drill Rigs	1	8.00	221	0.50
Building Construction	Cranes	7	7.00	231	0.29
Building Construction	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	7	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	15	0.74
Building Construction	Generator Sets	4	8.00	84	0.74
Building Construction	Graders	1	8.00	187	0.41
Building Construction	Off-Highway Trucks	1	8.00	402	0.38
Building Construction	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	13	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
trenching	Excavators	2	8.00	158	0.38
trenching	Off-Highway Trucks	3	8.00	402	0.38
trenching	Rollers	1	8.00	80	0.38
trenching	Skid Steer Loaders	1	8.00	65	0.37
trenching	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Graders	2	8.00	187	0.41
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Paving	Rubber Tired Dozers	2	8.00	247	0.40
Paving	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	68.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	16	40.00	0.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	50	499.00	195.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
trenching	10	25.00	0.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	10	25.00	0.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	100.00	0.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

Water Unpaved Roads

Reduce Vehicle Speed on Unpaved Roads

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.6700e-003	0.0000	7.6700e-003	1.1600e-003	0.0000	1.1600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0158	0.1572	0.1078	1.9000e-004		7.7600e-003	7.7600e-003		7.2100e-003	7.2100e-003	0.0000	17.0004	17.0004	4.7800e-003	0.0000	17.1200
Total	**0.0158**	**0.1572**	**0.1078**	**1.9000e-004**	**7.6700e-003**	**7.7600e-003**	**0.0154**	**1.1600e-003**	**7.2100e-003**	**8.3700e-003**	**0.0000**	**17.0004**	**17.0004**	**4.7800e-003**	**0.0000**	**17.1200**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7000e-004	7.4400e-003	1.0400e-003	3.0000e-005	5.9000e-004	2.0000e-005	6.1000e-004	1.6000e-004	2.0000e-005	1.8000e-004	0.0000	2.4712	2.4712	1.0000e-004	0.0000	2.4737
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-004	4.1000e-004	3.6800e-003	1.0000e-005	5.8000e-004	0.0000	5.8000e-004	1.5000e-004	0.0000	1.6000e-004	0.0000	0.4646	0.4646	3.0000e-005	0.0000	0.4654
Total	**6.7000e-004**	**7.8500e-003**	**4.7200e-003**	**4.0000e-005**	**1.1700e-003**	**2.0000e-005**	**1.1900e-003**	**3.1000e-004**	**2.0000e-005**	**3.4000e-004**	**0.0000**	**2.9358**	**2.9358**	**1.3000e-004**	**0.0000**	**2.9392**

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					3.4500e-003	0.0000	3.4500e-003	5.2000e-004	0.0000	5.2000e-004	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.3100e-003	0.0100	0.1164	1.9000e-004		3.1000e-004	3.1000e-004		3.1000e-004	3.1000e-004	0.0000	17.0004	17.0004	4.7800e-003	0.0000	17.1200
Total	**2.3100e-003**	**0.0100**	**0.1164**	**1.9000e-004**	**3.4500e-003**	**3.1000e-004**	**3.7600e-003**	**5.2000e-004**	**3.1000e-004**	**8.3000e-004**	**0.0000**	**17.0004**	**17.0004**	**4.7800e-003**	**0.0000**	**17.1200**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7000e-004	7.4400e-003	1.0400e-003	3.0000e-005	5.9000e-004	2.0000e-005	6.1000e-004	1.6000e-004	2.0000e-005	1.8000e-004	0.0000	2.4712	2.4712	1.0000e-004	0.0000	2.4737
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-004	4.1000e-004	3.6800e-003	1.0000e-005	5.8000e-004	0.0000	5.8000e-004	1.5000e-004	0.0000	1.6000e-004	0.0000	0.4646	0.4646	3.0000e-005	0.0000	0.4654
Total	**6.7000e-004**	**7.8500e-003**	**4.7200e-003**	**4.0000e-005**	**1.1700e-003**	**2.0000e-005**	**1.1900e-003**	**3.1000e-004**	**2.0000e-005**	**3.4000e-004**	**0.0000**	**2.9358**	**2.9358**	**1.3000e-004**	**0.0000**	**2.9392**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4204	0.0000	0.4204	0.1784	0.0000	0.1784	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2720	2.7836	1.6808	4.5600e-003		0.1125	0.1125		0.1035	0.1035	0.0000	400.8097	400.8097	0.1296	0.0000	404.0505
Total	**0.2720**	**2.7836**	**1.6808**	**4.5600e-003**	**0.4204**	**0.1125**	**0.5329**	**0.1784**	**0.1035**	**0.2819**	**0.0000**	**400.8097**	**400.8097**	**0.1296**	**0.0000**	**404.0505**

3.3 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.7200e-003	5.4200e-003	0.0490	7.0000e-005	7.7000e-003	5.0000e-005	7.7500e-003	2.0400e-003	4.0000e-005	2.0900e-003	0.0000	6.1942	6.1942	4.6000e-004	0.0000	6.2058
Total	**6.7200e-003**	**5.4200e-003**	**0.0490**	**7.0000e-005**	**7.7000e-003**	**5.0000e-005**	**7.7500e-003**	**2.0400e-003**	**4.0000e-005**	**2.0900e-003**	**0.0000**	**6.1942**	**6.1942**	**4.6000e-004**	**0.0000**	**6.2058**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1892	0.0000	0.1892	0.0803	0.0000	0.0803	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0559	0.2424	2.0950	4.5600e-003		7.4600e-003	7.4600e-003		7.4600e-003	7.4600e-003	0.0000	400.8093	400.8093	0.1296	0.0000	404.0500
Total	**0.0559**	**0.2424**	**2.0950**	**4.5600e-003**	**0.1892**	**7.4600e-003**	**0.1966**	**0.0803**	**7.4600e-003**	**0.0877**	**0.0000**	**400.8093**	**400.8093**	**0.1296**	**0.0000**	**404.0500**

3.3 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.7200e-003	5.4200e-003	0.0490	7.0000e-005	7.7000e-003	5.0000e-005	7.7500e-003	2.0400e-003	4.0000e-005	2.0900e-003	0.0000	6.1942	6.1942	4.6000e-004	0.0000	6.2058
Total	**6.7200e-003**	**5.4200e-003**	**0.0490**	**7.0000e-005**	**7.7000e-003**	**5.0000e-005**	**7.7500e-003**	**2.0400e-003**	**4.0000e-005**	**2.0900e-003**	**0.0000**	**6.1942**	**6.1942**	**4.6000e-004**	**0.0000**	**6.2058**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1089	11.0580	9.3630	0.0178		0.5361	0.5361		0.5030	0.5030	0.0000	1,550.5535	1,550.5535	0.4044	0.0000	1,560.6641
Total	**1.1089**	**11.0580**	**9.3630**	**0.0178**		**0.5361**	**0.5361**		**0.5030**	**0.5030**	**0.0000**	**1,550.5535**	**1,550.5535**	**0.4044**	**0.0000**	**1,560.6641**

3.4 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0833	2.1556	0.6006	7.3500e-003	0.2032	6.3400e-003	0.2096	0.0586	6.0700e-003	0.0646	0.0000	697.3340	697.3340	0.0303	0.0000	698.0903
Worker	0.3184	0.2570	2.3239	3.2700e-003	0.3652	2.2800e-003	0.3675	0.0969	2.1000e-003	0.0990	0.0000	293.6381	293.6381	0.0220	0.0000	294.1870
Total	**0.4017**	**2.4126**	**2.9245**	**0.0106**	**0.5684**	**8.6200e-003**	**0.5771**	**0.1555**	**8.1700e-003**	**0.1636**	**0.0000**	**990.9721**	**990.9721**	**0.0522**	**0.0000**	**992.2773**

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	0.2227	1.5509	10.6370	0.0178		0.0276	0.0276		0.0276	0.0276	0.0000	1,550.5517	1,550.5517	0.4044	0.0000	1,560.6622
Total	**0.2227**	**1.5509**	**10.6370**	**0.0178**		**0.0276**	**0.0276**		**0.0276**	**0.0276**	**0.0000**	**1,550.5517**	**1,550.5517**	**0.4044**	**0.0000**	**1,560.6622**

3.4 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0833	2.1556	0.6006	7.3500e-003	0.2032	6.3400e-003	0.2096	0.0586	6.0700e-003	0.0646	0.0000	697.3340	697.3340	0.0303	0.0000	698.0903
Worker	0.3184	0.2570	2.3239	3.2700e-003	0.3652	2.2800e-003	0.3675	0.0969	2.1000e-003	0.0990	0.0000	293.6381	293.6381	0.0220	0.0000	294.1870
Total	**0.4017**	**2.4126**	**2.9245**	**0.0106**	**0.5684**	**8.6200e-003**	**0.5771**	**0.1555**	**8.1700e-003**	**0.1636**	**0.0000**	**990.9721**	**990.9721**	**0.0522**	**0.0000**	**992.2773**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.3553	13.1856	12.5783	0.0244		0.6177	0.6177		0.5800	0.5800	0.0000	2,122.4353	2,122.4353	0.5517	0.0000	2,136.2273
Total	**1.3553**	**13.1856**	**12.5783**	**0.0244**		**0.6177**	**0.6177**		**0.5800**	**0.5800**	**0.0000**	**2,122.4353**	**2,122.4353**	**0.5517**	**0.0000**	**2,136.2273**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1057	2.7378	0.7476	9.9800e-003	0.2781	7.3700e-003	0.2855	0.0801	7.0500e-003	0.0872	0.0000	946.8650	946.8650	0.0391	0.0000	947.8423
Worker	0.4076	0.3225	2.9132	4.3100e-003	0.4997	2.9900e-003	0.5027	0.1326	2.7500e-003	0.1354	0.0000	387.1519	387.1519	0.0275	0.0000	387.8404
Total	**0.5133**	**3.0604**	**3.6608**	**0.0143**	**0.7778**	**0.0104**	**0.7882**	**0.2127**	**9.8000e-003**	**0.2225**	**0.0000**	**1,334.0169**	**1,334.0169**	**0.0666**	**0.0000**	**1,335.6827**

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	0.3047	2.1222	14.5559	0.0244		0.0377	0.0377		0.0377	0.0377	0.0000	2,122.4327	2,122.4327	0.5517	0.0000	2,136.2248
Total	**0.3047**	**2.1222**	**14.5559**	**0.0244**		**0.0377**	**0.0377**		**0.0377**	**0.0377**	**0.0000**	**2,122.4327**	**2,122.4327**	**0.5517**	**0.0000**	**2,136.2248**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1057	2.7378	0.7476	9.9800e-003	0.2781	7.3700e-003	0.2855	0.0801	7.0500e-003	0.0872	0.0000	946.8650	946.8650	0.0391	0.0000	947.8423
Worker	0.4076	0.3225	2.9132	4.3100e-003	0.4997	2.9900e-003	0.5027	0.1326	2.7500e-003	0.1354	0.0000	387.1519	387.1519	0.0275	0.0000	387.8404
Total	**0.5133**	**3.0604**	**3.6608**	**0.0143**	**0.7778**	**0.0104**	**0.7882**	**0.2127**	**9.8000e-003**	**0.2225**	**0.0000**	**1,334.0169**	**1,334.0169**	**0.0666**	**0.0000**	**1,335.6827**

3.4 Building Construction - 2023

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	0.3367	3.2150	3.3464	6.5700e-003		0.1442	0.1442		0.1354	0.1354	0.0000	571.6230	571.6230	0.1480	0.0000	575.3227
Total	**0.3367**	**3.2150**	**3.3464**	**6.5700e-003**		**0.1442**	**0.1442**		**0.1354**	**0.1354**	**0.0000**	**571.6230**	**571.6230**	**0.1480**	**0.0000**	**575.3227**

3.4 Building Construction - 2023

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	0.0230	0.5263	0.1745	2.6300e-003	0.0749	7.9000e-004	0.0757	0.0216	7.6000e-004	0.0223	0.0000	249.7032	249.7032	7.7700e-003	0.0000	249.8975
Worker	0.1030	0.0800	0.7214	1.1200e-003	0.1345	7.7000e-004	0.1353	0.0357	7.1000e-004	0.0364	0.0000	100.2791	100.2791	6.8200e-003	0.0000	100.4496
Total	**0.1259**	**0.6063**	**0.8959**	**3.7500e-003**	**0.2094**	**1.5600e-003**	**0.2110**	**0.0573**	**1.4700e-003**	**0.0588**	**0.0000**	**349.9824**	**349.9824**	**0.0146**	**0.0000**	**350.3471**

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	0.0821	0.5714	3.9189	6.5700e-003		0.0102	0.0102		0.0102	0.0102	0.0000	571.6223	571.6223	0.1480	0.0000	575.3220
Total	**0.0821**	**0.5714**	**3.9189**	**6.5700e-003**		**0.0102**	**0.0102**		**0.0102**	**0.0102**	**0.0000**	**571.6223**	**571.6223**	**0.1480**	**0.0000**	**575.3220**

3.4 Building Construction - 2023

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	0.0230	0.5263	0.1745	2.6300e-003	0.0749	7.9000e-004	0.0757	0.0216	7.6000e-004	0.0223	0.0000	249.7032	249.7032	7.7700e-003	0.0000	249.8975
Worker	0.1030	0.0800	0.7214	1.1200e-003	0.1345	7.7000e-004	0.1353	0.0357	7.1000e-004	0.0364	0.0000	100.2791	100.2791	6.8200e-003	0.0000	100.4496
Total	**0.1259**	**0.6063**	**0.8959**	**3.7500e-003**	**0.2094**	**1.5600e-003**	**0.2110**	**0.0573**	**1.4700e-003**	**0.0588**	**0.0000**	**349.9824**	**349.9824**	**0.0146**	**0.0000**	**350.3471**

3.5 trenching - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1939	1.7945	1.7130	4.0000e-003		0.0801	0.0801		0.0737	0.0737	0.0000	351.1338	351.1338	0.1136	0.0000	353.9729
Total	**0.1939**	**1.7945**	**1.7130**	**4.0000e-003**		**0.0801**	**0.0801**		**0.0737**	**0.0737**	**0.0000**	**351.1338**	**351.1338**	**0.1136**	**0.0000**	**353.9729**

3.5 trenching - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0105	8.4700e-003	0.0766	1.1000e-004	0.0120	8.0000e-005	0.0121	3.1900e-003	7.0000e-005	3.2600e-003	0.0000	9.6785	9.6785	7.2000e-004	0.0000	9.6966
Total	**0.0105**	**8.4700e-003**	**0.0766**	**1.1000e-004**	**0.0120**	**8.0000e-005**	**0.0121**	**3.1900e-003**	**7.0000e-005**	**3.2600e-003**	**0.0000**	**9.6785**	**9.6785**	**7.2000e-004**	**0.0000**	**9.6966**

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	0.0506	0.2780	2.2623	4.0000e-003		6.5300e-003	6.5300e-003		6.5300e-003	6.5300e-003	0.0000	351.1334	351.1334	0.1136	0.0000	353.9725
Total	**0.0506**	**0.2780**	**2.2623**	**4.0000e-003**		**6.5300e-003**	**6.5300e-003**		**6.5300e-003**	**6.5300e-003**	**0.0000**	**351.1334**	**351.1334**	**0.1136**	**0.0000**	**353.9725**

3.5 trenching - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0105	8.4700e-003	0.0766	1.1000e-004	0.0120	8.0000e-005	0.0121	3.1900e-003	7.0000e-005	3.2600e-003	0.0000	9.6785	9.6785	7.2000e-004	0.0000	9.6966
Total	**0.0105**	**8.4700e-003**	**0.0766**	**1.1000e-004**	**0.0120**	**8.0000e-005**	**0.0121**	**3.1900e-003**	**7.0000e-005**	**3.2600e-003**	**0.0000**	**9.6785**	**9.6785**	**7.2000e-004**	**0.0000**	**9.6966**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1168	1.2764	0.7896	1.6400e-003		0.0574	0.0574		0.0528	0.0528	0.0000	143.8122	143.8122	0.0465	0.0000	144.9750
Paving	7.4500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1242**	**1.2764**	**0.7896**	**1.6400e-003**		**0.0574**	**0.0574**		**0.0528**	**0.0528**	**0.0000**	**143.8122**	**143.8122**	**0.0465**	**0.0000**	**144.9750**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.1800e-003	4.1000e-003	0.0371	5.0000e-005	6.3600e-003	4.0000e-005	6.3900e-003	1.6900e-003	3.0000e-005	1.7200e-003	0.0000	4.9237	4.9237	3.5000e-004	0.0000	4.9325
Total	**5.1800e-003**	**4.1000e-003**	**0.0371**	**5.0000e-005**	**6.3600e-003**	**4.0000e-005**	**6.3900e-003**	**1.6900e-003**	**3.0000e-005**	**1.7200e-003**	**0.0000**	**4.9237**	**4.9237**	**3.5000e-004**	**0.0000**	**4.9325**

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	0.0201	0.0869	0.9297	1.6400e-003		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003	0.0000	143.8120	143.8120	0.0465	0.0000	144.9748
Paving	7.4500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0275**	**0.0869**	**0.9297**	**1.6400e-003**		**2.6700e-003**	**2.6700e-003**		**2.6700e-003**	**2.6700e-003**	**0.0000**	**143.8120**	**143.8120**	**0.0465**	**0.0000**	**144.9748**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.1800e-003	4.1000e-003	0.0371	5.0000e-005	6.3600e-003	4.0000e-005	6.3900e-003	1.6900e-003	3.0000e-005	1.7200e-003	0.0000	4.9237	4.9237	3.5000e-004	0.0000	4.9325
Total	**5.1800e-003**	**4.1000e-003**	**0.0371**	**5.0000e-005**	**6.3600e-003**	**4.0000e-005**	**6.3900e-003**	**1.6900e-003**	**3.0000e-005**	**1.7200e-003**	**0.0000**	**4.9237**	**4.9237**	**3.5000e-004**	**0.0000**	**4.9325**

3.6 Paving - 2023

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	0.0772	0.8318	0.5720	1.2400e-003		0.0359	0.0359		0.0330	0.0330	0.0000	108.9500	108.9500	0.0352	0.0000	109.8309
Paving	5.6500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0829**	**0.8318**	**0.5720**	**1.2400e-003**		**0.0359**	**0.0359**		**0.0330**	**0.0330**	**0.0000**	**108.9500**	**108.9500**	**0.0352**	**0.0000**	**109.8309**

3.6 Paving - 2023

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	3.6800e-003	2.8600e-003	0.0258	4.0000e-005	4.8100e-003	3.0000e-005	4.8400e-003	1.2800e-003	3.0000e-005	1.3000e-003	0.0000	3.5886	3.5886	2.4000e-004	0.0000	3.5947
Total	**3.6800e-003**	**2.8600e-003**	**0.0258**	**4.0000e-005**	**4.8100e-003**	**3.0000e-005**	**4.8400e-003**	**1.2800e-003**	**3.0000e-005**	**1.3000e-003**	**0.0000**	**3.5886**	**3.5886**	**2.4000e-004**	**0.0000**	**3.5947**

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	0.0152	0.0658	0.7043	1.2400e-003		2.0200e-003	2.0200e-003		2.0200e-003	2.0200e-003	0.0000	108.9499	108.9499	0.0352	0.0000	109.8308
Paving	5.6500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0208**	**0.0658**	**0.7043**	**1.2400e-003**		**2.0200e-003**	**2.0200e-003**		**2.0200e-003**	**2.0200e-003**	**0.0000**	**108.9499**	**108.9499**	**0.0352**	**0.0000**	**109.8308**

3.6 Paving - 2023

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	3.6800e-003	2.8600e-003	0.0258	4.0000e-005	4.8100e-003	3.0000e-005	4.8400e-003	1.2800e-003	3.0000e-005	1.3000e-003	0.0000	3.5886	3.5886	2.4000e-004	0.0000	3.5947
Total	**3.6800e-003**	**2.8600e-003**	**0.0258**	**4.0000e-005**	**4.8100e-003**	**3.0000e-005**	**4.8400e-003**	**1.2800e-003**	**3.0000e-005**	**1.3000e-003**	**0.0000**	**3.5886**	**3.5886**	**2.4000e-004**	**0.0000**	**3.5947**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2170					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0500e-003	0.0141	0.0181	3.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total	**0.2191**	**0.0141**	**0.0181**	**3.0000e-005**		**8.2000e-004**	**8.2000e-004**		**8.2000e-004**	**8.2000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.7000e-004**	**0.0000**	**2.5574**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2800e-003	4.9700e-003	0.0449	7.0000e-005	7.7000e-003	5.0000e-005	7.7500e-003	2.0400e-003	4.0000e-005	2.0900e-003	0.0000	5.9681	5.9681	4.2000e-004	0.0000	5.9787
Total	**6.2800e-003**	**4.9700e-003**	**0.0449**	**7.0000e-005**	**7.7000e-003**	**5.0000e-005**	**7.7500e-003**	**2.0400e-003**	**4.0000e-005**	**2.0900e-003**	**0.0000**	**5.9681**	**5.9681**	**4.2000e-004**	**0.0000**	**5.9787**

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	0.2170					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0000e-004	1.2900e-003	0.0183	3.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total	**0.2173**	**1.2900e-003**	**0.0183**	**3.0000e-005**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**	**0.0000**	**2.5533**	**2.5533**	**1.7000e-004**	**0.0000**	**2.5574**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2800e-003	4.9700e-003	0.0449	7.0000e-005	7.7000e-003	5.0000e-005	7.7500e-003	2.0400e-003	4.0000e-005	2.0900e-003	0.0000	5.9681	5.9681	4.2000e-004	0.0000	5.9787
Total	**6.2800e-003**	**4.9700e-003**	**0.0449**	**7.0000e-005**	**7.7000e-003**	**5.0000e-005**	**7.7500e-003**	**2.0400e-003**	**4.0000e-005**	**2.0900e-003**	**0.0000**	**5.9681**	**5.9681**	**4.2000e-004**	**0.0000**	**5.9787**

3.7 Architectural Coating - 2023

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	0.7054					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.2300e-003	0.0424	0.0589	1.0000e-004		2.3000e-003	2.3000e-003		2.3000e-003	2.3000e-003	0.0000	8.2981	8.2981	5.0000e-004	0.0000	8.3105
Total	**0.7116**	**0.0424**	**0.0589**	**1.0000e-004**		**2.3000e-003**	**2.3000e-003**		**2.3000e-003**	**2.3000e-003**	**0.0000**	**8.2981**	**8.2981**	**5.0000e-004**	**0.0000**	**8.3105**

3.7 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0192	0.0149	0.1342	2.1000e-004	0.0250	1.4000e-004	0.0252	6.6400e-003	1.3000e-004	6.7800e-003	0.0000	18.6606	18.6606	1.2700e-003	0.0000	18.6923
Total	**0.0192**	**0.0149**	**0.1342**	**2.1000e-004**	**0.0250**	**1.4000e-004**	**0.0252**	**6.6400e-003**	**1.3000e-004**	**6.7800e-003**	**0.0000**	**18.6606**	**18.6606**	**1.2700e-003**	**0.0000**	**18.6923**

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	0.7054					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.7000e-004	4.1800e-003	0.0596	1.0000e-004		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004	0.0000	8.2981	8.2981	5.0000e-004	0.0000	8.3105
Total	**0.7063**	**4.1800e-003**	**0.0596**	**1.0000e-004**		**1.3000e-004**	**1.3000e-004**		**1.3000e-004**	**1.3000e-004**	**0.0000**	**8.2981**	**8.2981**	**5.0000e-004**	**0.0000**	**8.3105**

3.7 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0192	0.0149	0.1342	2.1000e-004	0.0250	1.4000e-004	0.0252	6.6400e-003	1.3000e-004	6.7800e-003	0.0000	18.6606	18.6606	1.2700e-003	0.0000	18.6923
Total	**0.0192**	**0.0149**	**0.1342**	**2.1000e-004**	**0.0250**	**1.4000e-004**	**0.0252**	**6.6400e-003**	**1.3000e-004**	**6.7800e-003**	**0.0000**	**18.6606**	**18.6606**	**1.2700e-003**	**0.0000**	**18.6923**

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	0.0762	0.7252	1.0493	4.4600e-003	0.2462	1.8600e-003	0.2481	0.0659	1.7400e-003	0.0676	0.0000	415.5387	415.5387	0.0195	0.0000	416.0257
Unmitigated	0.0762	0.7252	1.0493	4.4600e-003	0.2462	1.8600e-003	0.2481	0.0659	1.7400e-003	0.0676	0.0000	415.5387	415.5387	0.0195	0.0000	416.0257

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	134.00	134.00	134.00	631,595	631,595
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	134.00	134.00	134.00	631,595	631,595

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
General Heavy Industry	16.40	9.50	11.90	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	16.40	9.50	11.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.40	9.50	11.90	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
Other Non-Asphalt Surfaces	0.524989	0.030717	0.161165	0.112416	0.014580	0.004690	0.018794	0.121206	0.003615	0.001256	0.005248	0.000725	0.000600
General Heavy Industry	0.380000	0.150000	0.100000	0.150000	0.000000	0.000000	0.000000	0.220000	0.000000	0.000000	0.000000	0.000000	0.000000
Other Asphalt Surfaces	0.524989	0.030717	0.161165	0.112416	0.014580	0.004690	0.018794	0.121206	0.003615	0.001256	0.005248	0.000725	0.000600

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	13,961.8083	13,961.8083	0.3292	0.0705	13,991.0600
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	13,961.8083	13,961.8083	0.3292	0.0705	13,991.0600
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	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
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	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
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	5.184e +007	13,961.8083	0.3292	0.0705	13,991.0600
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**13,961.8083**	**0.3292**	**0.0705**	**13,991.0600**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	5.184e +007	13,961.8083	0.3292	0.0705	13,991.0600
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**13,961.8083**	**0.3292**	**0.0705**	**13,991.0600**

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	0.5533	1.0000e-005	1.1500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2300e-003	2.2300e-003	1.0000e-005	0.0000	2.3800e-003
Unmitigated	0.5533	1.0000e-005	1.1500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2300e-003	2.2300e-003	1.0000e-005	0.0000	2.3800e-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	0.0922					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4609					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1000e-004	1.0000e-005	1.1500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2300e-003	2.2300e-003	1.0000e-005	0.0000	2.3800e-003
Total	**0.5533**	**1.0000e-005**	**1.1500e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.2300e-003**	**2.2300e-003**	**1.0000e-005**	**0.0000**	**2.3800e-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	0.0922					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4609					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1000e-004	1.0000e-005	1.1500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2300e-003	2.2300e-003	1.0000e-005	0.0000	2.3800e-003
Total	**0.5533**	**1.0000e-005**	**1.1500e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.2300e-003**	**2.2300e-003**	**1.0000e-005**	**0.0000**	**2.3800e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	731.0281	36.1097	0.8543	1,888.3629
Unmitigated	731.0281	36.1097	0.8543	1,888.3629

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	1107.89 / 0	731.0281	36.1097	0.8543	1,888.3629
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**731.0281**	**36.1097**	**0.8543**	**1,888.3629**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	1107.89 / 0	731.0281	36.1097	0.8543	1,888.3629
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**731.0281**	**36.1097**	**0.8543**	**1,888.3629**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	14.5991	0.8628	0.0000	36.1687
Unmitigated	14.5991	0.8628	0.0000	36.1687

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	71.92	14.5991	0.8628	0.0000	36.1687
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**14.5991**	**0.8628**	**0.0000**	**36.1687**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	71.92	14.5991	0.8628	0.0000	36.1687
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**14.5991**	**0.8628**	**0.0000**	**36.1687**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Forklifts	2	8.00	365	50	0.20	CNG

UnMitigated/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
Equipment Type	tons/yr										MT/yr					
Forklifts	0.0446	0.2600	0.3276	3.5000e-004		0.0131	0.0131		0.0120	0.0120	0.0000	30.6882	30.6882	9.9300e-003	0.0000	30.9364
Total	**0.0446**	**0.2600**	**0.3276**	**3.5000e-004**		**0.0131**	**0.0131**		**0.0120**	**0.0120**	**0.0000**	**30.6882**	**30.6882**	**9.9300e-003**	**0.0000**	**30.9364**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	2	80	600	0.73	Diesel
Fire Pump	1	2	80	62	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/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
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (600 - 750 HP)	0.0394	0.1101	0.1004	1.9000e-004		5.7900e-003	5.7900e-003		5.7900e-003	5.7900e-003	0.0000	18.2783	18.2783	2.5600e-003	0.0000	18.3423
Fire Pump - Diesel (50 - 75 HP)	4.0700e-003	0.0133	0.0148	2.0000e-005		1.2000e-003	1.2000e-003		1.2000e-003	1.2000e-003	0.0000	1.8888	1.8888	2.6000e-004	0.0000	1.8954
Total	**0.0435**	**0.1234**	**0.1152**	**2.1000e-004**		**6.9900e-003**	**6.9900e-003**		**6.9900e-003**	**6.9900e-003**	**0.0000**	**20.1670**	**20.1670**	**2.8200e-003**	**0.0000**	**20.2377**

11.0 Vegetation

Hudson Ranch Minerals (BAU)

Imperial County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
General Heavy Industry	100.00	1000sqft	27.00	100,000.00	0
Other Asphalt Surfaces	10.00	Acre	10.00	435,600.00	0
Other Non-Asphalt Surfaces	15.00	Acre	15.00	653,400.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	12
Climate Zone	15			**Operational Year**	2024
Utility Company	Imperial Irrigation District				
CO2 Intensity (lb/MWhr)	1270.9	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - BAU

Land Use - 37 acre construction site and 15 acre laydown area

Construction Phase - Construction dates estimated by Project Enegineer

Off-road Equipment - Equipment List provided by project applicant

Off-road Equipment - Equipment List provided by project applicant

Off-road Equipment - Equipment List provided by project applicant

Off-road Equipment - Equipment List provided by project applicant

Off-road Equipment - Equipment List provided by project applicant

Off-road Equipment - Equipment List provided by project applicant

Trips and VMT -

On-road Fugitive Dust - Trips use 111 and McDonald all paved except 2 miles at McDonald. prior to const. this area will be improved with 12-18" base and would have dedicated water truck. The City wants to wait to pave McDonald till contruction is complete.

Demolition -

Grading -

Architectural Coating -

Vehicle Trips - Trip Gen for Operations per TS excludes PCE adjustments 134 ADT

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Road Dust - Roadways are paved

Area Coating -

Energy Use - Energy Use - Project would consume 51,840 MWH per year

Water And Wastewater - Project will use 3,400 afy of water from IID canals.

Construction Off-road Equipment Mitigation - T3+ Equipment

Operational Off-Road Equipment - 2 forklifts less than 50HP will be used onsite

Fleet Mix - Truck Trips would be 22%. Remainder of vehicles would be Passenger Cars

Stationary Sources - Emergency Generators and Fire Pumps - 50 hours per year on average would be used 80 hours on average assumed

Table Name	Column Name	Default Value	New Value
tblConstDustMitigation	WaterUnpavedRoadMoistureContent	0	0.5
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	0	40
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	5.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	11.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	7.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	20.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final

tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstEquipMitigation	Tier	No Change	Tier 4 Final
tblConstructionPhase	NumDays	70.00	10.00
tblConstructionPhase	NumDays	110.00	50.00
tblConstructionPhase	NumDays	1,110.00	520.00
tblConstructionPhase	NumDays	75.00	116.00
tblConstructionPhase	NumDays	75.00	85.00
tblEnergyUse	LightingElect	2.93	0.00
tblEnergyUse	NT24E	5.02	518.40
tblEnergyUse	NT24NG	17.13	0.00
tblEnergyUse	T24E	2.20	0.00
tblEnergyUse	T24NG	15.36	0.00
tblFleetMix	HHD	0.12	0.22
tblFleetMix	LDA	0.52	0.38
tblFleetMix	LDT1	0.03	0.15
tblFleetMix	LDT2	0.16	0.10
tblFleetMix	LHD1	0.01	0.00
tblFleetMix	LHD2	4.6900e-003	0.00
tblFleetMix	MCY	5.2480e-003	0.00

tblFleetMix	MDV	0.11	0.15
tblFleetMix	MH	6.0000e-004	0.00
tblFleetMix	MHD	0.02	0.00
tblFleetMix	OBUS	3.6150e-003	0.00
tblFleetMix	SBUS	7.2500e-004	0.00
tblFleetMix	UBUS	1.2560e-003	0.00
tblLandUse	LotAcreage	2.30	27.00
tblOffRoadEquipment	HorsePower	84.00	15.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	7.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	7.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	13.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	1.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	HaulingPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	VendorPercentPave	50.00	100.00

tblOnRoadDust	VendorPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOnRoadDust	WorkerPercentPave	50.00	100.00
tblOperationalOffRoadEquipment	OperDaysPerYear	260.00	365.00
tblOperationalOffRoadEquipment	OperFuelType	Diesel	CNG
tblOperationalOffRoadEquipment	OperHorsePower	89.00	50.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	2.00
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	RoadPercentPave	50	100
tblSolidWaste	SolidWasteGenerationRate	124.00	71.92
tblVehicleTrips	ST_TR	1.50	1.34
tblVehicleTrips	SU_TR	1.50	1.34
tblVehicleTrips	WD_TR	1.50	1.34
tblWater	ElectricityIntensityFactorForWastewaterTreatment	1,911.00	0.00
tblWater	ElectricityIntensityFactorToSupply	9,727.00	0.00
tblWater	ElectricityIntensityFactorToTreat	111.00	0.00
tblWater	IndoorWaterUseRate	23,125,000.00	1,107,894,868.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	2.0102	18.2276	15.9194	0.0374	1.0174	0.7452	1.7627	0.3406	0.6957	1.0363	0.0000	3,329.2781	3,329.2781	0.7059	0.0000	3,346.9263
2022	2.2233	17.5456	17.1288	0.0405	0.7919	0.6863	1.4782	0.2165	0.6434	0.8599	0.0000	3,613.7094	3,613.7094	0.6658	0.0000	3,630.3535
2023	1.2800	4.7132	5.0332	0.0119	0.2393	0.1841	0.4234	0.0652	0.1723	0.2375	0.0000	1,061.1026	1,061.1026	0.1998	0.0000	1,066.0982
Maximum	**2.2233**	**18.2276**	**17.1288**	**0.0405**	**1.0174**	**0.7452**	**1.7627**	**0.3406**	**0.6957**	**1.0363**	**0.0000**	**3,613.7094**	**3,613.7094**	**0.7059**	**0.0000**	**3,630.3535**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.7511	4.5156	18.1655	0.0374	1.0174	0.0507	1.0681	0.3406	0.0502	0.3908	0.0000	3,329.2754	3,329.2754	0.7059	0.0000	3,346.9236
2022	1.0743	5.2798	19.2467	0.0405	0.7919	0.0509	0.8428	0.2165	0.0503	0.2668	0.0000	3,613.7067	3,613.7067	0.6658	0.0000	3,630.3508
2023	0.9580	1.2655	5.7387	0.0119	0.2393	0.0141	0.2533	0.0652	0.0139	0.0791	0.0000	1,061.1018	1,061.1018	0.1998	0.0000	1,066.0974
Maximum	**1.0743**	**5.2798**	**19.2467**	**0.0405**	**1.0174**	**0.0509**	**1.0681**	**0.3406**	**0.0503**	**0.3908**	**0.0000**	**3,613.7067**	**3,613.7067**	**0.7059**	**0.0000**	**3,630.3508**

	ROG	NOx	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	**49.52**	**72.68**	**-13.31**	**0.00**	**0.00**	**92.84**	**40.94**	**0.00**	**92.43**	**65.47**	**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)
2	**1-28-2021**	**4-27-2021**	3.7013	0.5684
3	**4-28-2021**	**7-27-2021**	6.6029	1.7903
4	**7-28-2021**	**10-27-2021**	6.0142	1.7271
5	**10-28-2021**	**1-27-2022**	4.9995	1.5612
6	**1-28-2022**	**4-27-2022**	4.4746	1.4794
7	**4-28-2022**	**7-27-2022**	4.5258	1.4973
8	**7-28-2022**	**10-27-2022**	5.0021	1.5506
9	**10-28-2022**	**1-27-2023**	6.2269	2.0141
10	**1-28-2023**	**4-27-2023**	4.1560	1.5589
		Highest	6.6029	2.0141

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	0.5533	1.0000e-005	1.1500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2300e-003	2.2300e-003	1.0000e-005	0.0000	2.3800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	29,884.2330	29,884.2330	0.6819	0.1411	29,943.3242
Mobile	0.0762	0.7252	1.0493	4.4600e-003	0.2462	1.8600e-003	0.2481	0.0659	1.7400e-003	0.0676	0.0000	415.5387	415.5387	0.0195	0.0000	416.0257
Offroad	0.0446	0.2600	0.3276	3.5000e-004		0.0131	0.0131		0.0120	0.0120	0.0000	30.6882	30.6882	9.9300e-003	0.0000	30.9364
Stationary	0.0435	0.1234	0.1152	2.1000e-004		6.9900e-003	6.9900e-003		6.9900e-003	6.9900e-003	0.0000	20.1670	20.1670	2.8300e-003	0.0000	20.2377
Waste						0.0000	0.0000		0.0000	0.0000	14.5991	0.0000	14.5991	0.8628	0.0000	36.1687
Water						0.0000	0.0000		0.0000	0.0000	351.4839	812.3867	1,163.8706	36.1193	0.8563	2,322.0166
Total	**0.7175**	**1.1086**	**1.4932**	**5.0200e-003**	**0.2462**	**0.0219**	**0.2682**	**0.0659**	**0.0208**	**0.0866**	**366.0830**	**31,163.0158**	**31,529.0988**	**37.6963**	**0.9973**	**32,768.7116**

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	0.5533	1.0000e-005	1.1500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2300e-003	2.2300e-003	1.0000e-005	0.0000	2.3800e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	29,884.2330	29,884.2330	0.6819	0.1411	29,943.3242
Mobile	0.0762	0.7252	1.0493	4.4600e-003	0.2462	1.8600e-003	0.2481	0.0659	1.7400e-003	0.0676	0.0000	415.5387	415.5387	0.0195	0.0000	416.0257
Offroad	0.0446	0.2600	0.3276	3.5000e-004		0.0131	0.0131		0.0120	0.0120	0.0000	30.6882	30.6882	9.9300e-003	0.0000	30.9364
Stationary	0.0435	0.1234	0.1152	2.1000e-004		6.9900e-003	6.9900e-003		6.9900e-003	6.9900e-003	0.0000	20.1670	20.1670	2.8300e-003	0.0000	20.2377
Waste						0.0000	0.0000		0.0000	0.0000	14.5991	0.0000	14.5991	0.8628	0.0000	36.1687
Water						0.0000	0.0000		0.0000	0.0000	351.4839	812.3867	1,163.8706	36.1193	0.8563	2,322.0166
Total	**0.7175**	**1.1086**	**1.4932**	**5.0200e-003**	**0.2462**	**0.0219**	**0.2682**	**0.0659**	**0.0208**	**0.0866**	**366.0830**	**31,163.0158**	**31,529.0988**	**37.6963**	**0.9973**	**32,768.7116**

	ROG	**NOx**	**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	3/1/2021	3/12/2021	5	10	
2	Grading	Grading	3/1/2021	5/7/2021	5	50	
3	Building Construction	Building Construction	4/12/2021	4/7/2023	5	520	
4	trenching	Trenching	4/19/2021	10/8/2021	5	125	
5	Paving	Paving	9/30/2022	3/10/2023	5	116	
6	Architectural Coating	Architectural Coating	12/5/2022	3/31/2023	5	85	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 225

Acres of Paving: 25

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 150,000; Non-Residential Outdoor: 50,000; Striped Parking Area: 65,340 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	1	8.00	81	0.73
Demolition	Excavators	3	8.00	158	0.38
Demolition	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Graders	1	8.00	187	0.41
Grading	Off-Highway Trucks	7	8.00	402	0.38
Grading	Rollers	1	8.00	80	0.38
Grading	Rubber Tired Dozers	2	8.00	247	0.40
Grading	Scrapers	4	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	1	8.00	97	0.37
Building Construction	Aerial Lifts	7	8.00	63	0.31

Building Construction	Air Compressors	4	8.00	78	0.48
Building Construction	Bore/Drill Rigs	1	8.00	221	0.50
Building Construction	Cranes	7	7.00	231	0.29
Building Construction	Excavators	2	8.00	158	0.38
Building Construction	Forklifts	7	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	15	0.74
Building Construction	Generator Sets	4	8.00	84	0.74
Building Construction	Graders	1	8.00	187	0.41
Building Construction	Off-Highway Trucks	1	8.00	402	0.38
Building Construction	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	13	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
trenching	Excavators	2	8.00	158	0.38
trenching	Off-Highway Trucks	3	8.00	402	0.38
trenching	Rollers	1	8.00	80	0.38
trenching	Skid Steer Loaders	1	8.00	65	0.37
trenching	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Graders	2	8.00	187	0.41
Paving	Pavers	1	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Paving	Rubber Tired Dozers	2	8.00	247	0.40
Paving	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Demolition	6	15.00	0.00	68.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	16	40.00	0.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	50	499.00	195.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
trenching	10	25.00	0.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
Paving	10	25.00	0.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	100.00	0.00	0.00	10.20	11.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

3.2 Demolition - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					7.6700e-003	0.0000	7.6700e-003	1.1600e-003	0.0000	1.1600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0158	0.1572	0.1078	1.9000e-004		7.7600e-003	7.7600e-003		7.2100e-003	7.2100e-003	0.0000	17.0004	17.0004	4.7800e-003	0.0000	17.1200
Total	**0.0158**	**0.1572**	**0.1078**	**1.9000e-004**	**7.6700e-003**	**7.7600e-003**	**0.0154**	**1.1600e-003**	**7.2100e-003**	**8.3700e-003**	**0.0000**	**17.0004**	**17.0004**	**4.7800e-003**	**0.0000**	**17.1200**

3.2 Demolition - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7000e-004	7.4400e-003	1.0400e-003	3.0000e-005	5.9000e-004	2.0000e-005	6.1000e-004	1.6000e-004	2.0000e-005	1.8000e-004	0.0000	2.4712	2.4712	1.0000e-004	0.0000	2.4737
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-004	4.1000e-004	3.6800e-003	1.0000e-005	5.8000e-004	0.0000	5.8000e-004	1.5000e-004	0.0000	1.6000e-004	0.0000	0.4646	0.4646	3.0000e-005	0.0000	0.4654
Total	**6.7000e-004**	**7.8500e-003**	**4.7200e-003**	**4.0000e-005**	**1.1700e-003**	**2.0000e-005**	**1.1900e-003**	**3.1000e-004**	**2.0000e-005**	**3.4000e-004**	**0.0000**	**2.9358**	**2.9358**	**1.3000e-004**	**0.0000**	**2.9392**

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					7.6700e-003	0.0000	7.6700e-003	1.1600e-003	0.0000	1.1600e-003	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.3100e-003	0.0100	0.1164	1.9000e-004		3.1000e-004	3.1000e-004		3.1000e-004	3.1000e-004	0.0000	17.0004	17.0004	4.7800e-003	0.0000	17.1200
Total	**2.3100e-003**	**0.0100**	**0.1164**	**1.9000e-004**	**7.6700e-003**	**3.1000e-004**	**7.9800e-003**	**1.1600e-003**	**3.1000e-004**	**1.4700e-003**	**0.0000**	**17.0004**	**17.0004**	**4.7800e-003**	**0.0000**	**17.1200**

3.2 Demolition - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	1.7000e-004	7.4400e-003	1.0400e-003	3.0000e-005	5.9000e-004	2.0000e-005	6.1000e-004	1.6000e-004	2.0000e-005	1.8000e-004	0.0000	2.4712	2.4712	1.0000e-004	0.0000	2.4737
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-004	4.1000e-004	3.6800e-003	1.0000e-005	5.8000e-004	0.0000	5.8000e-004	1.5000e-004	0.0000	1.6000e-004	0.0000	0.4646	0.4646	3.0000e-005	0.0000	0.4654
Total	**6.7000e-004**	**7.8500e-003**	**4.7200e-003**	**4.0000e-005**	**1.1700e-003**	**2.0000e-005**	**1.1900e-003**	**3.1000e-004**	**2.0000e-005**	**3.4000e-004**	**0.0000**	**2.9358**	**2.9358**	**1.3000e-004**	**0.0000**	**2.9392**

3.3 Grading - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4204	0.0000	0.4204	0.1784	0.0000	0.1784	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2720	2.7836	1.6808	4.5600e-003		0.1125	0.1125		0.1035	0.1035	0.0000	400.8097	400.8097	0.1296	0.0000	404.0505
Total	**0.2720**	**2.7836**	**1.6808**	**4.5600e-003**	**0.4204**	**0.1125**	**0.5329**	**0.1784**	**0.1035**	**0.2819**	**0.0000**	**400.8097**	**400.8097**	**0.1296**	**0.0000**	**404.0505**

3.3 Grading - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.7200e-003	5.4200e-003	0.0490	7.0000e-005	7.7000e-003	5.0000e-005	7.7500e-003	2.0400e-003	4.0000e-005	2.0900e-003	0.0000	6.1942	6.1942	4.6000e-004	0.0000	6.2058
Total	**6.7200e-003**	**5.4200e-003**	**0.0490**	**7.0000e-005**	**7.7000e-003**	**5.0000e-005**	**7.7500e-003**	**2.0400e-003**	**4.0000e-005**	**2.0900e-003**	**0.0000**	**6.1942**	**6.1942**	**4.6000e-004**	**0.0000**	**6.2058**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.4204	0.0000	0.4204	0.1784	0.0000	0.1784	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0559	0.2424	2.0950	4.5600e-003		7.4600e-003	7.4600e-003		7.4600e-003	7.4600e-003	0.0000	400.8093	400.8093	0.1296	0.0000	404.0500
Total	**0.0559**	**0.2424**	**2.0950**	**4.5600e-003**	**0.4204**	**7.4600e-003**	**0.4279**	**0.1784**	**7.4600e-003**	**0.1859**	**0.0000**	**400.8093**	**400.8093**	**0.1296**	**0.0000**	**404.0500**

3.3 Grading - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.7200e-003	5.4200e-003	0.0490	7.0000e-005	7.7000e-003	5.0000e-005	7.7500e-003	2.0400e-003	4.0000e-005	2.0900e-003	0.0000	6.1942	6.1942	4.6000e-004	0.0000	6.2058
Total	**6.7200e-003**	**5.4200e-003**	**0.0490**	**7.0000e-005**	**7.7000e-003**	**5.0000e-005**	**7.7500e-003**	**2.0400e-003**	**4.0000e-005**	**2.0900e-003**	**0.0000**	**6.1942**	**6.1942**	**4.6000e-004**	**0.0000**	**6.2058**

3.4 Building Construction - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.1089	11.0580	9.3630	0.0178		0.5361	0.5361		0.5030	0.5030	0.0000	1,550.5535	1,550.5535	0.4044	0.0000	1,560.6641
Total	**1.1089**	**11.0580**	**9.3630**	**0.0178**		**0.5361**	**0.5361**		**0.5030**	**0.5030**	**0.0000**	**1,550.5535**	**1,550.5535**	**0.4044**	**0.0000**	**1,560.6641**

3.4 Building Construction - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0833	2.1556	0.6006	7.3500e-003	0.2032	6.3400e-003	0.2096	0.0586	6.0700e-003	0.0646	0.0000	697.3340	697.3340	0.0303	0.0000	698.0903
Worker	0.3184	0.2570	2.3239	3.2700e-003	0.3652	2.2800e-003	0.3675	0.0969	2.1000e-003	0.0990	0.0000	293.6381	293.6381	0.0220	0.0000	294.1870
Total	**0.4017**	**2.4126**	**2.9245**	**0.0106**	**0.5684**	**8.6200e-003**	**0.5771**	**0.1555**	**8.1700e-003**	**0.1636**	**0.0000**	**990.9721**	**990.9721**	**0.0522**	**0.0000**	**992.2773**

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	0.2227	1.5509	10.6370	0.0178		0.0276	0.0276		0.0276	0.0276	0.0000	1,550.5517	1,550.5517	0.4044	0.0000	1,560.6622
Total	**0.2227**	**1.5509**	**10.6370**	**0.0178**		**0.0276**	**0.0276**		**0.0276**	**0.0276**	**0.0000**	**1,550.5517**	**1,550.5517**	**0.4044**	**0.0000**	**1,560.6622**

3.4 Building Construction - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0833	2.1556	0.6006	7.3500e-003	0.2032	6.3400e-003	0.2096	0.0586	6.0700e-003	0.0646	0.0000	697.3340	697.3340	0.0303	0.0000	698.0903
Worker	0.3184	0.2570	2.3239	3.2700e-003	0.3652	2.2800e-003	0.3675	0.0969	2.1000e-003	0.0990	0.0000	293.6381	293.6381	0.0220	0.0000	294.1870
Total	**0.4017**	**2.4126**	**2.9245**	**0.0106**	**0.5684**	**8.6200e-003**	**0.5771**	**0.1555**	**8.1700e-003**	**0.1636**	**0.0000**	**990.9721**	**990.9721**	**0.0522**	**0.0000**	**992.2773**

3.4 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	1.3553	13.1856	12.5783	0.0244		0.6177	0.6177		0.5800	0.5800	0.0000	2,122.4353	2,122.4353	0.5517	0.0000	2,136.2273
Total	**1.3553**	**13.1856**	**12.5783**	**0.0244**		**0.6177**	**0.6177**		**0.5800**	**0.5800**	**0.0000**	**2,122.4353**	**2,122.4353**	**0.5517**	**0.0000**	**2,136.2273**

3.4 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1057	2.7378	0.7476	9.9800e-003	0.2781	7.3700e-003	0.2855	0.0801	7.0500e-003	0.0872	0.0000	946.8650	946.8650	0.0391	0.0000	947.8423
Worker	0.4076	0.3225	2.9132	4.3100e-003	0.4997	2.9900e-003	0.5027	0.1326	2.7500e-003	0.1354	0.0000	387.1519	387.1519	0.0275	0.0000	387.8404
Total	**0.5133**	**3.0604**	**3.6608**	**0.0143**	**0.7778**	**0.0104**	**0.7882**	**0.2127**	**9.8000e-003**	**0.2225**	**0.0000**	**1,334.0169**	**1,334.0169**	**0.0666**	**0.0000**	**1,335.6827**

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	0.3047	2.1222	14.5559	0.0244		0.0377	0.0377		0.0377	0.0377	0.0000	2,122.4327	2,122.4327	0.5517	0.0000	2,136.2248
Total	**0.3047**	**2.1222**	**14.5559**	**0.0244**		**0.0377**	**0.0377**		**0.0377**	**0.0377**	**0.0000**	**2,122.4327**	**2,122.4327**	**0.5517**	**0.0000**	**2,136.2248**

