Todd Smith, Planning Director
Planning and Environmental Review

Troy Givans, Director
Department of Community Development

County of Sacramento

Mitigated Negative Declaration

Pursuant to Title 14, Division 6, Chapter 3, Article 6, Sections 15070 and 15071 of the California Code of Regulations and pursuant to the Procedures for Preparation and Processing of Environmental Documents adopted by the County of Sacramento pursuant to Sacramento County Ordinance No. SCC-116, the Environmental Coordinator of Sacramento County, State of California, does prepare, make, declare, publish, and cause to be filed with the County Clerk of Sacramento County, State of California, this Mitigated Negative Declaration re: The Project described as follows:

1. **Control Number: PLER2025-00142**

2. **Title and Short Description of Project: Aquifer Storage and Recovery Project Vineyard Surface Water Treatment Plant**

   Sacramento County Water Agency (SCWA) proposes to convert an inactive supply well (PW-1) at the Vineyard Surface Water Treatment Plant into an Aquifer

   Storage and Recovery (ASR) well and construct associated conveyance pipelines. The work includes installing a permanent 100-horsepower pump, electrical

   controls, and 12-inch piping and valves connecting to the existing potable water system. SCWA also plans four future ASR wells, associated pipelines, and the

   conversion of three active Excelsior supply wells to ASR. ASR implementation would involve removing the existing pump, performing pre- and

   post-rehabilitation downhole video surveys, cleaning the well screen and filter pack to remove scaling, biomatter, and sediment, and reinstalling the pump with

   an ASR valve. The existing above-ground pipeline would be reconfigured to include a backflushing loop.

3. **Assessor's Parcel Number: 066-0060-001-0000**

4. **Location of Project: Vineyard Community (Unincorporated Sacramento County)**

5. **Project Applicant: Matt Satow, Director of Water Resources, Sacramento County Water Agency, 10151 Florin Road, Sacramento, CA 95829, (916) 874-8913**

6. Said project will not have a significant effect on the environment for the following reasons:
   a. It will not have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory.
   b. It will not have the potential to achieve short-term, to the disadvantage of long-term, environmental goals.
   c. It will not have impacts, which are individually limited, but cumulatively considerable.
   d. It will not have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly.

7. As a result thereof, the preparation of an environmental impact report pursuant to the Environmental Quality Act (Division 13 of the Public Resources Code of the State of California) is not required.

8. The attached Initial Study has been prepared by the Sacramento County Planning and Environmental Review Division in support of this Mitigated Negative Declaration. Further information may be obtained by contacting the Planning and Environmental Review Division at 827 Seventh Street, Room 225, Sacramento, California, 95814, or phone (916) 874-6141.

Julie Newton
Environmental Coordinator
County of Sacramento, State of California

Initial Study and Mitigated Negative Declaration

Aquifer Storage and Recovery Project

Vineyard Surface Water Treatment Plant

Prepared for:

Sacramento County Water Agency

September 2026

GEI Consultants

Consulting Engineers and Scientists

Initial Study and Mitigated Negative Declaration

Aquifer Storage and Recovery Project
Vineyard Surface Water Treatment Plant

Prepared for:

Sacramento County Water Agency
Vineyard Surface Water Treatment Plant
10151 Florin Road
Sacramento, CA 95829

Contact:
Matt Satow, Director of Water Resources
(916) 874-8913

Prepared by:

GEI Consultants, Inc.
11010 White Rock Road, Suite 200
Rancho Cordova, CA 95670

Contact:
Rodney Fricke
Senior Hydrogeologist
916-341-9138

September 14, 2026

Project No. 2100205

Notice of Intent to Adopt a Mitigated Negative Declaration

Date: September 14, 2026

To: Responsible and Trustee Agencies and the Public

From: Sacramento County Water Agency (SCWA)

Subject: Notice of Intent to Adopt a Mitigated Negative Declaration for the Aquifer Storage and Recovery (ASR) Project at the Vineyard Surface Water Treatment Plant (VSWTP)

Enclosed for your review is an Initial Study and proposed Mitigated Negative Declaration (IS/MND) evaluating the potential environmental effects of the proposed VSWTP ASR Project (proposed project), which is located at 10151 Florin Road, Sacramento, CA 95829, within the Carmichael and Elk Grove U.S. Geological Survey (USGS) 7.5-minute quadrangle maps. The SCWA, as lead agency for the proposed project, has prepared this IS/MND in accordance with the requirements of the California Environmental Quality Act (CEQA) and the State CEQA Guidelines.

The SCWA proposes to convert one existing, inactive supply well (PW-1) at the VSWTP to ASR, and to construct associated pipelines to facilitate water conveyance. Additionally, the project includes 4 future ASR wells and associated pipelines, as well as the conversion of three existing off-site active supply wells (the Excelsior wells) to ASR. The IS/MND identifies potentially significant impacts related to the proposed project. All potentially significant impacts are reduced to less-than-significant levels with implementation of mitigation measures identified in the IS.

The IS/MND is being circulated for public review and comment for a 30-day period beginning on September 14, 2026 and ending on October 13, 2026. The IS/MND may be reviewed at https://planningdocuments.saccounty.gov/ViewProjectDetails.aspx?ControlNum=PLER2025-00142 or at 827 7th Street, Room 225, Sacramento, CA 95814.

Please send written comments on the IS/MND to Julie Newton, 827 7th Street, Room 225, Sacramento, CA 95814. Comments may also be sent via e-mail to CEQA@saccounty.gov. For e-mailed comments, please include the project title in the subject line, attach comments in MS Word format, and include the commenter's name and U.S. Postal Service mailing address. All comments must be received by SCWA by 5 p.m. on October 13, 2026.

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AIA	Airport Influence Area
ALUCP	Airport Land Use Compatibility Plan
APE	Area of Potential Effect
ASR	Aquifer Storage and Recovery
BCE	before common era
bgs	below ground surface
BMP	Best Management Practices
BO	Biological Opinion
BSA	Biological Study Area
CAA	Federal Clean Air Act
CAAQS	California ambient air quality standards
CalEEMod	California Emissions Estimator Model
CAL FIRE	California Department of Forestry and Fire Protection
CAP	Climate Action Plan
CARB	California Air Resource Board
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CE	common era
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CGS	California Geological Survey
CHSC	California Health and Safety Code
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monixide
CPRR	Central Pacific Railroad