3.4 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.1057	2.7378	0.7476	9.9800e-003	0.2781	7.3700e-003	0.2855	0.0801	7.0500e-003	0.0872	0.0000	946.8650	946.8650	0.0391	0.0000	947.8423
Worker	0.4076	0.3225	2.9132	4.3100e-003	0.4997	2.9900e-003	0.5027	0.1326	2.7500e-003	0.1354	0.0000	387.1519	387.1519	0.0275	0.0000	387.8404
Total	**0.5133**	**3.0604**	**3.6608**	**0.0143**	**0.7778**	**0.0104**	**0.7882**	**0.2127**	**9.8000e-003**	**0.2225**	**0.0000**	**1,334.0169**	**1,334.0169**	**0.0666**	**0.0000**	**1,335.6827**

3.4 Building Construction - 2023

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	0.3367	3.2150	3.3464	6.5700e-003		0.1442	0.1442		0.1354	0.1354	0.0000	571.6230	571.6230	0.1480	0.0000	575.3227
Total	**0.3367**	**3.2150**	**3.3464**	**6.5700e-003**		**0.1442**	**0.1442**		**0.1354**	**0.1354**	**0.0000**	**571.6230**	**571.6230**	**0.1480**	**0.0000**	**575.3227**

3.4 Building Construction - 2023

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	0.0230	0.5263	0.1745	2.6300e-003	0.0749	7.9000e-004	0.0757	0.0216	7.6000e-004	0.0223	0.0000	249.7032	249.7032	7.7700e-003	0.0000	249.8975
Worker	0.1030	0.0800	0.7214	1.1200e-003	0.1345	7.7000e-004	0.1353	0.0357	7.1000e-004	0.0364	0.0000	100.2791	100.2791	6.8200e-003	0.0000	100.4496
Total	**0.1259**	**0.6063**	**0.8959**	**3.7500e-003**	**0.2094**	**1.5600e-003**	**0.2110**	**0.0573**	**1.4700e-003**	**0.0588**	**0.0000**	**349.9824**	**349.9824**	**0.0146**	**0.0000**	**350.3471**

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	0.0821	0.5714	3.9189	6.5700e-003		0.0102	0.0102		0.0102	0.0102	0.0000	571.6223	571.6223	0.1480	0.0000	575.3220
Total	**0.0821**	**0.5714**	**3.9189**	**6.5700e-003**		**0.0102**	**0.0102**		**0.0102**	**0.0102**	**0.0000**	**571.6223**	**571.6223**	**0.1480**	**0.0000**	**575.3220**

3.4 Building Construction - 2023

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	0.0230	0.5263	0.1745	2.6300e-003	0.0749	7.9000e-004	0.0757	0.0216	7.6000e-004	0.0223	0.0000	249.7032	249.7032	7.7700e-003	0.0000	249.8975
Worker	0.1030	0.0800	0.7214	1.1200e-003	0.1345	7.7000e-004	0.1353	0.0357	7.1000e-004	0.0364	0.0000	100.2791	100.2791	6.8200e-003	0.0000	100.4496
Total	**0.1259**	**0.6063**	**0.8959**	**3.7500e-003**	**0.2094**	**1.5600e-003**	**0.2110**	**0.0573**	**1.4700e-003**	**0.0588**	**0.0000**	**349.9824**	**349.9824**	**0.0146**	**0.0000**	**350.3471**

3.5 trenching - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1939	1.7945	1.7130	4.0000e-003		0.0801	0.0801		0.0737	0.0737	0.0000	351.1338	351.1338	0.1136	0.0000	353.9729
Total	**0.1939**	**1.7945**	**1.7130**	**4.0000e-003**		**0.0801**	**0.0801**		**0.0737**	**0.0737**	**0.0000**	**351.1338**	**351.1338**	**0.1136**	**0.0000**	**353.9729**

3.5 trenching - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0105	8.4700e-003	0.0766	1.1000e-004	0.0120	8.0000e-005	0.0121	3.1900e-003	7.0000e-005	3.2600e-003	0.0000	9.6785	9.6785	7.2000e-004	0.0000	9.6966
Total	**0.0105**	**8.4700e-003**	**0.0766**	**1.1000e-004**	**0.0120**	**8.0000e-005**	**0.0121**	**3.1900e-003**	**7.0000e-005**	**3.2600e-003**	**0.0000**	**9.6785**	**9.6785**	**7.2000e-004**	**0.0000**	**9.6966**

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	0.0506	0.2780	2.2623	4.0000e-003		6.5300e-003	6.5300e-003		6.5300e-003	6.5300e-003	0.0000	351.1334	351.1334	0.1136	0.0000	353.9725
Total	**0.0506**	**0.2780**	**2.2623**	**4.0000e-003**		**6.5300e-003**	**6.5300e-003**		**6.5300e-003**	**6.5300e-003**	**0.0000**	**351.1334**	**351.1334**	**0.1136**	**0.0000**	**353.9725**

3.5 trenching - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0105	8.4700e-003	0.0766	1.1000e-004	0.0120	8.0000e-005	0.0121	3.1900e-003	7.0000e-005	3.2600e-003	0.0000	9.6785	9.6785	7.2000e-004	0.0000	9.6966
Total	**0.0105**	**8.4700e-003**	**0.0766**	**1.1000e-004**	**0.0120**	**8.0000e-005**	**0.0121**	**3.1900e-003**	**7.0000e-005**	**3.2600e-003**	**0.0000**	**9.6785**	**9.6785**	**7.2000e-004**	**0.0000**	**9.6966**

3.6 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1168	1.2764	0.7896	1.6400e-003		0.0574	0.0574		0.0528	0.0528	0.0000	143.8122	143.8122	0.0465	0.0000	144.9750
Paving	7.4500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.1242**	**1.2764**	**0.7896**	**1.6400e-003**		**0.0574**	**0.0574**		**0.0528**	**0.0528**	**0.0000**	**143.8122**	**143.8122**	**0.0465**	**0.0000**	**144.9750**

3.6 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.1800e-003	4.1000e-003	0.0371	5.0000e-005	6.3600e-003	4.0000e-005	6.3900e-003	1.6900e-003	3.0000e-005	1.7200e-003	0.0000	4.9237	4.9237	3.5000e-004	0.0000	4.9325
Total	**5.1800e-003**	**4.1000e-003**	**0.0371**	**5.0000e-005**	**6.3600e-003**	**4.0000e-005**	**6.3900e-003**	**1.6900e-003**	**3.0000e-005**	**1.7200e-003**	**0.0000**	**4.9237**	**4.9237**	**3.5000e-004**	**0.0000**	**4.9325**

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	0.0201	0.0869	0.9297	1.6400e-003		2.6700e-003	2.6700e-003		2.6700e-003	2.6700e-003	0.0000	143.8120	143.8120	0.0465	0.0000	144.9748
Paving	7.4500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0275**	**0.0869**	**0.9297**	**1.6400e-003**		**2.6700e-003**	**2.6700e-003**		**2.6700e-003**	**2.6700e-003**	**0.0000**	**143.8120**	**143.8120**	**0.0465**	**0.0000**	**144.9748**

3.6 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	5.1800e-003	4.1000e-003	0.0371	5.0000e-005	6.3600e-003	4.0000e-005	6.3900e-003	1.6900e-003	3.0000e-005	1.7200e-003	0.0000	4.9237	4.9237	3.5000e-004	0.0000	4.9325
Total	**5.1800e-003**	**4.1000e-003**	**0.0371**	**5.0000e-005**	**6.3600e-003**	**4.0000e-005**	**6.3900e-003**	**1.6900e-003**	**3.0000e-005**	**1.7200e-003**	**0.0000**	**4.9237**	**4.9237**	**3.5000e-004**	**0.0000**	**4.9325**

3.6 Paving - 2023

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	0.0772	0.8318	0.5720	1.2400e-003		0.0359	0.0359		0.0330	0.0330	0.0000	108.9500	108.9500	0.0352	0.0000	109.8309
Paving	5.6500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0829**	**0.8318**	**0.5720**	**1.2400e-003**		**0.0359**	**0.0359**		**0.0330**	**0.0330**	**0.0000**	**108.9500**	**108.9500**	**0.0352**	**0.0000**	**109.8309**

3.6 Paving - 2023

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	3.6800e-003	2.8600e-003	0.0258	4.0000e-005	4.8100e-003	3.0000e-005	4.8400e-003	1.2800e-003	3.0000e-005	1.3000e-003	0.0000	3.5886	3.5886	2.4000e-004	0.0000	3.5947
Total	**3.6800e-003**	**2.8600e-003**	**0.0258**	**4.0000e-005**	**4.8100e-003**	**3.0000e-005**	**4.8400e-003**	**1.2800e-003**	**3.0000e-005**	**1.3000e-003**	**0.0000**	**3.5886**	**3.5886**	**2.4000e-004**	**0.0000**	**3.5947**

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	0.0152	0.0658	0.7043	1.2400e-003		2.0200e-003	2.0200e-003		2.0200e-003	2.0200e-003	0.0000	108.9499	108.9499	0.0352	0.0000	109.8308
Paving	5.6500e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0208**	**0.0658**	**0.7043**	**1.2400e-003**		**2.0200e-003**	**2.0200e-003**		**2.0200e-003**	**2.0200e-003**	**0.0000**	**108.9499**	**108.9499**	**0.0352**	**0.0000**	**109.8308**

3.6 Paving - 2023

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	3.6800e-003	2.8600e-003	0.0258	4.0000e-005	4.8100e-003	3.0000e-005	4.8400e-003	1.2800e-003	3.0000e-005	1.3000e-003	0.0000	3.5886	3.5886	2.4000e-004	0.0000	3.5947
Total	**3.6800e-003**	**2.8600e-003**	**0.0258**	**4.0000e-005**	**4.8100e-003**	**3.0000e-005**	**4.8400e-003**	**1.2800e-003**	**3.0000e-005**	**1.3000e-003**	**0.0000**	**3.5886**	**3.5886**	**2.4000e-004**	**0.0000**	**3.5947**

3.7 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.2170					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0500e-003	0.0141	0.0181	3.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total	**0.2191**	**0.0141**	**0.0181**	**3.0000e-005**		**8.2000e-004**	**8.2000e-004**		**8.2000e-004**	**8.2000e-004**	**0.0000**	**2.5533**	**2.5533**	**1.7000e-004**	**0.0000**	**2.5574**

3.7 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2800e-003	4.9700e-003	0.0449	7.0000e-005	7.7000e-003	5.0000e-005	7.7500e-003	2.0400e-003	4.0000e-005	2.0900e-003	0.0000	5.9681	5.9681	4.2000e-004	0.0000	5.9787
Total	**6.2800e-003**	**4.9700e-003**	**0.0449**	**7.0000e-005**	**7.7000e-003**	**5.0000e-005**	**7.7500e-003**	**2.0400e-003**	**4.0000e-005**	**2.0900e-003**	**0.0000**	**5.9681**	**5.9681**	**4.2000e-004**	**0.0000**	**5.9787**

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	0.2170					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.0000e-004	1.2900e-003	0.0183	3.0000e-005		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total	**0.2173**	**1.2900e-003**	**0.0183**	**3.0000e-005**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**	**0.0000**	**2.5533**	**2.5533**	**1.7000e-004**	**0.0000**	**2.5574**

3.7 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	6.2800e-003	4.9700e-003	0.0449	7.0000e-005	7.7000e-003	5.0000e-005	7.7500e-003	2.0400e-003	4.0000e-005	2.0900e-003	0.0000	5.9681	5.9681	4.2000e-004	0.0000	5.9787
Total	**6.2800e-003**	**4.9700e-003**	**0.0449**	**7.0000e-005**	**7.7000e-003**	**5.0000e-005**	**7.7500e-003**	**2.0400e-003**	**4.0000e-005**	**2.0900e-003**	**0.0000**	**5.9681**	**5.9681**	**4.2000e-004**	**0.0000**	**5.9787**

3.7 Architectural Coating - 2023

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	0.7054					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	6.2300e-003	0.0424	0.0589	1.0000e-004		2.3000e-003	2.3000e-003		2.3000e-003	2.3000e-003	0.0000	8.2981	8.2981	5.0000e-004	0.0000	8.3105
Total	**0.7116**	**0.0424**	**0.0589**	**1.0000e-004**		**2.3000e-003**	**2.3000e-003**		**2.3000e-003**	**2.3000e-003**	**0.0000**	**8.2981**	**8.2981**	**5.0000e-004**	**0.0000**	**8.3105**

3.7 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0192	0.0149	0.1342	2.1000e-004	0.0250	1.4000e-004	0.0252	6.6400e-003	1.3000e-004	6.7800e-003	0.0000	18.6606	18.6606	1.2700e-003	0.0000	18.6923
Total	**0.0192**	**0.0149**	**0.1342**	**2.1000e-004**	**0.0250**	**1.4000e-004**	**0.0252**	**6.6400e-003**	**1.3000e-004**	**6.7800e-003**	**0.0000**	**18.6606**	**18.6606**	**1.2700e-003**	**0.0000**	**18.6923**

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	0.7054					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	9.7000e-004	4.1800e-003	0.0596	1.0000e-004		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004	0.0000	8.2981	8.2981	5.0000e-004	0.0000	8.3105
Total	**0.7063**	**4.1800e-003**	**0.0596**	**1.0000e-004**		**1.3000e-004**	**1.3000e-004**		**1.3000e-004**	**1.3000e-004**	**0.0000**	**8.2981**	**8.2981**	**5.0000e-004**	**0.0000**	**8.3105**

3.7 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0192	0.0149	0.1342	2.1000e-004	0.0250	1.4000e-004	0.0252	6.6400e-003	1.3000e-004	6.7800e-003	0.0000	18.6606	18.6606	1.2700e-003	0.0000	18.6923
Total	**0.0192**	**0.0149**	**0.1342**	**2.1000e-004**	**0.0250**	**1.4000e-004**	**0.0252**	**6.6400e-003**	**1.3000e-004**	**6.7800e-003**	**0.0000**	**18.6606**	**18.6606**	**1.2700e-003**	**0.0000**	**18.6923**

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	0.0762	0.7252	1.0493	4.4600e-003	0.2462	1.8600e-003	0.2481	0.0659	1.7400e-003	0.0676	0.0000	415.5387	415.5387	0.0195	0.0000	416.0257
Unmitigated	0.0762	0.7252	1.0493	4.4600e-003	0.2462	1.8600e-003	0.2481	0.0659	1.7400e-003	0.0676	0.0000	415.5387	415.5387	0.0195	0.0000	416.0257

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
General Heavy Industry	134.00	134.00	134.00	631,595	631,595
Other Asphalt Surfaces	0.00	0.00	0.00		
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	134.00	134.00	134.00	631,595	631,595

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
General Heavy Industry	16.40	9.50	11.90	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	16.40	9.50	11.90	0.00	0.00	0.00	0	0	0
Other Non-Asphalt Surfaces	16.40	9.50	11.90	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
General Heavy Industry	0.380000	0.150000	0.100000	0.150000	0.000000	0.000000	0.000000	0.220000	0.000000	0.000000	0.000000	0.000000	0.000000
Other Asphalt Surfaces	0.524989	0.030717	0.161165	0.112416	0.014580	0.004690	0.018794	0.121206	0.003615	0.001256	0.005248	0.000725	0.000600
Other Non-Asphalt Surfaces	0.524989	0.030717	0.161165	0.112416	0.014580	0.004690	0.018794	0.121206	0.003615	0.001256	0.005248	0.000725	0.000600

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	29,884.2330	29,884.2330	0.6819	0.1411	29,943.3242
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	29,884.2330	29,884.2330	0.6819	0.1411	29,943.3242
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	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
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
General Heavy Industry	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
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	5.184e +007	29,884.23 30	0.6819	0.1411	29,943.32 42
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**29,884.23 30**	**0.6819**	**0.1411**	**29,943.32 42**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
General Heavy Industry	5.184e +007	29,884.23 30	0.6819	0.1411	29,943.32 42
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**29,884.23 30**	**0.6819**	**0.1411**	**29,943.32 42**

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	0.5533	1.0000e-005	1.1500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2300e-003	2.2300e-003	1.0000e-005	0.0000	2.3800e-003
Unmitigated	0.5533	1.0000e-005	1.1500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2300e-003	2.2300e-003	1.0000e-005	0.0000	2.3800e-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	0.0922					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4609					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1000e-004	1.0000e-005	1.1500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2300e-003	2.2300e-003	1.0000e-005	0.0000	2.3800e-003
Total	**0.5533**	**1.0000e-005**	**1.1500e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.2300e-003**	**2.2300e-003**	**1.0000e-005**	**0.0000**	**2.3800e-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	0.0922					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.4609					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	1.1000e-004	1.0000e-005	1.1500e-003	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	2.2300e-003	2.2300e-003	1.0000e-005	0.0000	2.3800e-003
Total	**0.5533**	**1.0000e-005**	**1.1500e-003**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**2.2300e-003**	**2.2300e-003**	**1.0000e-005**	**0.0000**	**2.3800e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	1,163.8706	36.1193	0.8563	2,322.0166
Unmitigated	1,163.8706	36.1193	0.8563	2,322.0166

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	1107.89 / 0	1,163.8706	36.1193	0.8563	2,322.0166
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**1,163.8706**	**36.1193**	**0.8563**	**2,322.0166**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
General Heavy Industry	1107.89 / 0	1,163.8706	36.1193	0.8563	2,322.0166
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**1,163.8706**	**36.1193**	**0.8563**	**2,322.0166**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	14.5991	0.8628	0.0000	36.1687
Unmitigated	14.5991	0.8628	0.0000	36.1687

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	71.92	14.5991	0.8628	0.0000	36.1687
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**14.5991**	**0.8628**	**0.0000**	**36.1687**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
General Heavy Industry	71.92	14.5991	0.8628	0.0000	36.1687
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**14.5991**	**0.8628**	**0.0000**	**36.1687**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Forklifts	2	8.00	365	50	0.20	CNG

UnMitigated/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
Equipment Type	tons/yr										MT/yr					
Forklifts	0.0446	0.2600	0.3276	3.5000e-004		0.0131	0.0131		0.0120	0.0120	0.0000	30.6882	30.6882	9.9300e-003	0.0000	30.9364
Total	**0.0446**	**0.2600**	**0.3276**	**3.5000e-004**		**0.0131**	**0.0131**		**0.0120**	**0.0120**	**0.0000**	**30.6882**	**30.6882**	**9.9300e-003**	**0.0000**	**30.9364**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
Emergency Generator	1	2	80	600	0.73	Diesel
Fire Pump	1	2	80	62	0.73	Diesel

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

10.1 Stationary Sources

Unmitigated/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
Equipment Type	tons/yr										MT/yr					
Emergency Generator - Diesel (600 - 750 HP)	0.0394	0.1101	0.1004	1.9000e-004		5.7900e-003	5.7900e-003		5.7900e-003	5.7900e-003	0.0000	18.2783	18.2783	2.5600e-003	0.0000	18.3423
Fire Pump - Diesel (50 - 75 HP)	4.0700e-003	0.0133	0.0148	2.0000e-005		1.2000e-003	1.2000e-003		1.2000e-003	1.2000e-003	0.0000	1.8888	1.8888	2.6000e-004	0.0000	1.8954
Total	**0.0435**	**0.1234**	**0.1152**	**2.1000e-004**		**6.9900e-003**	**6.9900e-003**		**6.9900e-003**	**6.9900e-003**	**0.0000**	**20.1670**	**20.1670**	**2.8200e-003**	**0.0000**	**20.2377**

11.0 Vegetation

APPENDIX H – ENERGY CALCULATIONS

Appendix H - Energy Calculations

Construction-Related Petroleum Fuels

The off-road construction equipment fuel usage was calculated through use of the off-road equipment assumptions utilized in the CalEEMod model run provided in Appendix G: Greenhouse Gas Screening Letter – County of Imperial, March 23, 2021, Ldn Consulting, Inc. and the fuel usage calculations provided in the 2017 Off-road Diesel Emission Factors spreadsheet, prepared by CARB (https://ww3.arb.ca.gov/msei/ordiesel.htm). The Spreadsheet provides the following formula to calculate fuel usage from off-road equipment:

Fuel Used = Load Factor x Horsepower x Total Operational Hours x BSFC / Unit Conversion

Where:

Load Factor - Obtained from CalEEMod default values

Horsepower – Obtained from CalEEMod default values

Total Operational Hours – Calculated by multiplying CalEEMod default daily hours by the estimated number of working days for each phase of construction

BSFC – Brake Specific Fuel Consumption (pounds per horsepower-hour) – If less than 100 Horsepower = 0.408, if greater than 100 Horsepower = 0.367

Unit Conversion – Converts pounds to gallons = 7.109

The Following Table shows the off-road construction equipment fuel calculations based on the above formula, which shows that the off-road equipment utilized during construction of the proposed project would consume 561,273 gallons of fuel.

Off-Road Construction Equipment Modeled in CalEEMod and Fuel Used

Equipment Type	Equipment Quantity	Horse-Power	Load Factor	Operating Hours Per Day	Total Operational Hours[1]	Fuel Used (gallons)
Demolition						
Concrete/Industrial Saws	1	81	0.73	8	80	271
Excavators	3	158	0.38	8	240	744
Rubber Tired Dozers	2	247	0.4	8	160	816
Grading						
Graders	1	187	0.41	8	400	1,583
Off-Highway Trucks	7	402	0.38	8	2,800	22,081
Rollers	1	80	0.38	8	400	698
Rubber Tired Dozers	2	247	0.4	8	800	4,080
Scrapers	4	367	0.48	8	1,600	14,551
Tractors/Loaders/Backhoes	1	97	0.37	8	400	824
Building Construction						
Aerial Lifts	7	63	0.31	8	29,120	32,640
Air Compressor	4	78	0.48	8	16,640	35,755
Cranes	7	231	0.29	7	25,480	88,118
Excavators	2	158	0.38	8	8,320	25,788
Forklifts	7	89	0.2	8	29,120	29,748
Generator Set (small)	1	15	0.74	8	4,160	2,650
Generator Sets (large)	4	84	0.74	8	16,640	59,363
Graders	1	187	0.41	8	4,160	16,466
Off-Highway Trucks	1	402	0.38	8	4,160	32,807
Rubber Tired Dozers	1	247	0.4	8	4,160	21,218
Tractors/Loaders/Backhoes	13	97	0.37	7	47,320	97,470
Welders	1	46	0.45	8	4,160	4,942
Trenching						
Excavators	2	158	0.38	8	2,000	6,199
Off-Highway Trucks	3	402	0.38	8	3,000	23,659
Rollers	1	80	0.38	8	1,000	1,745
Skid Steer Loaders	1	65	0.37	8	1,000	1,380
Tractors/Loaders/Backhoes	3	97	0.37	8	3,000	6,179
Paving						
Graders	2	187	0.41	8	1856	7,346
Pavers	1	130	0.42	8	928	2,616
Rollers	2	80	0.38	8	1856	3,238
Rubber Tired Dozers	2	247	0.4	8	1856	9,467
Tractors/Loaders/Backhoes	3	97	0.37	8	2784	5,734

Equipment Type	Equipment Quantity	Horse-Power	Load Factor	Operating Hours Per Day	Total Operational Hours[1]	Fuel Used (gallons)
Architectural Coatings						
Air Compressor	1	78	0.48	6	510	1,096
Total Off-Road Equipment Fuel used during Construction of the Proposed Project (gallons)						**561,273**

Notes:

[1] Based on 10 days for Grading , 50 days for Grading, 520 days for Building Construction, 125 days for Trenching, 116 days for Paving, and 85 days for Architectural Coatings.

Source: CalEEMod Version 2016.3.2, CARB, 2018.

The on-road construction-related vehicle trips fuel usage was calculated through use of the default construction vehicle trip assumptions from the CalEEMod model run. The fleet average miles per gallon rates have been calculated through use of the EMFAC2017 model (https://www.arb.ca.gov/emfac/2017/) and the EMFAC2017 model printouts are attached. The following Table shows the on-road construction vehicle trips modeled in CalEEMod and the fuel usage calculations, which shows that the on-road construction-related vehicle trips would consume 123,306 gallons of fuel for the proposed Project.

On-Road Construction Vehicle Trips Modeled in CalEEMod and Fuel Used

Vehicle Trip Types	Daily Trips	Trip Length (miles)	Total per Day (miles)	Total per Phase (miles)	Fleet Average Miles per Gallon	Fuel Used (gallons)
Demolition						
Worker Trips	15	10.2	153	1,530	25.1	61
Haul Trips	7	20	136	1,360	7.7	176
Grading						
Worker Trips	40	10.2	408	20,400	25.1	814
Building Construction						
Worker Trips	225	10.2	2,295	1,193,400	25.1	47,603
Vendor Trips	88		1,047	544,544	7.7	70,645
Trenching						
Worker Trips	25	10.2	255	31,875	25.1	1,271
Paving						
Worker Trips	25	10.2	255	29,580	25.1	1,180
Architectural Coatings						
Worker Trips	45	10.2	459	39,015	25.1	1,556
Total On-Road Vehicle Fuel used during Construction of the Proposed Project (gallons)						**123,306**

Notes:

[1] Based on 10 days for Grading , 50 days for Grading, 520 days for Building Construction, 125 days for Trenching, 116 days for Paving, and 85 days for Architectural Coatings.

Source: CalEEMod Version 2016.3.2, CARB, 2018.

Operations-Related Petroleum Fuels

The on-road operations-related vehicle trips fuel usage was calculated through use of the total annual vehicle miles traveled assumptions from the CalEEMod model run provided in Appendix G: Greenhouse Gas Screening Letter – County of Imperial, March 23, 2021, Ldn Consulting, Inc., which found that operation of the proposed project would generate 631,595 vehicle miles traveled per year. The calculated total operational miles were then divided by the Imperial County fleet average rate of 27.5 miles per gallon, which was calculated through use of the EMFAC2017 model for year 2021 for Imperial County. The EMFAC2017 model printouts are attached to this Appendix. Based on the above calculation methodology, the operation of the proposed Project would consume 22,985 gallons per year.

EMFAC2017 (v1.0.2) Emissions Inventory

Region Type: County

Region: IMPERIAL

Calendar Year: 2021

Season: Annual

Vehicle Classification: EMFAC2007 Categories

Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption. Note 'day' in the unit is operation day.

Region	Calendar Y	Vehicle Cat	Model Yea	Speed	Fuel	Population	VMT	Trips	Fuel Consumption
IMPERIAL	2021	HHDT	Aggregate	Aggregate	GAS	2.825263	137.49617	56.52785	0.03343
IMPERIAL	2021	LDA	Aggregate	Aggregate	GAS	145175.9	5643786.6	683437.9	186.6888
IMPERIAL	2021	LDT1	Aggregate	Aggregate	GAS	17276.41	612064.25	77482.43	24.00773
IMPERIAL	2021	LDT2	Aggregate	Aggregate	GAS	52024.47	1908388.1	240462.6	80.63031
IMPERIAL	2021	LHDT1	Aggregate	Aggregate	GAS	4280.077	144693.38	63766.77	13.54718
IMPERIAL	2021	LHDT2	Aggregate	Aggregate	GAS	703.9896	23736.979	10488.4	2.547752
IMPERIAL	2021	MCY	Aggregate	Aggregate	GAS	6622.21	59214.749	13244.42	1.502854
IMPERIAL	2021	MDV	Aggregate	Aggregate	GAS	45128.95	1607774.8	205347.3	82.99022
IMPERIAL	2021	MH	Aggregate	Aggregate	GAS	859.4062	7399.0473	85.975	1.434682
IMPERIAL	2021	MHDT	Aggregate	Aggregate	GAS	505.9482	28400.557	10123.01	5.522487
IMPERIAL	2021	OBUS	Aggregate	Aggregate	GAS	132.3029	6896.0896	2647.116	1.352893
IMPERIAL	2021	SBUS	Aggregate	Aggregate	GAS	30.84301	1760.5474	123.372	0.187748
IMPERIAL	2021	UBUS	Aggregate	Aggregate	GAS	8.282969	947.79829	33.13188	0.241693

vehicle miles per day (All Categories)	10045200	401	1,000 gall per day
		400,688	gallons per day
Fleet Avg Miles per gallon	25.1		

EMFAC2017 (v1.0.2) Emissions Inventory

Region Type: County

Region: IMPERIAL

Calendar Year: 2021

Season: Annual

Vehicle Classification: EMFAC2007 Categories

Units: miles/day for VMT, trips/day for Trips, tons/day for Emissions, 1000 gallons/day for Fuel Consumption. Note 'day' in the unit is operation day.

Region	Calendar Y	Vehicle Ca	Model Yea	Speed	Fuel	Population	VMT	Trips	Fuel Consumption
IMPERIAL	2021	HHDT	Aggregate	Aggregated	DSL	4859.163	727200.53	57864.68	102.13909
IMPERIAL	2021	LDA	Aggregate	Aggregated	DSL	1274.529	50425.669	6002.429	0.9672779
IMPERIAL	2021	LDT1	Aggregate	Aggregated	DSL	13.16284	292.61362	42.55079	0.0113065
IMPERIAL	2021	LDT2	Aggregate	Aggregated	DSL	259.9127	11016.192	1284.794	0.2840536
IMPERIAL	2021	LHDT1	Aggregate	Aggregated	DSL	4178.056	148628.22	52554.68	7.1691825
IMPERIAL	2021	LHDT2	Aggregate	Aggregated	DSL	1332.595	49408.266	16762.37	2.5735426
IMPERIAL	2021	MDV	Aggregate	Aggregated	DSL	896.497	36985.877	4343.927	1.2992358
IMPERIAL	2021	MH	Aggregate	Aggregated	DSL	282.4584	2576.735	28.24584	0.2323685
IMPERIAL	2021	MHDT	Aggregate	Aggregated	DSL	2054.337	118673.4	15348.12	11.096555
IMPERIAL	2021	OBUS	Aggregate	Aggregated	DSL	135.3162	9408.1492	1254.028	1.0144107
IMPERIAL	2021	SBUS	Aggregate	Aggregated	DSL	203.9511	6376.6912	2353.568	0.8660474
IMPERIAL	2021	UBUS	Aggregate	Aggregated	DSL	27.95502	3506.4503	111.8201	0.5197596

Diesel Truck (HHDT, MDV, MHDT) vehicle miles per day	882,860	115	1,000 gall per day
		114,535	gallons per day
Diesel Truck Fleet Avg Miles per gallon	7.7		

APPENDIX I – NOISE WORKSHEETS

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 4/27/2021
Case Description: Energy Source Mineral ATLIS Project - All Equipment

---- Receptor #1 ----

Description	Land Use	Baselines (dBA) Daytime	Evening	Night
Nearest Home to North	Residential	55	55	45.0

Description	Impact Device	Usage(%)	Equipment Spec Lmax (dBA)	Actual Lmax (dBA)	Receptor Distance (feet)	Estimated Shielding (dBA)
Flat Bed Truck	No	40		74.3	5500	0
Roller	No	20		80	5500	0
Dozer	No	40		81.7	5500	0
Excavator	No	40		80.7	5500	0
Grader	No	40	85.0		5500	0
Dump Truck	No	40		76.5	5500	0
Compactor (ground)	No	20		83.2	5500	0
Front End Loader	No	40		79.1	5500	0
Scraper	No	40		83.6	5500	0
Crane	No	16		80.6	5500	0
Generator	No	50		80.6	5500	0
Pumps	No	50		80.9	5500	0
Compactor (ground)	No	20		83.2	5500	0
Gradall	No	40		83.4	5500	0
Front End Loader	No	40		79.1	5500	0
Tractor	No	40	84.0		5500	0
Man Lift	No	20		74.7	5500	0
Welder / Torch	No	40		74.0	5500	0
Compressor (air)	No	40		77.7	5500	0
Paver	No	50		77.2	5500	0

Roadway Construction Noise Model (RCNM),Version 1.1

Report date: 4/27/2021
Case Description: Energy Source Mineral ATLIS Project - All Equipment

	Results					
	Calculated (dBA)		Noise Limits (dBA)			
			Day		Evening	
Equipment	***Lmax**	**Leq**	Lmax	Leq	Lmax	Leq
Flat Bed Truck	33.4	29.4	N/A	N/A	N/A	N/A
Roller	39.2	32.2	N/A	N/A	N/A	N/A
Dozer	40.8	36.9	N/A	N/A	N/A	N/A
Excavator	39.9	35.9	N/A	N/A	N/A	N/A
Grader	44.2	40.2	N/A	N/A	N/A	N/A
Dump Truck	35.6	31.6	N/A	N/A	N/A	N/A
Compactor (ground)	42.4	35.4	N/A	N/A	N/A	N/A
Front End Loader	38.3	34.3	N/A	N/A	N/A	N/A
Scraper	42.8	38.8	N/A	N/A	N/A	N/A
Crane	39.7	31.8	N/A	N/A	N/A	N/A
Generator	39.8	36.8	N/A	N/A	N/A	N/A
Pumps	40.1	37.1	N/A	N/A	N/A	N/A
Compactor (ground)	42.4	35.4	N/A	N/A	N/A	N/A
Gradall	42.6	38.6	N/A	N/A	N/A	N/A
Front End Loader	38.3	34.3	N/A	N/A	N/A	N/A
Tractor	43.2	39.2	N/A	N/A	N/A	N/A
Man Lift	33.9	26.9	N/A	N/A	N/A	N/A
Welder / Torch	33.2	29.2	N/A	N/A	N/A	N/A
Compressor (air)	36.8	32.9	N/A	N/A	N/A	N/A
Paver	36.4	33.4	N/A	N/A	N/A	N/A
Total	**44.2**	**48.8**	N/A	N/A	N/A	N/A

*Calculated Lmax is the Loudest value.

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING CONDITIONS

Project: Energy Source Mineral ATLIS
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Major Arterial)				Vehicle Mix 3 (Hwy-111)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	56.48%	11.58%	13.54%	81.60%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	4.57%	0.83%	2.31%	7.71%
Heavy Trucks	0.35%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	5.85%	0.56%	4.28%	10.69%

Road Name: **State Route 111** **Segment:** **North of Hazard Road**

Average Daily Traffic: 3800 Vehicles Vehicle Speed: 65 MPH Vehicle Mix: 3 Roadway Classification: 2-Lane Expressway

	NOISE PARAMETERS AT 130 FEET FROM CENTERLINE				(Equiv. Lane Dist: 129.35 ft)						**Centerline Distance to Noise Contour (in feet)**		
	Noise Adjustments				**Unmitigated Noise Levels**								
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	75.54	-8.52	-6.30	-1.20	59.53	56.25	55.39	51.30	58.81	59.31	70 dBA:	**28**	**30**
Medium Trucks	81.71	-18.77	-6.30	-1.20	55.45	41.26	39.86	39.55	46.20	46.46	65 dBA:	**61**	**65**
Heavy Trucks	85.21	-17.35	-6.30	-1.20	60.37	47.25	43.08	47.13	53.48	53.59	60 dBA:	**132**	**141**
				Total:	**63.68**	**56.89**	**55.75**	**52.91**	**60.11**	**60.52**	55 dBA:	**285**	**303**

Road Name: **State Route 111** **Segment:** **South of McDonald Road**

Average Daily Traffic: 3800 Vehicles Vehicle Speed: 65 MPH Vehicle Mix: 3 Roadway Classification: 2-Lane Expressway

	NOISE PARAMETERS AT 100 FEET FROM CENTERLINE				(Equiv. Lane Dist: 99.15 ft)						**Centerline Distance to Noise Contour (in feet)**		
	Noise Adjustments				**Unmitigated Noise Levels**								
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	75.54	-8.52	-4.56	-1.20	61.26	57.99	57.12	53.03	60.54	61.04	70 dBA:	**29**	**30**
Medium Trucks	81.71	-18.77	-4.56	-1.20	57.18	42.99	41.59	41.28	47.93	48.20	65 dBA:	**62**	**66**
Heavy Trucks	85.21	-17.35	-4.56	-1.20	62.10	48.98	44.82	48.87	55.21	55.32	60 dBA:	**133**	**141**
				Total:	**65.42**	**58.62**	**57.48**	**54.65**	**61.84**	**62.25**	55 dBA:	**286**	**304**

Road Name: **State Route 111** **Segment:** **South of Sinclair Road**

Average Daily Traffic: 6400 Vehicles Vehicle Speed: 65 MPH Vehicle Mix: 3 Roadway Classification: 2-Lane Expressway

	NOISE PARAMETERS AT 100 FEET FROM CENTERLINE				(Equiv. Lane Dist: 99.15 ft)						**Centerline Distance to Noise Contour (in feet)**		
	Noise Adjustments				**Unmitigated Noise Levels**								
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	75.54	-6.26	-4.56	-1.20	63.52	60.25	59.39	55.30	62.80	63.31	70 dBA:	**40**	**43**
Medium Trucks	81.71	-16.50	-4.56	-1.20	59.44	45.25	43.85	43.54	50.20	50.46	65 dBA:	**87**	**93**
Heavy Trucks	85.21	-15.08	-4.56	-1.20	64.36	51.24	47.08	51.13	57.48	57.58	60 dBA:	**188**	**200**
				Total:	**67.68**	**60.88**	**59.75**	**56.91**	**64.10**	**64.51**	55 dBA:	**404**	**431**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT CONSTRUCTION CONDITIONS

Project: Energy Source Mineral ATLIS
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Major Arterial)				Vehicle Mix 3 (Hwy-111)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	56.48%	11.58%	13.54%	81.60%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	4.57%	0.83%	2.31%	7.71%
Heavy Trucks	0.35%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	5.85%	0.56%	4.28%	10.69%

Road Name: **State Route 111** **Segment:** **North of Hazard Road**

Average Daily Traffic: 3853 Vehicles Vehicle Speed: 65 MPH Vehicle Mix: 3 Roadway Classification: 2-Lane Expressway

	NOISE PARAMETERS AT 130 FEET FROM CENTERLINE (Equiv. Lane Dist: 129.35 ft)										**Centerline Distance to Noise Contour (in feet)**		
	Noise Adjustments				**Unmitigated Noise Levels**								
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	75.54	-8.46	-6.30	-1.20	59.59	56.31	55.45	51.36	58.87	59.37	70 dBA:	**29**	**31**
Medium Trucks	81.71	-18.71	-6.30	-1.20	55.51	41.32	39.92	39.61	46.26	46.52	65 dBA:	**62**	**66**
Heavy Trucks	85.21	-17.29	-6.30	-1.20	60.43	47.31	43.14	47.19	53.54	53.65	60 dBA:	**133**	**142**
				Total:	**63.74**	**56.95**	**55.81**	**52.97**	**60.17**	**60.58**	55 dBA:	**287**	**306**

Road Name: **State Route 111** **Segment:** **South of McDonald Road**

Average Daily Traffic: 3800 Vehicles Vehicle Speed: 65 MPH Vehicle Mix: 3 Roadway Classification: 2-Lane Expressway

	NOISE PARAMETERS AT 100 FEET FROM CENTERLINE (Equiv. Lane Dist: 99.15 ft)										**Centerline Distance to Noise Contour (in feet)**		
	Noise Adjustments				**Unmitigated Noise Levels**								
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	75.54	-8.52	-4.56	-1.20	61.26	57.99	57.12	53.03	60.54	61.04	70 dBA:	**29**	**30**
Medium Trucks	81.71	-18.77	-4.56	-1.20	57.18	42.99	41.59	41.28	47.93	48.20	65 dBA:	**62**	**66**
Heavy Trucks	85.21	-17.35	-4.56	-1.20	62.10	48.98	44.82	48.87	55.21	55.32	60 dBA:	**133**	**141**
				Total:	**65.42**	**58.62**	**57.48**	**54.65**	**61.84**	**62.25**	55 dBA:	**286**	**304**

Road Name: **State Route 111** **Segment:** **South of Sinclair Road**

Average Daily Traffic: 6720 Vehicles Vehicle Speed: 65 MPH Vehicle Mix: 3 Roadway Classification: 2-Lane Expressway

	NOISE PARAMETERS AT 100 FEET FROM CENTERLINE (Equiv. Lane Dist: 99.15 ft)										**Centerline Distance to Noise Contour (in feet)**		
	Noise Adjustments				**Unmitigated Noise Levels**								
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	75.54	-6.04	-4.56	-1.20	63.73	60.46	59.60	55.51	63.02	63.52	70 dBA:	**42**	**44**
Medium Trucks	81.71	-16.29	-4.56	-1.20	59.66	45.46	44.06	43.76	50.41	50.67	65 dBA:	**90**	**96**
Heavy Trucks	85.21	-14.87	-4.56	-1.20	64.57	51.46	47.29	51.34	57.69	57.79	60 dBA:	**194**	**207**
				Total:	**67.89**	**61.10**	**59.96**	**57.12**	**64.31**	**64.72**	55 dBA:	**418**	**445**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING WITH PROJECT OPERATIONAL CONDITIONS

Project: Energy Source Mineral ATLIS
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Major Arterial)				Vehicle Mix 3 (Hwy-111)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	56.48%	11.58%	13.54%	81.60%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	4.57%	0.83%	2.31%	7.71%
Heavy Trucks	0.35%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	5.85%	0.56%	4.28%	10.69%

Road Name: State Route 111 **Segment: North of Hazard Road**

Average Daily Traffic: 3824 Vehicles Vehicle Speed: 65 MPH Vehicle Mix: 3 Roadway Classification: 2-Lane Expressway

	NOISE PARAMETERS AT 130 FEET FROM CENTERLINE						(Equiv. Lane Dist: 129.35 ft)				**Centerline Distance to Noise Contour (in feet)**		
	Noise Adjustments				**Unmitigated Noise Levels**								
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	75.54	-8.49	-6.30	-1.20	59.55	56.28	55.42	51.33	58.84	59.34	70 dBA:	**29**	**30**
Medium Trucks	81.71	-18.74	-6.30	-1.20	55.48	41.28	39.88	39.58	46.23	46.49	65 dBA:	**62**	**66**
Heavy Trucks	85.21	-17.32	-6.30	-1.20	60.39	47.28	43.11	47.16	53.51	53.61	60 dBA:	**133**	**141**
				Total:	**63.71**	**56.92**	**55.78**	**52.94**	**60.13**	**60.54**	55 dBA:	**286**	**304**

Road Name: State Route 111 **Segment: South of McDonald Road**

Average Daily Traffic: 3950 Vehicles Vehicle Speed: 65 MPH Vehicle Mix: 3 Roadway Classification: 2-Lane Expressway

	NOISE PARAMETERS AT 100 FEET FROM CENTERLINE						(Equiv. Lane Dist: 99.15 ft)				**Centerline Distance to Noise Contour (in feet)**		
	Noise Adjustments				**Unmitigated Noise Levels**								
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	75.54	-8.35	-4.56	-1.20	61.43	58.15	57.29	53.20	60.71	61.21	70 dBA:	**29**	**31**
Medium Trucks	81.71	-18.60	-4.56	-1.20	57.35	43.16	41.76	41.45	48.10	48.36	65 dBA:	**63**	**67**
Heavy Trucks	85.21	-17.18	-4.56	-1.20	62.27	49.15	44.98	49.03	55.38	55.49	60 dBA:	**136**	**145**
				Total:	**65.58**	**58.79**	**57.65**	**54.81**	**62.01**	**62.42**	55 dBA:	**293**	**312**

Road Name: State Route 111 **Segment: South of Sinclair Road**

Average Daily Traffic: 6555 Vehicles Vehicle Speed: 65 MPH Vehicle Mix: 3 Roadway Classification: 2-Lane Expressway

	NOISE PARAMETERS AT 100 FEET FROM CENTERLINE						(Equiv. Lane Dist: 99.15 ft)				**Centerline Distance to Noise Contour (in feet)**		
	Noise Adjustments				**Unmitigated Noise Levels**								
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	75.54	-6.15	-4.56	-1.20	63.63	60.35	59.49	55.40	62.91	63.41	70 dBA:	**41**	**44**
Medium Trucks	81.71	-16.40	-4.56	-1.20	59.55	45.36	43.96	43.65	50.30	50.56	65 dBA:	**89**	**94**
Heavy Trucks	85.21	-14.98	-4.56	-1.20	64.47	51.35	47.18	51.23	57.58	57.69	60 dBA:	**191**	**203**
				Total:	**67.78**	**60.99**	**59.85**	**57.01**	**64.21**	**64.62**	55 dBA:	**411**	**438**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING YEAR PLUS CUMULATIVE PROJECTS WITHOUT PROJECT CONDITIONS

Project: Energy Source Mineral ATLIS
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Major Arterial)				Vehicle Mix 3 (Hwy-111)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	56.48%	11.58%	13.54%	81.60%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	4.57%	0.83%	2.31%	7.71%
Heavy Trucks	9.00%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	5.85%	0.56%	4.28%	10.69%

Road Name: State Route 111 **Segment: North of Hazard Road**

Average Daily Traffic: 4180 Vehicles Vehicle Speed: 65 MPH Vehicle Mix: 3 Roadway Classification: 2-Lane Expressway

	NOISE PARAMETERS AT 130 FEET FROM CENTERLINE (Equiv. Lane Dist: 129.35 ft)										**Centerline Distance to Noise Contour (in feet)**		
	Noise Adjustments				**Unmitigated Noise Levels**								
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	75.54	-8.11	-6.30	-1.20	59.94	56.67	55.80	51.71	59.22	59.73	70 dBA:	**30**	**32**
Medium Trucks	81.71	-18.35	-6.30	-1.20	55.86	41.67	40.27	39.96	46.61	46.88	65 dBA:	**65**	**70**
Heavy Trucks	85.21	-16.93	-6.30	-1.20	60.78	47.66	43.50	47.55	53.90	54.00	60 dBA:	**141**	**150**
				Total:	**64.10**	**57.30**	**56.17**	**53.33**	**60.52**	**60.93**	55 dBA:	**303**	**323**

Road Name: State Route 111 **Segment: South of McDonald Road**

Average Daily Traffic: 4180 Vehicles Vehicle Speed: 65 MPH Vehicle Mix: 3 Roadway Classification: 2-Lane Expressway

	NOISE PARAMETERS AT 100 FEET FROM CENTERLINE (Equiv. Lane Dist: 99.15 ft)										**Centerline Distance to Noise Contour (in feet)**		
	Noise Adjustments				**Unmitigated Noise Levels**								
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	75.54	-8.11	-4.56	-1.20	61.67	58.40	57.54	53.45	60.95	61.46	70 dBA:	**30**	**32**
Medium Trucks	81.71	-18.35	-4.56	-1.20	57.59	43.40	42.00	41.69	48.35	48.61	65 dBA:	**66**	**70**
Heavy Trucks	85.21	-16.93	-4.56	-1.20	62.51	49.39	45.23	49.28	55.63	55.73	60 dBA:	**141**	**150**
				Total:	**65.83**	**59.03**	**57.90**	**55.06**	**62.25**	**62.66**	55 dBA:	**304**	**324**

Road Name: State Route 111 **Segment: South of Sinclair Road**

Average Daily Traffic: 7040 Vehicles Vehicle Speed: 65 MPH Vehicle Mix: 3 Roadway Classification: 2-Lane Expressway

	NOISE PARAMETERS AT 100 FEET FROM CENTERLINE (Equiv. Lane Dist: 99.15 ft)										**Centerline Distance to Noise Contour (in feet)**		
	Noise Adjustments				**Unmitigated Noise Levels**								
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	75.54	-5.84	-4.56	-1.20	63.94	60.66	59.80	55.71	63.22	63.72	70 dBA:	**43**	**46**
Medium Trucks	81.71	-16.09	-4.56	-1.20	59.86	45.67	44.27	43.96	50.61	50.87	65 dBA:	**93**	**99**
Heavy Trucks	85.21	-14.67	-4.56	-1.20	64.78	51.66	47.49	51.54	57.89	58.00	60 dBA:	**200**	**213**
				Total:	**68.09**	**61.30**	**60.16**	**57.32**	**64.52**	**64.93**	55 dBA:	**431**	**459**

FHWA-RD-77-108 HIGHWAY TRAFFIC NOISE PREDICTION MODEL

Scenario: EXISTING YEAR PLUS CUMULTIVE PROJECTS WITH PROJECT CONDITIONS

Project: Energy Source Mineral ATLIS
Site Conditions: Soft

	Vehicle Mix 1 (Local)				Vehicle Mix 2 (Major Arterial)				Vehicle Mix 3 (Hwy-111)			
Vehicle Type	Day	Evening	Night	Daily	Day	Evening	Night	Daily	Day	Evenin	Night	Daily
Automobiles	73.60%	13.60%	10.22%	97.42%	69.50%	12.90%	9.60%	92.00%	56.48%	11.58%	13.54%	81.60%
Medium Trucks	0.90%	0.90%	0.04%	1.84%	1.44%	0.06%	1.50%	3.00%	4.57%	0.83%	2.31%	7.71%
Heavy Trucks	9.00%	0.04%	0.35%	0.74%	2.40%	0.10%	2.50%	5.00%	5.85%	0.56%	4.28%	10.69%

Road Name: State Route 111 **Segment: North of Hazard Road**

Average Daily Traffic: 4204 Vehicles Vehicle Speed: 65 MPH Vehicle Mix: 3 Roadway Classification: 2-Lane Expressway

	NOISE PARAMETERS AT 130 FEET FROM CENTERLINE						(Equiv. Lane Dist: 129.35 ft)				**Centerline Distance to Noise Contour (in feet)**		
	Noise Adjustments				**Unmitigated Noise Levels**								
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	75.54	-8.08	-6.30	-1.20	59.96	56.69	55.83	51.74	59.25	59.75	70 dBA:	**30**	**32**
Medium Trucks	81.71	-18.33	-6.30	-1.20	55.89	41.69	40.30	39.99	46.64	46.90	65 dBA:	**66**	**70**
Heavy Trucks	85.21	-16.91	-6.30	-1.20	60.80	47.69	43.52	47.57	53.92	54.03	60 dBA:	**141**	**151**
				Total:	**64.12**	**57.33**	**56.19**	**53.35**	**60.54**	**60.96**	55 dBA:	**305**	**324**

Road Name: State Route 111 **Segment: South of McDonald Road**

Average Daily Traffic: 4330 Vehicles Vehicle Speed: 65 MPH Vehicle Mix: 3 Roadway Classification: 2-Lane Expressway

	NOISE PARAMETERS AT 100 FEET FROM CENTERLINE						(Equiv. Lane Dist: 99.15 ft)				**Centerline Distance to Noise Contour (in feet)**		
	Noise Adjustments				**Unmitigated Noise Levels**								
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	75.54	-7.95	-4.56	-1.20	61.82	58.55	57.69	53.60	61.11	61.61	70 dBA:	**31**	**33**
Medium Trucks	81.71	-18.20	-4.56	-1.20	57.75	43.55	42.16	41.85	48.50	48.76	65 dBA:	**67**	**72**
Heavy Trucks	85.21	-16.78	-4.56	-1.20	62.66	49.55	45.38	49.43	55.78	55.89	60 dBA:	**145**	**154**
				Total:	**65.98**	**59.19**	**58.05**	**55.21**	**62.41**	**62.82**	55 dBA:	**312**	**332**

Road Name: State Route 111 **Segment: South of Sinclair Road**

Average Daily Traffic: 7195 Vehicles Vehicle Speed: 65 MPH Vehicle Mix: 3 Roadway Classification: 2-Lane Expressway

	NOISE PARAMETERS AT 100 FEET FROM CENTERLINE						(Equiv. Lane Dist: 99.15 ft)				**Centerline Distance to Noise Contour (in feet)**		
	Noise Adjustments				**Unmitigated Noise Levels**								
Vehicle Type	REMEL	Traffic Adj.	Dist Adj.	Finite Adj	Leq Peak	Leq Day	Leq Eve.	Leq Night	Ldn	CNEL		Ldn	CNEL
Automobiles	75.54	-5.75	-4.56	-1.20	64.03	60.76	59.89	55.80	63.31	63.82	70 dBA:	**44**	**47**
Medium Trucks	81.71	-15.99	-4.56	-1.20	59.95	45.76	44.36	44.05	50.70	50.97	65 dBA:	**94**	**100**
Heavy Trucks	85.21	-14.57	-4.56	-1.20	64.87	51.75	47.59	51.64	57.99	58.09	60 dBA:	**203**	**216**
				Total:	**68.19**	**61.39**	**60.26**	**57.42**	**64.61**	**65.02**	55 dBA:	**437**	**466**

APPENDIX J – WATER SUPPLY ASSESSMENT – ENERGY SOURCE MINERALS, LLC

2021

WATER SUPPLY ASSESSMENT – ES MINERALS

PREPARED FOR IMPERIAL COUNTY PLANNING & DEVELOPMENT SERVICES

BY DUBOSE DESIGN GROUP

APRIL 21, 2021

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ACRONYMS

A-3	Agricultural Zone - 3
AF	Acre-Foot or Acre-Feet
AFY	Acre-Feet per Year
AOP	Annual Operations Plan
APN	Assessor's Parcel Number
CAP	Central Arizona Project
CDCR	California Department of Corrections and Rehabilitation
CDPH	California Department of Public Health
CDWR	California Department of Water Resources
CEQA	California Environmental Quality Act
CRWDA	Colorado River Water Delivery Agreement
CUP	Conditional Use Permit
CVWD	Coachella Valley Water District
CWC	California Water Code
EDP	IID Equitable Distribution Plan
EHS	Environmental Health & Safety
EIS	Environmental Impact Statement
G	Land Zoning Geothermal
HR1	Hudson Ranch 1
ICPDS	Imperial County Planning and Development Services
ICS	Intentionally Created Surplus
IID	Imperial Irrigation District
IOPP	Inadvertent Overrun Payback Policy
ISG	Interim Surplus Guidelines
IRWMP	Integrated Regional Water Management Plan
IWSP	Interim Water Supply Policy
KAF	Thousand Acre Feet

LAFCO	Local Agency Formation Commission
LCR	Lower Colorado Region
LCRWSP	Lower Colorado Water Supply Project
M-2	Land Zoning Industrial-2
MCI	Municipal, commercial, industrial
MGD	Million Gallons per Day
MW	Megawatt
MWD	Metropolitan Water District of Southern California
NAF	Naval Air Facility
PE	Land Zoning Pre Existing
PVID	Palo Verde Irrigation District
Q2	Financial Quarter 2
Q3	Financial Quarter 3
QSA	Quantification Settlement Agreement and Related Agreements
SB	Senate Bill
SDCWA	San Diego County Water Authority
SNWA	Southern Nevada Water Authority
SWRCB	State Water Resource Control Board
TLCFP	Temporary Land Conversion Fallowing Policy
USBR	United States Bureau of Reclamation
USEPA	United States Environmental Protection Agency
WSA	Water Supply Assessment

PURPOSE OF WATER SUPPLY ASSESSMENT

This Water Supply Assessment (WSA) was prepared for the Imperial County Planning & Development Services (Lead Agency) by Dubose Design Group, regarding Energy Source Minerals, LLC (ES Minerals) (the "Applicant"). This study is a requirement of California law, specifically Senate Bill 610 (referred to as SB 610). SB 610 is an act that amended Section 21151.9 of the Public Resources Code, and Sections 10631, 10656, 10910, 10911, 10912, and 10915 of the Water Code. SB 221 is an act that amended Section 11010 of the Business and Professions Code, while amending Section 65867.5 and adding Sections 66455.3 and 66473.7 to the Government Code. SB 610 was approved by the Governor and filed with the Secretary of State on October 9, 2001, and became effective January 1, 2002.[1] SB 610 requires a lead agency, to determine that a project (as defined in CWC Section 10912) subject to California Environmental Quality Act (CEQA), to identify any public water system that may supply water for the project and to request the applicants to prepare a specified water supply assessment. This study has been prepared pursuant to the requirements of CWC Section 10910, as amended by SB 610 (Costa, Chapter 643, Stats. 2001). The purpose of SB 610 is to advance water supply planning efforts in the State of California; therefore, SB 610 requires the Lead Agency, to identify any public water system or water purveyor that may supply water for the project and to prepare the WSA after a consultation. Once the water supply system is identified and water usage is established for construction and operations for the life of the project, the lead agency is then able to coordinate with the local water supplier and make informed land use decisions to help provide California's cities, farms and rural communities with adequate water supplies.

This study has been prepared pursuant to the requirements of CWC Section 10910, as amended by SB 610 (Costa, Chapter 643, Stats. 2001). The purpose of SB 610 is to advance water supply

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[1] SB 610 amended Section 21151.9 of the California Public Resources Code, and amended Sections 10631, 10656, 10910, 10911, 10912, and 10915, repealed Section 10913, and added and amended Section 10657 of the Water Code. SB 610 was approved by California Governor Gray Davis and filed with the Secretary of State on October 9, 2001.

planning efforts in the State of California; therefore, SB 610 requires the Lead Agency, to identify any public water system or water purveyor that may supply water for the project and to prepare the WSA after a consultation. Once the water supply system is identified and water usage is established for construction and operations for the life of the project, the lead agency is then able to coordinate with the local water supplier and make informed land use decisions to help provide California's cities, farms and rural communities with adequate water supplies.

Under SB 610, water supply assessments must be furnished to local governments for inclusion in any environmental documentation for certain projects (as defined in California Water Code (CWC) Section 10912 [a]) that are subject to the California Environmental Quality Act (CEQA). Due to increased water demands statewide, this water bill seeks to improve the link between information on water availability and certain land use decisions made by cities and counties. This bill takes a significant step toward managing the demand placed on California's water supply. It provides further regulations and incentives to preserve and protect future water needs. Ultimately, this bill will coordinate local water supply and land use decisions to help provide California's cities, farms, rural communities, and industrial developments with adequate long-term water supplies. The WSA will allow the lead agency to determine whether water supplies will be sufficient to satisfy the demands of the project, in addition to existing and planned future uses.

PROJECT DETERMINATION ACCORDING TO SB 610 - WATER SUPPLY ASSESSMENT

With the introduction of SB 610, any project under the California Environmental Quality Act (CEQA) shall provide a Water Supply Assessment if the project meets the definition of CWC § 10912. Water Code section 10911(c) requires for that the lead agency "determine, based on the entire record, whether projected water supplies will be sufficient to satisfy the demands of the project, in addition to existing and planned future uses." Specifically, Water Code section 10910(c)(3) states that "If the projected water demand associated with the proposed project was not accounted for in the most recently adopted urban water management plan, or the public water system has no urban water management plan, the water supply assessment for the project shall include a discussion with regard to whether the total projected water supplies, determined to be available by the city or county for the project during normal, single dry, and multiple dry water years during a 20 year projection, will meet the projected water demand associated with the proposed project, in addition to the public water system's existing and planned future uses, including agricultural and manufacturing uses."

After review of CWC § 10912a, and Section 10912 (a)(5)(B), it was determined that the ES Minerals ATLiS, commercial lithium hydroxide production plant, is deemed a project as it is considered an industrial water use project use that is considered an industrial plant of 40 acres or more in accordance to CWC § 10912a (5). The proposed project totals 92 acres which exceeds the 40 acre or less allowance.

EXECUTIVE SUMMARY

Imperial Irrigation District (IID) and Imperial County Planning & Development Services (ICPDS) have requested a WSA as part of the environmental review for the proposed **ES Mineral** Project. This study is intended for use by the ICPDS in its evaluation of water supplies for existing and future land uses. The evaluation examines the following water elements:

- Water availability during a normal year
- Water availability during a single dry, and multiple dry water years
- Water availability during a 30-year projection to meet existing demands, with a 2-year construction window.
- Expected 30-year water demands of the project for operations with an added 2-year window for construction.
- Reasonably foreseeable planned future water demands to be served by the IID

The proposed Project site is located within IID's Imperial Unit and district boundary and as such is eligible to receive water service. IID has adopted an Interim Water Supply Policy (IWSP) for Non-Agricultural Projects, from which water supplies can be contracted to serve new developments within IID's water service area. For applications processed under the IWSP, applicants shall be required to pay a processing fee and, after IID board approval of the corresponding agreement, will be required to pay a reservation fee(s) and annual water supply development fees.

The IWSP sets aside 25,000 acre-feet annually (AFY) of IID's Colorado River water supply to serve new non- agricultural projects. As of March 2021, a balance of 23,800 AFY remain available under the IWSP for new non-agricultural projects ensuring reasonably sufficient supplies for such projects. The proposed Project water demand for construction for a period of 2 years is approximately 56 AFY, representing .025% of the annual unallocated supply set aside for new non-agricultural projects, and the total water demand for operations is approximately **3,400** AFY for 30 years and represents **14** % of the annual unallocated supply set aside for new non-agricultural projects. Thus, the proposed Project's estimated water demand **would not** affect IID's ability to provide water to other users in IID's water service area.

Table 1: *Project APNs, Canals and Gates and Land Relationship to Project*

IID Gate/ Canal	APN/Acres	Zoning	Purpose of Water Usage
"O" Lateral/Gate 32 "N" Lateral/Gate TBD	020-100-044 65.06 Acres (currently) Expected to be 40.3 (after subdivision map)	M-2_G-PE (Medium Industrial, Geothermal Overlay, Preexisting Allowed/Restricted)	Existing water use and demand for Hudson Ranch 1 will continue at the same level under an existing Water Supply Agreement with IID. Water source will be extended to include "N" Lateral as may be needed to accommodate shared water facilities with ES Minerals.
"O" Lateral/Gate 32 "N" Lateral/Gate TBD	New Parcel (79.91 AC) 25.03 AC (020-100-044) 14.88 AC (020-100-025) 40.00 AC (020-100-046)	M-2_G-PE (Medium Industrial, Geothermal Overlay, Preexisting Allowed/Restricted)	After a proposed parcel map, the water usage will be for mineral extraction at the newly formed subject site including lithium production, processing, landscaping and fire suppression. The newly formed APN will receive water from both the "O" Lateral and the "N" Lateral; the final APN and ES Minerals project site will be approximately 79.91 acres after the proposed parcel map.
Not Applicable	020-100-025 14.88 Acres	M-2-G-PE (Medium Industrial, Geothermal Overlay, Pre-Existing Allowed/Restricted	After proposed parcel map and acquisition of the 14.88 acres, the water usage will be for mineral extraction under the newly formed parcel and this existing APN will cease to exist.
Not Applicable	020-100-046 80 Acres	M-2-G-PE (Medium Industrial, Geothermal Overlay, Pre-Existing Allowed/Restricted	After proposed parcel map, 40 acres will be assigned to the new parcel and the 40 remaining acres will not have any water service under this Project.

Table 2: Project Water Use Summary

Water Use	Expected Years	Total AFY
Construction	2 Years	56 AFY
Total for Water Construction		112 AF
Processing, Daily Plant Operations & Mitigation	30 Years	3,400 AFY
Breakdown		
Operations		3,393 AFY
Landscaping		1 AFY
Fire Suppression		2 AFY
Dust Mitigation		4 AFY
Total Water Usage for Processing Daily Plant Operations & Mitigation		102,000 AFY
Total Water Usage for Project	**32 Years**	**102,112 AF**

Table 3: Amortized Project Water Summary

Project Water Use – Life of Project	Years	Total Years Combined*	IWSP (AFY)	% of IWSP per Year**
56 AFY	2 Years	112	23,800 AFY	.025%
3,400 AFY	30 Years	102,000 AF	23,800 AFY	14 %

*(56AF/YEAR x 2 Years)

**(112 AF/ YR/23,800 AF/YR x 100)

*3,400 AF/Year x 30 Years)

**(3,400 AF/ YR/23,800 AF/YR x 100)

PROJECT DESCRIPTION

ES Minerals is proposing to develop a commercial lithium hydroxide production plant on approximately 92 acres of land in Imperial County, California. The commercial lithium hydroxide production plant is known as The ATLiS plant and facilities The ATLiS plant and facilities will be located about 3 miles southwest of the community of Niland near the southwest corner of the existing Hudson Ranch 1 Geothermal Power Plant (HR1) site. (**Figure 1.** Site Regional Location, and

Figure 2. Aerial View of Project Site and Vicinity). The property is zoned for manufacturing (M-2-G-PE), and is located entirely within the existing Salton Sea Geothermal Overlay Zone. The proposed ATLiS plant site and associated plant facilities are proposed to be built on one new parcel consisting of portions of the three current parcels that through the subdivision process are being subdivided and/or combined and are privately owned by Hudson Ranch Power I LLC in an unincorporated area of the County: APNs 020-100-025, 020-100-044, 020-100-046. Currently, the HR1 power plant exists within the northeast corner of the 65.06-acre parcel, APN 020-100-044. The three parcels totaling 92 acres of land will undergo a minor subdivision map application to form the new parcel for the Project (**Figure 3.** Project Layout/Site Plan).

The industrial facility involves a Conditional Use Permit that will allow for the commercial lithium hydroxide production plant. The facility will process geothermal brine from the neighboring Hudson Ranch Power I Geothermal Plant (HR1) to produce lithium hydroxide, as well as zinc and manganese products which would be sold commercially. The Project facilities will be located in the north half of Section 24 in Township 11 South, Range 13 East, San Bernardino Base and Meridian.

All parcels that make up the Project site are zoned medium industrial (M-2) and are located within the geothermal overlay zone (G) and pre-existing allowed/restricted overlay zone (PE). The M-2 zone is to designate areas for wholesale commercial, storage, trucking, assembly type manufacturing, general manufacturing, research and development, medium intensity fabrication and other similar medium intensity processing facilities. Land in the PE overlay zone is also classified in another "base" zone, and is intended to allow an existing base zoned use to continue with its current use, even though through the strict interpretation of the County General Plan and Zoning Ordinances, such use is a pre-existing, non-conforming use. Additionally, the geothermal overlay zone designates the area for geothermal energy extraction and associated activities. The Project is located entirely within the Salton Sea Geothermal Overlay Zone.

The sewage from the Project will be processed by the HR1 sewer treatment plant, hence no further permitting for solid waste is required. Potable water will be provided from the existing HR1 permitted water treatment plant via an agreement between HR1 and the ATLiS Plant. An application to modify the HR1 water treatment plant by using both the existing approved plant and the former Simbol plant will be made to Environmental Health & Safety (EHS) to HR1.

The Project will need to contract with IID to deliver up to 3,400 AFT of untreated water, via the "O" Lateral and "N" Lateral as noted in Table 1. The primary source will be the "O" Lateral, Gate 32 while a new gate is proposed on the "N" Lateral to be used when the "O" Lateral is unable to accommodate the combined demand of the existing and new proposed facilities.

Fire Water and Freshwater Pond

The Project will share with HR1 the fire suppression system, and the freshwater storage containment pond. The fire suppression system will be re-designed to accommodate the overall fire protection obligation to both plants along with the necessary controls. The raw water storage pond currently located on the east side of the HR1 plant will continue to receive canal water from the IID "O" lateral. However, a backup delivery line will also be installed from the "N" lateral located about ¼ mile south of the plant. This redundancy is necessary for two reasons, first when IID does maintenance work on canals they can be out of service for several days and second in the event of a natural interruption such as an earthquake that may render the "O" lateral out of service. The Imperial County Fire Department will be consulted as appropriate to review and approve the proposed fire water and freshwater pond facilities. A 500,000-gallon above-ground water tank will be constructed to serve as the primary water supply for the joint fire suppression system for the HR1 and ATLiS sites.

Construction Water Supply Source and Requirements

Project construction would begin when all necessary permits are obtained, expected to be Quarter Three (Q3) of 2021. Construction is expected to be complete Quarter Two (Q2) of 2023. All work would occur in one phase, with approximately 90% of work occurring during daylight hours over 5 or 6 days per week over an intermittent 24-month period. It is estimated that up to 50,000 gallons per day of water will be needed during Project construction for fugitive dust control during

Project site grading and construction activities. This water will be purchased from the IID and will be transported to the site via temporary pipeline or via water truck.

Operational Water Supply Source and Requirements

Approximately 90,000 gallons per hour (g/h) or about 3,400 acre-feet per year (AFY) of canal water will be purchased from the IID for project cooling water makeup and additional process water and mitigation. Approximately 112 g/h or about 3 AFY of the canal water to be purchased will be used for potable water purposes, including potable washbasin water, eyewash equipment water, water for showers and toilets in crew change quarters, and sink water in the sample laboratory, this water will be supplied through the joint facility of Hudson Ranch 1 which has access to a potable water system as stated previously through a joint agreement. During the operational years of the project, the project is expected to use 3,400 AFY for the duration of the projects life of 30 years with an additional two year construction window. The water from the "O" Lateral gate 32 is the proposed primary lateral. Due to the fact that this gate is already supplying water to APN 020-100-044, the applicant will have to adhere to IID's procedures for a separate meter. This will all need to be decided upon the direction of IID's water engineering department and regulations and incorporated into a Water Supply Agreement.

The existing H1 facility treats water for potable purposes which will accommodate the proposed ES Minerals Project. Therefore, the proposed Project will only need the water identified under this Water Supply Assessment. The Project will need to contract with IID to deliver up to 3,400 AFY of untreated water, via the IID "O" lateral or "N" lateral (proposed new service line). The Project is anticipated to use approximately 3,400 AFY of water to operate a commercial lithium hydroxide production plant. This WSA does not include an analysis of water supply for domestic potable water use. The water supply analyzed is for processing, landscaping, and fire suppression needs. Site restoration water will be assessed via a Site Abandonment Plan.

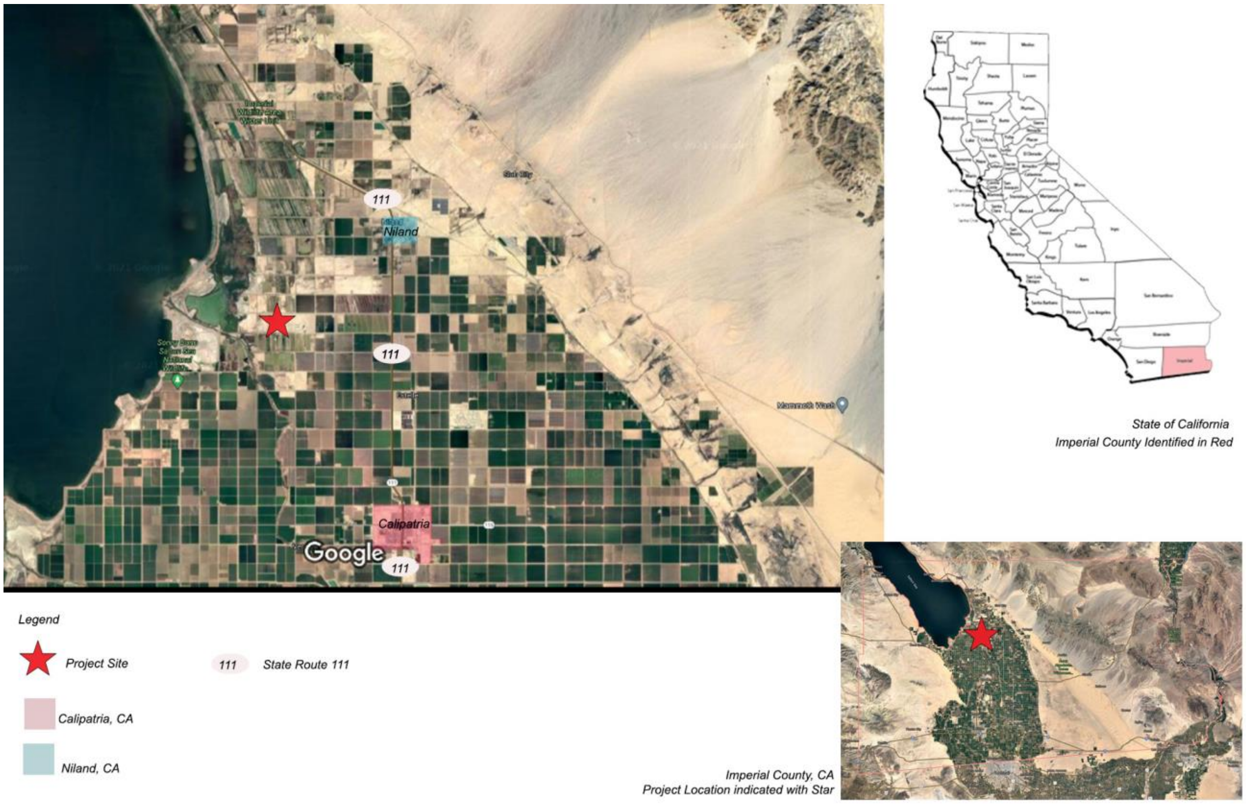
Lead Agency Approval

Imperial County Planning Department would be the lead agency for the proposed Project. The following permits would be required from the lead agency:

- Imperial County Planning Department – Minor Subdivision (APN 020-100-044, -046, -025)
- Imperial County Planning Department – Conditional Use Permit
- Imperial County Planning Department – Development Agreement (if required)
- Imperial County Building Department – Building and Grading Permits
- Imperial County Public Works Department – Encroachment Permit(s)

Potable/domestic water will be provided from the existing HR1 permitted water treatment plant via an agreement between HR1 and the ATLiS Plant. An application to modify the HR1 water treatment plant by using both the existing approved plant and the former Simbol plant will be made to Environmental Health & Safety (EHS) to HR1. The project will only be seeking raw water from the indicated canals for construction and operations.

Figure 1: Project Site Regional Location



State of California
Imperial County Identified in Red

Imperial County, CA
Project Location indicated with Star

Figure 2: Aerial Map of Project Vicinity

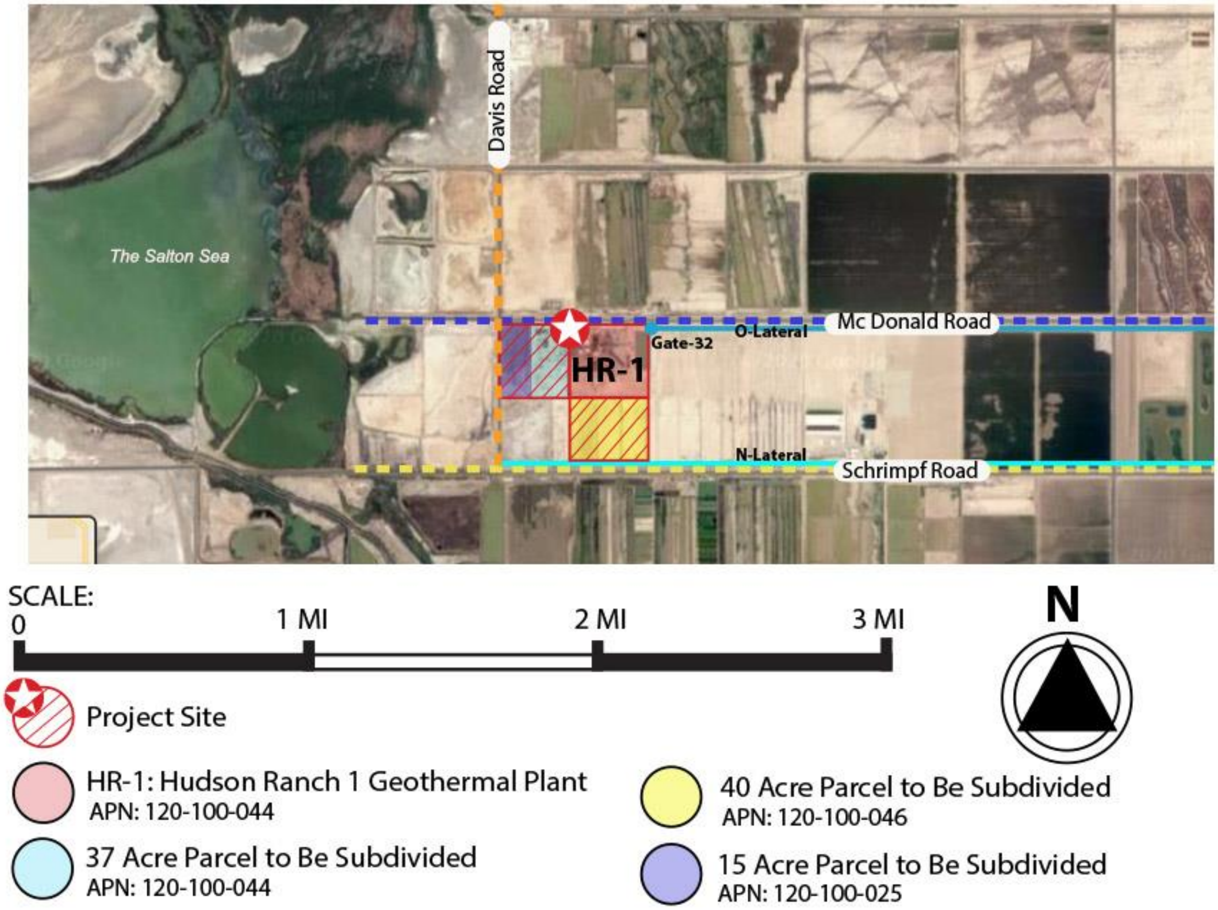
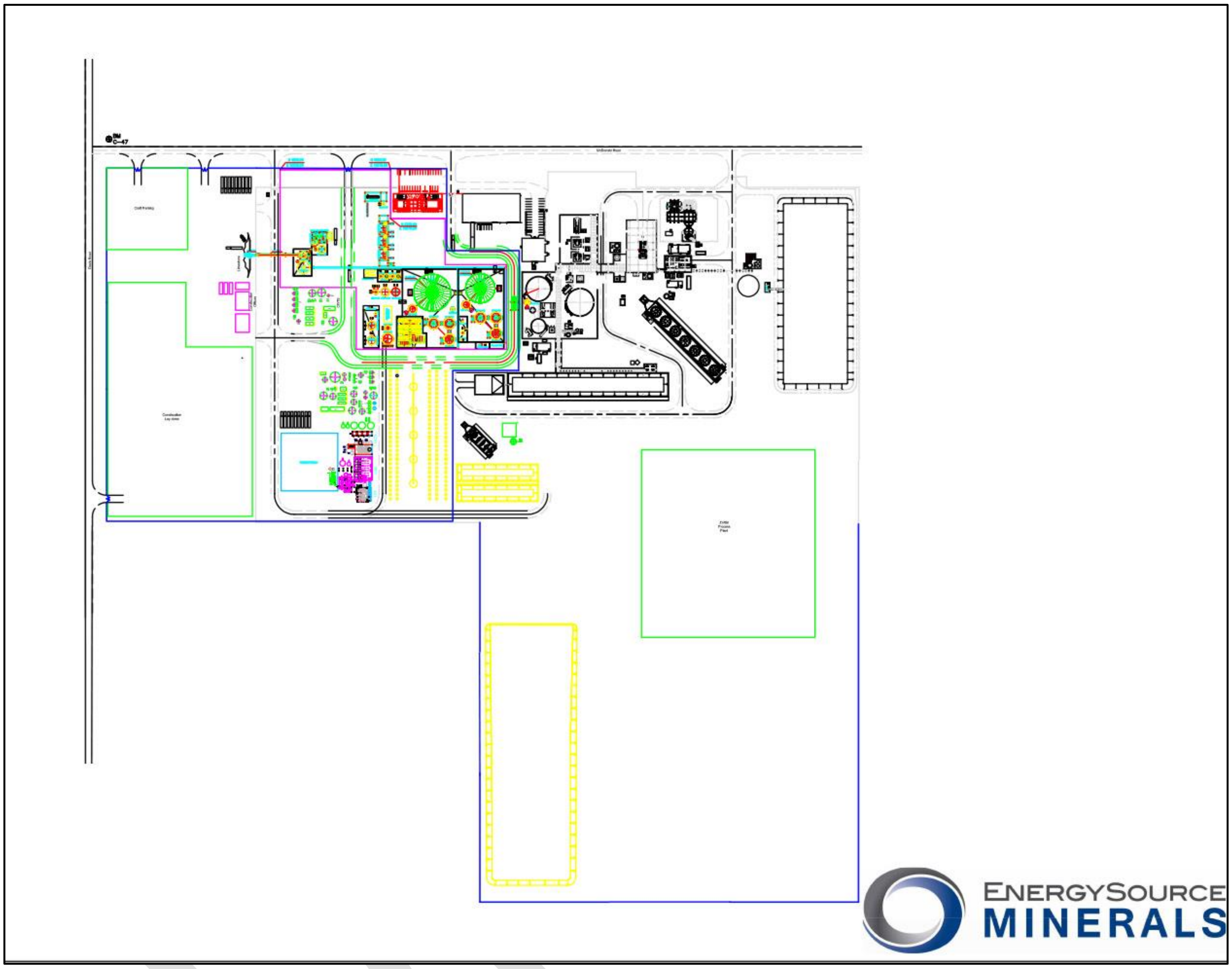


Figure 3: Project Layout/ Site Plan



DESCRIPTION OF IID SERVICE AREA

The proposed Project site is located in Imperial County in the southeastern corner of California. The County is comprised of approximately 4,597 square miles or 2,942,080 acres.[2] Imperial County is bordered by San Diego County to the west, Riverside County to the north, the Colorado River/Arizona boundary to the east, and 84 miles of International Boundary with the Republic of Mexico to the south. Approximately fifty percent of Imperial County is undeveloped land under federal ownership and jurisdiction. The Salton Sea accounts for approximately 11 percent of Imperial County's surface area. In 2020, fifteen percent (15%) of the area was in irrigated agriculture (463,948 acres), including 14,676 acres of the Yuma Project, some 35 sections or 5,600 acres served by Palo Verde Irrigation District (PVID), and 443,672 acres served by IID.[3], [4]

The area served by IID is located in the Imperial Valley, which is generally contiguous with IID's Imperial Unit, lies south of the Salton Sea, north of the U.S./Mexico International Border, and generally in the 658,942 acre area between IID's Westside Main and East Highline Canals.[5] In 2020, IID delivered untreated water to 443,677 net irrigated acres, predominantly in the Imperial Valley, along with small areas of East and West Mesa land.

The developed area consists of seven incorporated cities (Brawley, Calexico, Calipatria, El Centro, Holtville, Imperial and Westmorland), three unincorporated communities (Heber, Niland, Seeley), and three institutions (Naval Air Facility [NAF] El Centro, Calipatria CDCR, and Centinela CDCR) and supporting facilities. **Figure 4** provides a map of the IID Imperial Unit boundary, as well as cities, communities, and main canals.

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[2] *Imperial County General Plan*, Land Use Element 2008 Update

[3] *USBR website: Yuma Project. 7 June 2017, PVID website: About Us, Acreage Map. 7 June 2017.*

[4] Palo Verde Irrigation District Acreage Map <http://www.pvid.org/pviddocs/acreage_2012.pdf> 7 June 2013

[5] *IID Annual Inventory of Areas Receiving Water Years 2017, 2016, 2015*

Climate Factors

Imperial Valley, located in the Northern Sonoran Desert, which has a subtropical desert climate is characterized by hot, dry summers and mild winters. Clear and sunny conditions typically prevail, and frost is rare. The region receives 85 to 90 percent of possible sunshine each year, the highest in the United States. Winter temperatures are mild rarely dropping below 32°F, but summer temperatures are very hot, with more than 100 days over 100°F each year. The remainder of the year has a relatively mild climate with temperatures averaging in the mid-70s.

The 100-year average climate characteristics are provided in Table 4. Rainfall contributes around 50,000 AF of effective agricultural water per inch of rain. Most rainfall occurs from November through March; however, summer storms can be significant in some years. Annual areawide rainfall is shown in Table 5. The thirty-year, 1990-2020, average annual air temperature was 73.6°F, and average annual rainfall was 2.65 inches, Table 5 and Table **3**. This record shows that while average annual rainfall has fluctuated, the 10-year average temperatures have slightly increased over the 30-year averages.

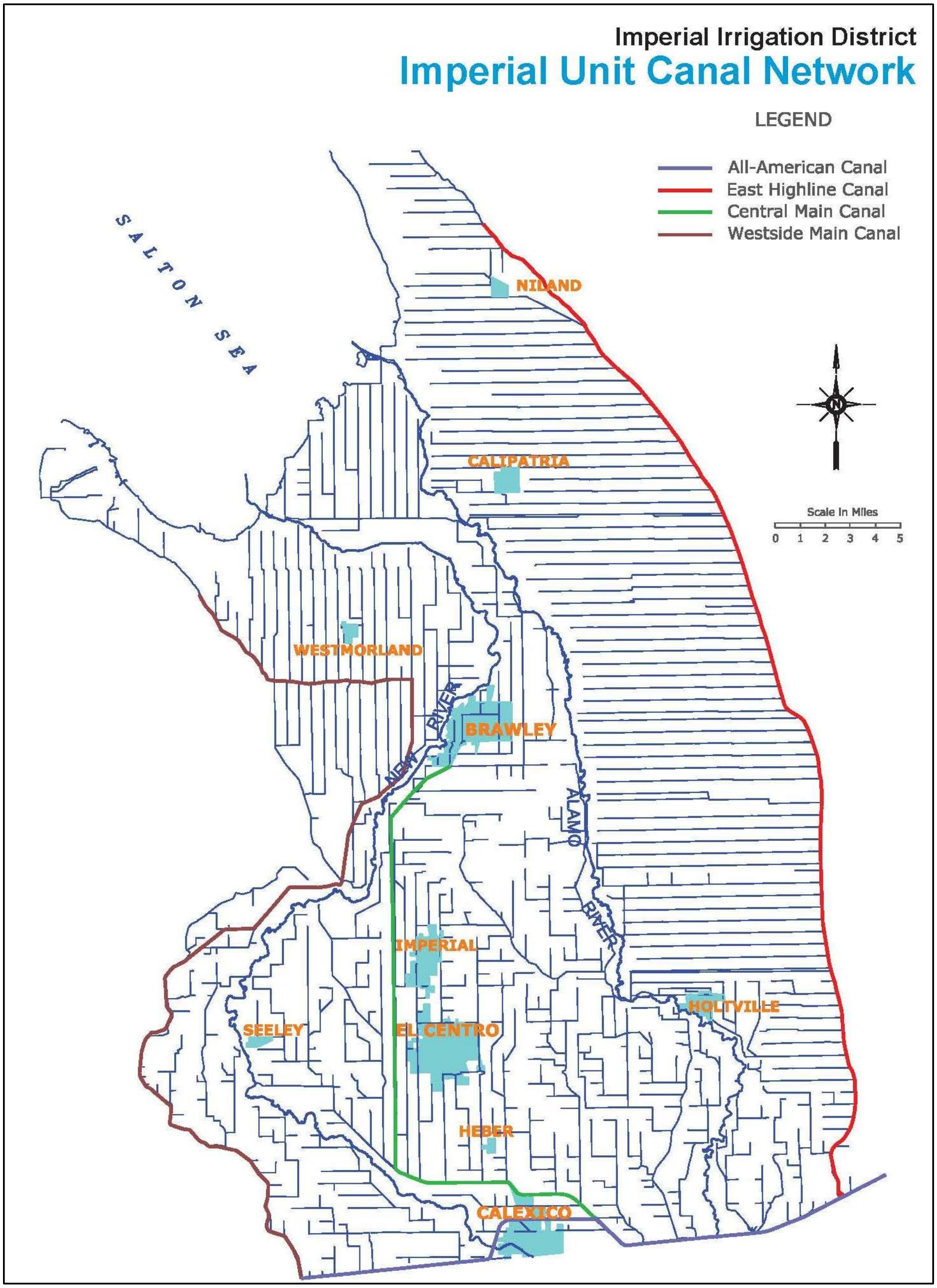

Figure 4 IID Imperial Unit Boundary and Canal Network

Table 4 Climate Characteristics, Imperial, CA 100-Year Record, 1920-2019

Climate Characteristic	Annual Value
Average Precipitation (100-year record, 1920-2019)	2.59 inches (In)
Minimum Temperature, Jan 1937	16 °F
Maximum Temperature, July 1995	121 °F
Average Minimum Temperature, 1920-2019	48.2 °F
Average Maximum Temperature, 1920-2019	98.2 °F
Average Temperature, 1920-2019	72.9 °F

Source: IID Imperial Weather Station Record

Table 5: IID Areawide Annual Precipitation (In), (1990-2019)

1990	1991	1992	1993	1994	1995	1996
1.646	3.347	4.939	2.784	1.775	1.251	0.685
1997	1998	1999	2000	2001	2002	2003
1.328	2.604	1.399	0.612	0.516	0.266	2.402
2004	2005	2006	2007	2008	2009	2010
4.116	4.140	0.410	1.331	1.301	0.619	3.907
2011	2012	2013	2014	2015	2016	2017
2.261	2.752	2.772	1.103	2.000	1.867	2.183
2018	2019					
1.305	3.017					

Source: Computation based on polygon average of CIMIS as station came online in the WIS. [6]

Notable from Table 5 (above) and Table 6 (below) is that while average annual rainfall measured at IID Headquarters in Imperial, CA, has been decreasing, monthly average temperatures are remarkably consistent.

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[6] From 1/1/1990-3/23/2004, 3 CIMIS stations: Seeley, Calipatria/Mulberry, Meloland; 3/24/2004-7/5/2009, 4 CIMIS stations (added Westmorland N.); 7/6/2009-12/1/2009, 3 CIMIS stations: Westmorland N. offline; 12/2/2009-2/31/2009, 4 CIMIS stations, Westmorland N. back online; 1/1/2010-9/20/2010.

Table 6: Monthly Mean Temperature (°F) – Imperial, CA 10-Year, 30-Year & 100-Year (2010-2019, 1990-2019, 1920-2019)

	Jan			Feb			Mar			Apr		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
10-year	82	32	56	85	35	60	94	41	67	99	47	72
30-year	81	33	57	84	37	60	92	41	66	99	47	71
100-year	80	31	55	84	35	59	91	40	64	98	46	71
	May			Jun			Jul			Aug		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
10-year	105	52	76	115	61	87	114	70	92	114	70	92
30-year	105	54	78	113	60	86	114	68	92	113	70	92
100-year	105	52	78	112	59	86	114	68	92	113	68	91
	Sep			Oct			Nov			Dec		
	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg	Max	Min	Avg
10-year	111	61	87	100	51	75	91	38	64	81	31	55
30-year	110	62	87	101	50	76	90	39	64	79	32	55
100-year	110	60	86	101	49	75	90	38	63	80	32	56

Table 7 Monthly Mean Rainfall (In) – Imperial, CA 10-Year, 30-Year & 100-Year (2010-2019, 1990-2019, 1920-2019)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
10-year	0.54	0.28	0.15	0.04	0.08	0.01	0.24	0.28	0.28	0.14	0.26	0.48	2.77
30-year	0.49	0.41	0.26	0.07	0.06	0.00	0.14	0.22	0.27	0.16	0.22	0.40	2.65
100-year	0.40	0.39	0.24	0.10	0.03	0.00	0.12	0.34	0.38	0.25	0.21	0.51	2.82

Source: IID WIS: CIMIS stations polygon calculation (Data provided by IID staff).

Imperial Valley depends on the Colorado River for its water, which IID transports, untreated, to delivery gates for agricultural, municipal, industrial (including geothermal and solar energy), environmental (managed marsh), recreational (lakes), and other non-agricultural uses. IID supplies the cities, communities, institutions and Golden State Water (which includes all or portions Calipatria, Niland, and some adjacent Imperial County territory) with untreated water that they treat to meet state and federal drinking water guidelines before distribution to their customers. Industries outside the municipal areas treat the water to required standards of their industry. To comply with U.S. Environmental Protection Agency (USEPA) requirements and avoid termination of canal water service, residents in the IID water service area who do not receive treated water service must obtain alternative water service for drinking and cooking from a state-approved provider. To avoid penalties that could exceed $25,000 a day, IID strictly enforces this rule. The IID Water Department tracks nearly 4,000 raw water service accounts required by the California

Department of Public Health (CDPH) to have alternate state approved drinking water service. IID maintains a small-acreage pipe and drinking water database and provides an annual compliance update to CDPH.

IMPERIAL VALLEY HISTORIC AND FUTURE LAND AND WATER USES

Agricultural development in the Imperial Valley began at the turn of the twentieth century. In 2019, gross agricultural production for Imperial County was valued at $2,015,843,000 of which approximately $1,693,308,120 was produced in the IID water service area.[10] While the agriculture-based economy is expected to continue, land use is projected to change somewhat over the years as industrial and/or alternative energy development and urbanization occur in rural areas and in areas adjacent to existing urban centers, respectively. ES Mineral's ATLiS commercial lithium project would benefit the Imperial Valley by way of supporting the goals of diversification of a growing renewable energy economy and supplying the world with a supply chain of lithium.

Imperial Valley's economy is gradually diversifying. Agriculture will likely continue to be the primary industry within the valley; however, two principal factors anticipated to reduce crop acreage are renewable energy (geothermal and solar) and urban development. Over the next twenty years, urbanization is expected to slightly decrease agriculture land use to provide space for an increase in residential, commercial and industrial uses. The transition from agricultural land use typically results in a net decrease in water demand for municipal, commercial, and solar energy development; and a net increase in water demand for geothermal energy development Local energy resources include geothermal, wind, biomass and solar. The County General Plan provides for development of energy production centers or energy parks within Imperial County. Alternative energy facilities will help California meet its statutory and regulatory goals for increasing renewable power generation and use and decrease water demands in Imperial County.

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[10] https://agcom.imperialcounty.org/wp-content/uploads/2020/12/2019-Crop-Report.pdf

The IID Board has adopted the following policies and programs to address how to accommodate water demands under the terms of the QSA/ Transfers Agreements and minimize potential negative impacts on agricultural water uses:

Imperial Integrated Regional Water Management Plan: adopted by the board on December 18, 2012, and by the County, the City of Imperial, to meet the basic requirement of California Department of Water Resources (CDWR) for an IRWM plan. In all, 14 local agencies adopted the 2012 Imperial IRWMP.

Interim Water Supply Policy for Non-Agricultural Projects: adopted by the board on September 29, 2009, to ensure sufficient water will be available for new development, in particular, anticipated renewable energy projects until the board selects and implements capital development projects such as those considered in the Imperial IRWMP.

Temporary Land Conversion Fallowing Policy: adopted by the board on May 8, 2012, and revised on March 29, 2016, to provide a framework for a temporary, long-term fallowing program to work in concert with the IWSP and IID's coordinated land use/water supply strategy.

Equitable Distribution Plan: adopted by the board on October 28, 2013, to provide a mechanism for IID to administer apportionment of the district's quantified annual supply of Colorado River water; IID board approved a resolution repealing the Equitable Distribution Plan (EDP)on February 6, 2018.

In addition, water users within the IID service area are subject to the statewide requirement of reasonable and beneficial use of water under the California Constitution, Article X, section 2.

IMPERIAL INTEGRATED REGIONAL WATER MANAGEMENT PLAN (OCTOBER 2012)

The Imperial Integrated Regional Water Management Plan (IRWMP) serves as the governing document for regional water planning to meet present and future water resource needs and demands by addressing such issues as additional water supply options, demand management and determination and prioritization of uses and classes of service provided. In November 2012, the Imperial County Board of Supervisors approved the Imperial IRWMP, and the City of Imperial City Council and the IID Board of Directors approved it in December 2012. Approval by these three (3) stakeholders meets the basic requirement of California Department of Water Resources (CDWR) for an IRWMP. Through the IRWMP process, IID presented to the region stakeholders options in the event long-term water supply augmentation is needed, such as water storage and banking, recycling of municipal wastewater, and desalination of brackish water[10]. As discussed herein, long term water supply augmentation is not anticipated to be necessary to meet proposed Project demands.

Chapter 5 of the 2012 Imperial IRWMP addresses water supplies (Colorado River and groundwater), demand, baseline and forecasted through 2050; and IID water budget. Chapter 12 addresses projects, programs and policies, and funding alternatives. Chapter 12 of the IRMWP lists, and Appendix N details, a set of capital projects that IID might pursue, including the amount of water that might result (AFY) and cost ($/AF) if necessary. These also highlight potential capital improvement projects that could be implemented in the future.

Imperial Valley historic 2015 and forecasted future for 2020 to 2055 non-agricultural water demand, are provided in Table 8 in five-year increments. Total water demand for non-agricultural uses is projected to be 198.4 KAF in the year 2055. This is a forecasted increase in the use of non-agricultural water from 107.4 KAF for the period of 2015 to 2055. These values were modified from Chapter 5 of the Imperial IRWMP to reflect updated conditions from the IID Provisional Water

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[10] October 2012 Imperial Integrated Regional Water Management Plan, Chapter 12.

Balance for calendar year 2015. Due to the recession in 2009 and other factors, non-agricultural growth projections have lessened since the 2012 Imperial IRWMP. Projections in Table 8 have been adjusted (reduced by 3%) to reflect IID 2015 delivery data.

Table 8: Non-Agricultural Water Demand within IID Water Service Area, 2015-2055 (KAFY)

	2015	2020	2025	2030	2035	2040	2045	2050	2055
Municipal	30.0	33.9	36.8	39.8	41.5	46.3	51.7	57.8	61.9
Industrial	26.4	33.1	39.8	46.5	53.2	59.9	66.6	73.3	80.0
Other	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5	5.5
Feedlots/Dairies	17.8	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Envr Resources	8.3	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Recreation	7.4	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0
Service Pipes	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0	12.0
Total Non Ag	**107.4**	**123.5**	**133.3**	**142.8**	**151.2**	**162.7**	**174.8**	**187.6**	**198.4**

Notes: 2015 non-agricultural water demands are from IID 2015 Provisional Water Balance rerun 03/28/2019 2020-2055 demands are modified from 2012 Imperial IRWMP Chapter 5, Table 5-22 p 5-50 based on IID 2015 Provisional Water Balance. Industrial Demand includes geothermal, but not solar, energy production.

Agricultural evapotranspiration (ET) demand of approximately 1,476.4 KAF in 2015, decreased in 2020 to around 1,494.9 KAF. The termination of fallowing programs provided 103.5 KAF of water for Salton Sea mitigation in 2017. Forecasted agricultural ET remains constant, as reductions in water use are to come from efficiency conservation not reduction in agricultural production. Market forces and other factors may impact forecasted future water demand. Table 9 provides the 2015 historic and 2020-2055 forecasted agricultural consumptive use and delivery demand within the IID water service area. When accounting for agriculture ET, tailwater and tilewater, total agricultural consumptive use (CU) demand ranges from 2,157.9 KAF in 2015 to 2,209.5 KAF in 2055. Forecasted total agricultural delivery demand is around 1 KAFY higher than the CU demand, ranging from 2,158.9 KAF in 2015 to 2,210.5 KAF in 2055.

Table 9: Historic and forecasted Agricultural Water Consumptive Use and Delivery Demand within IID Water Service Area, 2015-2055 (KAFY)

	2015	2020	2025	2030	2035	2040	2045	2050	2055
Ag ET from Delivered & Stored Soil Water	1,475.4	1,567.5	1,567.5	1,567.5	1,567.5	1,567.5	1,567.5	1,567.5	1,567.5
Ag Tailwater to Salton Sea	282.9	318.0	268.0	218.0	218.0	218.0	218.0	218.0	218.0
Ag Tilewater to Salton Sea	398.6	423.0	423.0	423.0	423.0	423.0	423.0	423.0	423.0
Total Ag CU Demand	**2,157.9**	**2,308.5**	**2,258.5**	**2,208.5**	**2,208.5**	**2,208.5**	**2,208.5**	**2,208.5**	**2,208.5**
Subsurface Flow to Salton Sea	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*	*1.0*
Total Ag Delivery Demand	**2,158.9**	**2,309.5**	**2,259.5**	**2,209.5**	**2,209.5**	**2,209.5**	**2,209.5**	**2,209.5**	**2,209.5**

Notes: 2015 record from IID 2015 Provisional Water Balance rerun 06/28/2019; 2020-2055 forecasts from spreadsheet used to develop Figure 19, et seq. in Imperial IRWMP Chapter 5 (Data provided by IID staff).

In addition to agricultural and non-agricultural water demands, system operational demands must be included to account for operational discharge, main and lateral canal seepage; and for All American Canal (AAC) seepage, river evaporation and phreatophyte ET from Imperial Dam to IID's measurement site at AAC Mesa Lateral 5. These system operation demands are shown in Table 10. IID measures system operational uses and at All-American Canal Station 2900 just upstream of Mesa Lateral 5 Heading. Total system operational use for 2019 was 257.9 KAF, including 10 KAF of LCWSP input, 39.8 KAF of seepage interception input, and 30.9 KAF of unaccounted canal water input.

Table 10 IID System Operations Consumptive Use within IID Water Service Area and from AAC at Mesa Lateral 5 to Imperial Dam, (KAF), 2019

Delivery System Evaporation	24.6
Canal Seepage	91.7
Canal Spill	13.1
Lateral Spill	118.1
Seepage Interception	-39.8
Unaccounted Canal Water	30.9
Total System Operational Use, In valley	**238.6**
Imperial Dam to AAC @ Mesa Lat 5	29.2
LCWSP	-10
Total System Operational Use in 2019	**257.8**
Source: 2019 Water Balance rerun 04/22/2020	

IID INTERIM WATER SUPPLY POLICY FOR NON-AGRICULTURAL PROJECTS (SEPTEMBER 2009)

The IID IWSP provides a mechanism to address water supply requests for projects being developed within the IID service area. The IWSP designates up to 25,000 AFY of IID's annual Colorado River water supply for new non-agricultural projects, provides a mechanism and process to develop a water supply agreement for any appropriately permitted project, and establishes a framework and set of fees to ensure the supplies used to meet new demands do not adversely affect existing users by funding water conservation or augmentation projects as needed. [10]

Depending on the nature, complexity and water demands of the proposed project, new projects may be charged a one-time Reservation Fee and an annual Water Supply Development Fee for the contracted water volume used solely to assist in funding new water supply projects. The applicability of the fee to certain projects will be determined by IID on a case-by-case basis, depending on the proportion of types of land uses and water demand proposed for a project. The 2020 fee schedule is shown in Table 11.