CRHR	California Register of Historical Resources
CRPR	California Rare Plant Rank
CWA	Clean Water Act
CWHR	California Wildlife Habitat Relationships System
CZMA	Coastal Zone Management Act
dBA	A-weighted decibels
DBP	disinfection byproducts
DOC	California Department of Conservation
DPS	distinct population segment
DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EFH	Essential Fish Habitat
EIR	Environmental Impact Report
EO	Executive Order
EPA	U.S Environmental Protection Agency
ESA	Federal Endangered Species Act
FEMA	Federal Emergency Management Agency
FHSZ	Fire Hazard Severity Zone
FMMP	Farmland Mapping and Monitoring Program
FP	Fully Protected
FPPA	Farmland Protection Policy Act
FTA	Federal Transit Authority
GEI	GEI Consultants, Inc.
GHG	greenhouse gases
GSP	Groundwater Sustainability Plan
HCP	Habitat Conservation Plan
hp	horsepower
IPCC	Intergovernmental Panel on Climate Change
IS	Initial Study
LRA	Local Responsibility Area
MBTA	Migratory Bird Treaty Act
mg/l	milligrams per litre
MLD	Most Likely Descendant
MMRP	Mitigation Monitoring and Reporting Program
MND	Mitigated Negative Declaration

MRP	Monitoring and Reporting Program
MRZ	Mineral Resource Zones
MT	metric tons
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NCIC	North Central Information Center
ND	Negative Declaration
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration Fisheries
NO_X	nitrogen oxides
NRCS	Natural Resource Conservation Service
NRHP	National Register of Historic Places
OHP	Office of Historic Preservation
PG&E	Pacific Gas and Electric Company
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
PM	particulate matter
PPU	Preserve Planning Unit
PRC	Public Resources Code
ROG	reactive organic gases
RWQCB	Regional Water Quality Control Board
SACOG	Sacramento County Association of Governments
SASb	South American Subbasin
SCADA	Supervisory Control and Data Acquisition
SCWA	Sacramento County Water Agency
SGMA	Sustainable Groundwater Management Act
SHTAC	Swainson's Hawk Technical Advisory Committee
SIP	State Implementation Plans
SLF	Sacred Lands File
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMUD	Sacramento Municipal Utility District
SO_2	sulfur dioxide
SR	State Route
SRF	State Revolving Fund

SSC	Species of Special Concern
SSHCP	South Sacramento Habitat Conservation Plan
SVAB	Sacramento Valley Air Basin
SVGB	Sacramento Valley Groundwater Basin
SVP	Society of Vertebrate Paleontology
SWCRB	State Water Resources Control Board
SWPPP	Storm Water Pollution Prevention Plan
TCR	Tribal Cultural Resources
TDS	total dissolved solids
UDA	Urban Development Areas
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VSWTP	Vineyard Surface Water Treatment Plant
WY	water year

Proposed Mitigated Negative Declaration

Project: Aquifer Storage and Recovery (ASR) Project at the Vineyard Surface Water Treatment Plant (VSWTP)

Lead Agency: SCWA

Project Description

CEQA Guidelines Section 15071 specifies that a Negative Declaration (ND) circulated for public review shall include:

a) A brief description of the project, including a commonly used name for the project, if any;

b) The location of the project, preferably shown on a map, and the name of the project proponent;

c) A proposed finding that the project will not have a significant effect on the environment;

d) An attached copy of the Initial Study (IS) documenting reasons to support the finding; and

e) Mitigation measures, if any, included in the project to avoid potentially significant effects.

Findings

An IS has been prepared under the California Environmental Quality Act (CEQA) to assess the project's potential effects on the physical environment and the significance of those effects. Based on the analysis in the IS and substantial evidence in the record, it has been determined that the proposed project would not have any significant adverse effects on the physical environment (impacts) after implementation of mitigation measures. This conclusion is supported by the following findings:

1. The proposed project would have no impacts on Agriculture and Forestry, Public Services, Recreation, and Wildfire.
2. The proposed project would have less-than-significant impacts on Aesthetics, Energy, Greenhouse Gas Emissions, Hazards and Hazardous Materials, Hydrology and Water Quality, Land Use and Planning, Noise, Population, Transportation, and Utilities and Service Systems.
3. The proposed project would have potentially significant impacts on Air Quality, Biological Resources, Cultural Resources, Geology and Soils, and Tribal Cultural Resources, but mitigation measures are proposed to avoid or reduce these impacts to less-than-significant levels.
4. The proposed project, with mitigation, would not make a cumulatively considerable incremental contribution to any significant cumulative impact.

An IS documenting the reasons supporting the finding is attached to this Mitigated Negative Declaration (MND). The following mitigation measures would be implemented by the SCWA to avoid, minimize,

rectify, reduce, eliminate, or compensate for potentially significant environmental impacts. Implementation of the mitigation measures presented in this IS would reduce the potentially significant environmental impacts of the proposed project to less-than-significant levels.

Mitigation Measure AIR-1: SMAQMD Basic Construction Emission Control Practices

- Water all exposed surfaces two times daily. Exposed surfaces include but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.
- Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered.
- Use wet power vacuum street sweepers to remove any visible track-out mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.
- Limit vehicle speeds on unpaved roads to 15 miles per hour.
- All roadways, driveways, sidewalks, and parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes [CRR, Title 13, sections 2449(d)(3) and 2485]. Provide clear signage that posts this requirement for workers at the entrances to the site.
- Provide current certificate(s) of compliance for CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation [CRR, Title 13, sections 2449 and 2449.1]. For more information contact CARB at 877-593-6677, doors@arb.ca.gov.
- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.

Timing: During construction.

Responsibility: SCWA

Mitigation Measure BIO-1: Conduct Worker Environmental Awareness Training.

To minimize potential effects of project construction on special-status wildlife, SCWA will ensure that an Environmental Awareness Program will be presented to all project personnel working in the field before project activities begin. The program will be presented by a qualified biologist with knowledge of special-status wildlife that could within the project area. The program will address each species biology and habitat needs; status of each species and their regulatory protections; and measures required to reduce impacts to the species during project construction. This training will be repeated on a yearly basis, as necessary.

Timing: Before construction

Responsibility: SCWA

Mitigation Measure BIO-2: Avoid and Minimize Impacts to Northwestern Pond Turtle and Its' Habitats.

- **Initial Ground Disturbance Timing**. Initial ground disturbance (including vegetation removal and geotechnical boring) in suitable upland habitat within 500 feet of aquatic habitat for northwestern pond turtle shall be minimized to greatest extent feasible during the brumation season (December through February), when adult turtles may be in torpor and particularly susceptible to equipment strikes. The target period for riparian vegetation removal in these areas shall be fall (September through November), to the greatest extent practicable, when potential for turtle strikes and direct impacts on other special-status species are lowest.

1. If vegetation removal or ground disturbance occurs outside the ideal timing for this species, a designated biological monitor will be present during all ground disturbance or vegetation removal activities. Disturbance activities will occur at a speed that allows the designated monitor to scan for turtles in brumation, nest, and avoid direct impacts.