Table 11 Interim Water Supply Policy 2020 Annual Non-Agricultural Water Supply Development Fee Schedule

Annual Demand (AF)	Reservation Fee ($/AF)*	Development Fee ($/AF)*
0-500	$74.48	$297.92
501-1000	$104.87	$419.47
1001-2500	$131.68	$526.72
2501-5000	$162.66	$650.65

Adjusted annually in accordance with the Consumer Price Index (CPI).

IID customers with new projects receiving water under the IWSP will be charged the appropriate water rate based on measured deliveries, see IID Water Rate Schedules. As of March 2021, IID has issued one Water Supply Agreement for 1,200 AFY, leaving a balance of 23,800 AFY of supply available for contracting under the IWSP.

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[10] *IID website: Municipal, Industrial and Commercial Customers.*

IID Temporary Land Conversion Fallowing Policy (May 2012)

Imperial County planning officials determined that renewable energy facilities were consistent with the county's agricultural zoning designation and began issuing CUPs for these projects with ten- to twenty-year terms. These longer-term, but temporary, land use designations were not conducive to a coordinated land use/water supply policy as envisioned in the Imperial IRWMP, because temporary water supply assignments during a conditional use permit (CUP) term were not sufficient to meet the water supply verification requirements for new project approvals. Agricultural landowners also sought long-term assurances from IID that, at project termination, irrigation service would be available for them to resume their farming operations.

Based on these conditions, IID determined it had to develop a water supply policy that conformed to the local land use decision-making in order to facilitate new development and economic diversity in Imperial County which has resulted in the IID Temporary Land Conversion Fallowing Policy (TLCFP). .[10] IID concluded that certain lower water use projects could still provide benefits to local water users. The resulting benefits; however, may not be to the same categories of use (e.g., MCI) but to the district as a whole.

At the general manager's direction, staff developed a framework for a fallowing program that could be used to supplement the IWSP and meet the multiple policy objectives envisioned for the coordinated land use/water supply strategy. Certain private projects that, if implemented, will temporarily remove land from agricultural production within the district's water service area include renewable solar energy and other non-agricultural projects. Such projects may need a short-term water supply for construction and decommissioning activities and longer-term water service for facility operation and maintenance or for treating to potable water standards. Conserved water will be credited to the extent that water use for the project is less than historic water use for the project site's footprint as determined by the ten year water use history.[11]

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[10] *IID website: Temporary Land Conversion Fallowing Policy (TLCFP), and The TLCFP are the sources of the text for this section.*

[11] For details of how water conservation yield attributable to land removed from agricultural production and temporarily fallowed is computed, see TLCFP for Water Conservation Yield.

Water demands for certain non-agricultural projects are typically less than that required for agricultural production; this reduced demand allows water to be made available for other users under IID's annual consumptive use cap. This allows the district to avail itself of the ability during the term of the QSA/Transfer Agreements under CWC Section 1013 to create conserved water through projects such as temporary land fallowing conservation measures. This conserved water can then be used to satisfy the district's conserved water transfer obligation and for environmental mitigation purposes.

Under the terms of the legislation adopted to facilitate the QSA/Transfer Agreements and enacted in CWC Section 1013, the TLCFP was adopted by the IID board on May 8, 2012 and revised on March 29, 2016 to update the fee schedule for 2016. This policy provides a framework for a temporary, long-term fallowing program to work in concert with the IWSP. While conserved water generated from the TLCFP is limited by law for use for water transfer or environmental purposes, by satisfying multiple district objectives the TLCFP serves to reduce efficiency conservation and water use reduction demands on IID water users, thus providing district wide benefits.

IMPERIAL IRRIGATION DISTRICT'S WATER RIGHTS

The laws and regulations that influence IID's water supply are noted in this section. The Law of the River (as described below), along with the 2003 Quantification Settlement Agreement and Related Agreements serve as the laws, regulations and agreements that primarily influence the findings of this WSA. These agreements grant California the most senior water rights along the Colorado River and IID specify that IID has access to 3.1 MAF per year. These two components will influence future decisions in terms of water supply during periods of shortages.

CALIFORNIA LAW

IID's has a longstanding right to divert Colorado River water, and IID holds legal titles to all of its water and water rights in trust for landowners within the district (CWC §20529 and §22437; *Bryant v. Yellen*, 447 U.S. 352, 371 (1980), fn.23.). Beginning in 1885, a number of individuals, as well as the California Development Company, made a series of appropriations of Colorado River water under California law for use in the Imperial Valley. The rights to these appropriations were among the properties acquired by IID from the California Development Company.

LAW OF THE RIVER

Colorado River water rights are governed by numerous compacts, state and federal laws, court decisions and decrees, contracts, and regulatory guidelines collectively known as the "Law of the River." Together, these documents form the basis for allocation of the water, regulation of land use, and management of the Colorado River water supply among the seven basin states and Mexico.

Of all regulatory literature that governs Colorado River water rights, the following are the specifics that impact IID:

- Colorado River Compact (1922)
- Boulder Canyon Project Act (1928)
- California Seven-Party Agreement (1931)
- Arizona v. California US Supreme Court Decision (1964, 1979)
- Colorado River Basin Project Act (1968)
- Quantification Settlement Agreement and Related Agreements (2003)
- 2003 Colorado River Water Delivery Agreement: Federal QSA for purposes of Section 5(b) Interim Surplus Guidelines (CRWDA)
- 1970 Criteria for Coordinated Long-Range Operation of Colorado River Reservoirs
- Annual Operating Plan (AOP) for Colorado River Reservoirs
- 2007 Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lakes Powell and Mead (2007 Interim Guidelines)

COLORADO RIVER COMPACT (1922)

With authorization of their legislatures and urging of the federal government, representatives from the seven Colorado River basin states began negotiations regarding distribution of water from the Colorado River in 1921. In November 1922, an interstate agreement called the "Colorado River

Compact" was signed by the representatives giving the Lower Basin perpetual rights to annual apportionments of 7.5 million acre-feet (MAF) of Colorado River water (75 MAF over ten years). The Upper Basin was to receive the remainder, which based on the available hydrological record was also expected to be 7.5 MAF annually, with enough left over to provide 1.5 MAF annually to Mexico.

BOULDER CANYON PROJECT ACT (1928)

Provisions in the 1928 Boulder Canyon Project Act made the compact effective and authorized construction of Hoover Dam and the All-American Canal, and served as the United States' consent to accept the Compact. Through a Presidential Proclamation on June 25, 1929, this act resulted in ratification of the Compact by six of the basin states and required California to limit its annual consumptive use to 4.4 MAF of the lower basin's apportionment plus not less than half of any excess or surplus water unportioned by the Compact. A lawsuit was filed by the State of Arizona after its refusal to sign. Through the implementation of its 1929 Limitation Act, California abided by this federal mandate. The Boulder Canyon Act authorized the Secretary of the Interior (Secretary) to "contract for the storage of water… and for the delivery thereof… for irrigation and domestic uses," and additionally defined the lower basin's 7.5 MAF apportionment split, with an annual allocation 0.3 MAF to Nevada, 2.8 MAF to Arizona, and 4.4 MAF to California. Even though the three states never formally settled or agreed to these terms, a 1964 Supreme Court decision (*Arizona v. California*, 373 U.S. 546) declared the three states' consent to be insignificant since the Boulder Canyon Project Act was authorized by the Secretary.

CALIFORNIA SEVEN-PARTY-AGREEMENT (1931)

Following implementation of the Boulder Canyon Project Act, the Secretary requested that California make recommendations regarding distribution of its apportionment of Colorado River water. In August 1931, under chairmanship of the State Engineer, the California Seven-Party Agreement was developed and authorized by the affected parties to prioritize California water rights. The Secretary accepted this agreement and established these priorities through General Regulations issued in September of 1931. The first four (4) priority allocations account for California's annual apportionment of 4.4 MAF, with agricultural entities using 3.85 MAF of that total. Additional priorities are defined for years in which the Secretary declares that excess waters are available.

ARIZONA V. CALIFORNIA U.S. SUPREME COURT DECISION (1964, 1979)

The 1964 Supreme Court decision settled a 25-year disagreement between Arizona and California that stemmed from Arizona's desire to build the Central Arizona Project to enable use of its full apportionment. California's argument was that as Arizona used water from the Gila River, which is a Colorado River tributary, it was using a portion of its annual Colorado River apportionment. An additional argument from California was that it had developed a historical use of some of Arizona's apportionment, which, under the doctrine of prior appropriation, precluded Arizona from developing the project. California's arguments were rejected by the U.S. Supreme Court. Under direction of the Supreme Court, the Secretary was restricted from delivering water outside of the framework of apportionments defined by law. Preparation of annual reports documenting consumptive use of water in the three lower basin states was also mandated by the Supreme Court. In 1979, present perfected water rights (PPRs) referred to in the Colorado River Compact and in the Boulder Canyon Project Act were addressed by the Supreme Court in the form of a Supplemental Decree.

In March of 2006, a Consolidated Decree was issued by the Supreme Court to provide a single reference to the conditions of the original 1964 decrees and several additional decrees in 1966, 1979, 1984 and 2000 that stemmed from the original ruling. The Consolidated Decree also reflects the settlements of the federal reserved water rights claim for the Fort Yuma Indian Reservation.

COLORADO RIVER BASIN PROJECT ACT (1968)

In 1968, various water development projects in both the upper and lower basins, including the Central Arizona Project (CAP) were authorized by Congress. Under the Colorado River Basin Project Act, priority was given to California's apportionment over (before) the CAP water supply in times of shortage. Also under the act, the Secretary was directed to prepare long-range criteria for the Colorado River reservoir system in consultation with the Colorado River Basin States.

QUANTIFICATION SETTLEMENT AGREEMENT AND RELATED AGREEMENTS (2003)

With completion of a large portion of the CAP infrastructure in 1994, creation of the Arizona Water Banking Authority in 1995, and the growth of Las Vegas in the 1990s, California encountered increasing pressure to live within its rights under the Law of the River. After years of negotiating among Colorado River Compact States and affected California water delivery agencies, a Quantification Settlement Agreement and Related Agreements and documents were signed on October 10, 2003, by the Secretary of Interior, IID, Coachella Valley Water District (CVWD), Metropolitan Water District of Southern California (MWD), San Diego County Water Authority (SDCWA), and other affected parties.

The Quantification Settlement Agreement and Related Agreements (QSA/Transfer Agreements) are a set of interrelated contracts that resolve certain disputes among the United States, the State of California, IID, MWD, CVWD and SDCWA, for a period of 35 to 75 years, regarding the reasonable and beneficial use of Colorado River water; the ability to conserve, transfer and acquire conserved Colorado River water; the quantification and priority of Priorities 3(a) and 6(a)[10] within California for use of Colorado River water; and the obligation to implement and fund environmental impact mitigation.

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[10] *Priorities 1, 2, 3(b), 6(b), and 7 of current Section 5 Contracts for the delivery of Colorado River water in the State of California and Indian and miscellaneous Present Perfected Rights within the State of California and other existing surplus water contracts are not affected by the QSA Agreement.*

Conserved water transfer agreements between IID and SDCWA, IID and CVWD, and IID and MWD are all part of the QSA/Transfer Agreements. For IID, these contracts identify conserved water volumes and establish transfer schedules along with price and payment terms. As specified in the agreements, IID will transfer nearly 415,000 AF annually over a 35-year period (or loner), as follows:

- to MWD 110,000 AF [modified to 105,000 AF in 2007],
- to SDCWA 200,000 AF,
- to CVWD and MWD combined 103,000 AF, and
- to certain San Luis Rey Indian Tribes 11,500 AFY of water.

All of the conserved water will ultimately come from IID system and on-farm efficiency conservation improvements. In the interim, IID has implemented a Fallowing Program to generate water associated with Salton Sea mitigation related to the impacts of the IID/SDCWA water transfer, as required by the State Water Resources Control Board, which is to run from 2003 through 2017. In return for its QSA/Transfer Agreements programs and deliveries, IID will receive payments totaling billions of dollars to fund needed efficiency conservation measures and to pay growers for conserved on-farm water, so IID can transfer nearly 14.5 MAF of water without impacting local productivity. In addition, IID will transfer to SDCWA 67,700 AFY annually of water conserved from the lining of the AAC in exchange for payment of lining project costs and a grant to IID of certain rights to use the conserved water. In addition to the 105,000 acre-feet of water currently being conserved under the 1988 IID/MWD Conservation Program, these more recent agreements define an additional 303,000 AFY to be conserved by IID from on-farm and distribution system conservation projects for transferred to SDCWA, CVWD, and MWD.

COLORADO RIVER WATER DELIVERY AGREEMENT (2003) [10]

As part of QSA/Transfer Agreements among California and federal agencies, the Colorado River Water Delivery Agreement: Federal QSA for purposes of Section 5(b) Interim Surplus Guidelines (CRWDA) was entered into by the Secretary of the Interior, IID, CVWD, MWD and SDCWA. This

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[10] *CRWDA: Federal QSA accessed 7 June 2017.*

agreement involves the federal government because of the change in place of diversion from Imperial Dam into the All-American Canal to Parker Dam into MWD's Colorado River Aqueduct. The CRWDA assists California to meet its "4.4 Plan" goals by quantifying deliveries for a specific number of years for certain Colorado River entitlements so transfers may occur. In particular, for the term of the CRWDA, quantification of Priority 3(a) was affected through caps on water deliveries to IID (consumptive use of 3.1 MAF per year) and CVWD (consumptive use of 330 KAF per year). In addition, California's Priority 3(a) apportionment between IID and CVWD, with provisions for transfer of supplies involving IID, CVWD, MWD and SDCWA are quantified in the CRWDA for a period of 35 years or 45 years (assumes SDCWA does not terminate in year 35) or 75 years (assumes SDCWA and IID mutually consent to renewal term of 30 years).

Allocations for consumptive use of Colorado River water by IID, CVWD and MWD that will enable California to stay within its basic annual apportionment (4.4 MAF plus not less than half of any declared surplus) are defined by the terms of the QSA/Transfer Agreements (Table 12). As specified in the QSA/Transfer Agreements, by 2026, IID annual use within (Imperial Valley) is to be reduced to just over 2.6 MAF of its 3.1 MAF quantified annual apportionment. The remaining nearly 500,000 AF (which includes the 67,000 AF from AAC lining) are to be transferred annually to urban water users outside of the Imperial Valley.

Table 12 CRWDA Annual 4.4 MAF Apportionment (Priorities 1 to 4) for California Agencies (AFY)

User	Apportionment (AFY)
Palo Verde Irrigation District and Yuma Project*	420,000
Imperial Irrigation District	3,100,000
Coachella Valley Water District	330,000
Metropolitan Water District of Southern California*	550,000
Total:	4,400,000

* PVID and Yuma Project did not agree to a cap; value represents a contractual obligation by MWD to assume responsibility for any overages or be credited with any volume below this value.

Notes: All values are consumptive use at point of Colorado River diversion: Palo Verde Diversion Dam (PVID), Imperial Dam (IID and CVWD), and Parker Dam (MWD). Source: IID Annual Water Report

Quantification of Priority 6(a) was effected through quantifying annual consumptive use amounts to be made available in order of priority to MWD (38 KAF), IID (63 KAF), and CVWD (119 KAF) with the provision that any additional water available to Priority 6(a) be delivered under IID's and CVWD's existing water delivery contract with the Secretary.[10] The CRWDA provides that the underlying water delivery contract with the Secretary remain in full force and effect. (*Colorado River Documents 2008*, Chapter 6, pages 6-12 and 6-13). The CRWDA also provides a source of water to effect a San Luis Rey Indian Water rights settlement. Additionally, the CRWDA satisfies the requirement of the 2001 Interim Surplus Guidelines (ISG) that a QSA be adopted as a prerequisite to the interim surplus determination by the Secretary in the ISG.

INADVERTENT OVERRUN PAYBACK POLICY (2003)

The CRWDA Inadvertent Overrun Payback Policy (IOPP), adopted by the Secretary contemporaneously with the execution of the CRWDA, provides additional flexibility to Colorado River management and applies to entitlement holders in the Lower Division States (Arizona, California and Nevada).[11] The IOPP defines inadvertent overruns as "Colorado River water diverted, pumped, or received by an entitlement holder of the Lower Division States that is in excess of the water users' entitlement for the year." An entitlement holder is allowed a maximum overrun of 10 percent (10%) of its Colorado River water entitlement.

In the event of an overrun, the IOPP provides a mechanism to payback the overrun. When the Secretary has declared a normal year for Colorado River diversions, a contractor has from one to three years to pay back its obligation, with a minimum annual payback equal to 20 percent of the entitlement holder's maximum allowable cumulative overrun account or 33.3 percent of the total account balance, whichever is greater. However, when Lake Mead is below 1125 feet on January 1, the terms of the IOPP require that the payment of the inadvertent overrun obligation be made

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[10] When water levels in the Colorado River reservoirs are low, Priority 5, 6 and 7 apportionments are not available for diversion.

[11] *USBR, 2003 CRWDA ROD Implementation Agreement, IOPP and Related Federal Actions Final EIS. Section IX. Implementing the Decision A. Inadvertent Overrun and Payback Policy. Pages 16-19 of 34.*

in the calendar year after the overrun I reported in the USBR Lower Colorado Region Colorado River Accounting and Water Use Report [for] Arizona, California, and Nevada (Decree Accounting Report).[10]

1970 CRITERIA FOR COORDINATED LONG-RANGE OPERATION OF COLORADO RIVER RESERVOIRS

The 1970 Operating Criteria control operation of the Colorado River reservoirs in compliance with requirements set forth in the Colorado River Compact of 1922, the United States-Mexico Water Treaty of 1944, the Colorado River Storage Project Act of 1956, the Boulder Canyon Projects Act (Lake Mead) and the Colorado River Basin Project Act (Upper Basin Reservoirs) of 1968, and other applicable federal laws. Under these Operating Criteria, the Secretary makes annual determinations published in the USBR Annual Operating Plan for Colorado River Reservoirs (discussed below) regarding the release of Colorado River water for deliveries to the lower basin states. A requirement to equalize active storage between Lake Powell and Lake Mead when there is sufficient storage in the Upper Basin is included in these operating criteria. **Figure 5** identifies the major storage facilities at the upper and lower basin boundaries.

ANNUAL OPERATING PLAN FOR COLORADO RIVER RESERVOIRS (Applicable Only if Lake Mead has Surplus/Shortage)

The AOP is developed in accordance with Section 602 of the Colorado River Basin Project Act (Public Law 90-537); the Criteria for Coordinated Long-Range Operations of Colorado River Reservoirs Pursuant to the Colorado River Basin Project Act of 1968, as amended, promulgated by the Secretary of the Interior; and Section 1804(c)(3) of the Grand Canyon Protection Act (Public Law 102-575). As part of the AOP process, the Secretary makes determinations regarding the availability of Colorado River water for deliveries to the lower basin states, including whether normal, surplus, and shortage conditions are in effect on the lower portion of the Colorado River.

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[10] *2003 CRWDA ROD. Section IX. A.6.c,, page 18 of 34.*

2007 COLORADO RIVER INTERIM GUIDELINES FOR LOWER BASIN SHORTAGES (2007 INTERIM GUIDELINES)

A multi-year drought in the Colorado River Upper Basin triggered the need for the 2007 Interim Shortage Guidelines. In the summer of 1999, Lake Powell was essentially full with reservoir storage at 97 percent of capacity. However, precipitation fell off starting in October 1999 and 2002 inflow was the lowest recorded since Lake Powell began filling in 1963.[10],[11] By August 2011, inflow was 279 percent (279%) of average; however, drought resumed in 2012 and continued through calendar year 2020. Using the record in **Table 13,** average unregulated inflow to Lake Powell for water years 2000-2020 is 73.8 percent (73.8%); or if 2011 is excluded, 70.5 percent (70.5%) of the historic average, see Table 13.

Table 13: Unregulated Inflow to Lake Powell, Percent of Historic Average, 2000-2019

2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
62%	59%	25%	51%	49%	105%	73%	68%	102%	88%	73%
2011	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**		
136%	35%	49%	90%	83%	80%	100%	43%	110%		

Source: Drought in the Upper Colorado River Basin (2000-2010), and UCR Water Operations: Historic Data (2011-2020)

2003 CRWDA ROD. Section IX. A.6.

c,, page 18 of 34.

s://www.usbr.gov/uc/feature/drought.html" Drought in the Upper Colorado River Basin. August 2011

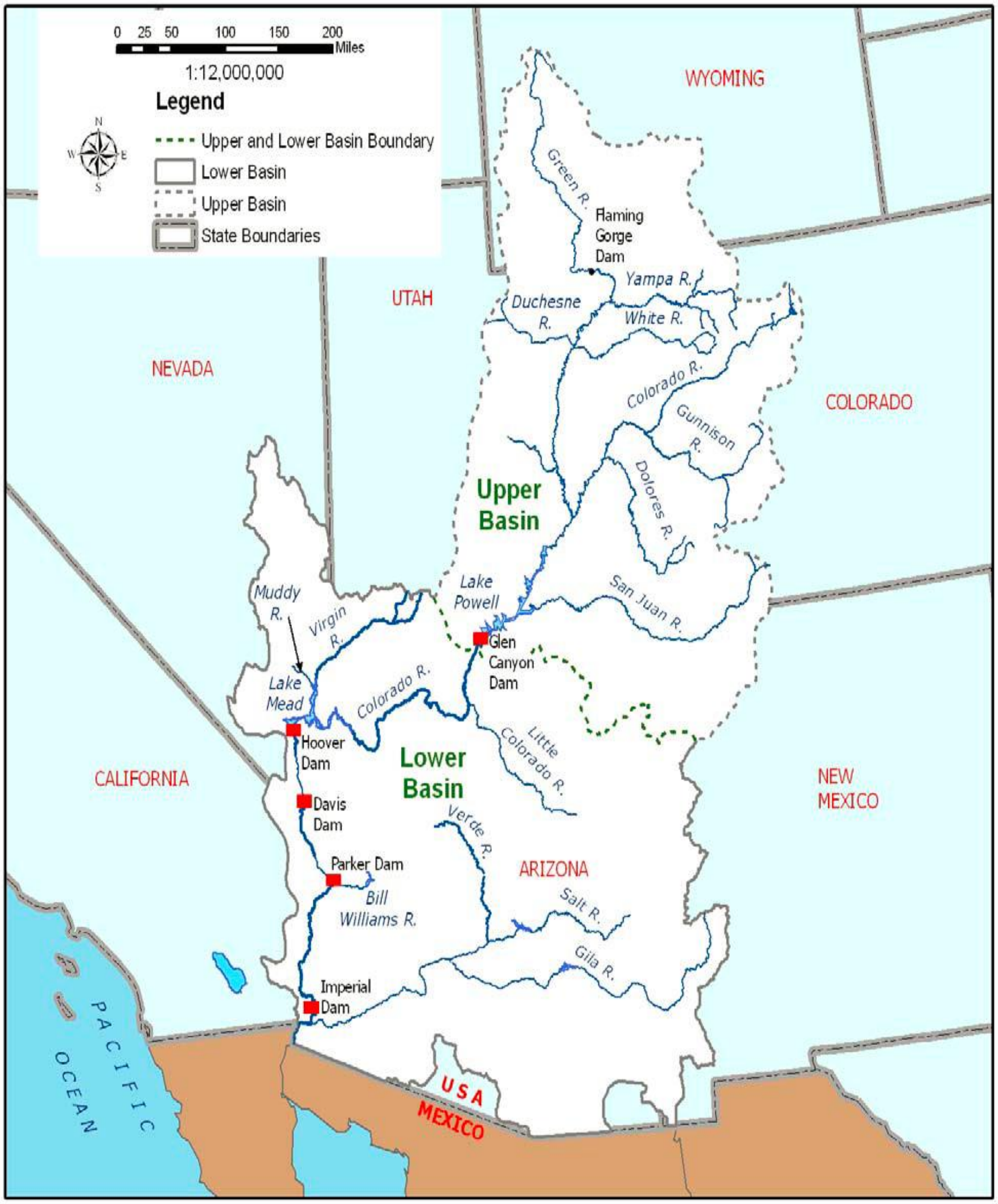

Figure 5 Major Colorado River Reservoir Storage Facilities and Basin Location Map

Source: **Final EIS – Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead, Volume 1 Chapter 1 Purpose and Need** , p I-10.

In the midst of the drought period, USBR developed 2007 Interim Guidelines with consensus from the seven basin states, which selected the Draft EIS Preferred Alternative as the basis for USBR's final determination. The basin states found the Preferred Alternative best met all aspects of the purpose and need for the federal action.[12]

The 2007 interim Guidelines Preferred Alternative highlights the following:

1. The need for the Interim Guidelines to remain in place for an extended period of time.
2. The desirability of the Preferred Alternative based on the facilitated consensus recommendation from the basin states.
3. The likely durability of the mechanisms adopted in the Preferred Alternative in light of the extraordinary efforts that the basin states and water users have undertaken to develop implementing agreements that will facilitate the water management tools (shortage sharing, forbearance, and conservation efforts) identified in the Preferred Alternative
4. That the range of elements in the Preferred Alternative will enhance the Secretary's ability to manage the Colorado River reservoirs in a manner that recognizes the inherent tradeoffs between water delivery and water storage.

In June 2007, USBR announced that a preferred alternative for Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations of Lake Powell and Lake Mead (Final Preferred Alternative) had been determined. The Final Preferred Alternative, based on the basin states' consensus alternative and an alternative submitted by the environmental interests called "Conservation Before Shortage," is comprised of four key operational elements which are to guide operations of Lake Powell and Lake Mead through 2026 are:

1. Shortage strategy for Lake Mead and Lower Division states: The Preferred Alternative proposed discrete levels of shortage volumes associated with Lake Mead elevations to conserve reservoir storage and provide water users and managers in the Lower Basin with

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[12] USBR *Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead* <http://www.usbr.gov/lc/region/programs/strategies.html>

greater certainty to know when, and by how much, water deliveries will be reduced during low reservoir conditions.

2. Coordinated operations of Lake Powell and Lake Mead: The Preferred Alternative proposed a fully coordinated operation of the reservoirs to minimize shortages in the Lower Basin and to avoid risk of curtailments of water use in the Upper Basin.
3. Mechanism for storage and delivery of conserved water in Lake Mead: The Preferred Alternative proposed the Intentionally Created Surplus (ICS) mechanism to provide for the creation, accounting, and delivery of conserved system and non-system water thereby promoting water conservation in the Lower Basin. Credits for Colorado River or non-Colorado River water that has been conserved by users in the Lower Basin creating an ICS would be made available for release from Lake Mead at a later time. The total amount of credits would be 2.1 MAF, but this amount could be increased up to 4.2 MAF in future years.
4. Modifying and extending elements of the Interim Surplus Guidelines (ISG). The ISG determines conditions under which surplus water is made available for use within the Lower Division states. These modifications eliminate the most liberal surplus conditions thereby leaving more water in storage to reduce the severity of future shortages.

With respect to the various interests, positions and views of the seven basin states, this provision adds an important element to the evolution of the legal framework for prudent management of the Colorado River. Furthermore, the coordinated operation element allows for adjustment of Lake Powell releases to respond to low reservoir storage conditions in either Lake Powell or Lake Mead[12]. States found the Preferred Alternative best met all aspects of the purpose and need for the federal action.[13] The 2007 Interim Guidelines are in place from 2008 through December 31, 2025 (through preparation of the 2026 Annual Operating Plan).

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[12] *For a discussion of the 2007 Interim Guidelines, see: Intermountain West Climate Summary by The Western Water Assessment, issued Jan. 21, 2008, Vol. 5, Issue 1, January 2009 Climate Summary, Feature Article, pages 5-7, 22 Mar 2013.*

[13] *USBR Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead.*

LOWER COLORADO REGION WATER SHORTAGE OPERATIONS

The drought in the Colorado River watershed has continued through 2020 despite an increase in observed runoff in August 2011 when unregulated inflow to Lake Powell was 279 percent of the average. Since 2000, Lake Mead has been below the "average" level of lake elevations (see **Figure 6**). Such conditions have caused the preparation of shortage plans for waters users in Arizona and Nevada, and in Mexico.

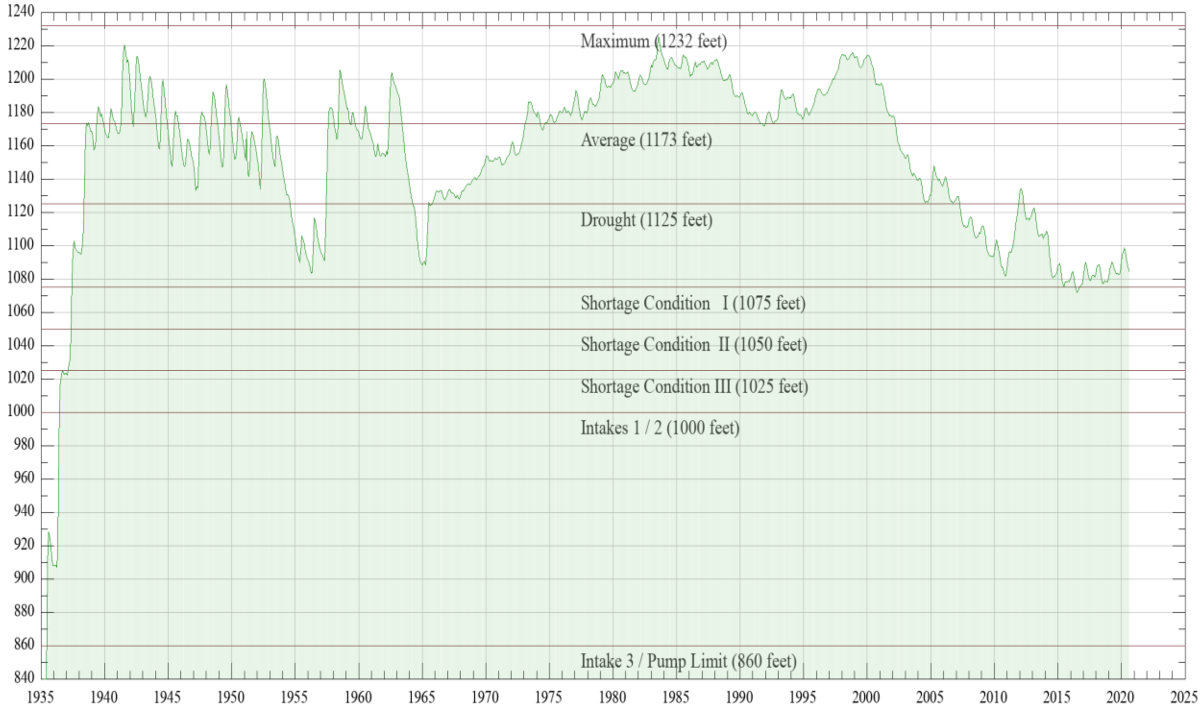

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Figure 6: Lake Mead Water Elevation Levels 2020

visit<http://www.arachnoid.com/NaturalResources/index.html>

According to guidelines put in place in 2007, Arizona and Nevada begin to take shortages when the water elevation in Lake Mead falls below 1,075 feet. The volumes of shortages increase as water levels fall to 1,050 feet and again at 1,025 feet. In 2012, Mexico agreed to participate in a 5-year pilot agreement to share specific volumes of shortages at the same elevations. The 2007 interim shortage guidelines contain no reductions for California, which has senior water rights to the Central Arizona Project water supply, through 2025 when the guidelines expire. If Lake Mead's elevation drops to 1,025 feet, a re-consultation process would be triggered among the basin states to address next steps. Consultation would start out within each state, then move to the three lower basin states, followed by all seven states and the USBR. Mexico will then be brought into the process unless they choose to participate earlier.

IMPERIAL IRRIGATION DISTRICT WATER SUPPLY AND DEMAND

SB 610 requires an analysis of a normal, single dry, and multiple dry water years to show that adequate water is available for the proposed Project in various climate scenarios. Water availability for this Project in a normal year is no different from water availability during a single-dry and multiple-dry year scenarios. This is due to the small effect rainfall has on water availability in IID's arid environment along with IID's strong entitlements to the Colorado River water supply. Local rainfall does have some impact on how much water is consumed (i.e. if rain falls on agricultural lands, those lands will not demand as much irrigation), but does not impact the definition of a normal year, a single-dry year or a multiple-dry year scenario.

WATER AVAILABILITY – NORMAL YEAR

IID is entitled to annual net consumptive use of 3.1 MAF of Colorado River, less its QSA/Transfer Agreement obligations. Imperial Dam, located north of Yuma, Arizona, serves as a diversion structure for water deliveries throughout southeastern California, Arizona and Mexico. Water is transported to the IID water service area through the AAC for use throughout the Imperial Valley. IID historic and forecast net consumptive use volumes at Imperial Dam from CRWDA Exhibit B are shown in Table 14. Volumes 2003-2020 are adjusted for USBR Decree Accounting historic records.

Volumes for 2021-2077 are from CRWDA Exhibit B modified to reflect 2014 Letter Agreement changes to the 1988 IID/MWD Water Conservation Agreement.[12]

GROUNDWATER, AGRICULTURAL PRACTICES AND DRAINAGE

Groundwater underlying the Imperial Valley is generally of poor quality unsuitable for domestic or irrigation purposes. Groundwater in the area of the project is brackish (contains a high salt content). Agricultural practices in the Imperial Valley, including in the project vicinity, consist of aerial and ground application of pesticides and application of chemical fertilizers to both ground and irrigation water at the farm delivery gate. Most of the agricultural fields in the valley are underlain by tile drainage systems (perforated pipelines encapsulated by sand/gravel) installed at a depth of approximately 5 to 7 feet below the ground surface. The tile drains maintain groundwater at levels below the root system of crops. The tile drains transport soluble salts contained in the Colorado River water and that are leached from the soil profile during irrigation. The tile drainage is collected in IID's drainage system, most of which discharges into the New and Alamo rivers and flows to the Salton Sea. A few IID drains discharge directly to the Salton Sea.

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[12] 2014 Imperial Irrigation District Letter Agreement for Substitution and Conservation Modifications to the IID/MWD Water Conservation Agreement - December 17, 2014.

Table 14 IID Historic and Forecast Net Consumptive Use for Normal Year, Single-Dry Year and Multiple-Dry Year Water Supply, 2003-2037, et seq. (CRWDA Exhibit B)

IID Quantification and Transfers, Volumes in KAF at Imperial Dam [1]										
Col 1	2	3	4	5	6	7	8	9	10	11
	IID Priority 3(a)									
		IID Reductions								IID Net [Available for] Consumptive Use (Col 2 - 10)
Year	IID 3(a) Quantified Amount	1988 MWD Transfer [2]	SDCWA Transfer	AAC Lining	Salton Sea Mitigation SDCWA Transfer [3]	Intra-Priority 3 CVWD Transfer	MWD Transfer w\ Salton Sea Restoration [4]	Misc. PPRs	IID Total Reduction (Σ Cols 3-9) [5]	
2003	3,100	105.1	10.0	0.0	0.0	0.0	0.0	11.5	126.6	2978.2
2004	3,100	101.9	20.0	0.0	15.0	0.0	0.0	11.5	148.4	2743.9
2005	3,100	101.9	30.0	0.0	15.0	0.0	0.0	11.5	158.4	2756.8
2006	3,100	101.2	40.0	0.0	20.0	0.0	0.0	11.5	172.7	2909.7
2007	3,100	105.0	50.0	0.0	25.0	0.0	0.0	11.5	191.5	2872.8
2008	3,100	105.0	50.0	8.9	26.0	4.0	0.0	11.5	205.4	2825.1
2009	3,100	105.0	60.0	65.5	30.1	8.0	0.0	11.5	280.1	2566.7
2010	3,100	105.0	70.0	67.7	33.8	12.0	0.0	11.5	294.8	2540.5
2011	3,100	103.9	63.3	67.7	0.0	16.0	0.0	11.5	262.4	2915.8
2012	3,100	104.1	106.7	67.7	15.2	21.0	0.0	11.5	326.2	2,903.2
2013	3,100	105.0	100.0	67.7	71.4	26.0	0.0	11.5	381.6	2,554.9
2014	3,100	104.1	100.0	67.7	89.2	31.0	0.0	11.5	403.5	2,533.4
2015	3,100	107.82	100.0	67.7	153.3	36.0	0.0	11.5	476.3	2,480.9
2016	3,100	105.0	100.0	67.7	130.8	41.0	0.0	11.5	456.0	2,504.3
2017	3,100	105.0	100.0	67.7	105.3	45.0	0.0	9.9	434.5	2,548.2
2018	3,100	105	130	67.7	0.1	63	0.0	11.5	377.3	2,722.8
2019	3,100	105	160	67.7	46.55	68	0.0	11.5	458.75	2,687.8
2020	3,100	105	193	67.7	0.0	73	0.0	11.5	450.2	2,649.8
2021	3,100	105	205	67.7	0	78	0	11.5	467.2	2,632.8
2022	3,100	105	203	67.7	0	83	0	11.5	470.2	2,629.8
2023	3,100	105	200	67.7	0	88	0	11.5	472.2	2,627.8
2024	3,100	105	200	67.7	0	93	0	11.5	477.2	2,622.8
2025	3,100	105	200	67.7	0	98	0	11.5	482.2	2,617.8
2026	3,100	105	200	67.7	0	103	0	11.5	487.2	2,612.8
2027	3,100	105	200	67.7	0	103	0	11.5	487.2	2,612.8
2028	3,100	105	200	67.7	0	103	0	11.5	487.2	2,612.8
2029-37	3,100	105	200	67.7	0	103	0	11.5	487.2	2,612.8
2038-47 [6]	3,100	105	200	67.7	0	103	0	11.5	487.2	2,612.8
2048-77 [7]	3,100	105	200	67.7	0	50 [8]	0	11.5	434.2	2,665.8

1. 2003 through 2020, volumes are adjusted for actual USBR Decree Accounting values; IID Total Reduction and Net Available for Consumptive Use may not equal Col 2 minus Col 10, if IID conservation/use was not included in Exhibit B.
2. 2014 Letter of Agreement provides that, effective January 2016 total amount of conserved water available is 105 KAFY
3. Salton Sea Mitigation volumes may vary based on conservation volumes and method of conservation.
4. *This transfer is not likely given lack of progress on Salton Sea restoration as of 2018; shaded entries represents volumes that may vary..*
5. Reductions include conservation for 1988 IID/MWD Transfer, IID/SDCWA Transfer, AAC Lining; SDCWA Transfer Mitigation, MWD Transfer w/Salton Sea Restoration (if any); Misc. PPRs. Amounts are independent of increases and reductions as allowed by the IOPP.
6. Assumes SDCWA does not elect termination in year 35.
7. Assumes SDCWA and IID mutually consent to renewal term of 30 years.
8. Modified from 100 KAFY in CRWDA Exhibit B; stating in 2018 MWD will provide CVWD 50 KAFY of the 100 KAFY.

Source: CRWDA: Federal QSA Exhibit B, p 13; updated values from 2019 QSA Implementation Report

Due to limits on annual consumptive use of Colorado River water under the QSA/Transfer Agreements, IID's water supply during a normal year is best represented by the CRWDA Exhibit B Net Available for Consumptive Use (Table 14, **Column 11**). The annual volume is IID Priority 3(a) Quantified Amount of 3.1 million acre-feet (MAF) (Table 14, **Column 2)** less the IID transfer program reductions for each year **(Table -14, Columns** 3-9). IID suggests **Table 14** which assumes full use of IID's quantified water supply, be used in determining base normal year water availability. CRWDA Exhibit B Net Available for Consumptive Use volumes less system operation demand represents the amount of water available for delivery by IID Water Department to its customers each year. In a normal year, perhaps 50,000 to 100,000 AF of effective rainfall would fall in the IID water service area. However, rainfall is not evenly distributed throughout the IID water service area and is not taken into account by IID in the submittal of its Estimate of Diversion (annual water order) to the USBR.

EXPECTED WATER AVAILABILITY – SINGLE DRY AND MULTIPLE DRY YEARS

When drought conditions exist within the IID water service area, as has been the case for the past decade or so, the water supply available to meet agricultural and non-agricultural water demands remains the same as normal year water supply because IID continues to rely solely on its entitlement for Colorado River water. Due to the priority of IID water rights and other agreements, drought conditions affecting Colorado River water supplies cause shortages for Arizona, Nevada and Mexico, before impacting California and IID. Accordingly, the Net Available for Consumptive Use volumes in **Table 14 Column 11** represents the water supply at Imperial Dam available for diversion by IID in single-dry year and multiple-dry year scenarios.

Under CRWDA Inadvertent Overrun Payback Policy (IOPP), IID has some flexibility to manage its water use. When the water level in Lake Mead is above 1,125 feet, an overrun of its USBR approved annual water order is permissible, and IID has up to three years to pay water use above the annual water order. When Lake Mead's water level is at or below 1,125 feet on January 1 in the calendar year after the overrun is reported in the USBR Lower Colorado Region Decree Accounting Report, the IOPP prohibits additional overruns and requires that outstanding overruns be paid back in the subsequent calendar year rather than in three years as allowed under normal conditions; that is, the payback is to be made in the calendar year following publication of the overrun in the USBR Decree Accounting Report. For historic IID annual rainfall, net consumptive use, transfers and IID underrun/overrun amounts see Table 14. For the purposes of the WSA , years with a shortage condition that impacts non-agricultural projects such as an IOPP payback obligation constitute “dry” years for IID.

In years of inadvertent overrun payback, conditions such as those in Sections 3.7 and 3.8 of the 2012 IWSP Water Agreement may go into effect, with the result that less water would be available for non-agricultural development contractors. Under such conditions, IID has requested that **ES Minerals** management work with IID to ensure it can manage the reduction. IID has further indicated that, provided a water supply agreement is approved and executed by IID under the provisions of the IWSP, IID will have sufficient water to support the water of this Project.

Table 15: IID Annual Rainfall (In), Net Consumptive Use and Underrun/Overrun Amounts (AF), 1988-2018

Year	IID Total Annual Rainfall	IID Water Users	IID/MWD Transfer	IID/ SDCWA Transfer	SDCWA Transfer Salton Sea Mitigation	IID Underrun / Overrun	IID/CVWD Transfer	AAC Lining
1988		2,947,581						
1989		3,009,451						
1990	91,104	3,054,188	6,110					
1991	192,671	2,898,963	26,700					
1992	375,955	2,575,659	33,929					
1993	288,081	2,772,148	54,830					
1994	137,226	3,048,076	72,870					
1995	159,189	3,070,582	74,570					
1996	78,507	3,159,609	90,880					
1997	64,407	3,158,486	97,740					
1998	100,092	3,101,548	107,160					
1999	67,854	3,088,980	108,500					
2000	29,642	3,112,770	109,460					
2001	12,850	3,089,911	106,880					
2002	12,850	3,152,984	104,940					
2003	116,232	2,978,223	105,130	10,000	0	**6,555**		
2004	199,358	2,743,909	101,900	20,000	15,000	166,408		
2005	202,983	2,756,846	101,940	30,000	15,000	159,881		
2006	19,893	2,909,680	101,160	40,000	20,000	**12,414**		
2007	64,580	2,872,754	105,000	50,000	25,021	**6,358**		
2008	63,124	2,825,116	105,000	50,000	26,085	47,999	4,000	8,898
2009	30,0354	2,566,713	105,000	60,000	30,158	237,767	8,000	65,577
2010	189,566	2,545,593	105,000	70,000	33,736	207,925	12,000	67,700
2011	109,703	2,915,784	103,940	63,278	0	**82,662**	16,000	67,700
2012	133,526	2,903,216	104,140	106,722	15,182	**134,076**	21,000	67,700
2013	134,497	2,554,845	105,000	100,000	71,398	65,981	26,000	67,700
2014	53,517	2,533,414	104,100	100,000	89,168	797	31,000	67,700
2015	97,039	2,480,933	107,820	100,000	153,327	97,188	36,000	67,700
2016	90,586	2,504,258	105,000	100,000	130,796	62,497	41,000	67,700
2017	105,919	2,548,164	105,000	100,000	105,311	30,227	45,000	67,700
2018	63,318	2,625,422	105,000	130,000	0	0	63,000	67,700
2019	146,384	2,558,136	105,000	160,000	46,555	34,215	68,000	67,700
2020	146,384	2,558,136	105,000	160.000	46,555	34,215	68,000	67,000

Notes: Volumes in acre-feet and except Total Annual Rainfall are USBR Decree Accounting Report record at Imperial Dam.

IID Total Annual Rainfall from IID Provisional Water Balance, first available calculations are for 1990

Not all IID QSA programs are shown on this table.

Source: USBR Decree Accounting reports, except IID Total Rainfall and IID Overrun/Underrun is a separate calculation

Source: 2019 IID QSA Implementation Report and 2019 IID SWRCB Report, page 31 of 335; IID Total Rainfall and IID Overrun/ Underrun is a separate calculation

Equitable Distribution Plan

A 2006 study by Hanemann and Brookes suggested that such conditions were likely to occur 40-50% of the years during the decade following the report. On November 28, 2006, the IID Board of Directors adopted Resolution No 22-2006 approving development and implementation of an Equitable Distribution Plan to deal with times when customers' demand would exceed IID's Colorado River supply. The EDP, adopted in 2007 allows the IID Board to institute an apportionment program. As part of this Resolution, the IID Board directed the General Manager to prepare the rules and regulations necessary or appropriate to implement the plan within the district, which the board adopted in November 2006. The 2009 Regulations for EDP were created to enable IID to implement a water management tool (apportionment) to address years in which water demand is expected to exceed supply. So far, for the 17 years from 2003 through 2020, demand has exceeded supply by some amount for a total of five years (see Table 15, above). IID has not experienced any overruns since 2014.

The IID 2013 Revised EDP, adopted by the Board on October 28, 2013, further allowed IID to pay back its outstanding overruns using an EDP Apportionment, and it was expected that an annual EDP Apportionment would be established for each of the next several years, if not for the duration of the QSA/Transfer Agreements. For purposes of this WSA, years with a shortage condition that impacts non-agricultural projects such as an IOPP payback obligation constitute "dry" years for IID. For single-dry year and multiple-dry water year assessments, IID's EDP shall govern. IOPP payback, EDP Apportionment, and the IWSP are further discussed under single-dry and multiple-dry year projections. However, the implementation of the EDP apportionment was legally challenged, and on February 6, 2018, the IID board approved a resolution repealing the EDP until the issue is resolved. As of the date of this WSA, a resolution had been reached, but a modified EDP has yet to be re-instated.

WATER MANAGEMENT UNDER INADVERTENT OVERRUN PAYBACK POLICY (IOPP)

On January 1, 2013, the water level in Lake Mead was 1120.5 feet and for the first time since the IOPP came into effect, Lower Colorado River Basin water users faced a shortage condition (Figure 6). For IID, this means that outstanding overruns must be paid back to the river in calendar years following the shortage (2013 and 2014) as described below and shown in Table 16.

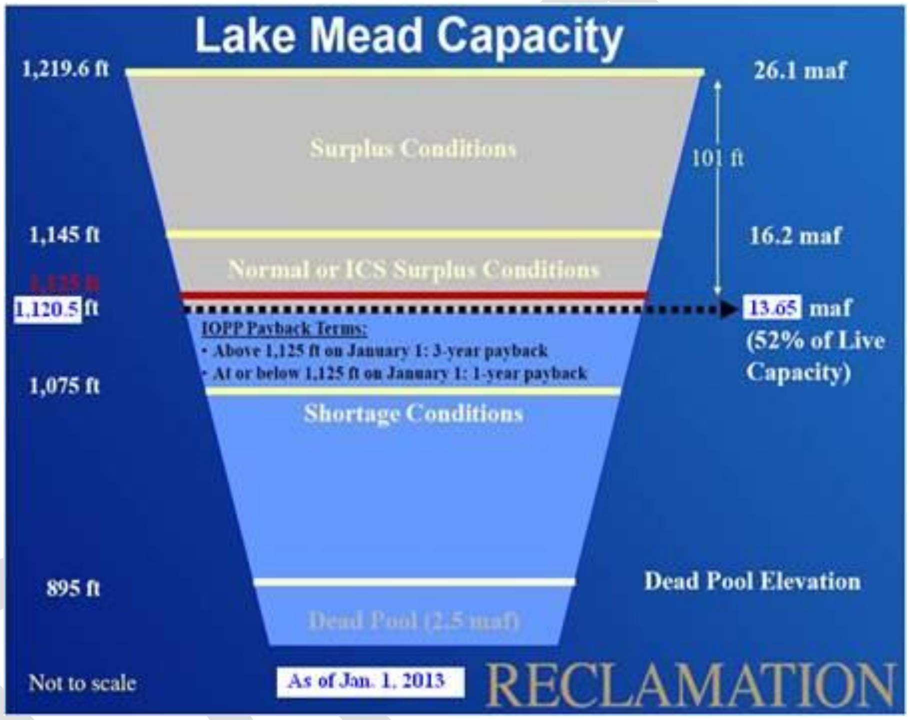

Figure 7 Lake Mead IOPP Schematic

IID's maximum allowable cumulative overrun account is 62,000 AF.[12] Thus, for IID's 2011 overrun of 82,662 AF (which was published in 2012), 62,000 AF were paid back at the river in calendar year 2013, with the remaining 20,662 AF paid back in 2014; however, due to an early payback of 6,290 AF in 2012, IID had 55,710 AF to pay back in 2013 and 20,662 AF of the 2011 overrun to pay back in 2014. In addition, because of the low level of Lake Mead on Jan 1, 2013, IID's entire 2012 overrun of 134,076 AF was paid back in 2014, for a total of 154,738 AF in 2014. Furthermore,

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[12] For IID Quantified Amount: 3.1 MAFY *10 percent = 310,000 AF allowable cumulative overrun account amount; minimum repayment in a calendar year is the less of 310,000 * 20 percent = 62,000 or the amount in the account, if less than 62,000 AF.

under the terms of the IOPP, no overruns are allowed in year when payback is required. IID has not experienced any overrun payback since 2014.