2. **Direct Impact Avoidance**. Measures shall be implemented to minimize potential for heavy equipment to destroy northwestern pond turtle nests and to encounter hatchling turtles. Feasible measures may vary depending on site-specific circumstances and could include, but not be limited to:

    a. Minimizing heavy equipment operation in upland habitat within 500 feet of aquatic habitat in February and March, when hatchling turtles emerge from nests and travel to aquatic habitat.

    b. Placing artificial ground cover that prevents female turtles from excavating nests in most likely nesting areas where ground disturbing activities shall occur before the following hatchling turtle emergence period.

    c. Fencing most likely in nesting areas to exclude access by female turtles and/or enclose hatchlings after emergence. If active nests and hatchlings may be present, the fenced area shall be inspected daily by a qualified biologist and hatchling turtles shall be captured and relocated to suitable habitat at a pre-determined location.

3. **Monitoring**. A qualified biologist shall be present during initial ground disturbance, in-water work, and the hatchling emergence period to search for northwestern pond turtles and minimize encounters with heavy equipment.

4. **Stop Work if a Northwestern Pond Turtle is Observed in Ground Disturbing Area and Allow to Leave the Ground Disturbing Area on Their Own or Have Qualified Biologist Capture and Relocate.** If northwestern pond turtles or nests are observed on land within the project footprint during project activities, the contractor shall stop work within approximately 200 feet of the turtle, and a qualified biologist shall be notified immediately. If possible, the turtle shall be allowed to leave on its own and the qualified biologist shall remain in the area until the biologist deems his or her presence no longer necessary to ensure that the turtle is not harmed. Alternatively, with prior California Department of Fish and Wildlife (CDFW) approval, the qualified biologist may capture and relocate the turtle unharmed to suitable habitat at a pre-determined location.

5. **Unintentional Nests Uncovered**. If a northwestern pond turtle nest is unintentionally uncovered during project activities, work shall stop in the vicinity of the nest and appropriate next steps, depending on the circumstances, shall be determined by a qualified biologist. These may include fencing and buffering the nest and/or rescue, rehabilitation, and relocation of affected turtles.

   Timing: Before and during project activities

   Responsibility: SCWA

Mitigation Measure BIO-3a: Conduct Focused Surveys for Nesting Special-Status Birds and Avoid Impacts.

Nesting bird surveys listed below shall be required prior to all project activities including geotechnical investigations that occur within the nesting bird season, from February 1 through August 31.

1. **Conduct Pre-Project Activity Surveys for Active Nests of Special-Status Birds in Areas of Suitable Habitat.** If project activities that could affect suitable habitat for special-status birds cannot be conducted outside of the respective nesting seasons, pre-project activity surveys for nesting birds shall be conducted. Surveys of all potential nesting habitat in the area shall be conducted by a qualified biologist during the nesting season. Surveys shall be conducted within suitable nesting habitat that could be affected by project activities and shall include a minimum buffer of 250 feet for passerines and 1,000 feet for raptors (or larger area if required by established survey protocol) surrounding these areas. Where appropriate, pre-activity surveys shall be conducted according to established survey protocols or guidelines, including but not limited to the following:

   a. Tricolored Blackbird Survey Methods (Airola *et al.* 2024)

   b. Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (Swainson's Hawk Technical Advisory Committee [SHTAC] 2000). One early-season survey shall be conducted in the period prior to the start of project's initiation. This survey should be conducted for a 0.5-mile radius around all project activities, and if nesting activity is identified within the 0.5-mile radius, consultation is required.

   c. Staff Report on Burrowing Owl Mitigation (California Department of Fish and Game [CDFG] 2012).

   If no established survey protocol exists, the qualified biologist shall complete surveys no more than five (5) days prior to the start of the activity and that surveys are repeated if activities lapse for a period of seven (7) days or longer. If no nesting birds are detected during pre-activity surveys, no additional mitigation measures are required.

   Timing: Before and during project activities

   Responsibility: SCWA

Mitigation Measure BIO-3b: If Avoiding Project-related Effects on Nesting Special-status Birds is Infeasible, Implement Minimization Measures.

If the measures described above in Mitigation Measure BIO-3a have been completed and avoiding effects on nesting special-status birds is infeasible, the measures described below shall be implemented to minimize effects of the project on nesting special-status birds, such that there is no direct loss of individuals of these species or project-related nest failure.

1. **Establish, Maintain, and Monitor Buffers Around Active Nest.** If any active nests or behaviors indicating active nests are observed, appropriate-sized avoidance buffers shall be established around the nest sites to avoid nest failure resulting from project activities. The size and shape of the buffer shall depend on the species, nest location, nest stage, and specific project activities to be performed while the nest is active. The buffer shall be expanded if the birds are exhibiting agitated behavior or the buffers may be adjusted (reduced) if a qualified biologist determines it would not be likely to adversely affect the nest. If required, buffers shall be marked in the field by a qualified biologist using temporary fencing, high-visibility flagging, or other means that are equally effective in clearly delineating the buffer. Standard nest buffer sizes for migratory and common bird species include 250 feet for passerine species and 1,000 feet for raptors, such as *Buteos*. Nesting special-status avian species, such as Swainson's hawk, shall have a nest buffer up to a half a mile, while burrowing owls would receive a buffer of 1,640 feet.

2. **Monitoring Nest Activity**. Nest monitoring shall be conducted by a qualified biologist, either continuously or periodically during work to confirm that project activity is not resulting in detectable adverse impacts on nesting birds or their young. A determination on monitoring frequency shall be based on environmental conditions, such as physical barriers, project activities, and species tolerance to project activities. The qualified biologist shall be empowered to stop all project activities that, in the biologist's opinion, threaten to cause unanticipated and/or unpermitted adverse effects on special-status wildlife (e.g., nest abandonment). If project activities are stopped, the qualified biologist shall consult with CDFW to determine appropriate measures that shall be implemented to avoid adverse effects.

3. **Work Within Established Buffer Zones**. No project activity shall commence within the buffer areas until a qualified biologist has determined that the young have fledged or the nest site is otherwise no longer in use. If work must be conducted within a stated buffer zone a qualified biologist shall provide continuous monitoring to confirm that the project activity is not resulting in detectable adverse impacts.

   Timing: Before and during project activities

   Responsibility: SCWA

Mitigation Measure BIO-4: Comply with the South Sacramento Habitat Conservation Plan

During project design and construction, SCWA shall comply with all applicable Avoidance and Minimization Measures identified within the SSHCP, as well as pay fees to mitigate impacts to species and habitat prior to construction.

Timing: Before and during construction.

Responsibility: SCWA

Mitigation Measure GEO-1: Conduct Construction Personnel Education, Stop Work if Paleontological Resources are Discovered, Assess the Significance of the Find, and Prepare and Implement a Recovery Plan as Required.

SCWA and its construction contractor(s) will implement the following measures to minimize potential adverse effects on previously unknown, potentially unique, and scientifically important paleontological resources:

- Before the start of any earthmoving activities, SCWA will retain a qualified paleontologist or archaeologist to train all construction personnel involved with earthmoving activities that would disturb at least 5 vertical feet in areas of sensitive geologic deposits, including the site superintendent, regarding the possibility of encountering fossils, the appearance and types of fossils likely to be seen during construction, and proper notification procedures should fossils be encountered.
- If paleontological resources are discovered during earthmoving activities, the construction crew will immediately cease work in the vicinity of the find and notify SCWA. SCWA will retain a qualified paleontologist to evaluate the resource and prepare a recovery plan in accordance with Society of Vertebrate Paleontology (SVP) guidelines (SVP 2010). The recovery plan might include but would not be limited to, a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations in the recovery plan that are determined by SCWA to be necessary and feasible will be implemented before construction activities can resume at the site where the paleontological resources were discovered.

Timing: Before and during ground-disturbing activities.

Responsibility: SCWA and its construction contractor(s).

Mitigation Measure TCR-1: Inadvertent Discovery of Tribal Cultural Resources

In the event that human remains are discovered in any location other than a dedicated cemetery, work shall be halted, and the County Coroner contacted. For all other potential tribal cultural resources [TCRs], archaeological, or cultural resources discovered during project's ground disturbing activities, work shall be halted until a qualified archaeologist and/or tribal representative may evaluate the resource.

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

2. **Unanticipated tribal cultural resources**. In the event of an inadvertent discovery of cultural resources (excluding human remains) during construction, all work must halt within a 100-foot radius of the discovery. A qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeology, shall be retained at the Applicant's expense to evaluate the significance of the find. If it is determined due to the types of deposits discovered that a Native American monitor is required, the Guidelines for Monitors/Consultants of Native American Cultural, Religious, and Burial Sites as established by the Native American Heritage Commission shall be followed, and the monitor shall be retained at the Applicant's expense.

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

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

Timing: During construction.

Responsibility: SCWA

Certification by Those Responsible for Preparation of This Document.

The Lead Agency (SCWA) is responsible for the preparation of this MND and the incorporated IS. I believe this document meets the requirements of CEQA and provides an accurate description of the proposed project, and that the lead agency has the means and commitment to implement the project design measures that will ensure the project does not have any significant, adverse effects on the physical environment. I recommend approval of this document.

_____ _____

Matt Satow, Director of Water Resources Date

*(*To be signed upon completion of the public review process and preparation of a final project approval package including consideration of all comments, if any, on the environmental document and any necessary modifications to project design measures.)*

Initial Study

1. Introduction

The SCWA has prepared this Initial Study (IS) and proposed Mitigated Negative Declaration (MND) in compliance with the California Environmental Quality Act (CEQA) and Federal standards (CEQA plus) implemented under the State Water Resources Control Board (SWRCB) for the Clean Water State Revolving Fund (SRF) Program, to address the potentially significant and significant environmental impacts of the proposed Aquifer Storage and Recovery (ASR) Project (project or proposed project) at the SCWA Vineyard Surface Water Treatment Plant (VSWTP) in Sacramento County, California. SCWA is the lead agency under CEQA. U.S Environmental Protection Agency (EPA) is the lead Federal agency because SCWA will receive funding from a federal earmark grant.

To satisfy specific CEQA requirements for environmental review of the proposed project, the IS/MND includes:

The IS; and
The Proposed MND.

After the required public review of this document is complete, the SCWA will consider the IS/MND, all comments received on the IS/MND, and the entirety of the administrative record for the project and decide whether to adopt the Proposed MND, adopt and incorporate into the proposed project the mitigation measures identified in the IS, adopt a Mitigation Monitoring and Reporting Program (MMRP), and approve the proposed project. The MMRP will be prepared after public review of the IS/MND is complete.

1.1. Purpose of the IS

CEQA requires State and local agencies to consider the environmental impacts of projects they propose to carry out or over which they have discretionary authority before implementing or approving those projects. The IS is a tool used to evaluate a project's effect on the physical environment. The IS considers all phases of a project (planning, implementation, and operation) when evaluating environmental impacts. The IS responses to checklist questions informs the lead agency on the type and severity (significance) of a project's impact, facilitates identification of mitigation measures and design modifications to avoid or lessen those significant impacts, and guides decision on whether to prepare an Environmental Impact Report (EIR) or a Negative Declaration (ND).

If a project, either individually or cumulatively, is found to have a potentially significant or significant impact, an EIR must be prepared (CEQA Guidelines, California Code of Regulations [CCR] Section 15064[a]). If the agency determines impacts would be less than significant, or that mitigation measures would reduce impacts to a less than significant level, a ND or MND can be prepared. In the event an EIR is required, the findings would be used to focus the EIR contents.

In order to foster public involvement and informed decision-making, CEQA requires an IS to be circulated for review and comment by interested agencies and stakeholders. Comments on the project's environmental impacts must be considered by a lead agency during the decision to approve or deny the project.

1.2. Summary of Findings

Chapter 3 – Environmental Checklist contains the analysis and discussion of potential environmental impacts of the proposed project. Based on the issues evaluated in Chapter 3, the following was determined:

The proposed project would result in no impacts on the following issue areas:

- Agriculture and Forestry Resources
- Public Services
- Recreation
- Wildfire

The proposed project would result in less-than-significant impacts on the following issue areas:

- Energy
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Land Use and Planning
- Noise
- Population and Housing
- Transportation
- Utilities and Service System

The proposed project would result in less-than-significant impacts on the following issue areas *with implementation of* mitigation identified in the IS/MND:

- Air Quality
- Biological Resources
- Cultural Resources
- Geology and Soils
- Tribal Cultural Resources

1.3. Document Organization

This document is divided into the following three key sections required under CEQA:

Notice of Intent to Adopt a Proposed MND. The Notice of Availability and Intent to Consider Adoption of a Proposed MND for the proposed project provides notice to responsible and trustee agencies and the public of the availability of this IS/MND and of SCWA's intent to consider adopting an MND for the proposed project.

Proposed MND. The MND, which precedes the presentation of the IS analysis in this document, briefly summarizes the proposed project, summarizes the environmental conclusions, and identifies mitigation measures that would be implemented in conjunction with the proposed project.

The Initial Study, referred to as "IS," constitutes the remaining portion of this document and includes an introduction, project description, environmental checklist, references cited, report preparers, and distribution list, as briefly summarized below:

Chapter 1 – Introduction. This chapter describes the purpose of the IS/MND, summarizes findings, and describes the organization of this IS/MND.