Table 16; IID Inadvertent Overrun Payback to the Colorado River under the IOPP, 2012-2020

Calendar Year of Payback	**2011 Overrun Payback (AF)**	**2012 Overrun Payback (AF)**	**Payback Total for 2014 Calendar Year (AF)**
2013	55,710	-	55,710
2014	20,662	134,076	154,738
Total Payback	76,372	134,076	210,448

The 2013 IOPP payback obligation and prohibition on overruns in payback years, led the IID Board to implement an apportionment program pursuant to the 2009 Regulations for EDP, which were subsequently revised and modified. The Revised 2013 EDP was version approved and adopted by the IID Board on October 28, 2013 (see Attachment B). The Revised 2013 EDP also establishes an agriculture water clearinghouse to facilitate the movement of apportioned water between agricultural water users and between farm units. This is to allow growers and IID to balance water demands for different types of crops and soils with the apportionment s that are made. IID's Water Conservation Committee agreed on a July 1, 2013 start date for the agricultural water clearinghouse.

Generally, the EDP Apportionment is not expected to impact industrial use. However, given the possibility of continuing drought on the Colorado River and other stressors, provisions such as the 2012 IWSP Water Agreement sections 3.7 and 3.8 as well for dry and multiple dry year water assessment may come into effect. However, IID has agreed to work with Project proponents to ensure to the extent possible that the IWSP Water Agreement terms will not negatively impact Project operation.

PROJECT WATER AVAILABILITY FOR A 30-YEAR PERIOD TO MEET PROJECTED DEMANDS

The proposed Project water will be used solely for processing plant operations, fire suppression, landscaping and dust mitigation measures as previously stated. The applicant will be accepting an agreement with Energy Source Hudson Ranch 1 for Sewer and Potable water needs, it is at this point in which the applicant will need to retain a separate meter. The Applicant is proposing to draw water primarily from the O Lateral Gate 32. Currently that gate is being used by Hudson Ranch 1, and it is likely that IID Water Engineering will require that the applicant retain a separate meter. The applicant is required to enter into a(n) IWSP Water Supply Agreement with IID and Schedule 7. General Industrial Use.

Imperial County Entitlement Discretionary Permits Include:

- Existing Conditional Use Permit (CUP #06-0047) for Hudson Ranch 1
- Imperial County Planning Department – Minor Subdivision (120-020-044, -046, -025)
- Imperial County Planning Department – Conditional Use Permit
- Imperial County Planning Department – Development Agreement (if required)
- Imperial County Building Department – Building and Grading Permits
- Imperial County Public Works Department – Encroachment Permit(s)

INTERIM WATER SUPPLY POLICY WATER

At the present time, IID is providing water for use by solar energy generation projects under Water Rate Schedule 7 General Industrial Use. If IID determines that the proposed Project should obtain water under IID's Interim Water Supply Policy (IWSP) for non-agricultural projects rather than Schedule 7 General Industrial Use, the Applicant will do so. IID will determine whether the Project should obtain water under IID's Interim Water Supply Policy (IWSP) for non-agricultural projects in addition to Schedule 7 General Industrial Water.

The IWSP, provided herein as Attachment A, designates up to 25,000 AFY of water for potential Non-Agricultural Projects within IID's water service area. As of June 2019, IID has 23,800 AF available under the IWSP for new projects such as the proposed project. The IWSP establishes a schedule for Processing Fees, Reservation Fees, and Connection Fees that change each year for all non-agricultural projects, and annual Water Supply Development fees for some non-agricultural projects. The proposed Project's water use will be subject to the annual Water Supply Development fee if IID determines that water for the Project is to be supplied under the IWSP.

The likelihood that IID will not receive its annual 3.1 MAF apportionment less QSA/Transfer Agreement obligations of Colorado River water is low due to the high priority of the IID entitlement relative to other Colorado River contractors, see **IID's Water Rights** section on page 35. If such reductions were to come into effect within the 30-year Project life, the Applicants are to work with IID to ensure any reduction can be managed.

As such, lower Colorado River water shortage does not present a material risk to the available water supply that would prevent the County from making the findings necessary to approve this WSA. IID, like any water provider, has jurisdiction to manage the water supply within its service area and impose conservation measures during a period of temporary water shortage. Furthermore, without the proposed Project, IID's task of managing water supply under the QSA/Transfer Agreements would be more difficult, because agricultural use on the proposed Project site would be significantly higher than the proposed demand for the proposed Project as explained in section Expected Water Demand For the Proposed Project that follows.

Water for construction (primarily for dust control) would be obtained from IID canals or laterals in conformance with IID rules and regulations for MCI temporary water use.[12] Water would be picked

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[12] *Complete the Application for Temporary Water Use and submit to Division office. Complete encroachment permit through Real Estate – non-refundable application fee of $250, se. IID website: Real Estate / Encroachments, Permissions, and Other Permitting. Fee for temporary service water: Schedule No. 7 General Industrial Use / Temporary Service Minimum charge for up to 5 AF, pay full flat fee for 5 AF at General Industrial Use rate ($425); use more than 5 AF, pay fee for actual use at General Industrial Rate ($85/AF).*

up from a nearby canal or lateral and delivered to the construction location by a water truck capable of carrying approximately 4,000 gallons per load. To obtain water delivery service, the applicant will complete an IID-410 Certificate of Ownership and Authorization (Water Card), which allows the Water Department to provide the district with information needed to manage the district apportioned supply. Water cards are used for Agriculture, Municipal, Industrial and Service Pipe accounts. If water is to be provided under IWSP in addition to Schedule 7. General Industrial Use, the applicant will seek to enter into a IWSP Water Supply Agreement. .

EXPECTED WATER DEMANDS FOR THE APPLICANT

Water for the Project will be needed on-site for the processing of. Untreated Colorado River water will be supplied to the project via the adjacent "O" or "N" Lateral under an IWSP Water Supply Agreement with IID. The Current land use is M-2-G-PE, for APNs 120-020-144, -046, -025. As described in the project description. The proposed project intends to enter into an agreement HR-1 to provide potable water needs which has the ability to provide the applicant with treated water. Therefore, the proposed project will only need the water requested in this Water Supply Assessment. The Project will need to contract with IID to deliver up to 3,400 AFY of untreated water, via the IID "O" lateral Gate 32 as the primary source and "N" lateral as the secondary option (proposed new service line). The Project is anticipated to use approximately 3,400 AFY of water to operate a commercial lithium hydroxide production plant and necessary plant operation mitigation. The project will increase the demand for water for this delivery gate 32 which is the project's primary gate and new gate on the "N" lateral will be used for emergency needs.[12] Project raw water uses are summarized in **in in** Table 17.

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[12] Should IID Water Engineering require a separate meter and or another gate used. Applicant will be required to make those accommodations to satisfy IID requirements.

Table 17 Project Water Uses (AFY)

Water Use	Acre-Feet Per Year
Raw Water for Processing (Years 30)	3,393.00 AFY
Raw Water for Landscaping	1.00 AFY
Raw Water for Fire Suppression	2.00 AFY
Raw Water for Dust Mitigation	4.00 AFY
TOTAL	3,400.00 AFY

IID delivers untreated Colorado River water to the proposed Project site for geothermal energy uses through the following gates and laterals. The 10-year record for 2010-2019 of water delivery accounting is shown in Table 18 and has a ten-year historic average in AFY.

Table 18 Ten-Year Historic Delivery (AFY), 2010-2019

Gate/Canal	2010	2011	2012	2013	2014	2015	2016	2017	2918	2019
"O" Lateral Gate 32	0	88	937.6	1478.4	1422.3	1604.4	1417.6	1532.6	1363.9	1504.6
Total	0	88	937.6	1478.4	1422.3	1604.4	1417.6	1532.6	1363.9	1504.6

Source: *IID Staff, July 13, 2020 (Jose Moreno)*

It is important to note that the historical water use of 1,127.0 AFY for the "O" Lateral Gate 32 represents water use for current operations for geothermal industrial activities. Water use for the new proposed Project will be used for the purpose of commercial lithium hydroxide production plant and will be done through a separate company and will be in addition of the current water supply. The "N" Lateral will be a new connection. The proposed Project is anticipated to have an estimated water demand of 112 AF for the first two years of construction and 102,000 AF or 3,400 AFY amortized over a 30-year term (for all delivery gates for new Project). Thus, the proposed Project demand is an increase of 2,273 AFY from the historical 10-year average annual delivery of 1,127 AFY or 202%[13] more than the historical 10-year average annual delivery for the proposed Project site. The proposed Project's estimated water demand represents 14 percent (14%) of the 23,800 AYF balance of supply available for contracting under the IWSP.

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[13] Project Anticipated Water Use Increase –Historical Average/ Historical Average *100 =% Increase

Table 19: Total Historical Delivery for Proposed Project Delivery Gates (AF), 10- Year Total, 10 Year Average, 2010-2019

	10 -Year Total (AF)	10-Year Average (AFY)
Historic Delivery Yield	11,269.4	1,127.0

Source: *IID Staff, July 13, 2020 (Jose Moreno)*

IID'S ABILITY TO MEET DEMANDS WITH WATER SUPPLY

Non-agricultural water demands for the IID water service area are projected for 2020-2055 in Table 8, and IID agricultural demands including system operation are projected for 2020-2055 in Table 9, all volumes within the IID water service area. IID water supplies available for consumptive use after accounting for mandatory transfers are projected to 2077 in Table 14 **(Column 11),** volumes at Imperial Dam. To assess IID's ability to meet future water demands, IID historic and forecasted demands are compared with CRWDA Exhibit B net availability, volumes at Imperial Dam Table 14 **(Column 11**). The analysis requires accounting for system operation consumptive use within the IID water service area, from AAC at Mesa Lateral 5 to Imperial Dam, and for water pumped for use by the USBR Lower Colorado Water Supply Project (LCRWSP), an IID consumptive use component in the USBR Decree Accounting Report. IID system operation consumptive use for 2015 is provided in **Table 15** to show the components included in the calculation and their 2015 volumes.

Table 20 IID System Operations Consumptive Use within IID Water Service Area and from AAC at Mesa Lateral 5 to Imperial Dam, (KAF), 2019

	Consumptive Use (KAF)
IID Delivery System Evaporation	24.6
IID Canal Seepage	91.7
IID Main Canal Spill	13.1
IID Lateral Canal Spill	118.1
IID Seepage Interception	-39.8
IID Unaccounted Canal Water	30.9
Total IID System Operational Use, within water service area	**238.6**

"Losses" from AAC @ Mesa Lat 5 to Imperial Dam	29.2
LCWSP pumpage	-10
Total System Operational Use in 2019	**257.8**

Sources: 2015 Water Balance rerun 04/22/2020, and 2016 IID Water Conservation Plan

IID’s ability to meet customer water demands through 2055 as shown in Table 21.

- Non-agricultural use from Table 8
- Agricultural and Salton Sea mitigation uses from Table 9
- CRWDA Exhibit B net available for IID consumptive use from Table 14
- System operation consumptive use from Table 20

Table 21: IID Historic and Forecasted Consumptive Use vs CRWDA Exhibit B IID Net Available Consumptive Use, volumes at Imperial Dam (KAFY), 2015-2055-

	2015	2020	2025	2030	2035	2040	2045	2050	2055
Non-Ag Delivery	**110.1**	123.4	133.1	142.9	151.4	163.2	175.4	188.4	199.3
Ag Delivery	**2,156.8**	2,309.6	2,259.5	2,209.5	2,209.5	2,209.5	2,209.5	2,209.5	2,209.5
QSA SS Mitigation Delivery	**153.3**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
System Op CU in IID & to Imperial Dam	**220.2**	235.6	230.5	225.4	225.4	225.4	225.4	225.4	225.4
IID CU at Imperial Dam	2,480.9	2,668.6	2,623.1	2,577.8	2,586.3	2,598.1	2,610.3	2,623.3	2,634.2
Exhibit B IID Net Available for CU at Imperial Dam	2,480.9	**2,649.8**	**2,617.8**	**2,612.8**	**2,612.8**	**2,612.8**	**2,612.8**	**2,665.8**	**2,665.8**
IID Underrun/Overrun at Imperial Dam	90.0	-18.80	-5.30	35.00	26.50	14.70	2.50	42.50	31.60

Notes: 2015 Provisional Water Balance rerun 06/28/2019
Non-Ag Delivery CI 15.0%, Ag Delivery CI 3.0%, QSA SS mitigation CI 15%
QSA Salton Sea Mitigation Delivery terminates on 12/31/2017
Underrun /Overrun = IID CU at Imperial Dam minus CRWDA Exhibit B Net Available
Notes: Ag Delivery for 2020-2055 does not take into account land conversion for solar use nor reduction in agricultural land area due to urban expansion.

As shown above, IID forecasted demand has the potential to exceed CRWDA Exhibit B Net Consumptive Use volumes during several time intervals through the lifespan projection for the Project. However, due to temporary land conversion for solar use and urban land expansion that will reduce agricultural acres in the future, a water savings of approximately 217,000 AFY will be generated into the future and for the lifetime of the Project.

In addition, USBR 2019 Decree Accounting Report states that IID Consumptive Use is 2,558.1 KAF (excludes 46,555 AF for water transfer associated with Salton Sea mitigation and 1,579 AF of ICS for storage in Lake Mead) with an underrun of -34.2 KAF, as reported by IID in 2019 Annual SWRCB Report per WRO 2002-2013; that is, IID uses less than the amount in its approved Water Order (2,629,675 AF).

Table 22: 2019 Approved Water Order, Actual CU (Decree Accounting Report) and IID Underrun, KAF at Imperial Dam

IID Approved Water Order	2,639.7 less 10 supplied by LCWSP
IID Consumptive Use	2,558.1
IID **Underrun /Overrun**	**-34,215**
Sources: 2019 IID Revised Water Order, approved on March 10, 2020, *2019 Decree Accounting Report*, and *2019 Annual Report of IID Pursuant to SWRCB Revised Order WRO 2002-2013*	

As reported in the 2017-2018 IID QSA Implementation Report and 2019 SWRCB IID Report and presented in **Table 20** from 2013 to 2019 IID consumptive use (CU) resulted in underruns; i.e., annual CU was less than the district's QSA Entitlement of 3.1 MAFY minus QSA/Transfer Agreements obligations. This would indicate that even though **Table 10** shows IID Overrun/Underrun at Imperial Dam exceeding CRWDA Exhibit B Net Available for CU, for the 30-year life of the proposed Project, IID consumptive use may be less than forecasted. However, with repeal of the IID EDP in February 2018, it is uncertain whether underruns will continue.

Meanwhile, forecasted Ag Delivery reductions presented in **Table 9** are premised on implementation of on-farm practices that will result in efficiency conservation. These reductions do not take into account land conversion for solar projects nor reduction in agricultural land area due to urban expansion; that is to say, the forecasted Ag Delivery is for acreage in 2003 with reduction for projected on-farm conservation efficiency. Thus, Ag Delivery demand may well be less than forecasted in **Table 9**. In any case, the proposed Project will use less water than the historical agricultural demand of proposed Project site, so the proposed Project will ease rather than exacerbate overall IID water demands.

In the event that IID has issued water supply agreements that exhaust the 25 KAFY IWSP set aside, and it becomes apparent that IID delivery demands due to non-agriculture use are going to cause the district to exceed its quantified 3.1 MAFY entitlement less QSA/Transfer Agreements obligations, IID has identified options to meet these new non-agricultural demands. These options include (1) tracking water yield from temporary land conversion from agricultural to non-agricultural land uses (renewable solar energy); and (2) only if necessary, developing projects to expand the size of the district's water supply portfolio.

These factors will be discussed in the next two sections**, Tracking Water Savings from Growth of Non-Agricultural land Uses** and **Expanding Water Supply Portfolio.**

Tracking Water Savings from Growth of Non-Agricultural Land Uses

The Imperial County Board of Supervisors has targeted up to 25,000 acres of agricultural lands, about 5 percent (5%) of the farmable acreage served by IID, for temporary conversion to solar farms; because the board found that this level of reduction would not adversely affect agricultural production. As reported for IID's 2019 Temporary Land Conversion Fallowing Program existing solar developments at the end of 2019 have converted 10,146 acres of farmland. These projects had a yield at-river of 65,791 AF of water in 2019. The balance of the 25,000-acre agriculture-to-solar policy is 14,854 acres. On average, each agricultural acre converted reduces agricultural demand by 5.1 AFY, which results in a total at-river yield (reduction in consumptive use) of 127,500 AFY.

However, due to the nature of the conditional use permits under which solar farms are developed, IID cannot rely on this supply being permanently available. In fact, should a solar project decommission early, that land may go immediately back to agricultural use (it remains zoned an agricultural land). Nevertheless, during their operation, the solar farms do ameliorate pressure on IID to implement projects to meet demand from new non-agricultural projects.

Unlike the impact of solar projects, other non-agricultural uses are projected to grow, as reflected in the nearly 76 percent (76%) increase in non-agricultural water demand from 107.2 KAF in 2015 to 198.4 KAF in 2055 reflected herein in **Table 8**. This increase in demand of 91.2 KAFY will more than likely be met by solar development; however, as the land remains zoned as agricultural land, that source is not reliable to be permanently available to IID.

The amount of land developed for residential, commercial, and industrial purposes is projected to grow by 55,733 acres from 2015 to 2050[13] within the sphere of influence of the incorporated cities and specific plan areas in Imperial County. A conservative estimate is that such development will displace at least another 24,500 acres of farmland based on the Imperial County Local Agency Formation Commission (LAFCO) sphere of influence maps and existing zoning and land use in Imperial County. At 5.13 AFY yield at-river, there would be a 125,000 AFY reduction IID net consumptive use.

The total foreseeable solar project temporary yield at-river (91,800 AFY) and municipal development permanent yield at-river (125,000 AFY) is to reduce forecasted IID net consumptive use at-river 216,800 AFY, which is more than enough to meet the forecast Demand minus Exhibit B Net Available volumes shown in **Table 14**. This Yield at-river is sufficient to meet the forecasted excess of non-agricultural use over Net Available supply within the IID service area for the next 20 years, as is required for SB 610 analysis.

Farmland retirement associated with municipal development would reduce IID agricultural delivery requirements beyond the efficiency conservation projections shown in **Table 9.** Therefore, in the event that Schedule 7 General Industrial Use water is unavailable, the Applicants will rely on IID IWSP water to supply the Project, as discussed above in the section **IID Water Supply Policy for Non-Agricultural Projects (September 2009).**

EXPANDING WATER SUPPLY PORTFOLIO

While forecasted long-term annual yield-at-river from the reduction in agricultural acreage due to municipal development in the IID service area is sufficient to meet the forecasted excess of non-agricultural use over CRWDA Net Available supply (**Table 14)** without expanding IID's Water Supply Portfolio, IID has also evaluated the feasibility of a number of capital projects to increase its water supply portfolio.

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[13] IRWMP, Chapter 5, Table 5-14.

As reported in 2012 Imperial IRWMP Chapter 12, IID contracted with GEI Consultants, Inc. to identify a range of capital project alternatives that the district could implement. Qualitative and quantitative screening criteria and assumptions were developed in consultation with IID staff. Locations within the IID water service area with physical, geographical, and environmental characteristics most suited to implementing short- and long-term alternatives were identified. Technical project evaluation criteria included volumes of water that could be delivered and/or stored by each project, regulatory and permitting complexity, preliminary engineering components, land use requirements, and costs.

After preliminary evaluation, a total of 27 projects were configured:

- 17 groundwater or drain water desalination
- 2 groundwater blending
- 6 recycled water
- 1 groundwater banking
- 1 IID system conservation (concrete lining)

Projects were assessed at a reconnaissance level to allow for comparison of project costs. IID staff and the board identified key factors to categorize project alternatives and establish priorities. Lower priority projects were less feasible due to technical, political, or financial constraints. Preferential criteria were features that increased the relative benefits of a project and grant it a higher priority. Four criteria were used to prioritize the IID capital projects:

1. **Financial Feasibility.** Projects whose unit cost was more than $600/AF were eliminated from further consideration.
2. **Annual Yield.** Project alternatives generating 5,000 AF or less of total annual yield were determined not to be cost-effective and lacking necessary economies of scale.

3. **Groundwater Banking.** Groundwater banking to capture and store underruns is recognized as a beneficial use of Colorado River water. Project alternatives without groundwater banking were given a lower priority.
4. **Partnering.** Project alternatives in which IID was dependent on others (private and/or public agencies) for implementation were considered to have a lower priority in the IID review; this criterion was reserved for the IRWMP process, where partnering is a desirable attribute.

Based on these criteria, the top ten included six desalination, two groundwater blending, one system conservation, and one groundwater storage capital projects. These capital projects are listed **Table 23** which follows.

Table 23 IID Capital Project Alternatives and Cost (May 2009 price levels $)

Name	Description	Capital Cost	O&M Cost	Equivalent Annual Cost	Unit Cost ($/AF)	In-Valley Yield (AF)
GW 18	Groundwater Blending E. Mesa Well Field Pumping to AAC	$39,501,517	$198,000	$2,482,000	$99	25,000
GW 19	Groundwater Blending: E. Mesa Well Field Pumping to AAC w/Percolation Ponds	$48,605,551	$243,000	$3,054,000	$122	25,000
WB 1	Coachella Valley Groundwater Storage	$92,200,000	$7,544,000	$5,736,746	$266	50,000
DES 8	E. Brawley Desalination with Well Field and Groundwater Recharge	$100,991,177	$6,166,000	$12,006,000	$480	25,000
AWC 1	IID System Conservation Projects	$56,225,000	N/A	$4,068,000	$504	8,000
DES 12	East Mesa Desalination with Well Field and Groundwater Recharge	$112,318,224	$6,336,000	$12,831,000	$513	25,000
DES 4	Keystone Desalination with IID Drainwater/ Alamo River	$147,437,743	$15,323,901	$23,849,901	$477	50,000
DES 14	So. Salton Sea Desalination with Alamo River Water and Industrial Distribution	$158,619,378	$15,491,901	$24,664,901	$493	50,000

DES 15	So. Salton Sea Desalination with Alamo River Water and MCI Distribution	$182,975,327	$15,857,901	$26,438,901	$529	50,000
DES 2	Keystone Desalination with Well Field and Groundwater Recharge	$282,399,468	$13,158,000	$29,489,000	$590	50,000

Source: Imperial IRWMP, Chapter 12; see also Imperial IRWMP Appendix N, IID Capital Projects

IID Near Term Water Supply Projections

As mentioned above, IID's quantified Priority 3(a) water right under the QSA/Transfer Agreements secures 3.1 MAF per year, less transfer obligations of water for IID's use from the Colorado River, without relying on rainfall in the IID service area. Even with this strong entitlement to water, IID actively promotes on-farm efficiency conservation and is implementing system efficiency conservation measures including seepage recovery from IID canals and the All-American Canal (ACC) and measures to reduce operational discharge. As the IID website Water Department states:

> Through the implementation of extraordinary conservation projects, the development of innovative efficiency measures and the utilization of progressive management tools, the IID Water Department is working to ensure both the long-term viability of agriculture and the continued protection of water resources within its service area.

Overall, agricultural water demand in the Imperial Valley will decrease due to IID system and grower on-farm efficiency conservation measures that are designed to maintain agricultural productivity at pre-QSA levels while producing sufficient yield-at-river to meet IID's QSA/Transfer Agreements obligations. These efficiencies combined with the conversion of some agricultural land uses to non-agricultural land uses (both solar and municipal), ensure that IID can continue to meet the water delivery demand of its existing and future agricultural and non-agricultural water users, including this Project for the next 30 years and for the life of the proposed Project.

PUBLIC WATER SYSTEM/ LEAD AGENCY FINDINGS

IID serves as the regional wholesale water supplier, importing raw Colorado River water and delivering it, untreated, to agricultural, municipal, industrial, environmental, and recreational water users within its Imperial Unit water service area. The County of Imperial serves as the responsible agency with land use authority over the proposed project. Water Assessment findings are summarized as follows:

1. IID's annual entitlement to consumptive use of Colorado River water is capped at 3.1 MAF less water transfer obligations, pursuant to the QSA and Related Agreements. Under the terms of the CRWDA, IID is implementing efficiency conservation measure to reduce net consumptive use of Colorado River water needed to meet its QSA/Transfer Agreements obligations while retaining historical levels of agricultural productivity.
2. In 2019 IID consumptively used 2,588,136 AF of Colorado River water (volume at Imperial Dam); 2,315,988 AF were delivered to customers of which 2,225,089 AF or 96 percent went to agricultural users.
3. Reduction of IID's net consumptive use of Colorado River water under the terms of the Colorado River Water Delivery Agreement is to be the result of efficiency conservation measures. Agricultural consumptive use in the Imperial Valley will not decline. However, IID operational spill and tailwater will decline, impacting the Salton Sea.
4. Due to the dependability of IID's water rights, Colorado River flows, and Colorado River storage facilities for Colorado River water, it is unlikely that the water supply of IID would be disrupted, even in dry years or under shortage conditions because Mexico, Arizona and Nevada have lower priority and are responsible for reducing their water use during a declared Colorado River water shortage before impacting California.
5. Historically, IID has never been denied the right to use the annual volume of water it has available for its consumptive uses under its entitlement. Nevertheless, IID is participating in discussions for possible actions in response to extreme drought on the Colorado River.
6. The proposed Project has an estimated total water demand of 112 AF for a duration of 2 years during construction and 102,000 AF or 3,400 AFY amortized over a 30-year term (for

all delivery gates for proposed Project). Thus, the proposed Project demand is a an increase of 2,273 AFY from the historical 10-year average, or 202% more than the historical 10-year average annual delivery of 1,127 AF of historic water use at the proposed Project Site.

7. The Project's water use will be covered under the Schedule 7 General Industrial Use. In the event that IID determines that the proposed Project is to utilize IWSP for Non-Agricultural Projects water, the Applicant will enter into an IWSP Water Supply Agreement with IID. In which case, the proposed Project would use 14 percent (14%) of the 23,800 AFY of IWSP water.
8. Based on the Environmental Impact Report (EIR) prepared for this proposed Project pursuant to the CEQA, California Public Resources Code sections 21000, *et seq*., the Lead Agency hereby finds that the IID projected water supply will be sufficient to satisfy the demands of this proposed Project in addition to existing and planned future uses, including agricultural and non-agricultural uses for a 30-year Water Supply Assessment period and for the 30 -year proposed Project life with a 2 year construction water consumption life. California State Clearing House Number: 2020120143

ASSESSMENT CONCLUSION

This Water Supply Assessment has determined that IID water supply is adequate for ES Minerals, the proposed Project. The Imperial Irrigation District's IWSP for Non-Agricultural Projects dedicates 25,000 AF of IID's annual water supply to serve new projects. As of June 2020, 23,800 AF per year remain available for new projects ensuring reasonably sufficient supplies for new non-agricultural water users. The project water demand of approximately 102,000 AF and 3,400 AFY amortized represents 14 % of the unallocated supply set aside in the IWSP for non-agricultural project, and approximately (14%) of forecasted future non-agricultural water demands planned in the Imperial IRWMP through 2055. The water demand for the Project is an increase in the overall historic demand for the project site.

For all the reasons described herein, the amount of water available and the stability of the IID water supply along with on-farm and system efficiency conservation and other measures being undertaken by IID and its customers ensure that ES Mineral 's water needs will be met for the next 30 years as assessed for compliance under SB-610.

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ATTACHMENTS

Attachments

Attachment A: IID Interim Water Supply Policy for Non-Agricultural Projects

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Attachment A: IID Interim Water Supply Policy for Non-Agricultural Projects[13]

1.0 Purpose.

Imperial Irrigation District (the District) is developing an Integrated Water Resources Management Plan (IWRMP)[14] that will identify and recommend potential programs and projects to develop new water supplies and new storage, enhance the reliability of existing supplies, and provide more flexibility for District water department operations, all in order to maintain service levels within the District's existing water service area. The first phase of the IWRMP is scheduled to be completed by the end of 2009 and will identify potential projects, implementation strategies and funding sources. Pending development of the IWRMP, the District is adopting this Interim Water Supply Policy (IWSP) for Non-Agricultural Projects, as defined below, in order to address proposed projects that will rely upon a water supply from the District during the time that the IWRMP is still under development. It is anticipated that this IWSP will be modified and/or superseded to take into consideration policies and data developed by the IWRMP.

2.0 Background.

The IWRMP will enable the District to more effectively manage existing water supplies and to maximize the District's ability to store or create water when the available water supplies exceed the demand for such water. The stored water can be made available for later use when there is a higher water demand. Based upon known pending requests to the District for water supply assessments/verifications and pending applications to the County of Imperial for various Non-Agricultural Projects, the District currently estimates that up to 50,000 acre feet per year (AFY) of water could potentially be requested for Non-Agricultural Projects over the next ten to twenty years. Under the IWRMP the District shall evaluate the projected water demand of such projects and the potential means of supplying that amount of water. This IWSP currently designates up to 25,000 AFY of water for potential Non-Agricultural Projects within IID's water service area. Proposed Non-Agricultural projects may be required to pay a Reservation Fee, further described below. The reserved water shall be available for other users until such Non-Agricultural projects are implemented and require the reserved water supply. This IWSP shall remain in effect pending the approval of further policies that will be adopted in association with the IWRMP.

APPENDIX K – TRAFFIC IMPACT ANALYSIS, HUDSON RANCH MINERAL RECOVERY

LINSCOTT
LAW &
GREENSPAN
engineers

TRANSPORTATION IMPACT ANALYSIS

HUDSON RANCH MINERAL RECOVERY

County of Imperial, California
June 22, 2021

LLG Ref. 3-19-3152

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TRANSPORTATION IMPACT ANALYSIS

HUDSON RANCH MINERAL RECOVERY

County of Imperial, California
June 22, 2021

1.0 INTRODUCTION

The following traffic impact analysis has been prepared to determine the potential impacts to the local circulation system due to the addition of truck and employee traffic related to construction and post construction Day-to-Day Operations of the proposed Hudson Ranch Mineral Recovery project in the County of Imperial, California. This report includes the following sections:

- Project Description
- Existing Conditions
- Analysis Approach and Methodology
- Significance Criteria
- Analysis of Existing Conditions
- Trip Generation / Distribution / Assignment
- During Construction Analysis
- Day-to-Day Operations Analysis
- Project Access Discussion
- Vehicle Miles Travelled (VMT) Assessment
- Conclusions and Recommendations

2.0 PROJECT DESCRIPTION

Energy-Source Minerals LLC (ES Minerals), is proposing to construct and operate a commercial lithium hydroxide production plant in the Salton Sea geothermal field known as Project ATLiS. The facility will process geothermal brine from the neighboring Hudson Ranch Power I Geothermal Plant (HRl) to produce lithium hydroxide, and zinc and manganese products which will be sold commercially.

The proposed Project consists of the following:

- Construction and operation of a facility to extract lithium, manganese, zinc and other commercially viable substances from geothermal brine and process the extracted substances to produce commercial quantities of lithium, and to the extent possible, manganese and zinc products and other products;
- Construction and operation of brine supply and return pipelines and other associated interconnection facilities with the HRl power plant;
- Construction of a primary access road from McDonald Road (approximately 500 ft. west of the HR 1 entrance) and an emergency access entrance only from Davis Road;
- Paving of McDonald Road from Highway 111 to English Road;
- Construction of a "laydown yard" that will also support temporary offices during construction as well as serving as a truck management yard during operations, and
- Construction of offices, repair facilities, shipping and receiving facilities and other infrastructure components.

The ATLiS plant & facilities will be located about 3 miles west-southwest of the community of Niland near the southwest corner of the existing HRl power plant site. The property is zoned for manufacturing (medium industrial) (M2G-PE), and is located entirely within the existing Salton Sea Geothermal Overlay Zone (see Figure 3). The proposed ATLiS plant site and associated plant facilities would be built within an existing approximately 37-acre project area, with the addition of the 15 acres located at the southeast corner of Davis Road and McDonald Road, and approximately 40 acres on the south of the current HR 1 plant site.

Access is via McDonald Road.

Figure 2–1 depicts the project vicinity with ***Figure 2–2*** depicts a more details project area map and ***Figure 2–3*** shows the project’s site plan.

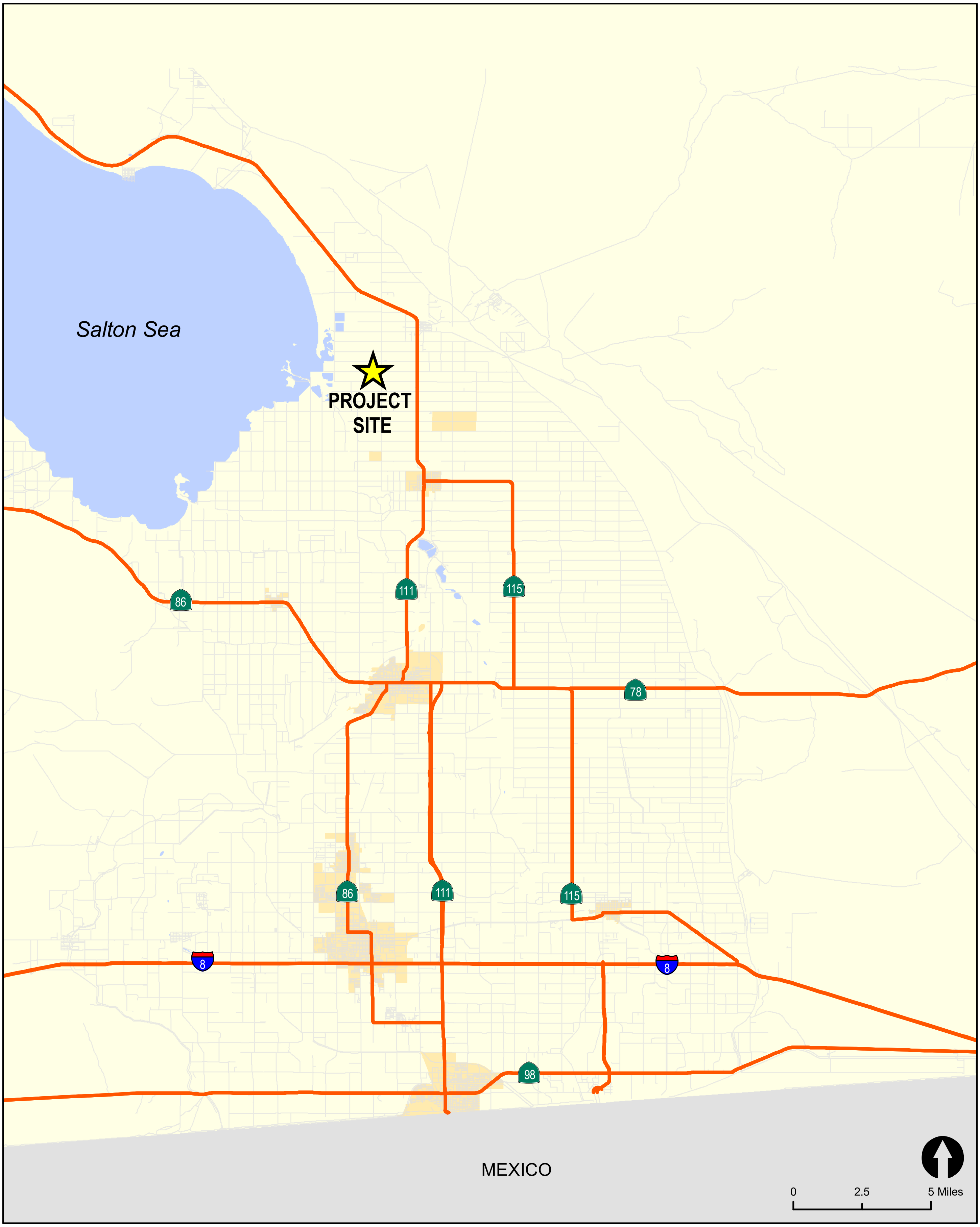

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Figure 2-1

Vicinity Map

Hudson Ranch Mineral Recovery

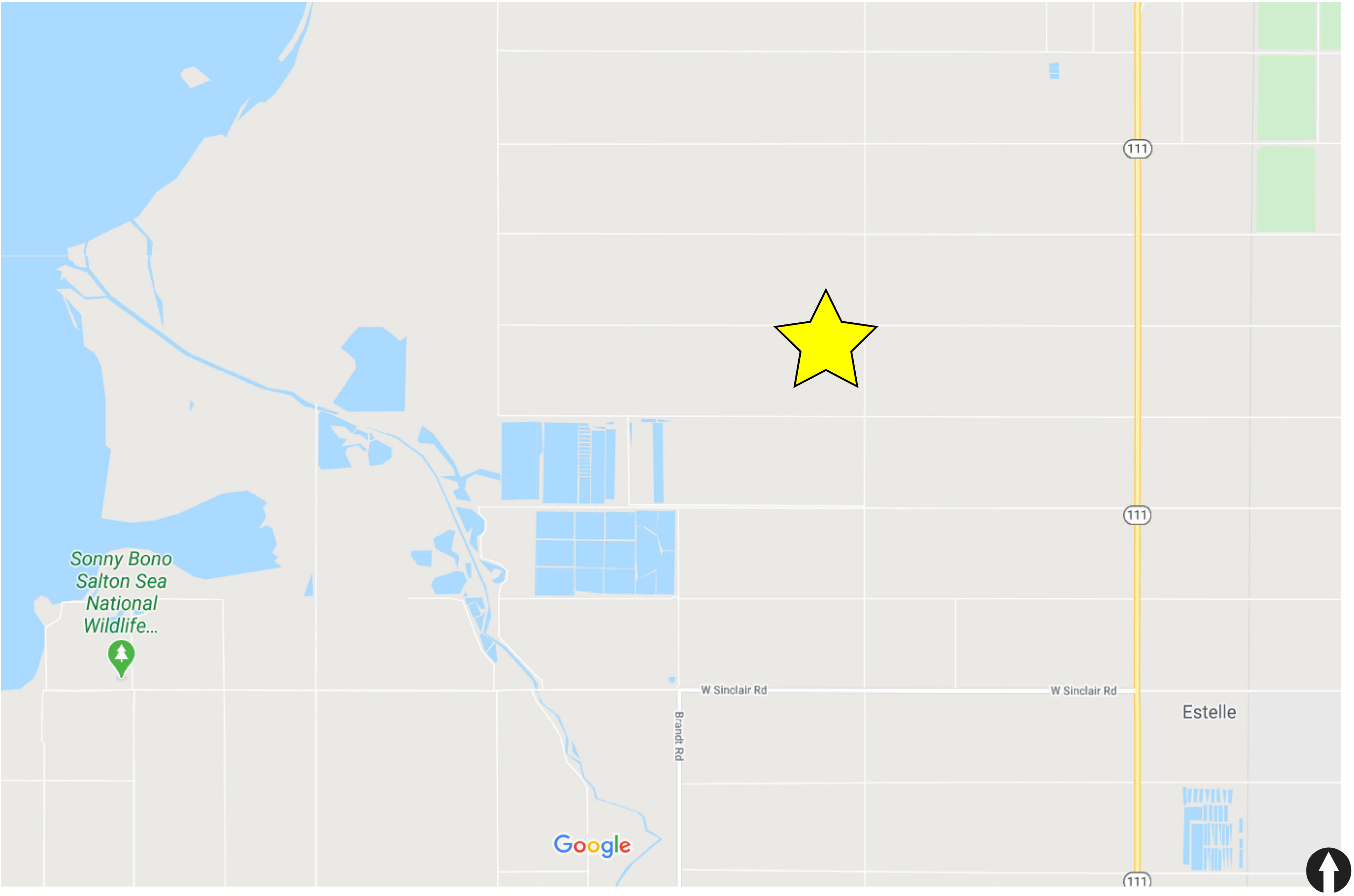

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Figure 2-2

Project Area Map

HUDSON RANCH MINERAL RECOVERY

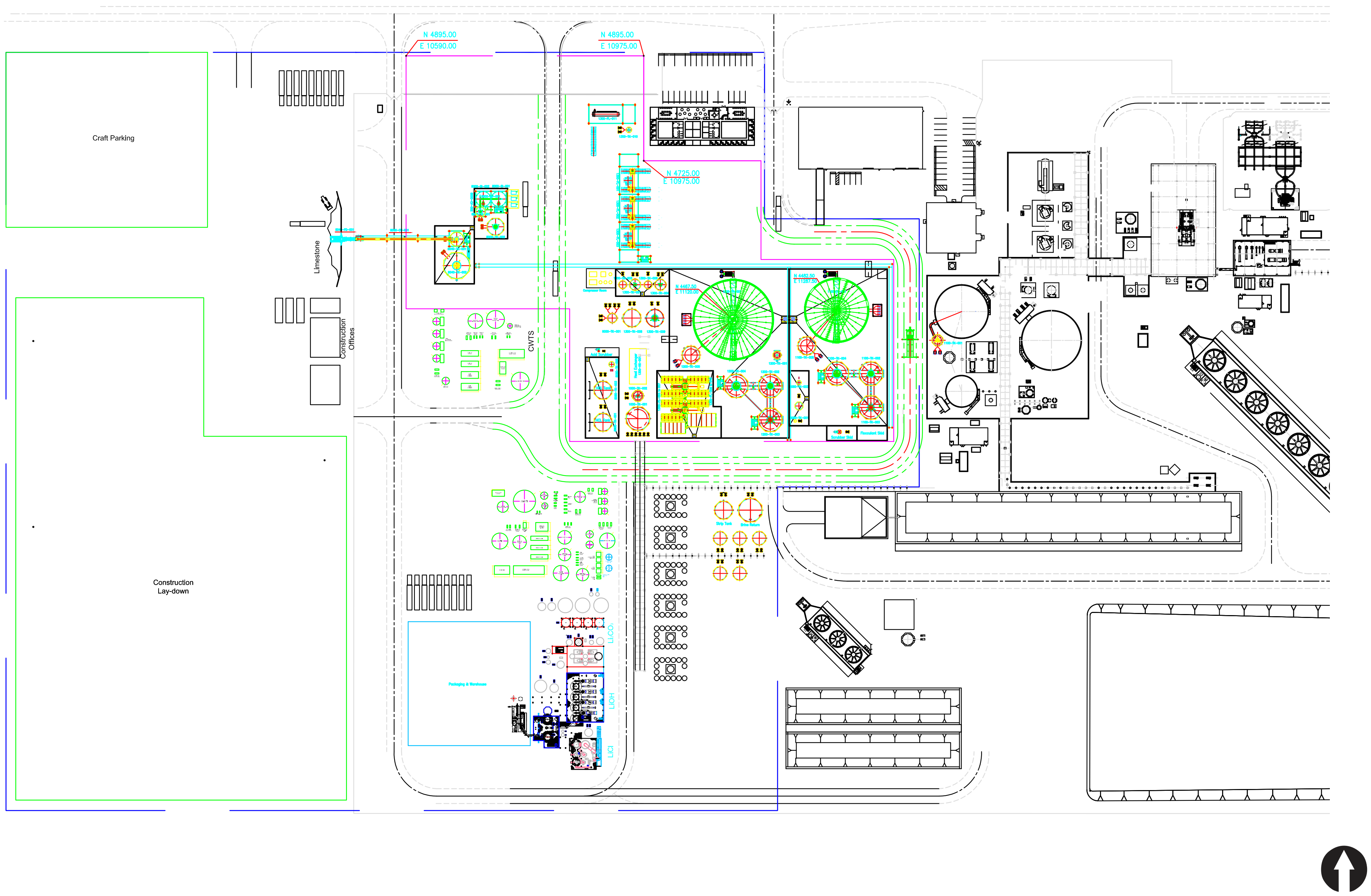

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Figure 2-3

Site Plan

HUDSON RANCH MINERAL RECOVERY

3.0 EXISTING CONDITIONS

3.1 Existing Street Network

Following is a brief description of the street segments within the project area. ***Figure 3–1*** illustrates the existing conditions, including the lane geometry, for the key intersections in the study area.

State Route 111 (SR-111) is classified as a State Highway/Expressway on the Imperial County General Plan Circulation Element. SR-111 is a north-south highway connecting the three largest cities in Imperial County and runs from I-10 in Riverside County to the international border. Outside the towns of Calipatria and Niland, SR-111 is constructed as a two-lane undivided north-south roadway, providing one lane of travel per direction and the posted speed limit is generally 65 mph.

Hazard Road is an east-west route through Imperial County. Hazard Road is currently an unpaved two-lane roadway within the Project vicinity.

Sinclair Road is an east-west route through Imperial County. Sinclair Road is currently a paved two-lane undivided roadway within the Project vicinity.

English Road is a north-south route through Imperial County. English Road is currently an unpaved two-lane roadway north of Sinclair Road and constructed as a two-lane paved roadway south of Sinclair Road.

McDonald Road is an east-west route though Imperial County. Currently, McDonald Road is an unpaved two-lane roadway west of SR-111 of Sinclair Road and constructed as a two-lane paved roadway east of SR-111. It is proposed to improve the intersection at SR-111 and pave McDonald Road between SR-111 and the site (west of SR-111) prior to construction of the project and thus the "Operations" analysis reflects these improvements.

3.2 Existing Traffic Volumes

Daily traffic (ADT) volumes on study area segments along SR-111 were obtained from the Caltrans Traffic Census Program for Year 2017, the latest available as of the date of this report. AM and PM peak hour intersection turning movement volume counts at study area intersections were commissioned by LLG Engineers in September 2019. ***Table 3–1*** summarizes the segment ADT volumes on all the study area segments. It should be noted that all segment ADT volumes were applied a growth factor of 2% per year to represent Year 2021 conditions. In addition, it should be noted that for the unpaved segments along McDonald Road and Sinclair Road, the ADTs were estimated based on a relationship that the PM peak hour volumes comprise approximately 10% of the ADT.

Figure 3–2 depicts the existing traffic volumes on both an ADT and peak hour basis. ***Appendix A*** contains the manual intersection count sheets and latest Caltrans traffic volumes.

TABLE 3–1
EXISTING TRAFFIC VOLUMES

Street Segment	Source	ADT[a]
SR-111		
North of Hazard Road	Caltrans	3,800
Hazard Road to McDonald Road	Caltrans	3,800
McDonald Road to Sinclair Road	Caltrans	3,800
South of Sinclair Road	Caltrans	6,400
McDonald Road		
Project Site to English Road	LLG	270E
English Road to SR-111	LLG	220E
Sinclair Road		
English Road to SR-111	LLG	320E

Footnotes:

a. Average Daily Traffic Volume.

b. A 2% growth factor per year (8%) was applied to the 2017 Caltrans segment ADTs to reflect 2021 conditions.

E – Estimated volumes since road is unpaved.

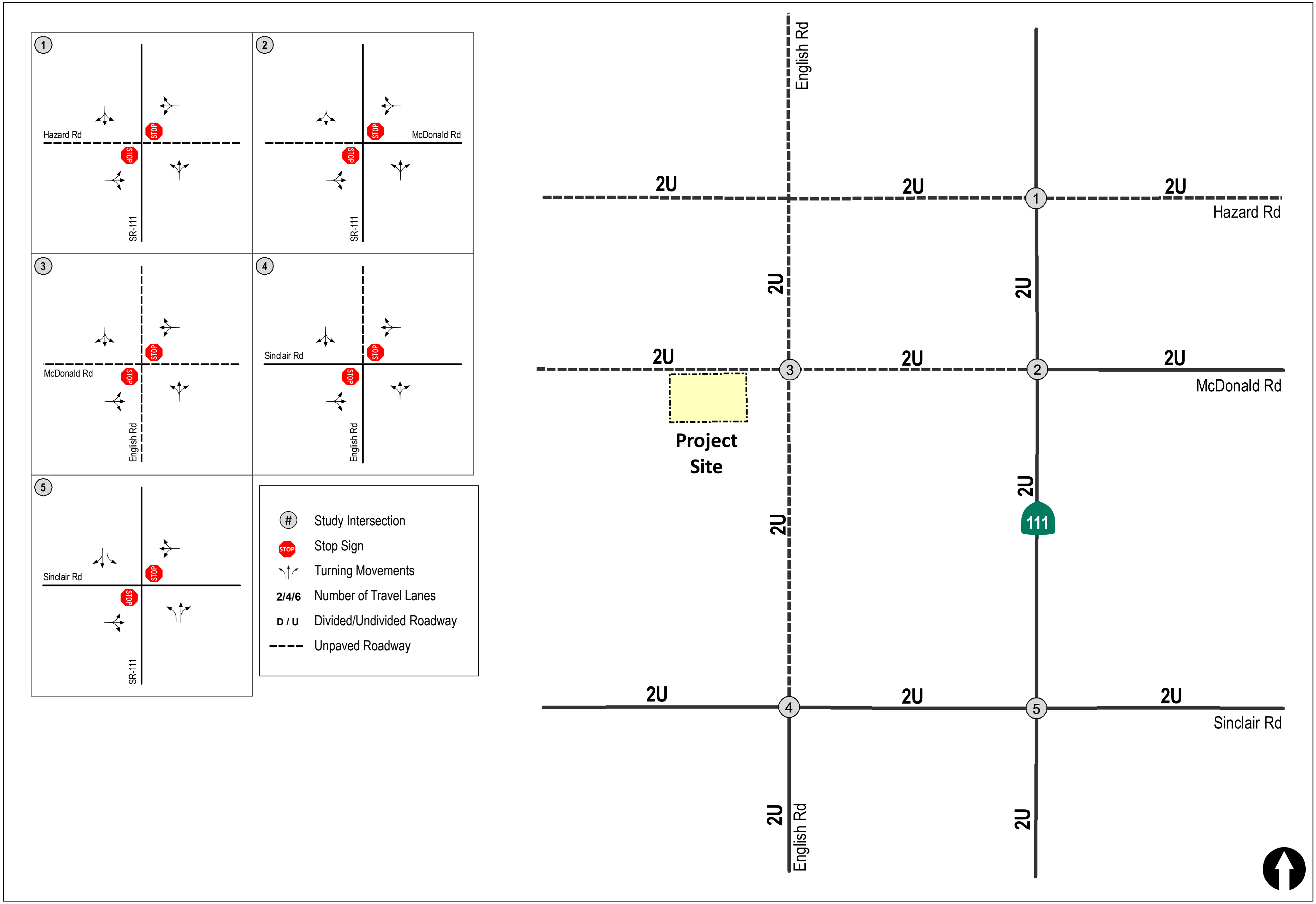

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Figure 3-1

Existing Conditions Diagram

Hudson Ranch Mineral Recovery

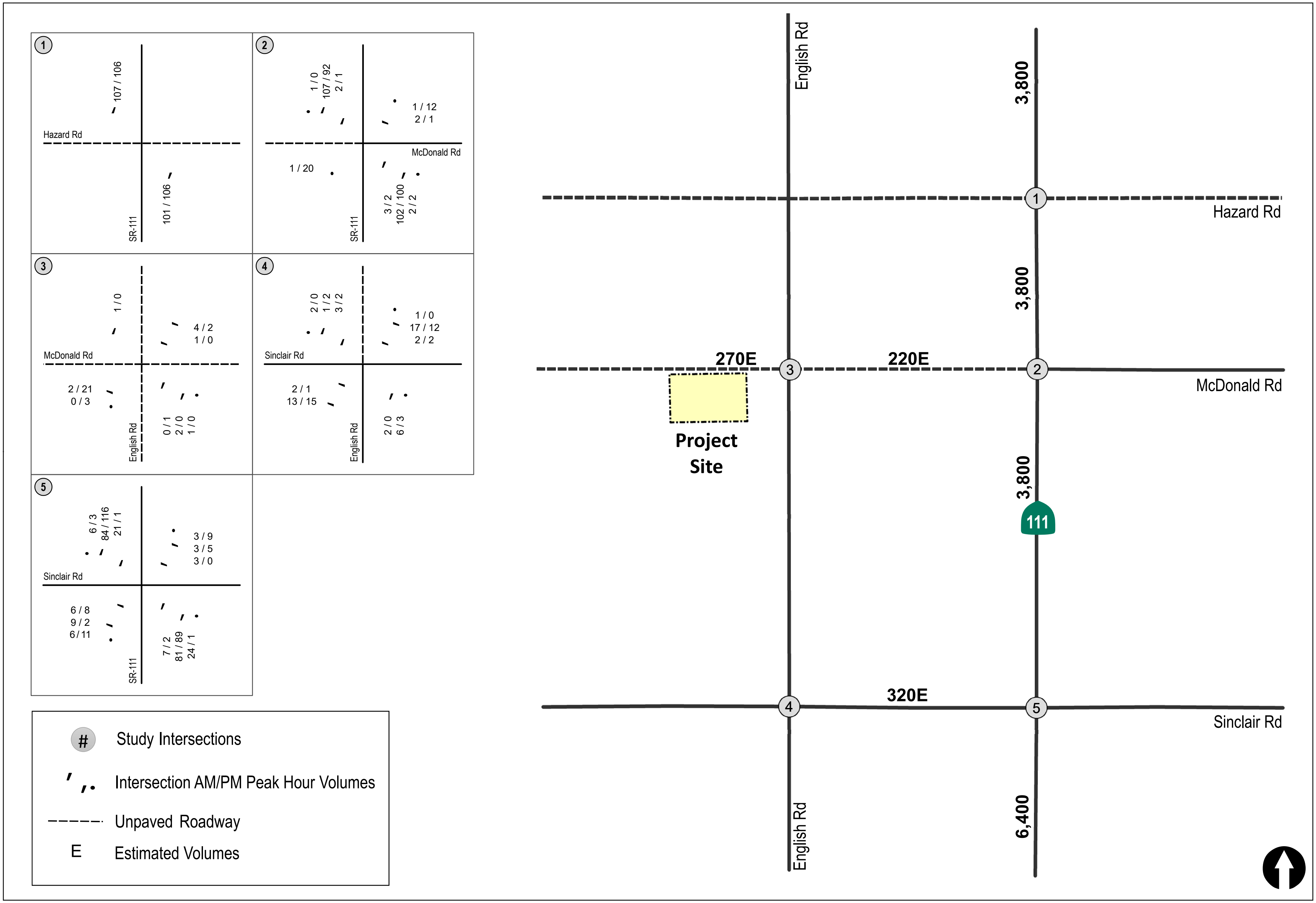

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Figure 3-2

Existing Traffic Volumes

Hudson Ranch Mineral Recovery

4.0 ANALYSIS APPROACH AND METHODOLOGY

4.1 Project Study Area

The following intersections and segments were analyzed in this study and were chosen since they will carry the majority of project truck traffic.