Chapter 2 – Project Description. This chapter describes the project location and background, project needs and objectives, project characteristics, construction activities, project operations, and discretionary actions and approvals that may be required.

Chapter 3 – Environmental Checklist. This chapter presents an analysis of environmental issues identified in the CEQA environmental checklist and determines whether project implementation would result in a beneficial impact, no impact, less-than-significant impact, less-than-significant impact with mitigation incorporated, potentially significant impact, or significant impact on the physical environment in each topic area. Should any impacts be determined to be potentially significant or significant, an EIR would be required. However, for this proposed project, mitigation measures have been incorporated as needed to reduce all potentially significant and significant impacts to a less-than-significant level.

Chapter 4 – Federal Cross-Cutting Environmental Regulations Evaluation. To assist in compliance with the Federal environmental requirements for the SWRCB's Clean Water SRF Program, this chapter provides analysis pertinent to several Federal cross-cutting regulations.

Chapter 5 – References. This chapter lists the references used to prepare this IS/MND.

Chapter 6 – Report Preparers. This chapter identifies report preparers who contributed to the preparation of this document.

2. Project Description

2.1. Introduction

The proposed project includes the conversion of one existing inactive supply well (PW-1) at the VSWTP to ASR and the construction of associated pipelines to facilitate water conveyance. Additionally, the project includes four future ASR wells and associated pipelines, as well as the conversion of three existing off-site active supply wells (the Excelsior wells) to ASR. PW-1 and the associated pipeline, as well as one Excelsior well (03), are described and analyzed at a project level, while the future ASR wells, pipelines, and conversion of the remaining existing Excelsior wells (01 and 02), are described and analyzed at a program level of detail because they are still early in the planning phase and substantial information is not currently available to accurately describe impacts at a project level of analysis.

2.2. Project Background

SCWA produces drinking water (potable water) diverted from the Sacramento River at its VSWTP. SCWA is looking to increase the use of available surface water rights at the VSWTP by using ASR wells to recharge potable water into an aquifer during periods of high river flows (winter) and/or during above normal to wet water years (WYs) when surface water supply may be available. This potable water could be stored in the aquifer until the following dry season and/or during below normal to critical WYs. To inform the future development of ASR wells at the VSWTP, an evaluation of local groundwater conditions was described in a Technical Report (GEI Consultants, Inc. [GEI] 2021), which was included in the permit application to RWQCB for an ASR pilot study. Thereafter, a 6.5-month ASR pilot study was conducted during 2023 and 2024. The purpose of the pilot study was to evaluate the hydraulic response of the aquifer to ASR operations and changes in water quality constituents. The methodology and results of the pilot study are summarized below and are provided in more detail in the Technical Addendum for the VSWTP ASR Pilot Study (GEI 2024).

The results of the pilot test show the drinking water is suitable as recharge water for long-term ASR applications (GEI 2024). The mixed-cation, bicarbonate character of the recharge water appears compatible with the sodium-dominated, mixed-cation, bicarbonate groundwater. The concentrations of total dissolved solids (TDS) were 160 and 170 milligrams per liter (mg/l) in the native groundwater but varied between 80 and 140 mg/l in the recharge water. The lower TDS of the recharge water is beneficial to an ASR project.

The static groundwater level at PW-1 was 113 feet below ground surface (bgs) prior to the pilot test in late September 2023 and rose to 83 feet bgs at the end of the third recharge period (25 feet of drawup). The static groundwater level was 110 feet bgs after the test in early April 2024. This 3-foot water level rise is related to seasonal water level recovery in the region and not related to the pilot test because the pilot test recovered more water than was recharged at PW-1. An evaluation of hydraulic capacity at PW-1 indicates a water level rise of 50 to 60 feet at PW-1 for a recharge rate of 2,000 gallons per minute during a 6-month recharge period. This recharge effort would add over 1,600 acre feet of water to the

aquifer system. Some treatment will likely be needed prior to distribution as potable water due to some mobilization of arsenic and an increase in the pH of recovered water.

Arsenic was not detected in PW-1 or the nearby monitor well prior to the pilot test, but during the pilot test it was detected in six of 12 samples from PW-1 and seven samples at the nearby monitor well. One sample from the monitor well exceeded the applicable drinking water standard for arsenic while all other samples were less than the standard.

The field pH of the native groundwater was 7.8 at PW-1 and 6.6 at the nearby monitoring well, and the recharge water pH varied from 6.2 to 8.5 (mean: 7.8). The field pH of the recovered water increased to values of 8.6 to 8.9 in 23 of 35 days of recovery pumping, particularly during the third period (22 out of 28 days). Discharge limitations require pH to measure between 6.5 and 8.5 to protect fish and wildlife. This increase is likely related to the dissolution of sulfide minerals (e.g., pyrite, arsenopyrite) in the aquifer by the lower pH, oxygenated recharge water.

Disinfection byproducts (DBPs) were present in the recharge water, including trihalomethanes and haloacetic acids, but were not detected in native groundwater. DBPs are produced when the disinfectant (chlorine) reacts with organic matter in the water. Total trihalomethanes and haloacetic acids concentrations are below the applicable drinking water standard. These DBP were not detected in the final sample of recovered water, indicating that the recharged water was removed from the aquifer by the end of the pilot test.

2.3. Project Location

The project site is located within the Sacramento Valley - South American subbasin (SASb). The majority of the project would be located at the VSWTP, which sits at the intersection of Florin and Knox Roads, in eastern Sacramento County (see **Figures 2-1**). However, the Excelsior wells are located less than 1 mile east of the VSWTP, as shown in **Figure 2-1**. Parcel numbers for the properties include 066-0060-001-0000 for the VSWTP, 067-0110-078-0000 for Excelsior Well 01, 067-0110-079-0000 for Excelsior Well 02, and 066-0060-013-0000 for Excelsior Well 03.

2.4. Project Components

2.4.1. PW-1 and Associated Pipeline

Conversion of PW-1 for ASR use would include installation of a permanent 100 horsepower (hp) pump, electrical power and control panels, and 12-inch-diameter conveyance piping and valves to connect to the existing potable water pipeline within the roadway of the VSWTP (see **Table 2-1**). Electrical power would be provided by Sacramento Municipal Utility District (SMUD).

An ASR valve would be included as part of the pump column and would be located just above the pump along with a control panel at the surface. The ASR valve eliminates the potential entrainment of air in the recharge water by allowing the column to be completely full (and air vented) before the start of a recharge period. The valve system is operated via a pneumatic or hydraulic system. A water level sensory system would prevent recharge water from overtopping the wellhead. The sensor system would

include set points for warning of high-water level and to terminate operations. Additionally, the well casing would be extended several feet higher to be compatible with a concrete pedestal around the well

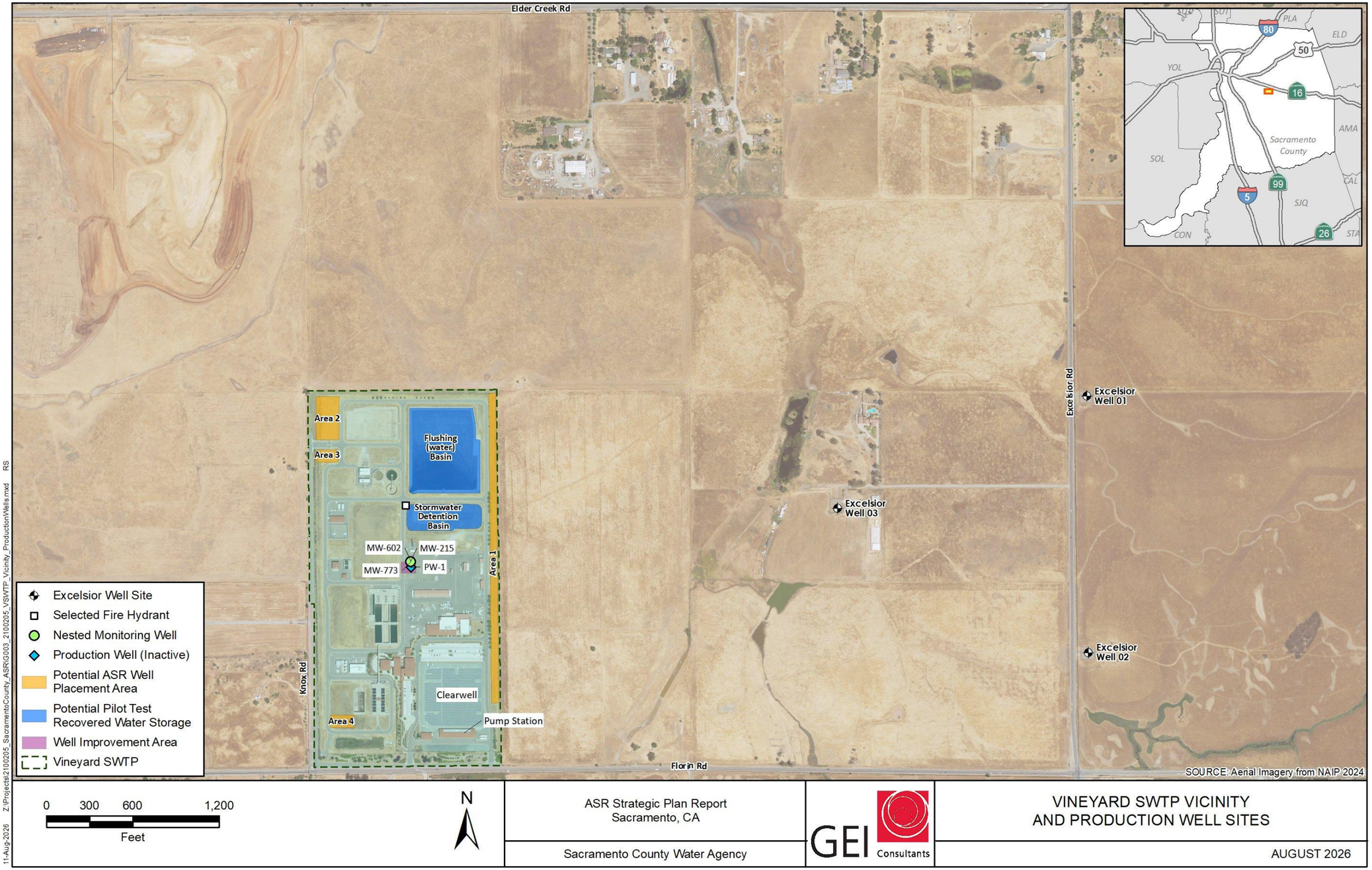


Figure 2-1. Project Components

along with a concrete slab. Rehabilitation efforts for PW-1 were completed during 2022 prior to the pilot test. Installation of the new 12-inch-diameter conveyance piping would require a 3-foot-wide by 35-foot-long trench from the existing PW-1 well to the nearby roadway (VSWTP Road B), as shown on **Figure 2-2**. An aboveground pipeline ASR loop at the well head will facilitate recharge and backflush water to be discharged to the gravel-covered ground at the well, which drains to the stormwater retention basin. The ASR loop will include various components including several valves to control and limit the direction and magnitude of flow, separate flow meters on the recharge piping to the well and on the discharge piping from the well, pressure gauges, and sampling ports, as well as supports for this above ground piping.

The discharge piping would include a diversion for backflush water to be discharged to ground. Backflush pumping is conducted periodically (e.g., weekly, twice monthly) to remove fine particles that might accumulate in the filter pack from the recharge process. Backflushing includes several short cycles of pumping during long recharge periods – 10 minutes of pumping and 10 minutes of no pumping repeated four times.