Intersections:

1. SR 111 / Hazard Road
2. SR 111 / McDonald Road
3. SR 111 / Sinclair Road
4. English Road / McDonald Road
5. English Road / Sinclair Road

Segments:

SR 111:

- North of Hazard Road
- Hazard Road to McDonald Road
- McDonald Road to Sinclair Road
- South of Sinclair Road

McDonald Road:

- Project Site to English Road (currently unpaved)
- English Road to SR 111 (currently unpaved)

Sinclair Road:

- English Road to SR 111

Analysis Scenarios

The following scenarios are analyzed in this report:

- Existing
- Existing + Construction traffic;
- Existing + Operations traffic;
- Existing + Operations + Cumulative Growth traffic.

4.2 Analysis Methodology

The operations of the project area intersections and segments are characterized using the concept of "Level of Service" (LOS). LOS is the term used to denote the different operating conditions which occur on a given roadway segment under various traffic volume loads. It is a qualitative measure used to describe a quantitative analysis taking into account factors such as roadway geometries, signal phasing, speed, travel delay, freedom to maneuver, and safety. LOS provides an index to the operational qualities of a roadway segment or an intersection. LOS designations range from A through F, with LOS A representing the best operating conditions and LOS F representing the worst operating conditions. LOS designation is reported differently for signalized and unsignalized intersections, as well as for roadway segments.

Table 4–1 summarizes the description for each level of service. ***Table 4–2*** depicts the criteria, which are based on the average control delay for any particular minor movement (unsignalized intersections).

TABLE 4–1
INTERSECTION LEVEL OF SERVICE DESCRIPTIONS

Level of Service	Description
A	Occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.
B	Generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.
C	Generally results when there is fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear in this level. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
D	Generally results in noticeable congestion. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.
E	Considered to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.
F	Considered to be unacceptable to most drivers. This condition often occurs with over saturation i.e. when arrival flow rates exceed the capacity of the intersection. It may also occur at high volume-to-capacity ratios below 1.00 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

TABLE 4–2
UNSIGNALIZED INTERSECTION LOS & DELAY RANGES

LOS	Delay (seconds/vehicle)
A	≤ 10.0
B	10.1 to 15.0
C	15.1 to 25.0
D	25.1 to 35.0
E	35.1 to 50.0
F	≥ 50.1

Source: 2000 Highway Capacity Manual

4.3 Street Segments

Street segments were analyzed based upon the comparison of ADT to the County of Imperial *Roadway Classifications, Levels of Service (LOS) and Average Daily Traffic (ADT)* table (see ***Table 4–3*** below). *Table 4–3* provides segment capacities for different street classifications, based on traffic volumes and roadway characteristics. Segment analysis is a comparison of ADT volumes and an approximate daily capacity on the subject roadway.

The County does not have a Two-Lane Expressway capacity. Therefore, for segments along SR-111, 40% capacity of a 6-lane Prime Arterial was utilized to calculate level of service.

TABLE 4–3
IMPERIAL COUNTY STANDARD STREET CLASSIFICATION AVERAGE DAILY VEHICLE TRIPS

Road		Level of Service W/ADT*				
Class	**X-Section**	**A**	**B**	**C**	**D**	**E**
Expressway	128 / 210	30,000	42,000	60,000	70,000	80,000
Prime Arterial	106 / 136	22,200	37,000	44,600	50,000	57,000
Minor Arterial	82 / 102	14,800	24,700	29,600	33,400	37,000
Major Collector (Collector)	64 / 84	13,700	22,800	27,400	30,800	34,200
Minor Collector (Local Collector)	40 / 70	1,900	4,100	7,100	10,900	16,200
Residential Street	40 / 60	*	*	< 1,500	*	*
Residential Cul-de-Sac / Loop Street	40/60	*	*	< 1,500	*	*
Industrial Collector	76 / 96	5,000	10,000	14,000	17,000	20,000
Industrial Local Street	44 / 64	2,500	5,000	7,000	8,500	10,000

* Levels of service are not applied to residential streets since their primary purpose is to serve abutting lots, not carry through traffic. Levels of service normally apply to roads carrying through traffic between major trip generators and attractors. It should be noted that for segments along SR-111, the capacities of a 6-lane expressway were reduced by one-third and utilized to calculate level of service.

5.0 SIGNIFICANCE CRITERIA

The County of Imperial does not have published significance criteria. However, the County General Plan does state that the level of service (LOS) goal for intersections and roadway segments is to operate at LOS C or better. Therefore, if an intersection or segment degrades from LOS C or better to LOS D or worse with the addition of project traffic, the impact is considered significant. If the location operates at LOS D or worse with and without project traffic, the impact is considered significant if the project causes the intersection delta to increase by more than two (2) seconds, or the V/C ratio to increase by more than 0.02. These amounts are consistent with those used in the City of El Centro and the County of Imperial in numerous traffic studies.

TABLE 5–1
TRAFFIC IMPACT SIGNIFICANT THRESHOLDS

Level of Service with Project [a]	**Allowable Increase Due to Project Impacts** [b]					
	Freeways		**Roadway Segments**		**Intersections**	Ramp Metering
	V/C	Speed (mph)	**V/C**	Speed (mph)	**Delay (sec.)**	Delay (min.)
D, E & F (*or ramp meter delays above 15 minutes*)	0.01	1	0.02	1	2	2[c]

Footnotes:

a. All level of service measurements are based upon HCM procedures for peak-hour conditions. However, V/C ratios for Roadway Segments may be estimated on an ADT/24-hour traffic volume. The acceptable LOS for freeways, roadways, and intersections is generally "D" ("C" for undeveloped or not densely developed locations per jurisdiction definitions). For metered freeway ramps, LOS does not apply. However, ramp meter delays above 15 minutes are considered excessive.

b. If a proposed project's traffic causes the values shown in the table to be exceeded, the impacts are deemed to be significant. These impact changes may be measured from appropriate computer programs or expanded manual spreadsheets. The project applicant shall then identify feasible mitigations (within the Traffic Impact Study [TIS] report) that will maintain the traffic facility at an acceptable LOS. If the LOS with the proposed project becomes unacceptable (see note a above), or if the project adds a significant amount of peak hour trips to cause any traffic queues to exceed on- or off-ramp storage capacities, the project applicant shall be responsible for mitigating significant impact changes.

c. The allowable increase in delay at a ramp meter with more than 15 minutes of delay and freeway LOS E is 2 minutes and at LOS F is 1 minute.

General Notes:

1. V/C = Volume to Capacity Ratio
2. Speed = Arterial speed measured in miles per hour
3. Delay = Average stopped delay per vehicle measured in seconds for intersections, or minutes for ramp meters.
4. LOS = Level of Service

6.0 ANALYSIS OF EXISTING CONDITIONS

6.1 Peak Hour Intersection Levels of Service

The project study area is located in a rural setting and all intersections are unsignalized. As seen in ***Table 6–1,*** all study area intersections are calculated to currently operate at LOS B or better during both the AM and PM peak hours.

TABLE 6–1
EXISTING INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing	
			Delay [a]	LOS [b]
1. SR-111 / Hazard Road	TWSC [c]	AM	0.0	A
		PM	0.0	A
2. SR-111 / McDonald Road	TWSC	AM	8.9	A
		PM	8.9	A
3. English Road / McDonald Road	TWSC	AM	9.0	A
		PM	0.0	A
4. English Road / Sinclair Road	TWSC	AM	0.7	A
		PM	1.0	A
5. SR-111 / Sinclair Road	TWSC	AM	10.2	B
		PM	9.6	A

Footnotes:

a. Delay per vehicle in seconds
b. LOS - Level of service
c. TWSC - Minor street STOP Controlled intersection. Minor street left-turn delay is reported.

TWSC - Two-Way STOP Controlled intersection.

UNSIGNALIZED

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 15.0	B
15.1 to 25.0	C
25.1 to 35.0	D
35.1 to 50.0	E
≥ 50.1	F

6.2 Daily Street Segment Levels of Service

As described above, the project study area is located in a rural setting and all segments are two-lane facilities. As seen in ***Table 6–2***, all study area segments are calculated to currently operate at LOS A on a daily basis.

TABLE 6–2
EXISTING STREET SEGMENT OPERATIONS

Street Segment	Functional Roadway Classification [a]	Capacity (LOS E) [b]	ADT [c]	LOS [d]	V/C [e]
SR-111					
North of Hazard Road	2-Ln Expressway	22,700	3,800	A	0.167
Hazard Road to McDonald Road	2-Ln Expressway	22,700	3,800	A	0.167
McDonald Road to Sinclair Road	2-Ln Expressway	22,700	3,800	A	0.167
South of Sinclair Road	2-Ln Expressway	22,700	6,400	A	0.282
McDonald Road					
Project Site to English Road	2-Ln Roadway	1,500	270	A	0.180
English Road to SR-111	2-Ln Roadway	1,500	220	A	0.147
Sinclair Road					
English Road to SR-111	2-Ln Roadway	1,500	320	A	0.213

Footnotes:

a. County of Imperial roadway classification
b. Roadway capacity corresponding to Level of Service E from Imperial County Standard Street Classification, Average Daily Vehicle Trips table.
c. Average Daily Traffic volumes
d. Level of Service
e. Volume / Capacity ratio.

7.0 TRIP GENERATION/DISTRIBUTION/ASSIGNMENT

7.1 Construction Trip Generation

Project traffic generation is based on site-specific trip generating characteristics provided by the applicant. The Project consists of two parts: During *Construction*, and Day-to-Day *Operations*.

In calculating daily trip generation for the construction portion of the project the total construction staff and truck activity was obtained from project description. Peak hour traffic volumes assume that half of workers will arrive/depart in the AM/PM peak hours. However, a meaningful number of worker trips may arrive/depart outside the peak hours due to earlier start times. While detailed construction schedules have yet to be established, these assumptions are based on experience with similar projects. To be conservative, it was assumed that no carpooling between workers was provided. These conservative assumptions are intended to represent a reasonably worst-case scenario for AM/PM peak hour traffic. In addition, 10 trips per day (20 ADT) was added to account for miscellaneous trips such as deliveries).

Based on these assumptions, the employee and miscellaneous portion of the construction phase would generate a maximum of 300 ADT, with 74 trips during the AM peak hour and 72 trips during the PM peak hour. Fifteen (15) trucks are estimated during construction. A passenger car equivalence factor (PCE) of 2.5 is applied to these trips for the purposes of the analysis to account for the reduced performance characteristics (stopping, starting, maneuvering, etc.) of heavy vehicles in the traffic flow. The trucks will generate an additional 75.

Table 7–1 is a summary of the peak Project construction traffic. As shown on *Table 7–1* the Construction portion of the Project would generate a total of 375 ADT with 84 total AM peak hour trips and 82 total PM peak hour trips.

7.2 Day-to-Day Operations Trip Generation

Trip generation for the Day-to-Day Operations portion of the project was also obtained from project description. Peak hour traffic volumes assume that half of workers would arrive/depart in the AM/PM peak hours. However, a meaningful number of worker trips may arrive/depart outside the peak hours due to earlier start times. While detailed schedules have yet to be established, these assumptions are based on experience with similar projects. To be conservative, it was assumed that no carpooling between workers was provided. These conservative assumptions are intended to represent a reasonably worst-case scenario for AM/PM peak hour traffic. In addition, 10 trips per day (20 ADT) was added to account for miscellaneous trips such as deliveries) during the Day-to-Day Operations portion of the project.

Based on these assumptions, the employee and miscellaneous portion of the operations would generate a maximum of 104 ADT, with 32 trips during the AM peak hour and 34 trips during the PM peak hour. Fifteen (15) trucks are estimated to generated during the Day-to-Day Operations. A passenger car equivalence factor (PCE) of 2.5 is applied to these trips for the purposes of the analysis to account for the reduced performance characteristics (stopping, starting, maneuvering, etc.) of heavy vehicles in the traffic flow. The trucks will generate an additional 75.

Table 7–2 is a summary of the peak Day-to-Day Operations portion of the project. As shown on *Table 7–2*, a total of 179 ADT with 47 total AM peak hour trips and 55 total PM peak hour trips.

TABLE 7–1
CONSTRUCTION TRIP GENERATION

Trip Type	**Daily Total (ADT)** [a]	**AM Peak Hour**			**PM Peak Hour**		
		In	**Out**	***Total***	**In**	**Out**	***Total***
Employees (140)[b]	280	70	0	70	0	70	70
Trucks (w/ PCE)[c]	75	5	5	10	5	5	10
Misc. Trips	20	2	2	4	1	1	2
Total	***375***	***77***	***7***	***84***	***6***	***76***	***82***

Footnotes:

a. ADT = Average Daily Traffic (24-hour total bi-directional traffic on a roadway segment).
b. Assumes half of total employees begin or leave shift during peak hour.
c. PCE = Passenger Car Equivalent (2.5), used to reflect the additional impacts of heavy vehicles in the technical analyses (15 Inbound Trucks * 2 (In + Out) * 2.5 (PCE) = 75 total trips.

Table 7–2 shows the Day-to-Day Operations traffic after construction is complete. As compared to *Table 7–1*, the Operations traffic is substantially less than the construction traffic, which validates the assertion that analysis of the construction impacts would represent the worst-case potential traffic impacts of the project.

TABLE 7–2
DAY-TO-DAY OPERATIONS TRIP GENERATION

Trip Type	**Daily Total (ADT)** [a]	**AM Peak Hour**			**PM Peak Hour**		
		In	**Out**	***Total***	**In**	**Out**	***Total***
Employees (42)[b]	84	30	0	30	0	30	30
Trucks (w/ PCE)[c]	75	10	5	15	13	8	21
Misc. Trips/Deliveries	20	1	1	2	2	2	4
Total	***179***	***41***	***6***	***47***	***15***	***40***	***55***

Footnotes:

a. ADT = Average Daily Traffic (24-hour total bi-directional traffic on a roadway segment).
b. Assumes half of total employees begin or leave shift during peak hour.
c. PCE = Passenger Car Equivalent (2.5), used to reflect the additional impacts of heavy vehicles in the technical analyses (15 Inbound Trucks * 2 (In + Out) * 2.5 (PCE) = 75 total trips.

7.3 Trip Distribution

It should be noted that separate distributions were derived for the Construction and Operations phases of the project. It is also noted that during the construction phase of the project, McDonald Road will not be a viable option for construction traffic since it will be unpaved. Construction traffic from the south will utilize the paved Sinclair Road as opposed to the unpaved McDonald Road as east / west access to reach the site during construction. It should be noted that for the Operations distribution, McDonald Road will be paved and would serve as the primary road utilized by project traffic.

7.3.1 *During Construction – Employee and Truck Construction Traffic Distribution*

It is initially anticipated that the majority of construction workers and trucks will be from the proximate local population centers of Calipatria, Brawley, and El Centro. The majority of employee traffic (85%) is anticipated to be to/from south of the site, from the local labor pool utilizing SR-111 as the primary route to work. This traffic will use Sinclair Road as the east/west road to reach the construction site/

Figure 7–1a shows the distribution of construction employee passenger car as well as any miscellaneous trips that would occur during the day. ***Figure 7–1b*** shows the distribution of construction truck traffic.

7.3.2 *Day-to-Day Operations – Employee and Truck Traffic Distribution*

It is initially anticipated that the majority of construction workers will be from the proximate local population centers of Calipatria, Brawley, and El Centro. The majority of employee traffic (85%) is anticipated to be to/from south of the site, from the local labor pool utilizing SR-111 as the primary route to work. It should be detailed that the majority of operations traffic are utilizing the intersection of SR-111 and McDonald Road as the primary access from SR-111.

Figure 7–2a shows the distribution of employee passenger car operations traffic as well as any miscellaneous trips that would occur during the day. ***Figure 7–1b*** shows the distribution of construction truck traffic.

7.4 Trip Assignment

Separate trip assignments were prepared for each trip type and project phase based on the distribution percentages detailed above.

The Project construction employee vehicle traffic assignment is shown on ***Figure 7–3. Figure 7–4*** shows the Project construction truck traffic assignment. ***Figure 7–5*** depicts the total Project construction traffic assignment. The Project operations employee vehicle traffic assignment is shown on ***Figure 7–6. Figure*** *7–7* shows the Project operations truck traffic assignment. ***Figure 7–8*** depicts the total Project operations traffic assignment.

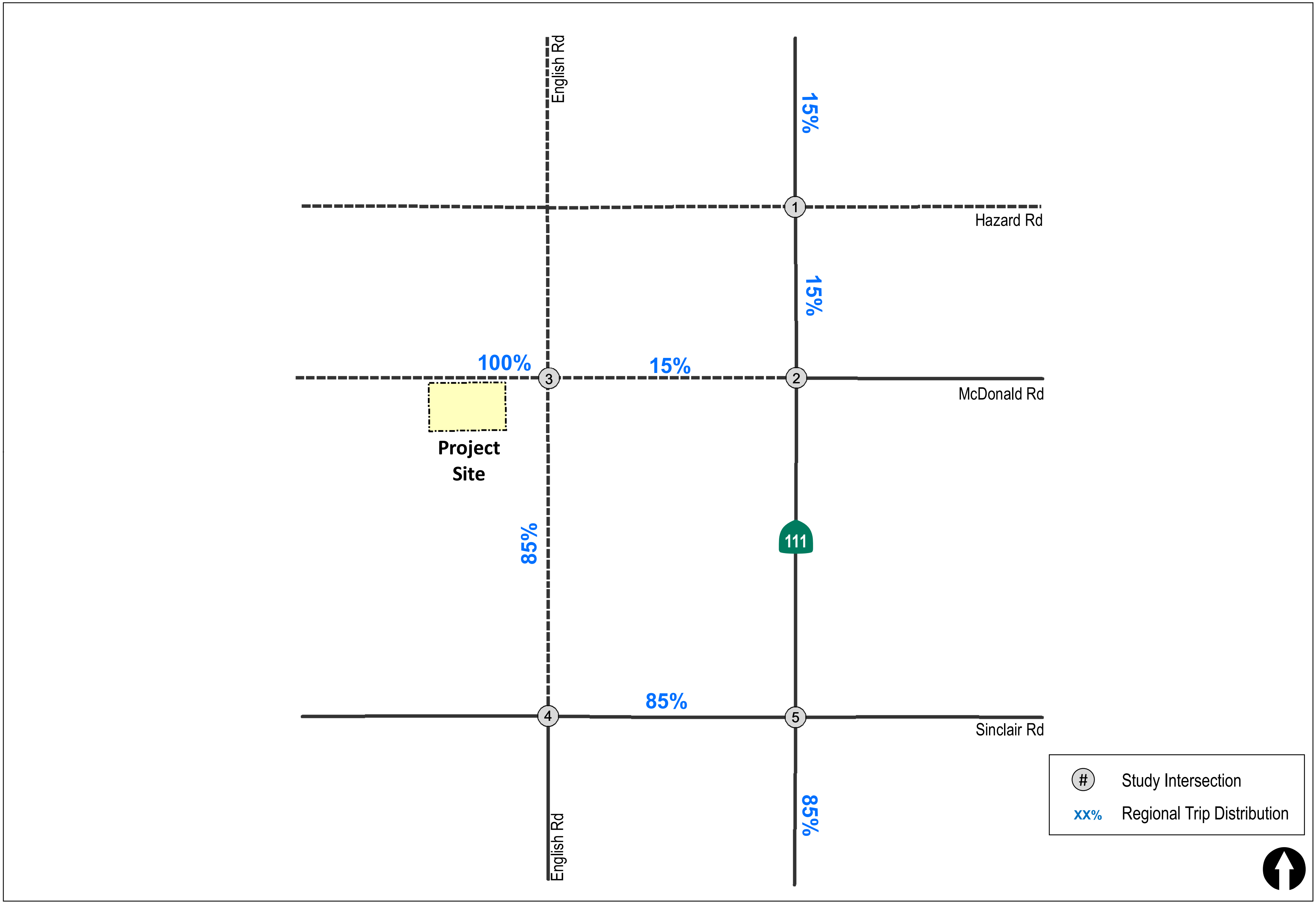

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Figure 7-1a

Construction Trip Distribution

(Employee & Miscellaneous Trips)

Hudson Ranch Mineral Recovery

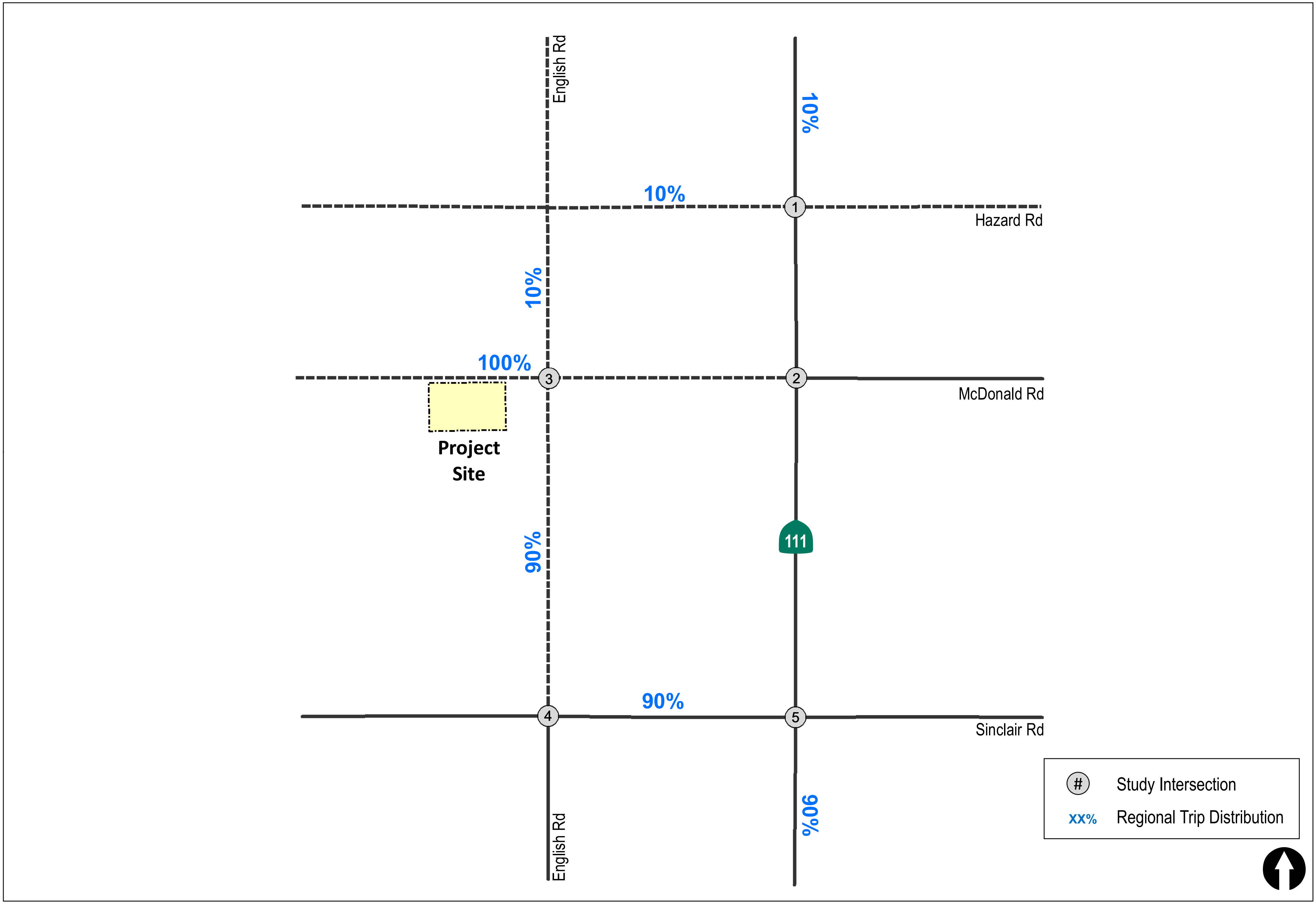

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Figure 7-1b

Construction Trip Distribution - Truck Trips

Hudson Ranch Mineral Recovery

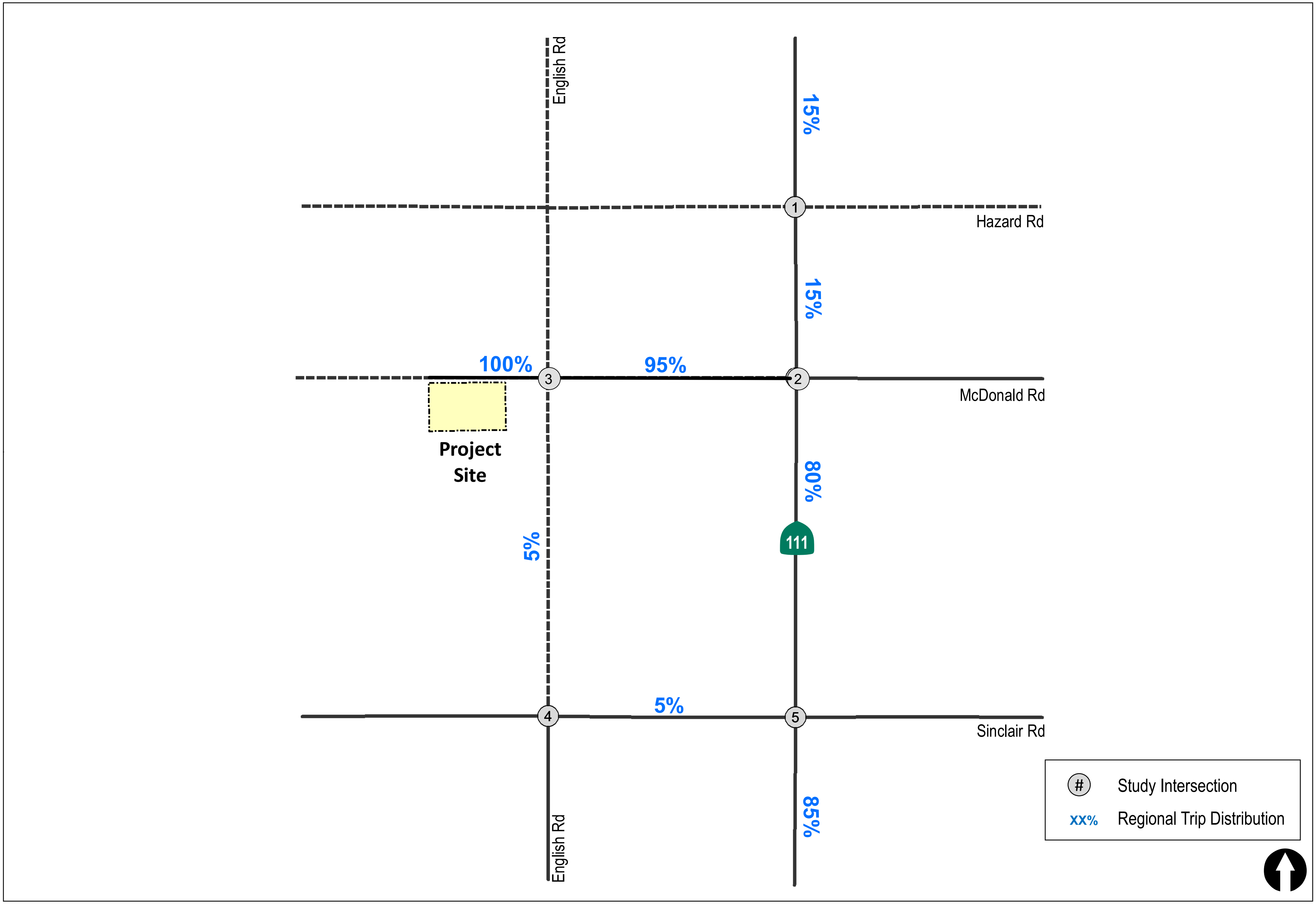

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Figure 7-2a

Operations Trip Distribution

(Employee & Miscellaneous Trips)

Hudson Ranch Mineral Recovery

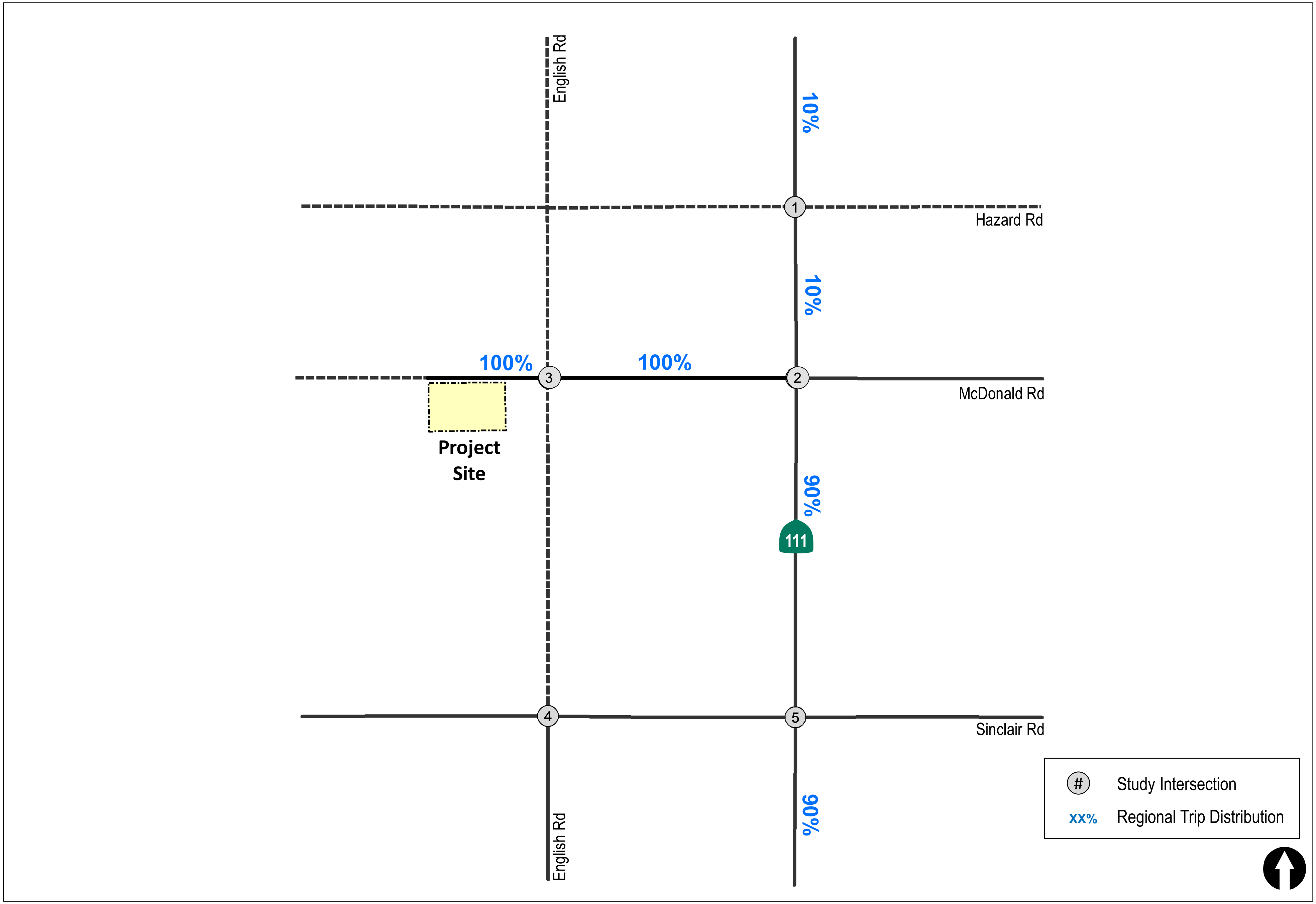

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Figure 7-2b

Operations Trip Distribution - Truck Trips

Hudson Ranch Mineral Recovery

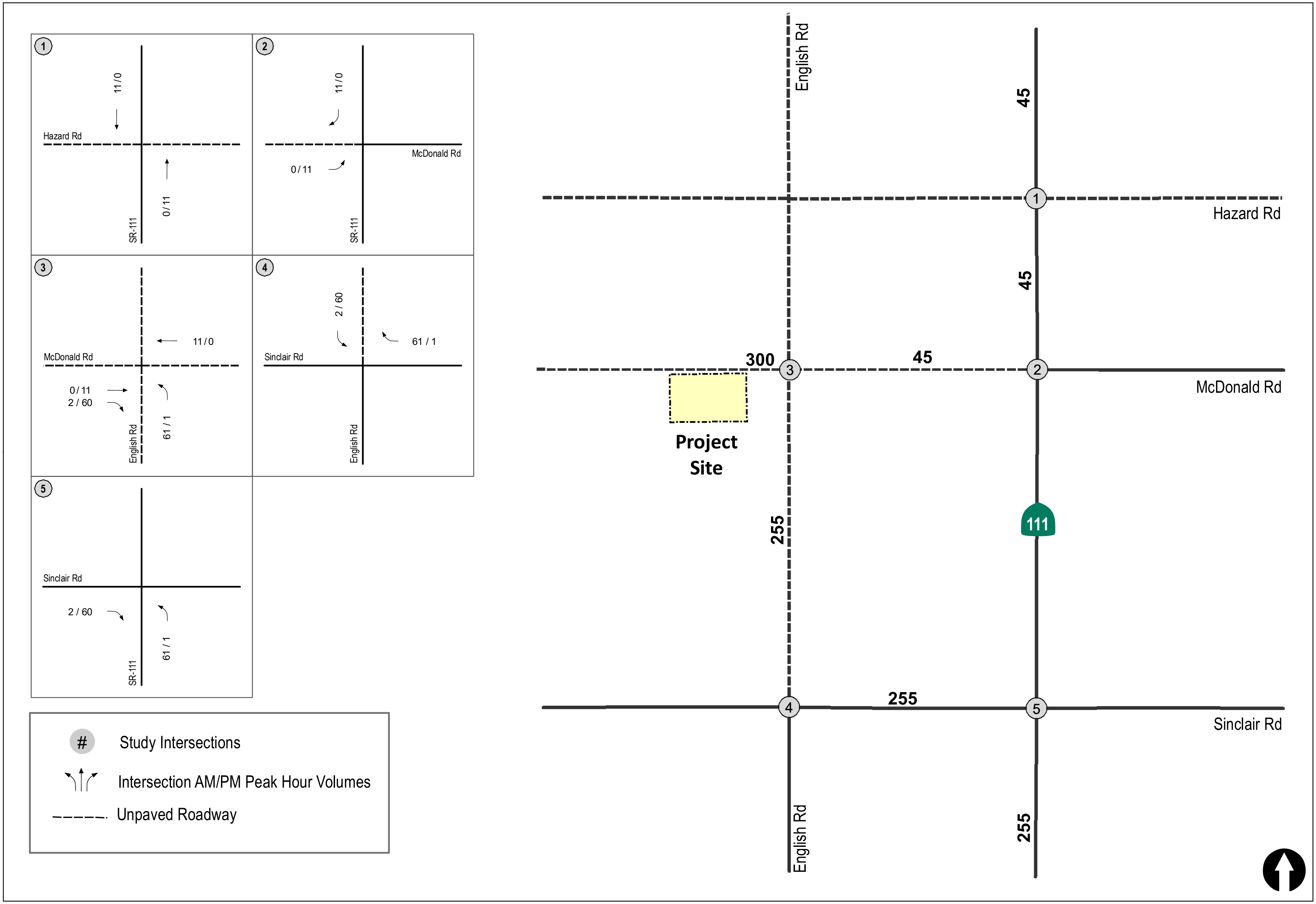

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Figure 7-3

Construction Traffic Volumes

(Employee & Miscellaneous Trips)

Hudson Ranch Mineral Recovery

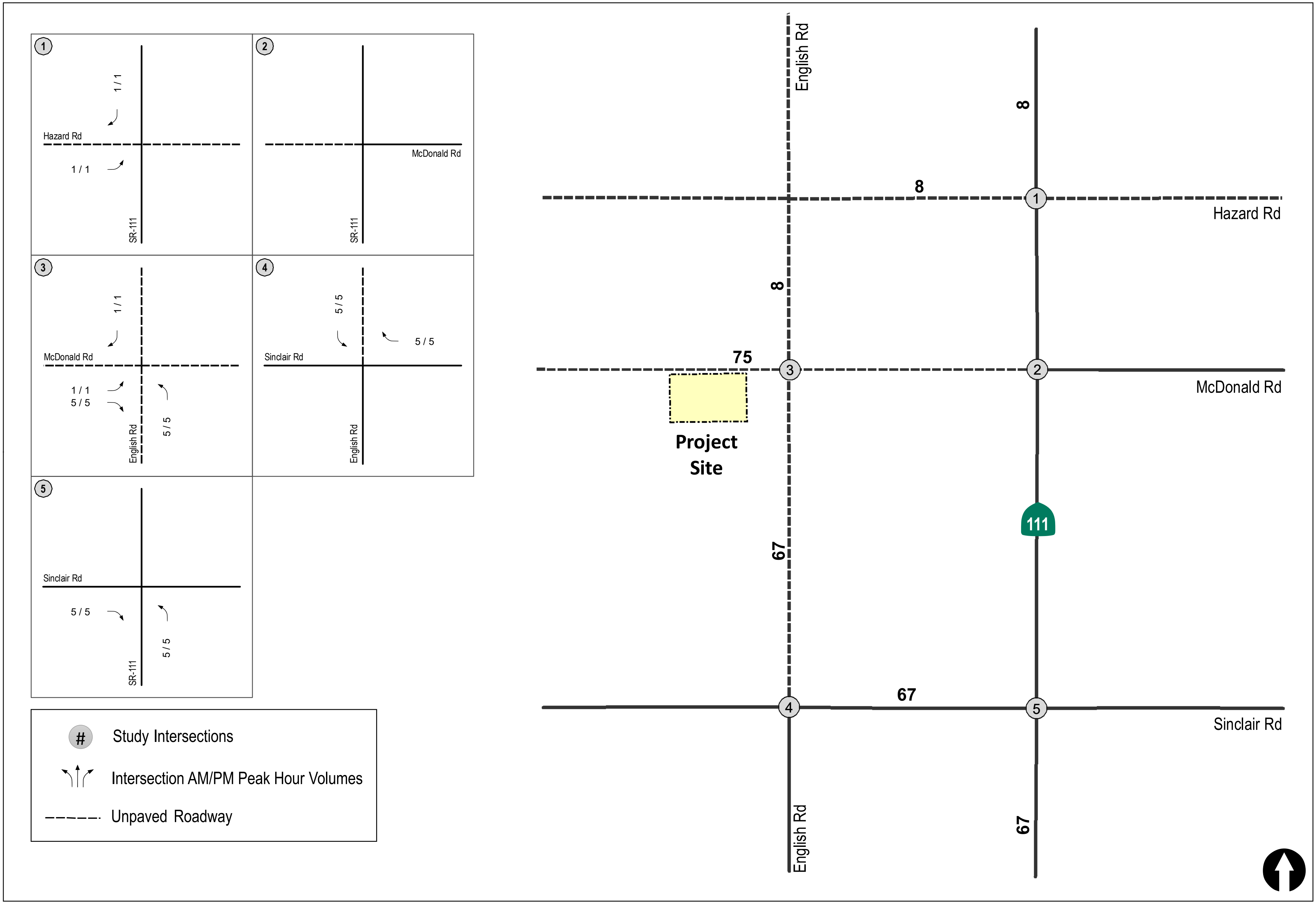

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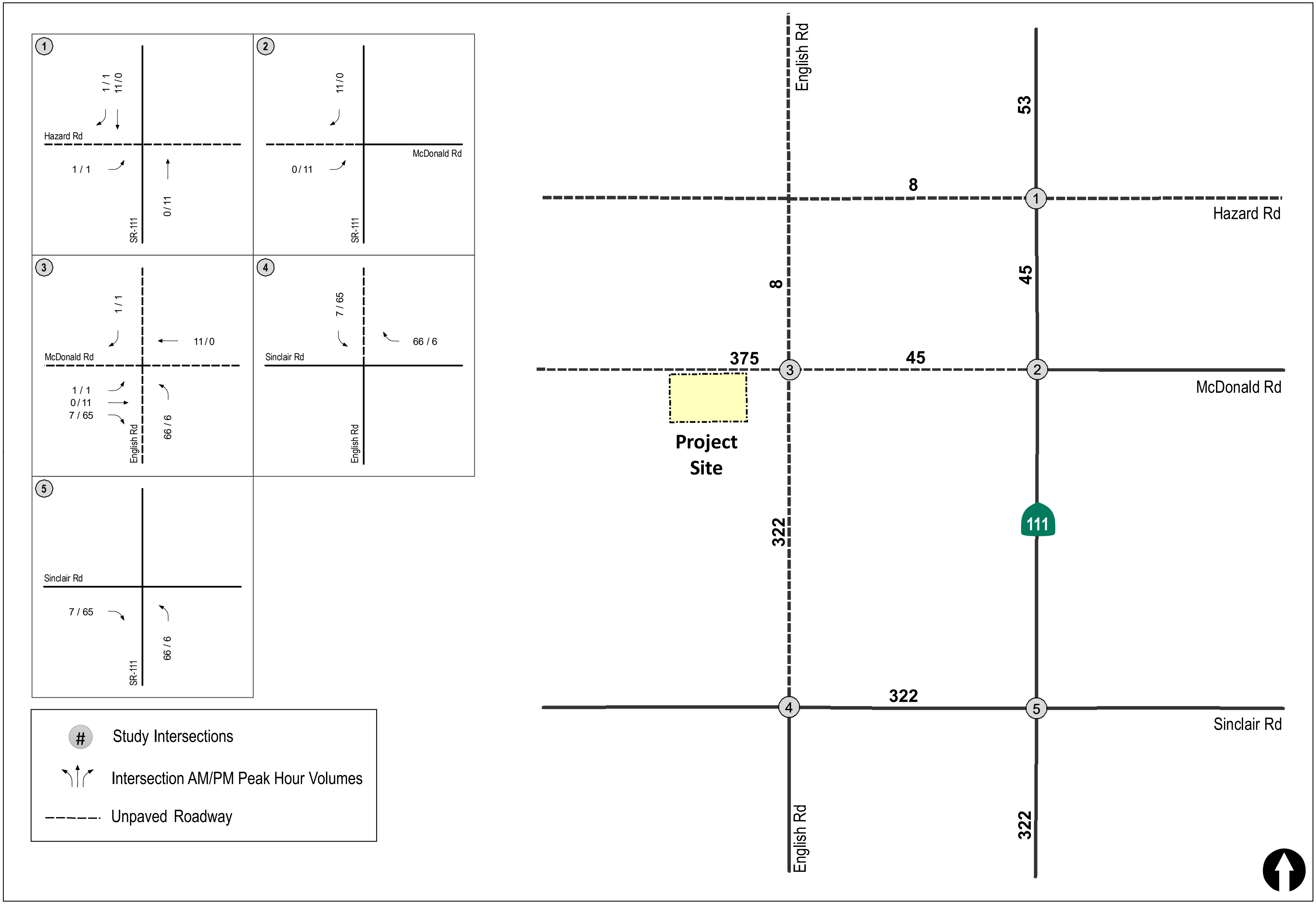
Figure 7-4

Construction Traffic Volumes

(Truck Trips)

Hudson Ranch Mineral Recovery



LINSCOTT LAW & GREENSPAN engineers

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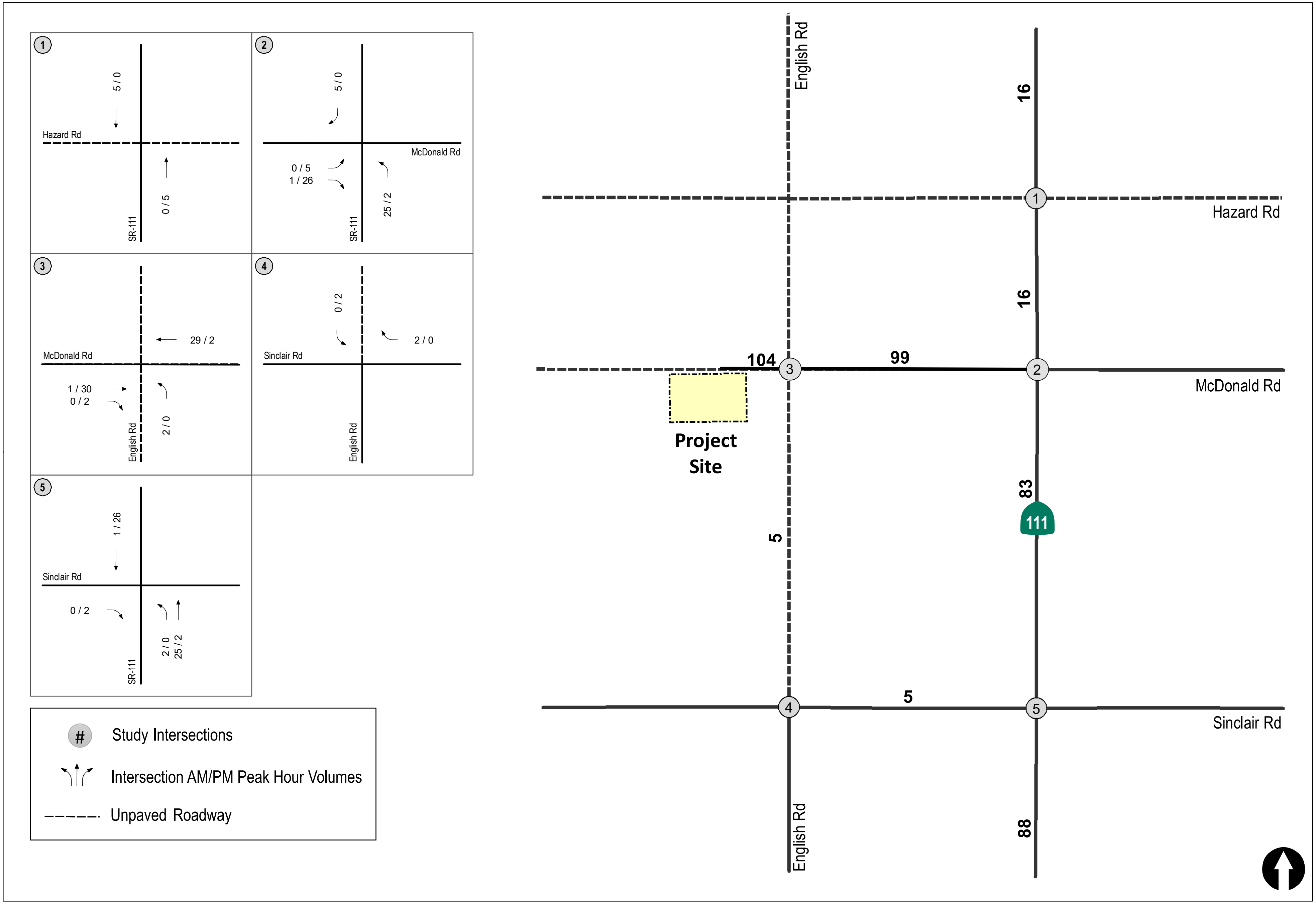
Figure 7-5

Construction Traffic Volumes

(Total Trips)