2.4.2. Excelsior Well

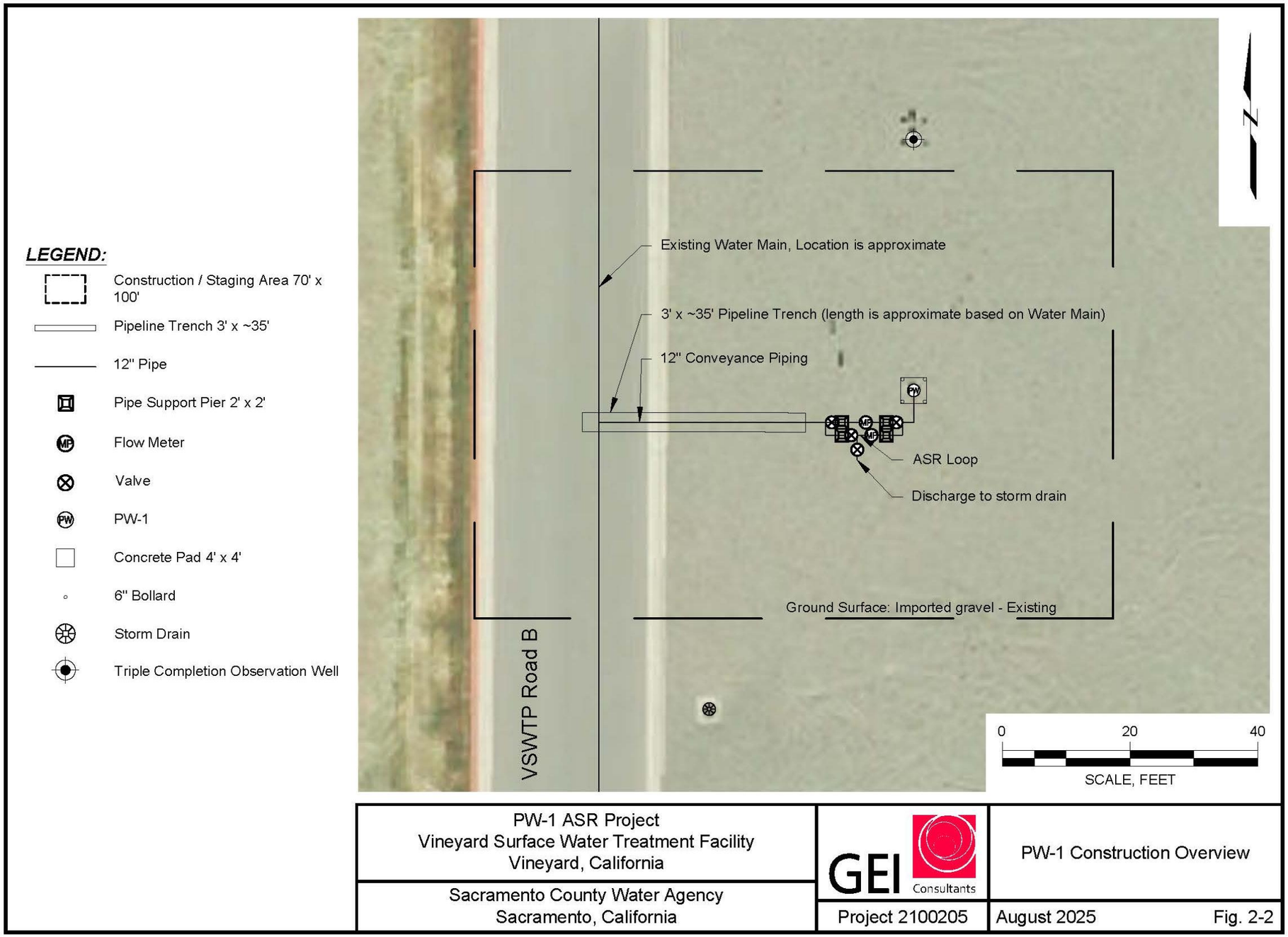
Three Excelsior wells are currently operational and have been supplying raw water for more than 20 years. Each well, along with above-ground piping and controls, is located inside an 800 square foot cinder block building surrounded by an 8,000 to 9,000 square foot pad of asphalt pavement and a perimeter chain-link fence. **Figure 2-3** illustrates the well locations and well pads. Excelsior well numbers 01 and 02 are accessed via paved driveways from Excelsior Road, and well number 03 is accessed via a gravel drive.

One of these three wells (03) could be selected as an effective means to initiate ASR operations instead of improving PW-1. Implementation of ASR operations would require the removal of the existing pump; a video survey of the downhole conditions; rehabilitation to remove scaling and biomatter from the well screen, biomatter from the filter pack and well screen, fine sediments, and any accumulations at the bottom of the well; a second video survey to document post-rehabilitation conditions; and the reinstallation of the pump along with an ASR valve at the top of the pump bowls. The existing above-ground pipeline would be reconfigured to include an ASR loop to facilitate backflushing. The ASR loop would be parallel to the piping and consist of new piping, such as either an 8-foot by 8-foot square or a 2-foot by 10-foot rectangle. All new piping would be constructed within the existing well enclosure on the existing asphalt pad. The loop would include meters for recharge flow and for pumping flow and several valves (control and check) to control and limit the direction and magnitude of flow. The existing below-ground pipeline would not be disturbed.

2.5. Program Components

2.5.1. Future ASR Wells and Pipelines

Construction of each future ASR well would include the use of an approximately 400 square foot area with a 100 square foot operational area remaining at each well after construction is complete. Well depths would be approximately 700 feet and would be completed with 18-inch-diameter stainless steel



BUNCH, JUSTIN B:\Working\SACRAMENTO COUNTY WATER AGENCY\2100205 ASR Well Program Study - Phase 1\Phase 3 ASR Implementation\CEQA\CAD\Figure 2-2.PW-1 Construction Overview.dwg - 12/18/2025