Hudson Ranch Mineral Recovery



LINSCOTT LAW & GREENSPAN engineers

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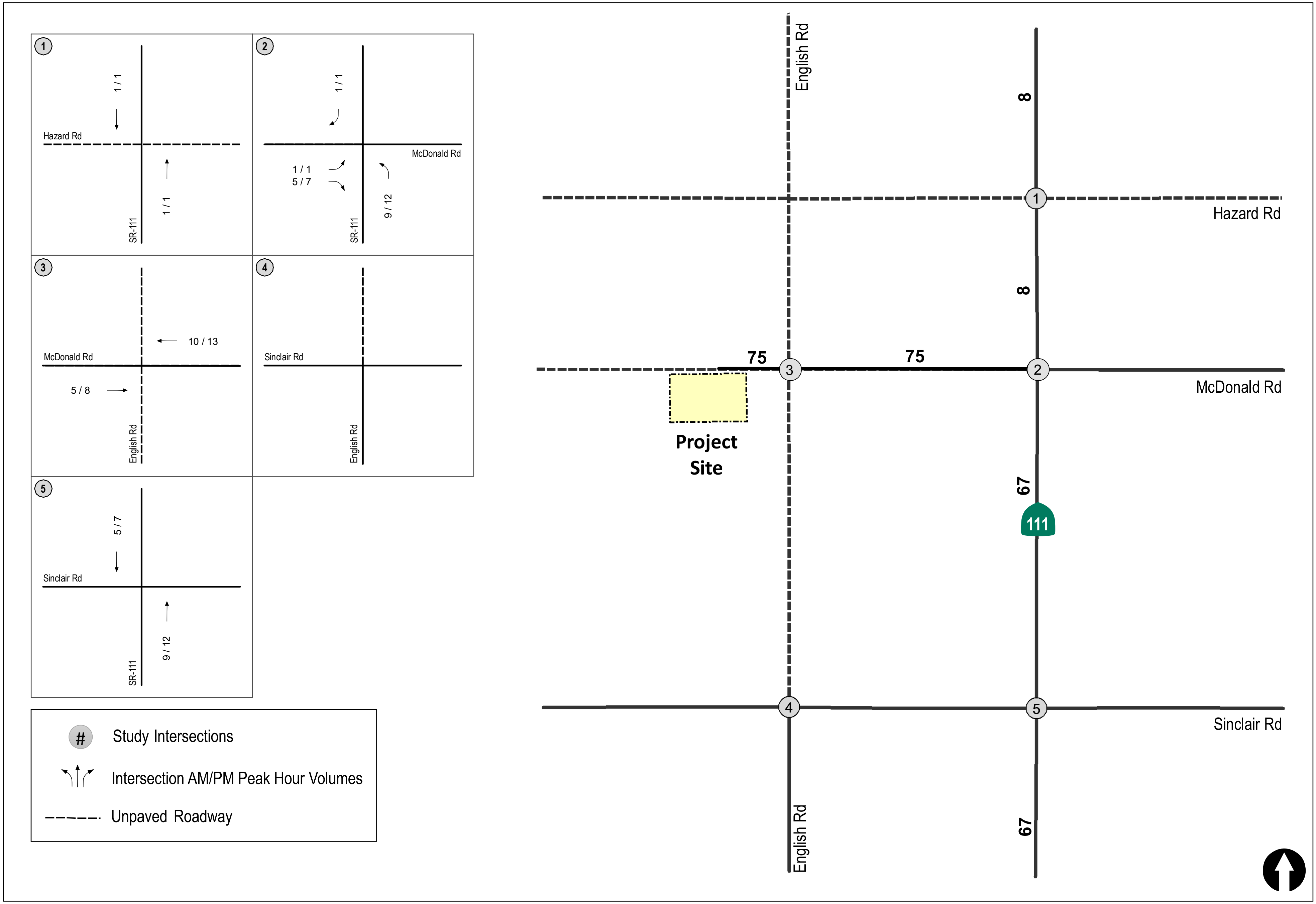
Time: 11:09 AM

Figure 7-6

Operations Traffic Volumes

(Employee & MiscellaneousTrips)

Hudson Ranch Mineral Recovery



Linscott Law & Greenspan
engineers

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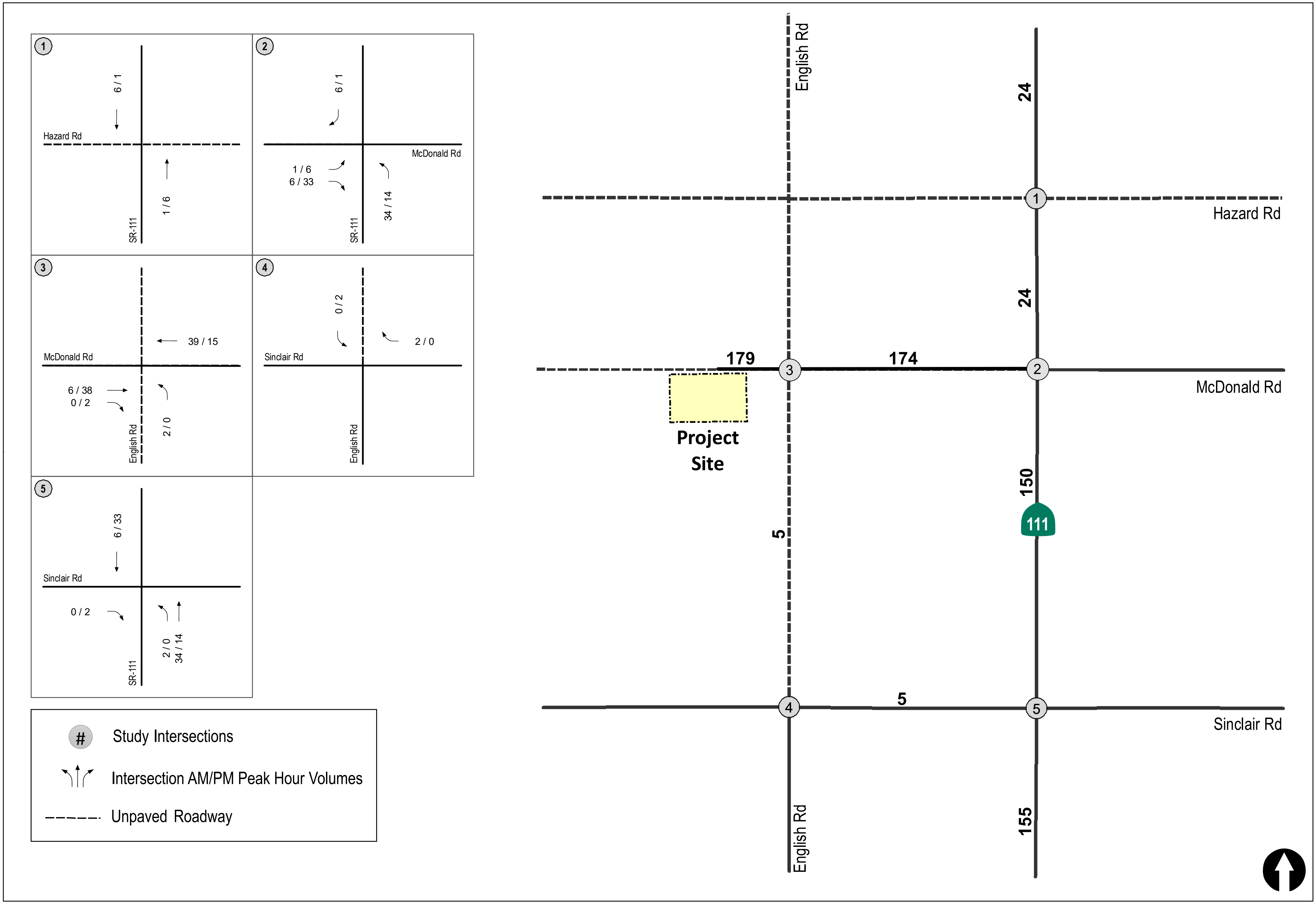
Figure 7-7

Operations Traffic Volumes

(Truck Trips)

Hudson Ranch Mineral Recovery



LINSCOTT LAW & GREENSPAN engineers

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Time: 11:12 AM

Figure 7-8

Operations Traffic Volumes

(Total Trips)

Hudson Ranch Mineral Recovery

8.0 ANALYSIS

8.1 Existing + Construction Project Analysis

8.1.1 *Intersection Operations*

Table 8–1 summarizes the intersection operations throughout the project study area during the construction phase of the project. This table shows that all of the intersections in the study area are calculated to operate at LOS B or better during the AM and PM peak hours.

8.1.2 *Segment Analysis*

Table 8–2 summarizes the street segment operations throughout the project study area during the construction phase of the project. This table shows that all of the street segments in the study area are forecasted to operate at LOS A on a daily basis.

TABLE 8–1
EXISTING + CONSTRUCTION INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing + Construction Traffic	
			Delay [a]	LOS [b]
1. SR-111 / Hazard Road	TWSC [c]	AM	10.0	A
		PM	10.1	B
2. SR-111 / McDonald Road	TWSC	AM	8.9	A
		PM	9.0	A
3. English Road / McDonald Road	TWSC	AM	10.2	B
		PM	7.2	A
4. English Road / Sinclair Road	TWSC	AM	0.2	A
		PM	0.7	A
5. SR-111 / Sinclair Road	TWSC	AM	10.8	B
		PM	9.5	A

Footnotes:

a. Delay per vehicle in seconds
b. LOS - Level of service
c. TWSC - Minor street STOP Controlled intersection. Minor street left-turn delay is reported.

UNSIGNALIZED

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 15.0	B
15.1 to 25.0	C
25.1 to 35.0	D
35.1 to 50.0	E
≥ 50.1	F

TABLE 8–2
EXISTING + CONSTRUCTION TRAFFIC STREET SEGMENT OPERATIONS

Street Segment	Functional Roadway Classification [a]	LOS E Capacity [b]	ADT [c]	LOS [d]	V/C [e]
SR-111					
North of Hazard Road	2-Ln Expressway	22.700	3,853	A	0.170
Hazard Road to McDonald Road	2-Ln Expressway	22,700	3,845	A	0.169
McDonald Road to Sinclair Road	2-Ln Expressway	22,700	3,800	A	0.167
South of Sinclair Road	2-Ln Expressway	22,700	6,720	A	0.230
McDonald Road					
Project Site to English Road	2-Ln Roadway	1,500	645	A	0.430
English Road to SR-111	2-Ln Roadway	1,500	220	A	0.147
Sinclair Road					
English Road to SR-111	2-Ln Roadway	1,500	642	A	0.427

Footnotes:

a. County of Imperial roadway classification

b. Roadway capacity corresponding to Level of Service E from Imperial County Standard Street Classification, Average Daily Vehicle Trips table. Forty percent (40%) of capacity utilized for SR-111 segments.

c. Average Daily Traffic volumes

d. Level of Service

e. Volume / Capacity ratio.

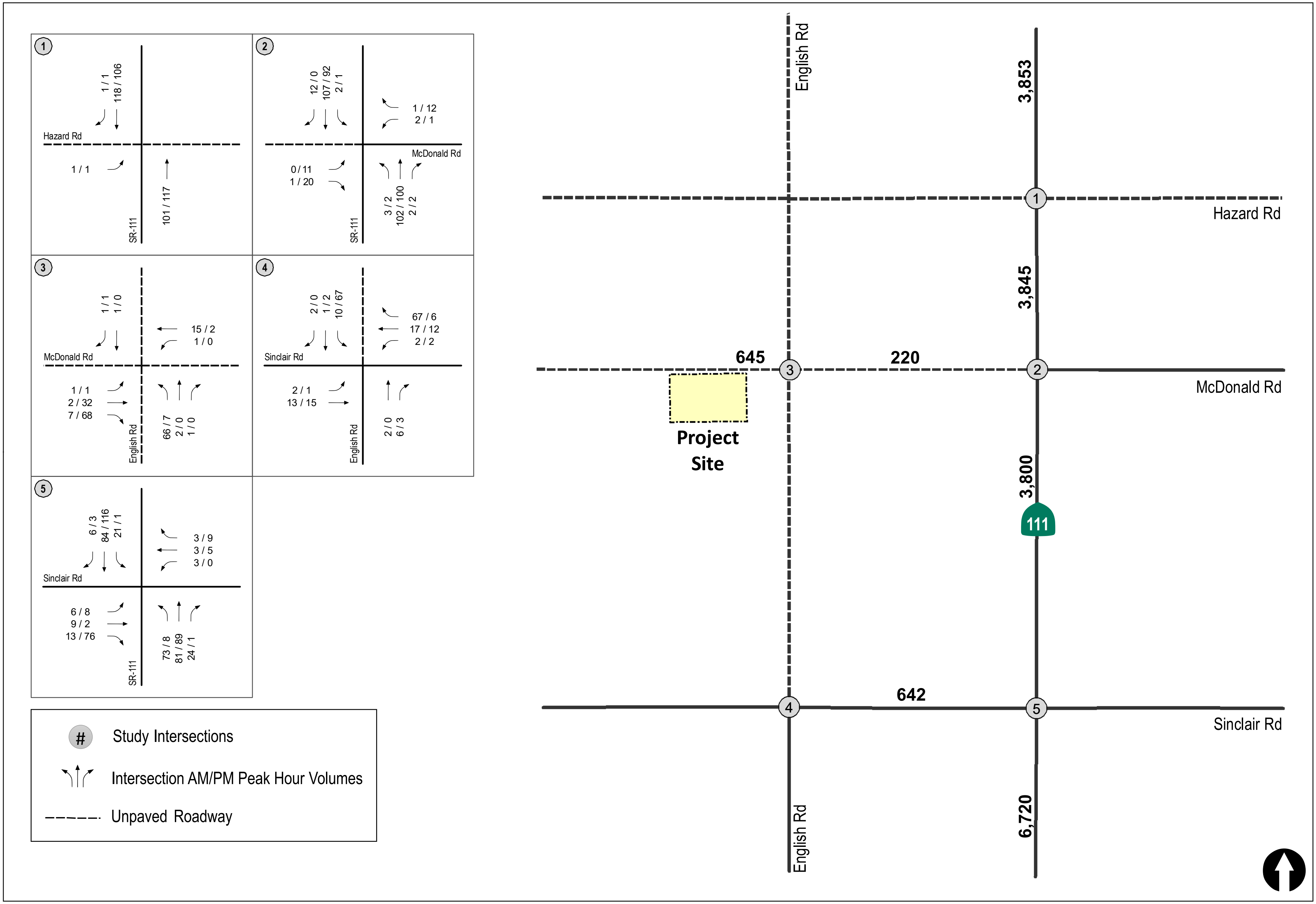

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Figure 8-1

Existing + Construction Traffic Volumes

Hudson Ranch Mineral Recovery

9.0 PROJECT OPERATIONS ANALYSIS

9.1 Existing + Project Operations Analysis

9.1.1 *Intersection Operations*

Table 8–1 summarizes the intersection operations throughout the project study area during the operations phase of the project. This table shows that all of the intersections in the study area are calculated to continue to operate at LOS B or better during the AM and PM peak hours.

9.1.2 *Segment Analysis*

Table 8–2 summarizes the street segment operations throughout the project study area during the operations phase of the project. This table shows that all of the street segments in the study area are calculated to continue to operate at LOS A on a daily basis.

9.2 Cumulative Growth

To account for potential cumulative project traffic increases that may be unforeseen, a 10% growth factor was applied to the existing traffic volumes at the study area intersections and segments. This 10% growth would conservatively represent the amount of traffic that may utilize the street system in the project vicinity proposed from future development projects planned in Imperial County.

9.3 Existing + Project Operations + Cumulative Analysis

9.3.1 *Intersection Operations*

Table 8–1 summarizes the intersection operations throughout the project study area during the operations phase of the project and the addition of cumulative growth. This table shows that all of the intersections in the study area are calculated to continue to operate at LOS B or better during the AM and PM peak hours.

9.3.2 *Segment Analysis*

Table 8–2 summarizes the street segment operations throughout the project study area during the operations phase of the project and the addition of cumulative growth. This table shows that all of the street segments in the study area are calculated to continue to operate at LOS A on a daily basis.

TABLE 9–1
INTERSECTION OPERATIONS

Intersection	Control Type	Peak Hour	Existing + Project Operations		Existing + Project + Cumulative Projects Operations		Δ [c] Delay	Impact Type
			Delay	LOS	Delay	LOS		
1. SR-111 / Hazard Rd	TWSC [d]	AM	0.0	A	0.0	A	0.0	None
		PM	0.0	A	0.0	A	0.0	None
2. SR-111 / McDonald Rd	TWSC	AM	9.1	A	9.2	A	0.1	None
		PM	9.2	A	9.3	A	0.1	None
3. English Road / McDonald Rd	TWSC	AM	9.3	A	9.3	A	0.0	None
		PM	0.0	A	0.0	A	0.0	None
4. English Road / Sinclair Rd	TWSC	AM	0.7	A	0.7	A	0.0	None
		PM	1.0	A	1.0	A	0.0	None
5. SR-111 / Sinclair Rd	TWSC	AM	10.6	B	10.7	B	0.1	None
		PM	9.9	A	10.1	B	0.2	None

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Δ denotes an increase in delay due to project.
d. TWSC – Minor Street Stop Controlled intersection. Minor street left turn delay is reported.

UNSIGNALIZED

Delay	LOS
0.0 ≤ 10.0	A
10.1 to 15.0	B
15.1 to 25.0	C
25.1 to 35.0	D
35.1 to 50.0	E
≥ 50.1	F

TABLE 9–2
STREET SEGMENT OPERATIONS

Street Segment	Capacity (LOS E) [a]	Existing + Project Operations			Existing + Project + Cumulative Projects Operations			Δ V/C	Impact Type
		ADT	LOS	V/C	ADT	LOS	V/C		
SR-111									
North of Hazard Rd	22,700	3,824	A	0.168	4,204	A	0.185	0.017	None
Hazard Rd to McDonald Rd	22,700	3,824	A	0.168	4,204	A	0.185	0.017	None
McDonald Rd to Sinclair Rd	22,700	3,950	A	0.174	4,330	A	0.191	0.017	None
South of Sinclair Road	22,700	6,555	A	0.288	7,195	A	0.317	0.028	None
McDonald Road									
Project Site to English Rd	1,500	449	A	0.300	476	A	0.317	0.018	None
English Rd to SR-111	1,500	394	A	0.263	416	A	0.277	0.015	None
Sinclair Road									
English Rd to SR-111	1,500	325	A	0.217	357	A	0.238	0.021	None

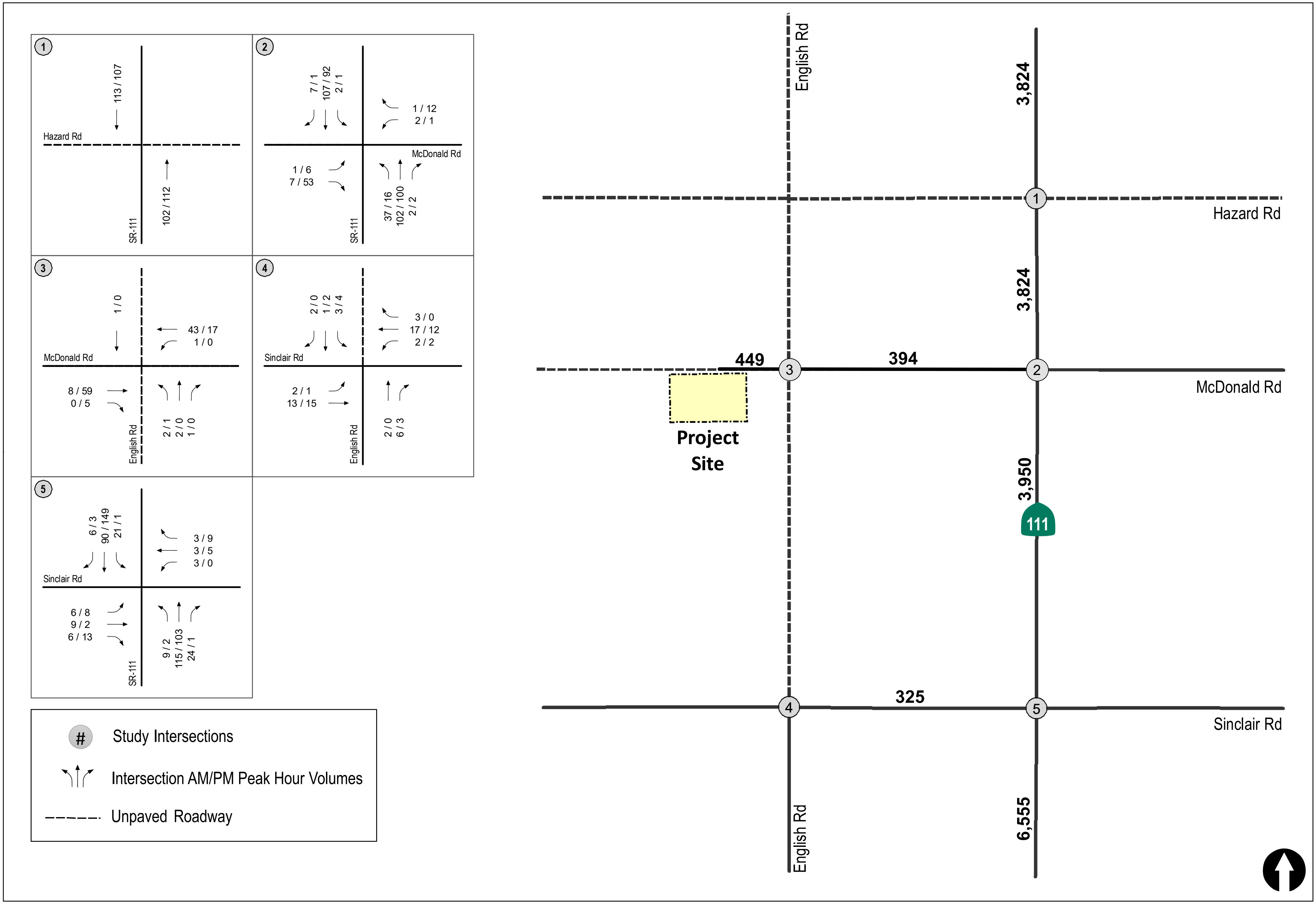
Footnotes:

a. Capacities based on County of Imperial Roadway Classification Table.

b. Average Daily Traffic Volumes.

c. Level of Service.

d. Volume to Capacity.



LINSCOTT LAW & GREENSPAN engineers

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Figure 9-1

Existing + Operations Traffic Volumes

Hudson Ranch Mineral Recovery

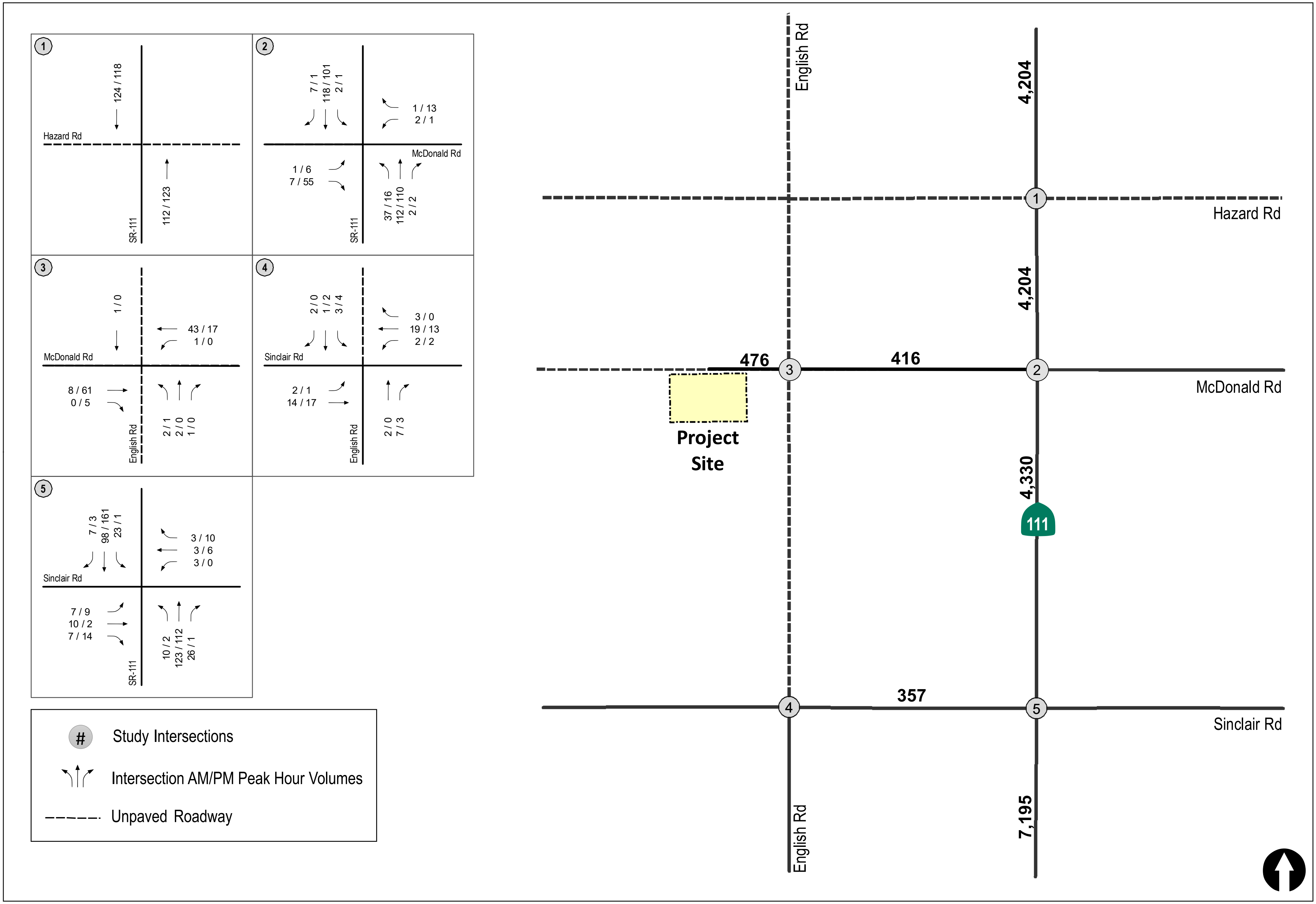

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Figure 9-2

Existing + Operations + Cumulative Growth Traffic Volumes

Hudson Ranch Mineral Recovery

10.0 INTERSECTION CONTROL EVALUATION (ICE)

An Intersection Control Evaluation (ICE) is being competed under separate cover. ***Table 10–1*** summarizes the operations of four alternatives that could be implemented at the SR-111 / McDonald Road intersection.

TABLE 10-1
SR-111 / MCDONALD ROAD INTERSECTION ICE ANALYSIS

Control Type	Peak Hour	Existing + Operations + Cumulative	
		Delay	LOS
Two-Way Stop	AM	9.2	A
	PM	9.3	A
All-Way Stop [c]	AM	8.2	A
	PM	8.1	A
Traffic Signal	AM	5.8	A
	PM	6.8	A
Single-Lane Roundabout	AM	4.2	A
	PM	4.2	A

Footnotes:

a. Average delay expressed in seconds per vehicle.
b. Level of Service.
c. Free eastbound right-turn movement excluded from AWSC analysis.

General Notes:

Bold typeface indicates intersections operating at LOS E or F.

SIGNALIZED		UNSIGNALIZED	
Delay	LOS	Delay	LOS
0.0 ≤ 10.0	A	0.0 ≤ 10.0	A
10.1 to 20.0	B	10.1 to 15.0	B
20.1 to 35.0	C	15.1 to 25.0	C
35.1 to 55.0	D	25.1 to 35.0	D
55.1 to 80.0	E	35.1 to 50.0	E
≥ 80.1	F	≥ 50.1	F

11.0 VEHICLE MILES TRAVELED (VMT)

11.1 VMT Background

In September 2013, the Governor's Office signed SB 743 into law, starting a process that fundamentally changes the way transportation impact analysis is conducted under CEQA. These changes include the elimination of auto delay, level of service (LOS), and similar measurements of vehicular roadway capacity and traffic congestion as the basis for determining significant impacts. The justification for this paradigm shift is that Auto Delay/LOS impacts lead to improvements that increase roadway capacity and therefore induce more traffic and greenhouse gas emissions. The VMT standard for evaluating transportation impacts under CEQA became mandatory statewide on July 1, 2020.

VMT is defined as a measurement of miles traveled by vehicles within a specified region and for a specified time period. VMT is a measure of the use and efficiency of the transportation network. VMT's are calculated based on individual vehicle trips generated and their associated trip lengths. VMT accounts for two-way (round trip) travel and is typically estimated on a weekday for the purpose of measuring potential transportation impacts.

11.2 Significance Threshold

Since the County has not yet adopted its own VMT threshold, the County is relying on the guidance provided in the Technical Advisory published by the Governor's Office of Planning and Research (OPR) in December 2018 (the "OPR Guidance") for purposes of evaluating the potential VMT impacts of development projects. The OPR Guidance for VMT states that depending on the type of project, different thresholds of significance are applicable. The "Recommended Numeric Thresholds for Residential, Office, and Retail Project" section of the OPR Guidance includes a section on "Other Project Types" which applies to the Project:

"Of land use projects, residential, office, and retail projects tend to have the greatest influence on VMT. For that reason, OPR recommends the quantified thresholds described [in the Residential, Office, and Retail Project section] for purposes of analysis and mitigation. Lead agencies, using more location-specific information, may develop their own more specific thresholds, which may include other land use types...".

Guidance from OPR's Technical Advisory is used to establish a significance threshold of a minimum 15% reduction or more from the Regional average VMT per employee for this project evaluation. That means that if the Project's VMT per employee is more than 15% below the regional average, no significant transportation impact would result. It should be noted that OPR has no guidelines for truck trips.

11.3 VMT Methodology

The VMT assessment conducted using California Statewide Travel Demand Model (CSTDM) data provided by Caltrans. The following is a summary of steps involved in calculating the trip length and Region-wide VMT:

- Step 1. Determine the project analysis zone
- Step 2. Determine the VMT per Employee for the zone where proposed Project is located.
- Step 3. Determine the average VMT per Employee within the County of Imperial representing the Regional VMT.
- Step 4. Using the average VMT from Step 2, compare the zone VMT against the Regional VMT. It should be noted that this step differs from the typical approach of comparing VMT per Capita because there is no associated population for the Project.

Using the CSTDM, the VMT per Employee can be utilized at both the regional and census tract level.

County	Imperial
TAZ12	5600
Shape_Le_1	167498
Shape_Area	1.11638e+09
SqMI	431.036
NewUniqID	4092

Project TAZ

Regional Map

11.4 Assessment:

Caltrans provides Transportation Analysis Zone (TAZs) map which provide information for each zone. The Project site is located in the County of Imperial which includes total 17 zones representing Imperial Region. ***Table 11–1*** tabulates average regional VMT per employee and the threshold. ***Attachment D*** contains the calculation of average regional VMT data.

Caltrans guidelines suggest that the VMT analysis is recommended based on the project location and zoning. The Project site is located in the Traffic Analysis Zone (TAZ) 5600. The VMT per employee for TAZ 5600 is 20.84.

TABLE 11–1
REGIONAL VMT PER EMPLOYEE AND THRESHOLD

Region[1]	Significance Threshold[2]
24.51	20.83

Footnotes:
1. Regional VMT per Employee is calculated by Averaging VMT per Employee for 17 TAZs located in the Imperial County.
2. Based on 15% below the Regional VMT Average.

11.5 Result

As shown in ***Table 11–2***, the VMT per employee for TAZ 5600, where the project is located, is 0.01 mile more than the significance threshold shown in *Table 11–1*. **Therefore, the Project has a significant transportation impact and mitigation measures are needed.** Only a 0.048% decrease I VMT is required to mitigate the impact.

TABLE 11–2
VMT PER EMPLOYEE COMPARISON

Significance Threshold[1]	TAZ (Project)[2]	Significant Transportation Impact?
20.83	20.84	Yes

Footnotes:
1. See Table 11–1.
2. SOURCE: Project VMT per Employee

11.6 Mitigation

It is recommended that the project implement a Commute Trip Reduction (CTR) program to discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking. The CTR program could include features such as Carpooling encouragement, Ride-matching assistance, Preferential carpool parking, Half time transportation coordinator, Vanpool assistance and Bicycle end-trip facilities (parking, showers and lockers) and provide employees with assistance in using alternative modes of travel.

12.0 CONCLUSIONS & RECOMMENDATIONS

The capacity analyses performed for the key roadway segments and unsignalized and signalized intersections indicate that ***no significant impacts would occur*** during the construction or Day-to-Day Operations of the project.

12.1 Operational Deficiencies

However, a significant impact could potentially occur if improvements are not implemented at the SR-111 / McDonald Road intersection. Therefore, the SR-111/McDonald Road intersection should be improved to Caltrans satisfaction including the installation of a Northbound Left-Turn pocket prior to the opening of the project. This improvement will be implemented prior to the Project's certificate of occupation.

Providing a southbound right-turn lane was considered but rejected due to the low volumes. The maximum peak hour volume in this movement is 12 during construction and 7 during operations.

An ICE analysis has been prepared under separate cover that address and analyzes the following four alternatives:

1. Minor Street Stop Control (MSSC) – Existing traffic control
2. All-Way Stop Control (AWSC)
3. Traffic Signal
4. Roundabout

Construction traffic should be instructed to use the paved Sinclair Road and not the unpaved McDonald Road as east / west access to the site during construction.

12.2 VMT Analysis

The Project has a significant transportation impact. However, only a 0.048% decrease in VMT is required to mitigate the impact. It is recommended that the project implement a Commute Trip Reduction (CTR) program to discourage single-occupancy vehicle trips and encourage alternative modes of transportation such as carpooling, taking transit, walking, and biking. The CTR program could include features such as Carpooling encouragement, Ride-matching assistance, Preferential carpool parking, Half-time transportation coordinator, Vanpool assistance and Bicycle end-trip facilities (parking, showers and lockers) and provide employees with assistance in using alternative modes of travel.

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TECHNICAL APPENDICES

HUDSON RANCH MINERAL RECOVERY

County of Imperial, California

June 22, 2021

LLG Ref. 3-19-3152

**Linscott, Law &
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San Diego, CA 92111
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APPENDIX A

INTERSECTION COUNT SHEETS & CALTRANS TRAFFIC VOLUMES

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Prepared by National Data & Surveying Services

Hwy 111 & Hazard Rd

Peak Hour Turning Movement Count

ID: 19-04371-001
City: Calipatria

Day: Wednesday
Date: 09/25/2019

	PEAK HOURS	COUNT PERIODS
AM	07:45 AM - 08:45 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	03:00 PM - 04:00 PM	03:00 PM - 05:00 PM

Hwy 111 SOUTHBOUND

	↲	↓	↳	⤸	⇧
AM	0	107	0	0	101
NOON	0	0	0	0	0
PM	0	106	0	0	106
	0	1	0	0	

Hazard Rd EASTBOUND

		AM	NOON	PM
⇦		0	0	0
⤺	0	0	0	0
⬏	0	0	0	0
→	1	0	0	0
↴	0	0	0	0

Hazard Rd WESTBOUND

		PM	NOON	AM
↰	0	0	0	0
←	1	0	0	0
↙	0	0	0	0
⤹	0	0	0	0
⇨		0	0	0

Hwy 111 NORTHBOUND

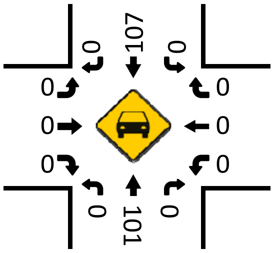
	⇩	⤻	↰	↑	↱
		0	0	1	0
PM	106	0	0	106	0
NOON	0	0	0	0	0
AM	107	0	0	101	0

CONTROL

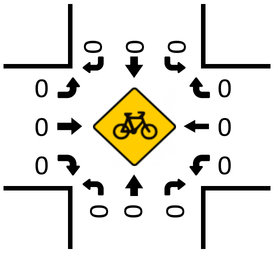
2-Way Stop (EB/WB)

	AM	NOON	PM
TEV	208	0	212
PHF	0.96		0.96

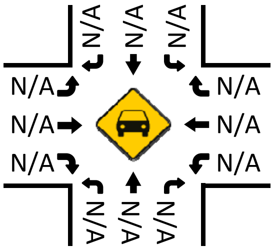
Total Vehicles (AM)



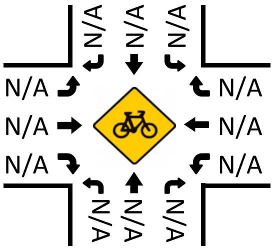
Bikes (AM)



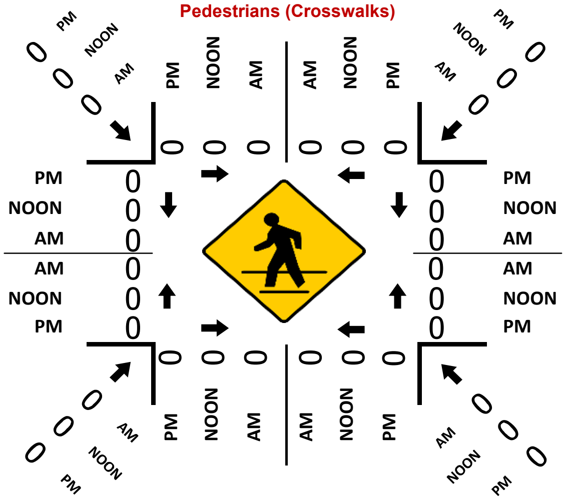
Total Vehicles (Noon)



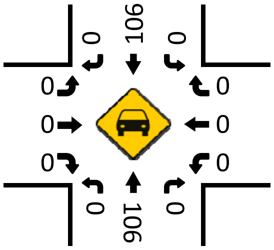
Bikes (NOON)



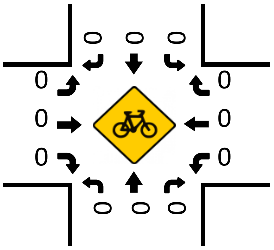
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

Hwy 111 & McDonald Rd

Peak Hour Turning Movement Count

ID: 19-04371-002
City: Calipatria

Day: Wednesday
Date: 09/25/2019

PEAK HOURS	
	07:45 AM - 08:45 AM
	NONE
	03:45 PM - 04:45 PM

	COUNT PERIODS
07:00 AM - 09:00 AM	
NONE	
03:00 PM - 05:00 PM	

Hwy 111

SOUTHBOUND

	↲	↓	↳	↶	⇧	
AM	1	107	2	0	103	AM
NOON	0	0	0	0	0	NOON
PM	0	92	1	0	112	PM
	0	1	0	0		

McDonald Rd

EASTBOUND

		AM	NOON	PM
⇦		4	0	2
↷	0	0	0	0
↱	0	0	0	0
→	1	0	0	0
↴	0	1	0	20

CONTROL

2-Way Stop (EB/WB)

	AM	NOON	PM
TEV	221	0	230
PHF	0.94		0.87

WESTBOUND

McDonald Rd

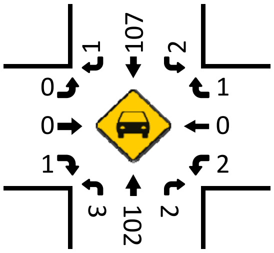
		PM	NOON	AM
↰	0	12	0	1
←	1	0	0	0
↙	0	1	0	2
↶	0	0	0	0
⇨		3	0	4

NORTHBOUND

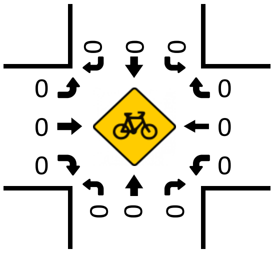
Hwy 111

	⇩	↶	↰	↑	↱	
		0	0	1	0	
PM	113	0	2	100	2	PM
NOON	0	0	0	0	0	NOON
AM	110	0	3	102	2	AM

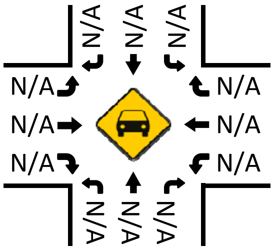
Total Vehicles (AM)



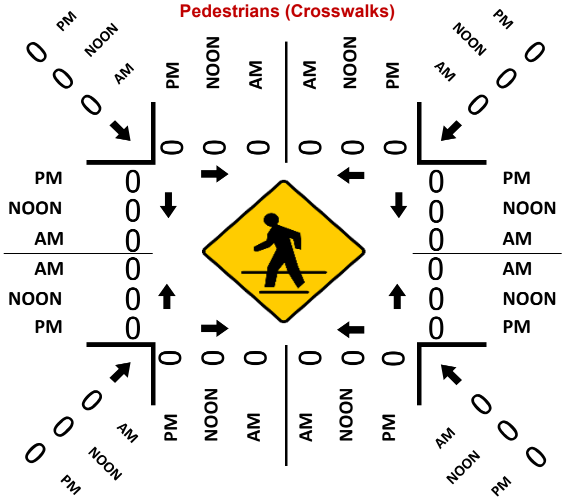
Bikes (AM)



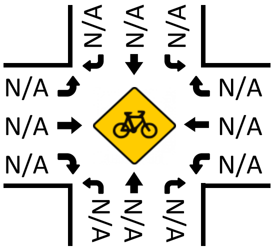
Total Vehicles (Noon)



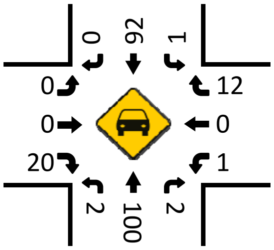
Pedestrians (Crosswalks)



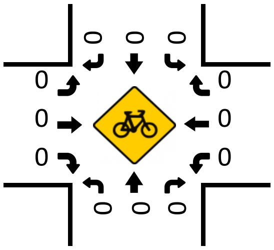
Bikes (NOON)



Total Vehicles (PM)



Bikes (PM)



Prepared by National Data & Surveying Services

English Rd & McDonald Rd

Peak Hour Turning Movement Count

ID: 19-04371-003
City: Calipatria

Day: Wednesday
Date: 09/25/2019

	PEAK HOURS	COUNT PERIODS
AM	07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	04:00 PM - 05:00 PM	03:00 PM - 05:00 PM

English Rd

SOUTHBOUND

	↲	↓	↳	⮍	⇧
AM	0	1	0	0	2
NOON	0	0	0	0	0
PM	0	0	0	0	0
	0	1	0	0	

McDonald Rd

EASTBOUND

	AM	NOON	PM	
⇦	4	0	3	
⮌	0	0	0	0
↱	0	0	0	0
→	2	0	21	1
↴	0	0	3	0

CONTROL

1-Way Stop (EB)

	AM	NOON	PM
TEV	11	0	27
PHF	0.92		0.61

WESTBOUND

McDonald Rd

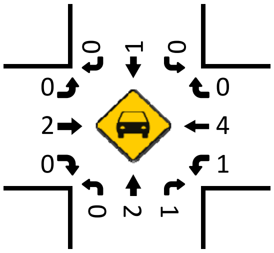
		PM	NOON	AM
0	↰	0	0	0
1	←	2	0	4
0	↙	0	0	1
0	⮏	0	0	0
	⇨	21	0	3

NORTHBOUND

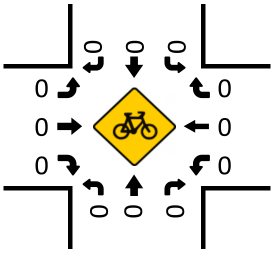
English Rd

	⇩	⮏	↰	↑	↱
		0	0	1	0
PM	3	0	1	0	0
NOON	0	0	0	0	0
AM	2	0	0	2	1

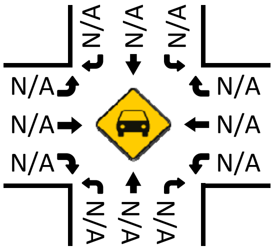
Total Vehicles (AM)



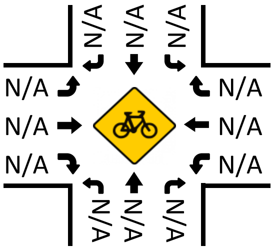
Bikes (AM)



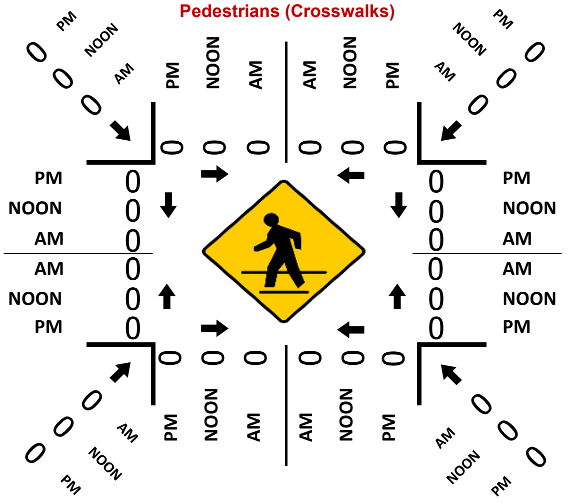
Total Vehicles (Noon)



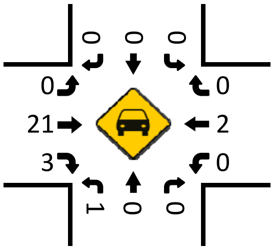
Bikes (NOON)



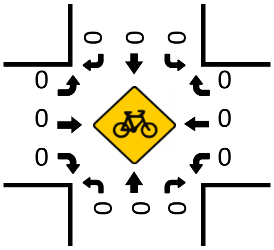
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



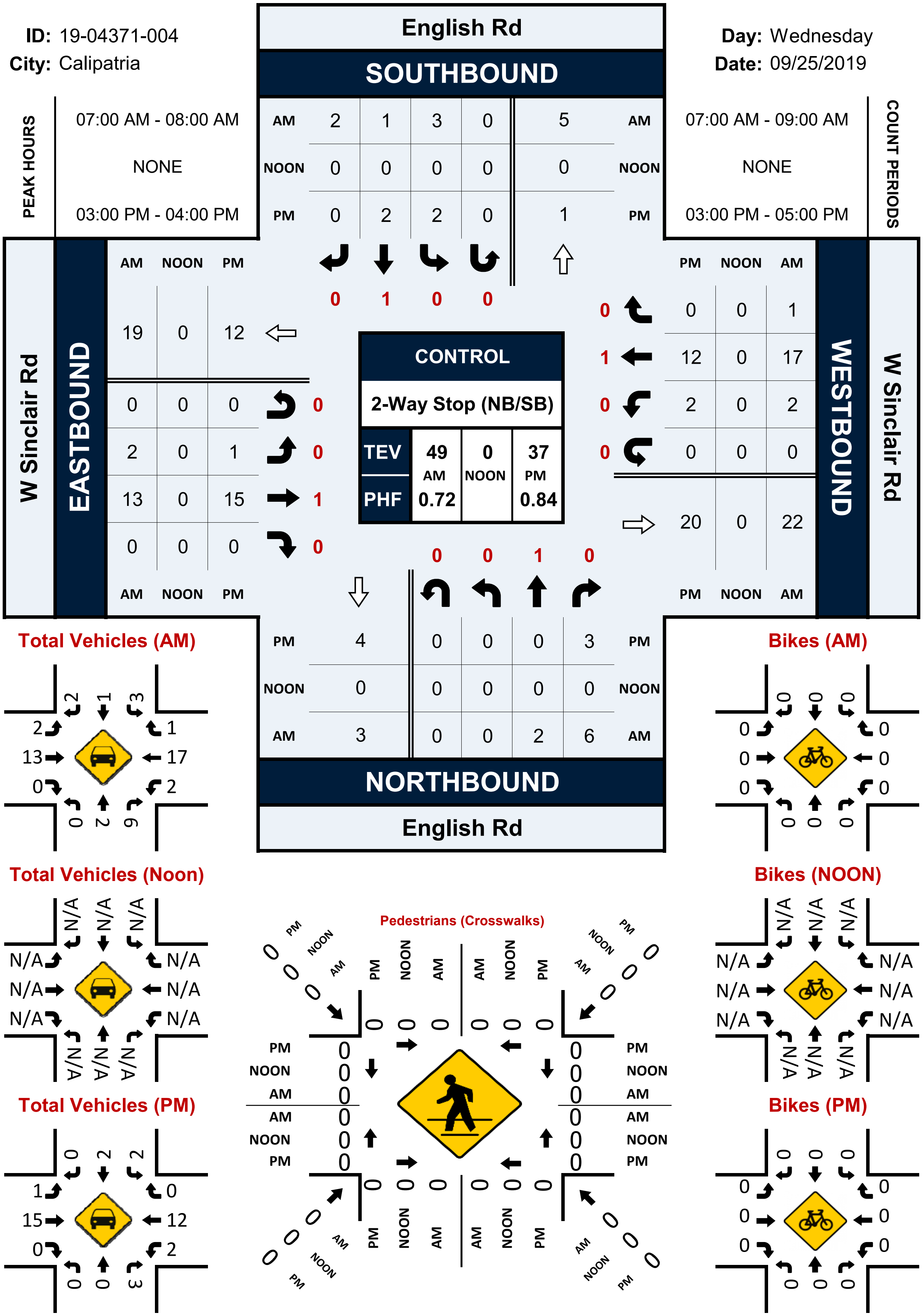
Prepared by National Data & Surveying Services

English Rd & W Sinclair Rd

Peak Hour Turning Movement Count

ID: 19-04371-004
City: Calipatria

Day: Wednesday
Date: 09/25/2019



PEAK HOURS	COUNT PERIODS
07:00 AM - 08:00 AM	07:00 AM - 09:00 AM
NONE	NONE
03:00 PM - 04:00 PM	03:00 PM - 05:00 PM

English Rd

SOUTHBOUND

	↲	↓	↳	↺	⇧
AM	2	1	3	0	5
NOON	0	0	0	0	0
PM	0	2	2	0	1
	0	1	0	0	

W Sinclair Rd

EASTBOUND

	AM	NOON	PM	
⇦	19	0	12	
↺	0	0	0	0
↱	2	0	1	0
→	13	0	15	1
↴	0	0	0	0

W Sinclair Rd

WESTBOUND

		PM	NOON	AM
0	↰	0	0	1
1	←	12	0	17
0	↙	2	0	2
0	↻	0	0	0
	⇨	20	0	22

CONTROL

2-Way Stop (NB/SB)

	AM	NOON	PM
TEV	49	0	37
PHF	0.72		0.84

NORTHBOUND

English Rd

	⇩	↺	↰	↑	↱
		0	0	1	0
PM	4	0	0	0	3
NOON	0	0	0	0	0
AM	3	0	0	2	6

Total Vehicles (AM)

Total Vehicles (Noon)

Total Vehicles (PM)

Bikes (AM)

Bikes (NOON)

Bikes (PM)

Pedestrians (Crosswalks)

Prepared by National Data & Surveying Services

Hwy 111 & Sinclair Rd

Peak Hour Turning Movement Count

ID: 19-04371-005
City: Calipatria

Day: Wednesday
Date: 09/25/2019

PEAK HOURS		COUNT PERIODS
AM	07:15 AM - 08:15 AM	07:00 AM - 09:00 AM
NOON	NONE	NONE
PM	03:45 PM - 04:45 PM	03:00 PM - 05:00 PM

Hwy 111

SOUTHBOUND

	↲	↓	↳	↶	⇧	
AM	6	84	21	0	90	AM
NOON	0	0	0	0	0	NOON
PM	3	116	1	0	106	PM
	0	1	1	0		

Sinclair Rd

EASTBOUND

	AM	NOON	PM	
⇦	16	0	10	
↶	0	0	0	0
↱	6	0	8	0
→	9	0	2	0.5
↴	6	0	11	0.5

Sinclair Rd

WESTBOUND

		PM	NOON	AM
0.5	↰	9	0	3
0.5	←	5	0	3
0	↙	0	0	3
0	↷	0	0	0
	⇨	4	0	54

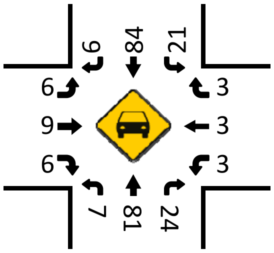
CONTROL			
2-Way Stop (EB/WB)			
TEV	253 AM	0 NOON	247 PM
PHF	0.87		0.92

NORTHBOUND

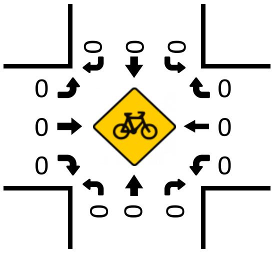
Hwy 111

	⇩	↶	↰	↑	↱	
		0	1	1	0	
PM	127	0	2	89	1	PM
NOON	0	0	0	0	0	NOON
AM	93	0	7	81	24	AM

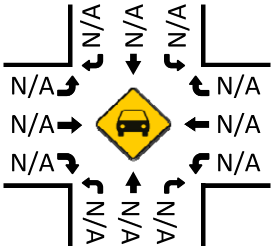
Total Vehicles (AM)



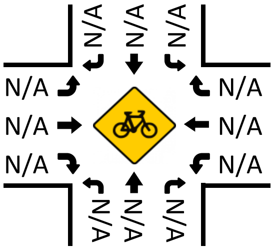
Bikes (AM)



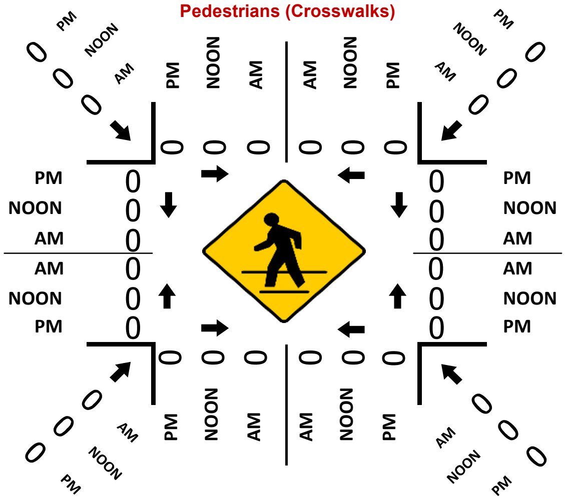
Total Vehicles (Noon)



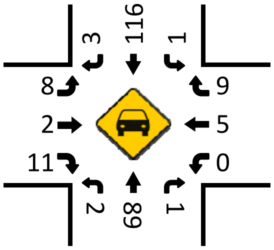
Bikes (NOON)



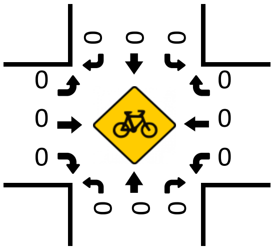
Pedestrians (Crosswalks)



Total Vehicles (PM)



Bikes (PM)



Dist	Route	County		Postmile	Description	Back Peak Hour	Back Peak Month	Back AADT	Ahead Peak Hour	Ahead Peak AADT	Ahead AADT
7	110	LA		29.028	LOS ANGELES, AVENUE 64	8700	103000	98000	7100	82000	80000
7	110	LA		29.5	LOS ANGELES, YORK BOULEVARD	7100	82000	80000	6900	82000	78000
7	110	LA		29.95	SOUTH PASADENA, BRIDEWELL STREET	6900	82000	78000	6800	81000	77000
7	110	LA		30.587	SOUTH PASADENA, ORANGE GROVE AVENUE	6800	81000	77000	4950	59000	56000
7	110	LA		31.17	SOUTH PASADENA, FAIR OAKS AVENUE	4950	59000	56000	3550	42000	40000
7	110	LA		31.912	PASADENA, GLENARM STREET	3550	42000	40000	3550	42000	40000
7	110	LA		31.913	PASADENA, END FREEWAY	3550	42000	40000			
11	111	IMP	R	0	CALEXICO, SO CITY LIMITS, AT MEXICAN BNDRY				1950	26000	24600
11	111	IMP	R	0.2	CALEXICO, SECOND STREET	1950	26000	24600	1950	26000	24600
11	111	IMP		0.408	THIRD ST	1950	26000	24600	2150	29500	28500
11	111	IMP		0.836	CALEXICO, GRANT STREET (EIGHTH STREET)	2150	29500	28500	2150	30000	28500
11	111	IMP	R	1.183	JCT. RTE. 98	2150	30000	28500	2600	32500	31500
11	111	IMP	R	2.211	COLE ROAD	2600	32500	31500	2800	38000	35000
11	111	IMP	R	4.741	JCT. RTE. 86 WEST	2800	38000	35000	2750	34000	30500
11	111	IMP	R	6.242	MC CABE ROAD (LAKE ROAD)	2750	34000	30500	2400	32000	30000
11	111	IMP	R	7.714	JCT. RTE. 8	2400	32000	30000	1800	20600	19300
11	111	IMP	R	9.503	EVAN HEWES HWY	1700	20200	18200	1600	18900	16800
11	111	IMP	R	11.299	ATEN RD	1600	18900	16800	1050	14000	13500
11	111	IMP	R	12.874	WORTHINGTON ROAD	1050	14000	13500	1100	12100	11000
11	111	IMP	R	17.385	KEYSTONE ROAD	1100	12100	11000	1050	12300	11000
11	111	IMP	R	22.015	JCT. RTE. 78	950	11500	10000	630	5800	5500
11	111	IMP		23.538	SHANK ROAD	630	5800	5500	560	5700	5300
11	111	IMP		23.787	DEL RIO RD RT.	560	5700	5300	560	5700	5300
11	111	IMP		24.682	ANDRE RD	560	5700	5300	620	6000	4650
11	111	IMP		26.67	RUTHERFORD ROAD	620	6000	4650	700	6600	5300
11	111	IMP		32.01	CALIPATRIA, SOUTH CITY LIMITS	700	6600	5300	690	6500	5200
11	111	IMP		32.513	JCT. RTE. 115 EAST	690	6500	5200	600	5700	4550
11	111	IMP		32.74	CALIFORNIA STREET	600	5700	4550	730	6500	5000
11	111	IMP		36.09	SINCLAIR ROAD	730	6500	5000	650	6000	3750
11	111	IMP		39.82	NILAND AVENUE	650	6000	3750	420	3700	2900
11	111	IMP		40.4	THIRD STREET	420	3700	2900	480	4200	3200

Dist	Route	County		Postmile	Description	Back Peak Hour	Back Peak Month	Back AADT	Ahead Peak Hour	Ahead Peak AADT	Ahead AADT
11	111	IMP		40.71	BEAL ROAD	480	4200	3200	330	3200	2450
11	111	IMP		42.47	ENGLISH ROAD	330	3200	2450	340	3200	2500
11	111	IMP		57.625	BOMBAY BEACH ROAD	200	1900	1500	190	1700	1400
11	111	IMP		65.394	IMPERIAL/RIVERSIDE COUNTY LINE	190	2150	1500	190	1750	1400
8	111	RIV		7.67	SALTON SEA STATE PARK ROAD	190	2050	1700	300	3200	2700
8	111	RIV		18.428	MECCA, JCT. RTE. 195 WEST	490	5200	4400	860	9200	7700
8	111	RIV		47.252	PALM SPRINGS, GOLF CLUB DRIVE	860	9200	7700	3150	35000	32000
8	111	RIV	T	47.795	EAST PALM CANYON/GENE AUTRY TRAIL	2800	31000	28500	1300	13300	12500
8	111	RIV	T	48.318	GENE AUTRY TR N/O PALM CYN	1300	13300	12500	1150	12500	11700
8	111	RIV	T	49.37	PALM SPRINGS, RAMON ROAD	1150	12500	11700	1850	19200	18000
8	111	RIV	T	51.588	VISTA CHINO	2000	20600	19300	2650	31000	29000
8	111	RIV	T	52.371	PALM SPRINGS, FARRELL DRIVE	2650	31000	29000	2100	24500	23000
8	111	RIV	T	52.876	PALM SPRINGS, SUNRISE WAY	2100	24500	23000	1950	22300	21000
8	111	RIV	T	53.376	PALM SPRINGS, AVENIDA CABALLEROS	1950	22300	21000	1250	14700	13800
8	111	RIV	T	53.627	PALM SPRINGS, VIA MIRALESTE	1250	14700	13800	1250	14700	13800
8	111	RIV	T	53.877	PALM SPRINGS, INDIAN CANYON	1250	14700	13800	970	11200	10500
8	111	RIV		53.821	VISTA CHINO @ PALM CNYN	970	11200	10500	2100	19700	17500
8	111	RIV		54.955	PALM SPRINGS, TRAMWAY DRIVE	1900	18000	16000	1900	18000	16000
8	111	RIV	R	63.378	JCT. RTE. 10	1550	14800	13200			
4	112	ALA	R	0	SAN LEANDRO, JCT. RTE. 61				2200	29500	29000
4	112	ALA		0.602	JCT. RTE. 880	4100	55000	54000	3000	41000	40000
4	112	ALA		1.507	SAN LEANDRO, SAN LEANDRO BOULEVARD	2650	36000	35000	2200	31000	30000
4	112	ALA		1.782	SAN LEANDRO, JCT. RTE. 185	1750	23500	22900			
4	113	SOL		0	JCT. RTE. 12				390	4050	3750
4	113	SOL		11.61	ELMIRA/FRY ROADS	370	3850	3550	320	3350	3100
4	113	SOL		18.95	DIXON, CHERRY STREET	970	7500	6900	1150	8500	8200
4	113	SOL		19.29	DIXON, A STREET	1650	12100	11700	990	9300	9000
4	113	SOL		19.96	DIXON, NORTH ADAMS STREET	1050	10000	9600	1250	11200	10900
4	113	SOL	R	21.24 R	DIXON, WEST JCT. RTE. 80	2400	21500	20000	4750	43000	40000
4	113	SOL	R	21.653 L	EAST JCT RTE 80 SB	2400	21500	20000	4750	43000	40000
4	113	SOL	R	22.45	SOLANO YOLO COUNTY LINE (PUTAH CREEK BRIDGE)	4750	43000	40000			

APPENDIX B

PEAK HOUR INTERSECTION ANALYSIS WORKSHEETS

EXISTING

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	0	0	0	0	0	0	0	101	0	0	107	0
Future Vol, veh/h	0	0	0	0	0	0	0	101	0	0	107	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	110	0	0	116	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	226	226	116	226	226	110	116	0	0	110	0	0
Stage 1	116	116	-	110	110	-	-	-	-	-	-	-
Stage 2	110	110	-	116	116	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	729	673	936	729	673	943	1473	-	-	1480	-	-
Stage 1	889	800	-	895	804	-	-	-	-	-	-	-
Stage 2	895	804	-	889	800	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	729	673	936	729	673	943	1473	-	-	1480	-	-
Mov Cap-2 Maneuver	729	673	-	729	673	-	-	-	-	-	-	-
Stage 1	889	800	-	895	804	-	-	-	-	-	-	-
Stage 2	895	804	-	889	800	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1473	-	-	-	-	1480	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	0	0	1	2	0	1	3	102	2	2	107	1
Future Vol, veh/h	0	0	1	2	0	1	3	102	2	2	107	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	1	2	0	1	3	111	2	2	116	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	240	240	117	239	239	112	117	0	0	113	0	0
Stage 1	121	121	-	118	118	-	-	-	-	-	-	-
Stage 2	119	119	-	121	121	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	714	661	935	715	662	941	1471	-	-	1476	-	-
Stage 1	883	796	-	887	798	-	-	-	-	-	-	-
Stage 2	885	797	-	883	796	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	712	659	935	713	660	941	1471	-	-	1476	-	-
Mov Cap-2 Maneuver	712	659	-	713	660	-	-	-	-	-	-	-
Stage 1	881	795	-	885	796	-	-	-	-	-	-	-
Stage 2	882	795	-	881	795	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.9	9.7	0.2	0.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1471	-	-	935	776	1476	-	-
HCM Lane V/C Ratio	0.002	-	-	0.001	0.004	0.001	-	-
HCM Control Delay (s)	7.5	0	-	8.9	9.7	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	0	2	0	1	4	0	0	2	1	0	1	0
Future Vol, veh/h	0	2	0	1	4	0	0	2	1	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	2	0	1	4	0	0	2	1	0	1	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	6	4	1	5	4	3	1	0	0	3	0	0
Stage 1	1	1	-	3	3	-	-	-	-	-	-	-
Stage 2	5	3	-	2	1	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	1014	891	1084	1016	891	1081	1622	-	-	1619	-	-
Stage 1	1022	895	-	1020	893	-	-	-	-	-	-	-
Stage 2	1017	893	-	1021	895	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	1010	891	1084	1014	891	1081	1622	-	-	1619	-	-
Mov Cap-2 Maneuver	1010	891	-	1014	891	-	-	-	-	-	-	-
Stage 1	1022	895	-	1020	893	-	-	-	-	-	-	-
Stage 2	1012	893	-	1019	895	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	9	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1622	-	-	891	913	1619	-	-
HCM Lane V/C Ratio	-	-	-	0.002	0.006	-	-	-
HCM Control Delay (s)	0	-	-	9.1	9	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

HCM 2010 TWSC
4: English Rd & W. Sinclair Rd

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	2	13	0	2	17	1	0	2	6	3	1	2
Future Vol, veh/h	2	13	0	2	17	1	0	2	6	3	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	14	0	2	18	1	0	2	7	3	1	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	19	0	0	14	0	0	42	41	14	46	41	19
Stage 1	-	-	-	-	-	-	18	18	-	23	23	-
Stage 2	-	-	-	-	-	-	24	23	-	23	18	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1597	-	-	1604	-	-	961	851	1066	955	851	1059
Stage 1	-	-	-	-	-	-	1001	880	-	995	876	-
Stage 2	-	-	-	-	-	-	994	876	-	995	880	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1597	-	-	1604	-	-	956	849	1066	945	849	1059
Mov Cap-2 Maneuver	-	-	-	-	-	-	956	849	-	945	849	-
Stage 1	-	-	-	-	-	-	1000	879	-	994	875	-
Stage 2	-	-	-	-	-	-	990	875	-	985	879	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.7	8.6	8.8
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1002	1597	-	-	1604	-	-	961
HCM Lane V/C Ratio	0.009	0.001	-	-	0.001	-	-	0.007
HCM Control Delay (s)	8.6	7.3	0	-	7.2	0	-	8.8
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣		↰	↱		↰	↱	
Traffic Vol, veh/h	6	9	6	3	3	3	7	81	24	21	84	6
Future Vol, veh/h	6	9	6	3	3	3	7	81	24	21	84	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	10	7	3	3	3	8	88	26	23	91	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	261	271	95	266	261	101	98	0	0	114	0	0
Stage 1	141	141	-	117	117	-	-	-	-	-	-	-
Stage 2	120	130	-	149	144	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	692	636	962	687	644	954	1495	-	-	1475	-	-
Stage 1	862	780	-	888	799	-	-	-	-	-	-	-
Stage 2	884	789	-	854	778	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	676	623	962	664	630	954	1495	-	-	1475	-	-
Mov Cap-2 Maneuver	676	623	-	664	630	-	-	-	-	-	-	-
Stage 1	858	768	-	884	795	-	-	-	-	-	-	-
Stage 2	873	785	-	824	766	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.2	10	0.5	1.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1495	-	-	710	724	1475	-	-
HCM Lane V/C Ratio	0.005	-	-	0.032	0.014	0.015	-	-
HCM Control Delay (s)	7.4	-	-	10.2	10	7.5	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	0	0	0	0	0	0	0	106	0	0	106	0
Future Vol, veh/h	0	0	0	0	0	0	0	106	0	0	106	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	115	0	0	115	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	230	230	115	230	230	115	115	0	0	115	0	0
Stage 1	115	115	-	115	115	-	-	-	-	-	-	-
Stage 2	115	115	-	115	115	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	725	670	937	725	670	937	1474	-	-	1474	-	-
Stage 1	890	800	-	890	800	-	-	-	-	-	-	-
Stage 2	890	800	-	890	800	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	725	670	937	725	670	937	1474	-	-	1474	-	-
Mov Cap-2 Maneuver	725	670	-	725	670	-	-	-	-	-	-	-
Stage 1	890	800	-	890	800	-	-	-	-	-	-	-
Stage 2	890	800	-	890	800	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1474	-	-	-	-	1474	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	0	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	0	0	20	1	0	12	2	100	2	1	92	0
Future Vol, veh/h	0	0	20	1	0	12	2	100	2	1	92	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	22	1	0	13	2	109	2	1	100	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	223	217	100	227	216	110	100	0	0	111	0	0
Stage 1	102	102	-	114	114	-	-	-	-	-	-	-
Stage 2	121	115	-	113	102	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	733	681	956	728	682	943	1493	-	-	1479	-	-
Stage 1	904	811	-	891	801	-	-	-	-	-	-	-
Stage 2	883	800	-	892	811	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	722	680	956	711	681	943	1493	-	-	1479	-	-
Mov Cap-2 Maneuver	722	680	-	711	681	-	-	-	-	-	-	-
Stage 1	903	810	-	890	800	-	-	-	-	-	-	-
Stage 2	870	799	-	871	810	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.9	9	0.1	0.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1493	-	-	956	920	1479	-	-
HCM Lane V/C Ratio	0.001	-	-	0.023	0.015	0.001	-	-
HCM Control Delay (s)	7.4	0	-	8.9	9	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	0	21	3	0	2	0	1	0	0	0	0	0
Future Vol, veh/h	0	21	3	0	2	0	1	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	23	3	0	2	0	1	0	0	0	0	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	4	3	1	16	3	0	1	0	0	0	0	0
Stage 1	1	1	-	2	2	-	-	-	-	-	-	-
Stage 2	3	2	-	14	1	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	1017	893	1084	999	893	-	1622	-	-	-	-	-
Stage 1	1022	895	-	1021	894	-	-	-	-	-	-	-
Stage 2	1020	894	-	1006	895	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	892	1084	976	892	-	1622	-	-	-	-	-
Mov Cap-2 Maneuver	-	892	-	976	892	-	-	-	-	-	-	-
Stage 1	1021	895	-	1020	893	-	-	-	-	-	-	-
Stage 2	1016	893	-	977	895	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			7.2	0
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1622	-	-	-	-	-	-	-
HCM Lane V/C Ratio	0.001	-	-	-	-	-	-	-
HCM Control Delay (s)	7.2	0	-	-	-	0	-	-
HCM Lane LOS	A	A	-	-	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	-	-	-

4: English Rd & W. Sinclair Rd

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	1	15	0	2	12	0	0	0	3	2	2	0
Future Vol, veh/h	1	15	0	2	12	0	0	0	3	2	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	16	0	2	13	0	0	0	3	2	2	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	13	0	0	16	0	0	36	35	16	37	35	13
Stage 1	-	-	-	-	-	-	18	18	-	17	17	-
Stage 2	-	-	-	-	-	-	18	17	-	20	18	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1606	-	-	1602	-	-	970	857	1063	968	857	1067
Stage 1	-	-	-	-	-	-	1001	880	-	1002	881	-
Stage 2	-	-	-	-	-	-	1001	881	-	999	880	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1606	-	-	1602	-	-	967	855	1063	963	855	1067
Mov Cap-2 Maneuver	-	-	-	-	-	-	967	855	-	963	855	-
Stage 1	-	-	-	-	-	-	1000	879	-	1001	880	-
Stage 2	-	-	-	-	-	-	998	880	-	995	879	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	1	8.4	9
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1063	1606	-	-	1602	-	-	906
HCM Lane V/C Ratio	0.003	0.001	-	-	0.001	-	-	0.005
HCM Control Delay (s)	8.4	7.2	0	-	7.2	0	-	9
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↱		↰	↱	
Traffic Vol, veh/h	8	2	11	0	5	9	2	89	1	1	116	3
Future Vol, veh/h	8	2	11	0	5	9	2	89	1	1	116	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	2	12	0	5	10	2	97	1	1	126	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	239	232	128	239	233	98	129	0	0	98	0	0
Stage 1	130	130	-	102	102	-	-	-	-	-	-	-
Stage 2	109	102	-	137	131	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	715	668	922	715	667	958	1457	-	-	1495	-	-
Stage 1	874	789	-	904	811	-	-	-	-	-	-	-
Stage 2	896	811	-	866	788	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	702	667	922	703	666	958	1457	-	-	1495	-	-
Mov Cap-2 Maneuver	702	667	-	703	666	-	-	-	-	-	-	-
Stage 1	873	788	-	903	810	-	-	-	-	-	-	-
Stage 2	880	810	-	852	787	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	9.4	0.2	0.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1457	-	-	798	828	1495	-	-
HCM Lane V/C Ratio	0.001	-	-	0.029	0.018	0.001	-	-
HCM Control Delay (s)	7.5	-	-	9.6	9.4	7.4	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

EXISTING + PROJECT OPERATIONS

HCM 2010 TWSC
1: SR-111 & Hazard Rd

Ex+Const - AM
03/06/2020

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	1	0	0	0	0	0	0	101	0	0	118	1
Future Vol, veh/h	1	0	0	0	0	0	0	101	0	0	118	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	0	0	0	0	0	110	0	0	128	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	239	239	129	239	239	110	129	0	0	110	0	0
Stage 1	129	129	-	110	110	-	-	-	-	-	-	-
Stage 2	110	110	-	129	129	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	715	662	921	715	662	943	1457	-	-	1480	-	-
Stage 1	875	789	-	895	804	-	-	-	-	-	-	-
Stage 2	895	804	-	875	789	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	715	662	921	715	662	943	1457	-	-	1480	-	-
Mov Cap-2 Maneuver	715	662	-	715	662	-	-	-	-	-	-	-
Stage 1	875	789	-	895	804	-	-	-	-	-	-	-
Stage 2	895	804	-	875	789	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	0	0	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1457	-	-	715	-	1480	-	-
HCM Lane V/C Ratio	-	-	-	0.002	-	-	-	-
HCM Control Delay (s)	0	-	-	10	0	0	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-	-

HCM 2010 TWSC
2: SR-111 & McDonald Rd

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	0	0	1	2	0	1	3	102	2	2	107	12
Future Vol, veh/h	0	0	1	2	0	1	3	102	2	2	107	12
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	1	2	0	1	3	111	2	2	116	13

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	246	246	123	245	251	112	129	0	0	113	0	0
Stage 1	127	127	-	118	118	-	-	-	-	-	-	-
Stage 2	119	119	-	127	133	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	708	656	928	709	652	941	1457	-	-	1476	-	-
Stage 1	877	791	-	887	798	-	-	-	-	-	-	-
Stage 2	885	797	-	877	786	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	706	654	928	707	650	941	1457	-	-	1476	-	-
Mov Cap-2 Maneuver	706	654	-	707	650	-	-	-	-	-	-	-
Stage 1	875	790	-	885	796	-	-	-	-	-	-	-
Stage 2	882	795	-	875	785	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.9	9.7	0.2	0.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1457	-	-	928	771	1476	-	-
HCM Lane V/C Ratio	0.002	-	-	0.001	0.004	0.001	-	-
HCM Control Delay (s)	7.5	0	-	8.9	9.7	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0	0	0	-	-

3: English Rd & McDonald Rd

Intersection	
Int Delay, s/veh	7.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	1	2	7	1	15	0	66	2	1	0	1	1
Future Vol, veh/h	1	2	7	1	15	0	66	2	1	0	1	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	2	8	1	16	0	72	2	1	0	1	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	157	149	2	154	149	3	2	0	0	3	0	0
Stage 1	2	2	-	147	147	-	-	-	-	-	-	-
Stage 2	155	147	-	7	2	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	809	743	1082	813	743	1081	1620	-	-	1619	-	-
Stage 1	1021	894	-	856	775	-	-	-	-	-	-	-
Stage 2	847	775	-	1015	894	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	768	710	1082	778	710	1081	1620	-	-	1619	-	-
Mov Cap-2 Maneuver	768	710	-	778	710	-	-	-	-	-	-	-
Stage 1	975	894	-	817	740	-	-	-	-	-	-	-
Stage 2	791	740	-	1005	894	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	8.9	10.2	7	0
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1620	-	-	944	714	1619	-	-
HCM Lane V/C Ratio	0.044	-	-	0.012	0.024	-	-	-
HCM Control Delay (s)	7.3	0	-	8.9	10.2	0	-	-
HCM Lane LOS	A	A	-	A	B	A	-	-
HCM 95th %tile Q(veh)	0.1	-	-	0	0.1	0	-	-

4: English Rd & W. Sinclair Rd

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	2	13	0	2	17	67	0	2	6	10	1	2
Future Vol, veh/h	2	13	0	2	17	67	0	2	6	10	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	14	0	2	18	73	0	2	7	11	1	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	91	0	0	14	0	0	78	113	14	82	77	55
Stage 1	-	-	-	-	-	-	18	18	-	59	59	-
Stage 2	-	-	-	-	-	-	60	95	-	23	18	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1504	-	-	1604	-	-	911	777	1066	905	813	1012
Stage 1	-	-	-	-	-	-	1001	880	-	953	846	-
Stage 2	-	-	-	-	-	-	951	816	-	995	880	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1504	-	-	1604	-	-	906	775	1066	896	811	1012
Mov Cap-2 Maneuver	-	-	-	-	-	-	906	775	-	896	811	-
Stage 1	-	-	-	-	-	-	1000	879	-	952	845	-
Stage 2	-	-	-	-	-	-	947	815	-	985	879	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1	0.2	8.7	9
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	975	1504	-	-	1604	-	-	905
HCM Lane V/C Ratio	0.009	0.001	-	-	0.001	-	-	0.016
HCM Control Delay (s)	8.7	7.4	0	-	7.2	0	-	9
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↱		↰	↱	
Traffic Vol, veh/h	6	9	13	3	3	3	73	81	24	21	84	6
Future Vol, veh/h	6	9	13	3	3	3	73	81	24	21	84	6
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	10	14	3	3	3	79	88	26	23	91	7

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	403	413	95	412	403	101	98	0	0	114	0	0
Stage 1	141	141	-	259	259	-	-	-	-	-	-	-
Stage 2	262	272	-	153	144	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	558	529	962	550	536	954	1495	-	-	1475	-	-
Stage 1	862	780	-	746	694	-	-	-	-	-	-	-
Stage 2	743	685	-	849	778	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	525	493	962	506	500	954	1495	-	-	1475	-	-
Mov Cap-2 Maneuver	525	493	-	506	500	-	-	-	-	-	-	-
Stage 1	816	768	-	706	657	-	-	-	-	-	-	-
Stage 2	698	649	-	813	766	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.8	11.1	3.1	1.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1495	-	-	648	597	1475	-	-
HCM Lane V/C Ratio	0.053	-	-	0.047	0.016	0.015	-	-
HCM Control Delay (s)	7.5	-	-	10.8	11.1	7.5	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	1	0	0	0	0	0	0	117	0	0	106	1
Future Vol, veh/h	1	0	0	0	0	0	0	117	0	0	106	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	0	0	0	0	0	127	0	0	115	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	243	243	116	243	243	127	116	0	0	127	0	0
Stage 1	116	116	-	127	127	-	-	-	-	-	-	-
Stage 2	127	127	-	116	116	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	711	659	936	711	659	923	1473	-	-	1459	-	-
Stage 1	889	800	-	877	791	-	-	-	-	-	-	-
Stage 2	877	791	-	889	800	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	711	659	936	711	659	923	1473	-	-	1459	-	-
Mov Cap-2 Maneuver	711	659	-	711	659	-	-	-	-	-	-	-
Stage 1	889	800	-	877	791	-	-	-	-	-	-	-
Stage 2	877	791	-	889	800	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	0	0	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1473	-	-	711	-	1459	-	-
HCM Lane V/C Ratio	-	-	-	0.002	-	-	-	-
HCM Control Delay (s)	0	-	-	10.1	0	0	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	11	0	20	1	0	12	2	100	2	1	92	0
Future Vol, veh/h	11	0	20	1	0	12	2	100	2	1	92	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	0	22	1	0	13	2	109	2	1	100	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	223	217	100	227	216	110	100	0	0	111	0	0
Stage 1	102	102	-	114	114	-	-	-	-	-	-	-
Stage 2	121	115	-	113	102	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	733	681	956	728	682	943	1493	-	-	1479	-	-
Stage 1	904	811	-	891	801	-	-	-	-	-	-	-
Stage 2	883	800	-	892	811	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	722	680	956	711	681	943	1493	-	-	1479	-	-
Mov Cap-2 Maneuver	722	680	-	711	681	-	-	-	-	-	-	-
Stage 1	903	810	-	890	800	-	-	-	-	-	-	-
Stage 2	870	799	-	871	810	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.4	9	0.1	0.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1493	-	-	857	920	1479	-	-
HCM Lane V/C Ratio	0.001	-	-	0.039	0.015	0.001	-	-
HCM Control Delay (s)	7.4	0	-	9.4	9	7.4	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0	-	-

3: English Rd & McDonald Rd

Intersection	
Int Delay, s/veh	0.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	1	32	68	0	2	0	7	0	0	0	0	1
Future Vol, veh/h	1	32	68	0	2	0	7	0	0	0	0	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	35	74	0	2	0	8	0	0	0	0	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	18	17	1	71	17	0	1	0	0	0	0	0
Stage 1	1	1	-	16	16	-	-	-	-	-	-	-
Stage 2	17	16	-	55	1	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	996	877	1084	920	877	-	1622	-	-	-	-	-
Stage 1	1022	895	-	1004	882	-	-	-	-	-	-	-
Stage 2	1002	882	-	957	895	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	873	1084	828	873	-	1622	-	-	-	-	-
Mov Cap-2 Maneuver	-	873	-	828	873	-	-	-	-	-	-	-
Stage 1	1017	895	-	999	878	-	-	-	-	-	-	-
Stage 2	995	878	-	857	895	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			7.2	0
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1622	-	-	-	-	-	-	-
HCM Lane V/C Ratio	0.005	-	-	-	-	-	-	-
HCM Control Delay (s)	7.2	0	-	-	-	0	-	-
HCM Lane LOS	A	A	-	-	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	-	-	-

Intersection	
Int Delay, s/veh	6.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	1	15	0	2	12	6	0	0	3	67	2	0
Future Vol, veh/h	1	15	0	2	12	6	0	0	3	67	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	16	0	2	13	7	0	0	3	73	2	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	20	0	0	16	0	0	40	42	16	41	39	17
Stage 1	-	-	-	-	-	-	18	18	-	21	21	-
Stage 2	-	-	-	-	-	-	22	24	-	20	18	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1596	-	-	1602	-	-	964	850	1063	963	853	1062
Stage 1	-	-	-	-	-	-	1001	880	-	998	878	-
Stage 2	-	-	-	-	-	-	996	875	-	999	880	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1596	-	-	1602	-	-	961	848	1063	958	851	1062
Mov Cap-2 Maneuver	-	-	-	-	-	-	961	848	-	958	851	-
Stage 1	-	-	-	-	-	-	1000	879	-	997	877	-
Stage 2	-	-	-	-	-	-	993	874	-	995	879	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.7	8.4	9.1
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1063	1596	-	-	1602	-	-	955
HCM Lane V/C Ratio	0.003	0.001	-	-	0.001	-	-	0.079
HCM Control Delay (s)	8.4	7.3	0	-	7.2	0	-	9.1
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0.3

5: SR-111 & Sinclair Rd

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	8	2	76	0	5	9	8	89	1	1	116	3
Future Vol, veh/h	8	2	76	0	5	9	8	89	1	1	116	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	2	83	0	5	10	9	97	1	1	126	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	253	246	128	288	247	98	129	0	0	98	0	0
Stage 1	130	130	-	116	116	-	-	-	-	-	-	-
Stage 2	123	116	-	172	131	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	700	656	922	664	655	958	1457	-	-	1495	-	-
Stage 1	874	789	-	889	800	-	-	-	-	-	-	-
Stage 2	881	800	-	830	788	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	685	651	922	600	650	958	1457	-	-	1495	-	-
Mov Cap-2 Maneuver	685	651	-	600	650	-	-	-	-	-	-	-
Stage 1	869	788	-	884	795	-	-	-	-	-	-	-
Stage 2	861	795	-	753	787	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.5	9.5	0.6	0.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1457	-	-	885	819	1495	-	-
HCM Lane V/C Ratio	0.006	-	-	0.106	0.019	0.001	-	-
HCM Control Delay (s)	7.5	-	-	9.5	9.5	7.4	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.4	0.1	0	-	-

EXISTING + PROJECT OPERATIONS + CUMULATIVE ANALYSIS

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	0	0	0	0	0	0	0	112	0	0	124	0
Future Vol, veh/h	0	0	0	0	0	0	0	112	0	0	124	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	122	0	0	135	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	257	257	135	257	257	122	135	0	0	122	0	0
Stage 1	135	135	-	122	122	-	-	-	-	-	-	-
Stage 2	122	122	-	135	135	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	696	647	914	696	647	929	1449	-	-	1465	-	-
Stage 1	868	785	-	882	795	-	-	-	-	-	-	-
Stage 2	882	795	-	868	785	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	696	647	914	696	647	929	1449	-	-	1465	-	-
Mov Cap-2 Maneuver	696	647	-	696	647	-	-	-	-	-	-	-
Stage 1	868	785	-	882	795	-	-	-	-	-	-	-
Stage 2	882	795	-	868	785	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1449	-	-	-	-	1465	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	0	-	-

Intersection	
Int Delay, s/veh	1.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↱			↰	↱
Traffic Vol, veh/h	1	0	7	2	0	1	37	112	2	2	118	7
Future Vol, veh/h	1	0	7	2	0	1	37	112	2	2	118	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	0	8	2	0	1	40	122	2	2	128	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	336	336	128	343	343	123	136	0	0	124	0	0
Stage 1	132	132	-	203	203	-	-	-	-	-	-	-
Stage 2	204	204	-	140	140	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	618	585	922	611	579	928	1448	-	-	1463	-	-
Stage 1	871	787	-	799	733	-	-	-	-	-	-	-
Stage 2	798	733	-	863	781	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	604	568	922	593	562	928	1448	-	-	1463	-	-
Mov Cap-2 Maneuver	604	568	-	593	562	-	-	-	-	-	-	-
Stage 1	847	786	-	777	712	-	-	-	-	-	-	-
Stage 2	775	712	-	855	780	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.2	10.4	1.9	0.1
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1448	-	-	865	674	1463	-	-
HCM Lane V/C Ratio	0.028	-	-	0.01	0.005	0.001	-	-
HCM Control Delay (s)	7.6	-	-	9.2	10.4	7.5	0	-
HCM Lane LOS	A	-	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	0	0	0	-	-

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	0	8	0	1	43	0	2	2	1	0	1	0
Future Vol, veh/h	0	8	0	1	43	0	2	2	1	0	1	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	9	0	1	47	0	2	2	1	0	1	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	31	8	1	13	8	3	1	0	0	3	0	0
Stage 1	1	1	-	7	7	-	-	-	-	-	-	-
Stage 2	30	7	-	6	1	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	977	887	1084	1004	887	1081	1622	-	-	1619	-	-
Stage 1	1022	895	-	1015	890	-	-	-	-	-	-	-
Stage 2	987	890	-	1016	895	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	937	886	1084	996	886	1081	1622	-	-	1619	-	-
Mov Cap-2 Maneuver	937	886	-	996	886	-	-	-	-	-	-	-
Stage 1	1021	895	-	1014	889	-	-	-	-	-	-	-
Stage 2	934	889	-	1006	895	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.1	9.3	2.9	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1622	-	-	886	888	1619	-	-
HCM Lane V/C Ratio	0.001	-	-	0.01	0.054	-	-	-
HCM Control Delay (s)	7.2	0	-	9.1	9.3	0	-	-
HCM Lane LOS	A	A	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0	0.2	0	-	-

HCM 2010 TWSC
4: English Rd & W. Sinclair Rd

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	2	14	0	2	19	3	0	2	7	3	1	2
Future Vol, veh/h	2	14	0	2	19	3	0	2	7	3	1	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	2	15	0	2	21	3	0	2	8	3	1	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	24	0	0	15	0	0	47	47	15	51	46	23
Stage 1	-	-	-	-	-	-	19	19	-	27	27	-
Stage 2	-	-	-	-	-	-	28	28	-	24	19	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1591	-	-	1603	-	-	954	845	1065	948	846	1054
Stage 1	-	-	-	-	-	-	1000	880	-	990	873	-
Stage 2	-	-	-	-	-	-	989	872	-	994	880	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1591	-	-	1603	-	-	949	843	1065	938	844	1054
Mov Cap-2 Maneuver	-	-	-	-	-	-	949	843	-	938	844	-
Stage 1	-	-	-	-	-	-	999	879	-	989	872	-
Stage 2	-	-	-	-	-	-	985	871	-	983	879	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.6	8.6	8.8
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	1006	1591	-	-	1603	-	-	955
HCM Lane V/C Ratio	0.01	0.001	-	-	0.001	-	-	0.007
HCM Control Delay (s)	8.6	7.3	0	-	7.2	0	-	8.8
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✢			✢		↰	↱		↰	↱	
Traffic Vol, veh/h	7	10	7	3	3	3	10	123	26	23	98	7
Future Vol, veh/h	7	10	7	3	3	3	10	123	26	23	98	7
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	8	11	8	3	3	3	11	134	28	25	107	8

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	334	345	111	341	335	148	115	0	0	162	0	0
Stage 1	161	161	-	170	170	-	-	-	-	-	-	-
Stage 2	173	184	-	171	165	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	620	578	942	613	585	899	1474	-	-	1417	-	-
Stage 1	841	765	-	832	758	-	-	-	-	-	-	-
Stage 2	829	747	-	831	762	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	603	564	942	588	570	899	1474	-	-	1417	-	-
Mov Cap-2 Maneuver	603	564	-	588	570	-	-	-	-	-	-	-
Stage 1	835	751	-	826	753	-	-	-	-	-	-	-
Stage 2	816	742	-	798	748	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.7	10.6	0.5	1.4
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1474	-	-	653	657	1417	-	-
HCM Lane V/C Ratio	0.007	-	-	0.04	0.015	0.018	-	-
HCM Control Delay (s)	7.5	-	-	10.7	10.6	7.6	-	-
HCM Lane LOS	A	-	-	B	B	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0	0.1	-	-

HCM 2010 TWSC
1: SR-111 & Hazard Rd

Ex + Operations + Cumulative -PM
03/06/2020

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	0	0	0	0	0	0	0	123	0	0	118	0
Future Vol, veh/h	0	0	0	0	0	0	0	123	0	0	118	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	0	0	0	0	0	0	134	0	0	128	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	262	262	128	262	262	134	128	0	0	134	0	0
Stage 1	128	128	-	134	134	-	-	-	-	-	-	-
Stage 2	134	134	-	128	128	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	691	643	922	691	643	915	1458	-	-	1451	-	-
Stage 1	876	790	-	869	785	-	-	-	-	-	-	-
Stage 2	869	785	-	876	790	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	691	643	922	691	643	915	1458	-	-	1451	-	-
Mov Cap-2 Maneuver	691	643	-	691	643	-	-	-	-	-	-	-
Stage 1	876	790	-	869	785	-	-	-	-	-	-	-
Stage 2	869	785	-	876	790	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0	0	0
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1458	-	-	-	-	1451	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s)	0	-	-	0	0	0	-	-
HCM Lane LOS	A	-	-	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	0	-	-

Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣		↰	↱			↰	↱
Traffic Vol, veh/h	6	0	55	1	0	13	16	110	2	1	101	1
Future Vol, veh/h	6	0	55	1	0	13	16	110	2	1	101	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	-	-	0
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	7	0	60	1	0	14	17	120	2	1	110	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	274	268	110	298	268	121	111	0	0	122	0	0
Stage 1	112	112	-	155	155	-	-	-	-	-	-	-
Stage 2	162	156	-	143	113	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	678	638	943	654	638	930	1479	-	-	1465	-	-
Stage 1	893	803	-	847	769	-	-	-	-	-	-	-
Stage 2	840	769	-	860	802	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	661	630	943	607	630	930	1479	-	-	1465	-	-
Mov Cap-2 Maneuver	661	630	-	607	630	-	-	-	-	-	-	-
Stage 1	883	802	-	838	761	-	-	-	-	-	-	-
Stage 2	818	761	-	805	801	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.3	9.1	0.9	0.1
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1479	-	-	905	896	1465	-	-
HCM Lane V/C Ratio	0.012	-	-	0.073	0.017	0.001	-	-
HCM Control Delay (s)	7.5	-	-	9.3	9.1	7.5	0	-
HCM Lane LOS	A	-	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.2	0.1	0	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✣			✣			✣			✣	
Traffic Vol, veh/h	0	61	5	0	17	0	1	0	0	0	0	0
Future Vol, veh/h	0	61	5	0	17	0	1	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	66	5	0	18	0	1	0	0	0	0	0

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	12	3	1	39	3	0	1	0	0	0	0	0
Stage 1	1	1	-	2	2	-	-	-	-	-	-	-
Stage 2	11	2	-	37	1	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	1005	893	1084	966	893	-	1622	-	-	-	-	-
Stage 1	1022	895	-	1021	894	-	-	-	-	-	-	-
Stage 2	1010	894	-	978	895	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	892	1084	906	892	-	1622	-	-	-	-	-
Mov Cap-2 Maneuver	-	892	-	906	892	-	-	-	-	-	-	-
Stage 1	1021	895	-	1020	893	-	-	-	-	-	-	-
Stage 2	988	893	-	901	895	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			7.2	0
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1622	-	-	-	-	-	-	-
HCM Lane V/C Ratio	0.001	-	-	-	-	-	-	-
HCM Control Delay (s)	7.2	0	-	-	-	0	-	-
HCM Lane LOS	A	A	-	-	-	A	-	-
HCM 95th %tile Q(veh)	0	-	-	-	-	-	-	-

4: English Rd & W. Sinclair Rd

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥			✥			✥	
Traffic Vol, veh/h	1	17	0	2	13	0	0	12	3	4	2	0
Future Vol, veh/h	1	17	0	2	13	0	0	12	3	4	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	1	18	0	2	14	0	0	13	3	4	2	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	14	0	0	18	0	0	39	38	18	46	38	14
Stage 1	-	-	-	-	-	-	20	20	-	18	18	-
Stage 2	-	-	-	-	-	-	19	18	-	28	20	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1604	-	-	1599	-	-	966	854	1061	955	854	1066
Stage 1	-	-	-	-	-	-	999	879	-	1001	880	-
Stage 2	-	-	-	-	-	-	1000	880	-	989	879	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1604	-	-	1599	-	-	963	852	1061	940	852	1066
Mov Cap-2 Maneuver	-	-	-	-	-	-	963	852	-	940	852	-
Stage 1	-	-	-	-	-	-	998	878	-	1000	879	-
Stage 2	-	-	-	-	-	-	997	879	-	970	878	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.4	1	9.1	9
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	887	1604	-	-	1599	-	-	909
HCM Lane V/C Ratio	0.018	0.001	-	-	0.001	-	-	0.007
HCM Control Delay (s)	9.1	7.2	0	-	7.3	0	-	9
HCM Lane LOS	A	A	A	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		✥			✥		↰	↱		↰	↱	
Traffic Vol, veh/h	9	2	14	0	6	10	2	112	1	1	161	3
Future Vol, veh/h	9	2	14	0	6	10	2	112	1	1	161	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	2	15	0	7	11	2	122	1	1	175	3

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	315	306	177	314	307	123	178	0	0	123	0	0
Stage 1	179	179	-	127	127	-	-	-	-	-	-	-
Stage 2	136	127	-	187	180	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	638	608	866	639	607	928	1398	-	-	1464	-	-
Stage 1	823	751	-	877	791	-	-	-	-	-	-	-
Stage 2	867	791	-	815	750	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	625	607	866	625	606	928	1398	-	-	1464	-	-
Mov Cap-2 Maneuver	625	607	-	625	606	-	-	-	-	-	-	-
Stage 1	822	750	-	876	790	-	-	-	-	-	-	-
Stage 2	849	790	-	798	749	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	9.8	0.1	0
HCM LOS	B	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1398	-	-	738	774	1464	-	-
HCM Lane V/C Ratio	0.002	-	-	0.037	0.022	0.001	-	-
HCM Control Delay (s)	7.6	-	-	10.1	9.8	7.5	-	-
HCM Lane LOS	A	-	-	B	A	A	-	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.1	0	-	-

APPENDIX L – AB 52 TRIBAL CONSULTATION

Imperial County Planning & Development Services
Planning / Building

Jim Minnick
DIRECTOR

November 6, 2020

CERTIFIED MAIL #7016-2140-0000-2124-3036

FORT YUMA - QUECHAN INDIAN TRIBE
Jordan D. Joaquin., President
350 W. Picacho Road
Winterhaven, CA 92283

RE: **Notice of Opportunity to consult on the Energy Source Minerals LLC Project**.

Dear Mr. Joaquin,

The Imperial County Planning & Development Services Department has received applications for the preparation of a comprehensive Environmental Impact Report (EIR) for the following projects: Energy Source Minerals LLC Parcel Map 2485 & Conditional Use Permit (CUP 20-0008).

The Imperial County Planning & Development Services Department will act as the "Lead Agency" for the preparation of the EIR pursuant to the California Environmental Quality Act (CEQA.

Energy-Source Minerals LLC (ES Minerals) is proposing to construct and operate a commercial lithium hydroxide production plant within the Salton Sea geothermal field in Imperial County (County), California (Project). This facility (ALTiS Plant) will process geothermal brine from the neighboring Hudson Ranch Power I Geothermal Plant (HR1) to produce lithium hydroxide, as well as zinc and manganese products, which would be sold commercially.

The Project's plant and facilities will be located at 477 West McDonald Road, Calipatria, California which is approximately 3.8 miles southwest of the community of Niland on three parcels privately owned by Hudson Ranch Power I (HR1) LLC in the County: APNs 020-100-025, 020-100-044, 020-100-046 (Project site; Figure 1). Currently, the HR1 power plant exists within the northeast corner of the 65.12-acre parcel, APN 020-100-044.

The Project's plant facilities are on approximately 37-acre area that would be subdivided out of the existing 65.12 acres. An additional 15 acres of the Project site located on the northwestern parcel APN 020-100-025 and approximately 40 acres of the Project site located on the southeast parcel APN 020-100-046 will be merged with the 37-acre subdivided parcel to form the new parcel for the Project. The project facilities will be located in the north half of Section 24 in Township 11 South, Range 13 East, San Bernardino Base and Meridian (SBB&M) as shown on the USGS Niland Quadrangle topographic map (see Figure 1.)

A Sacred Lands File search by the NAHC indicates that sacred sites have been identified within a one-mile radius of the proposed Project. The California Historical Resources Information System records search is currently pending results for previously recorded cultural resources located within 0.5-mile of the Project site. We are working with our client to provide recommendations on project design and cultural resources scope of work for site evaluations.

Surrounding land uses and setting:

Medium Industrial zones on the north, south and east side of project surround the parcels.

In accordance with Assembly Bill 52 (AB 52) and Section 21080.3.1(d) of the California Public Resources Code (PRC), we are responding to your request to be notified of projects in our jurisdiction that will be reviewed under CEQA. Your name was provided to us as the point of contact for your tribe. We are hereby notifying you of an opportunity to consult with the County regarding the potential for this project to impact Tribal Cultural Resources, as defined in Section 21074 of the PRC. The purposes of tribal consultation under AB 52 are to determine, as part of the CEQA review process, whether or not Tribal Cultural Resources are present within the project area, and if so, whether or not those resources will be significantly impacted by the project. If Tribal Cultural Resources may be significantly impacted, then consultation will also help to determine the most appropriate way to avoid or mitigate those impacts.

In accordance with Section 21080.3.1(d) of the PRC, you have 30 days from the receipt of this letter to either request or decline consultation in writing for this project. Please send your written response before December 9, 2020 to Imperial County Planning & Development Services Department, 801 Main Street, El Centro, CA. 92243, att. David Black, Project Planner or by email to ICPDSCommentLetters@co.imperial.ca.us . If the County does not receive a response within 30 days, the County will proceed with the project. Thank you and we look forward to your response.

Sincerely,

JIM MINNICK, DIRECTOR
Imperial County Planning & Development Services

BY:
David Black
Project Planner

Attachment: Location Map

cc:
Jim Minnick, Director, ICPDS
Michael Abraham, AICP, Asst. Director of ICPDS
David Black, Planner IV, ICPDS
Katy Sanchez, Associate Environmental Planner
File 10.101, 10.102, and 10.104

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Figure 1
Energy Source Mineral
Project Site

Name: 21268 CULT Fig 1 Project Site.Mxd
Print Date: 11/3/2020, Author: pcarlos

CHAMBERS
GROUP

Imperial County Planning & Development Services
Planning / Building

Jim Minnick
DIRECTOR

November 6, 2020

CERTIFIED MAIL #7016-2140-0000-2124-3296

TORRES-MARTINEZ INDIAN TRIBE
Joseph Mirelez, Vice Chairperson
66725 Martinez Rd,
Thermal CA 92274

RE: **Notice of Opportunity to consult on the Energy Source Minerals LLC Project.**

Dear Mr. Mirelez,

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Sincerely,

JIM MINNICK, DIRECTOR
Imperial County Planning & Development Services

BY:
David Black
Project Planner

Attachment: Location Map

cc:

Jim Minnick, Director, ICPDS
Michael Abraham, AICP, Asst. Director of ICPDS
David Black, Planner IV, ICPDS
Katy Sanchez, Associate Environmental Planner
File 10.101, 10.102, and 10.104

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🟥 Project Site

N

0 150 300 600
Feet

Figure 1
Energy Source Mineral
Project Site

Name: 21268 CULT Fig 1 Project Site.Mxd
Print Date: 11/3/2020, Author: pcarlos

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