Figure 2-2. PW-1 Construction Overview

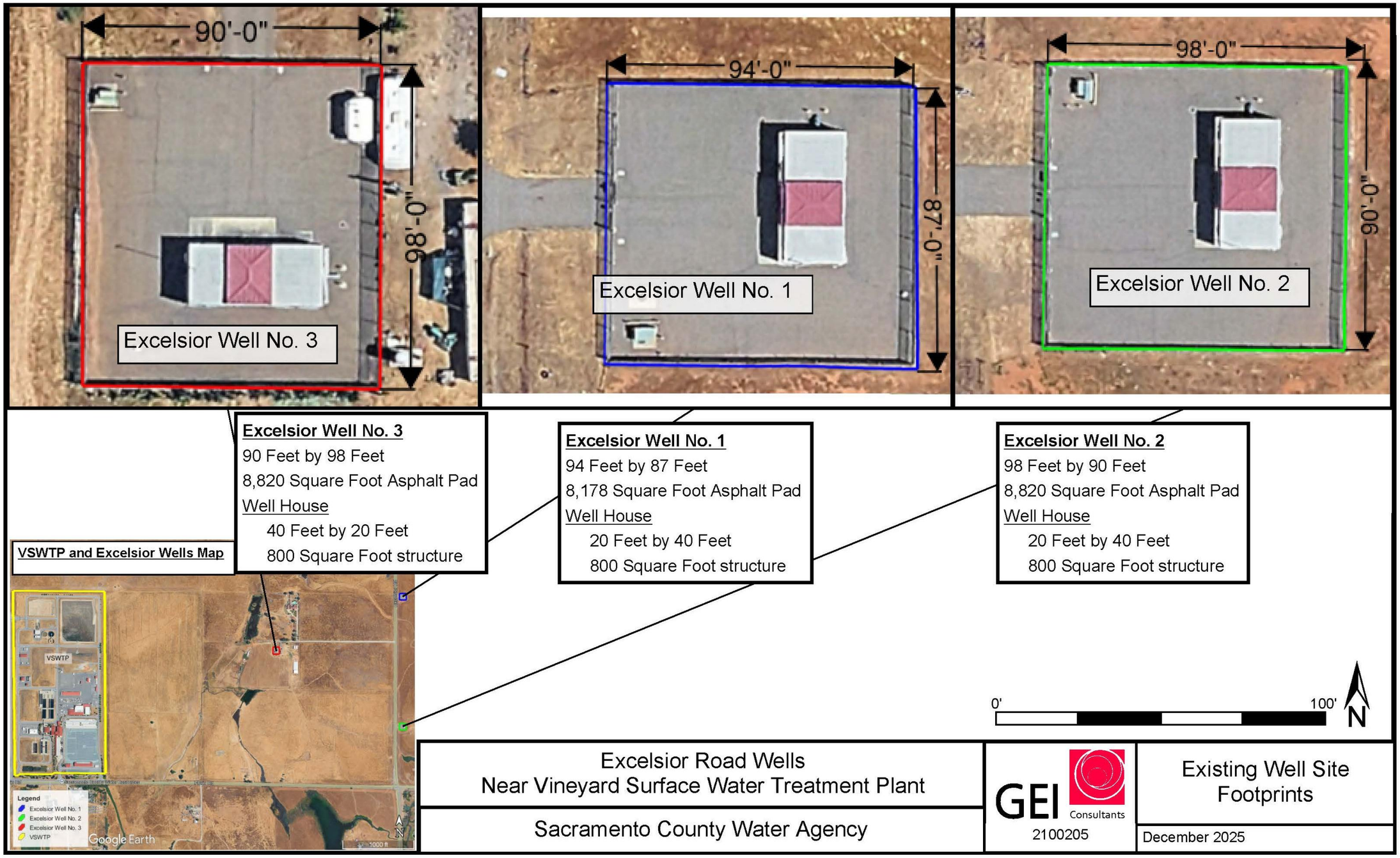


Figure 2-3. Excelsior Well Details

casings and screens. Constructing each future ASR well would include the use of a reverse rotary drilling rig, water truck, pipe truck, and support vehicles (see **Table 2-2**). After installation of each future ASR well, a pump rig would be used to set a 100 hp pump and the ASR control valve, as described above.

Additionally, a flow control valve would be installed on the pipe column above the submersible pump to the deepest anticipated depth of groundwater in the well during pumping. Standard construction equipment would be used to install a total of 5,000 linear feet of 12-inch-diameter piping looping around the VSWTP perimeter (see **Table 2-2**). The trench would be 3-feet-wide by 5-feet-deep. The pipeline would deliver potable water from the VSWTP Clearwell to the ASR wells and convey recovered water back to the Clearwell. Project ASR wells would be integrated into VSWTP's existing Supervisory Control and Data Acquisition (SCADA) control system for remote operation and monitoring of groundwater levels, flow rates, and pressure.

Backflushing would occur via an ASR loop, which would allow this waste groundwater to be diverted from the distribution system, as discussed above. Backflushing may occur weekly during the recharge period but is dependent on the characteristic of each well and the recharge water.

2.5.2. Excelsior Wells

ASR operations at the two remaining Excelsior wells (01 and 02) would require the same effort as described above for Excelsior Well 03. Implementation would be phased in one well at a time over a 5- to 10-year period.

2.6. Project Implementation

2.6.1. Construction

The project-level components would be constructed starting in 2028. Construction of PW-1 and associated pipelines and the Excelsior Well 03 would take approximately 2 weeks. Construction of the future wells and remaining Excelsior wells would occur in future years (approximately 5 to 10 years) and would require 4 to 6 weeks per well, and up to 2 weeks for pipeline installation.

The construction of new ASR wells would occur on a 24-hour basis during the drilling operations and during the installation of screen, casing, and backfill materials (filter pack, bentonite clay, and sand-cement grout). Development of each ASR well would occur during a standard construction day while aquifer testing would require 24-hour operations.

Pipeline construction would typically occur between 6:00 a.m. and 8:00 p.m., Monday through Friday. If work occurs on Saturdays, work activities would occur between 7:00 a.m. and 8:00 p.m. (Sacramento County Code 2024). Workdays would be limited to up to 14 hours per weekday and 13 hours on weekends, 6 days per week. Nighttime work would not be required for the pipeline. Staging would occur within the designated construction footprint. Following the completion of ground disturbing activities, all construction-related equipment would be removed, and the project site would be restored to approximate pre-construction conditions.

Ground Disturbing Equipment and Personnel

Proposed ground disturbing activities, equipment mix and estimated usage durations, maximum number of workers required, and import and export quantities are summarized below in **Tables 2-1 and 2-2**. The number of site personnel would vary depending on the level of project activities during the seasonal conditions. Site workers would most likely come from the local workforce in the greater Sacramento region, including neighboring counties. All excavated materials would be reused onsite.

Table 2-1. Near Term Ground Disturbance Activity Associated with PW-1 or an Excelsior Well

Project Activity	Anticipated Types of Equipment and Number of Pieces	Anticipated Use Duration (days)	No. of Workers Required	Import Quantity (cubic yards)	Excavation Quantity (cubic yards)
Pump and/or ASR Valve Installation	Pump crane, flatbed trailer or truck for pump column, pickup truck (2)	2	3	0	0
Excavation and Trenching	Backhoe, dump truck, shoring, crane, pickup truck (2)	3	2	0	35
Piping and Bedding	Crane, pickup truck (2)	3	4	13	0
Backfill and Compaction	Backhoe, dump truck, compactor, pickup truck (2)	3	3	22 reuse from excavation if suitable	0
Surface Restoration and Paving	Paver, Dump truck, pickup truck	2	2	3.5	0

Source: GEI, 2025

Table 2-2. Future Term Ground Disturbance Activity Associated with Future ASR Wells and Remaining Excelsior Wells

Project Activity	Anticipated Types of Equipment and Number of Pieces	Anticipated Use Duration (days)	No. of Workers Required	Import Quantity (cubic yards)	Excavation Quantity (cubic yards)
Installation of New ASR Well	Reverse-rotary drilling rig, flatbed truck for drill rods, drill cuttings separation tank system, equipment trailer, backhoe, frac tanks (2), pickup trucks (2)	21 per well	3	0	
Development and Testing of ASR Well	Pump rig, test pump, discharge piping	14 per well	2	0	0
Excavation and Trenching	Backhoe, dump truck, shoring, crane, pickup truck (2)	25	2	0	2,900
Piping and Bedding	Crane, pickup truck (2)	25	4	1,100	0
Backfill and Compaction	Backhoe, dump truck, compactor, pickup truck (2)	25	3	1,800 reuse from excavation if suitable	0
Surface Restoration and Paving	Paver, Dump truck, pickup truck	22	2	500	0

Source: GEI, 2025

2.6.2. Operation

Potable water will be discharged into the ASR wells during periods when surplus water is available. This recharge could be conducted at any time during the year but would typically be conducted during the winter in above normal to wet WYs. The well would be backflushed periodically (twice monthly) to remove potential build-up of fine particulate matter, which can reduce the permeability of the aquifer. Water would be stored in the aquifer until summer or below normal to critical WYs, when the water would be withdrawn. When groundwater is withdrawn from an aquifer, it is pumped into the existing distribution system with the addition of a disinfectant, typically a chlorine product. Operation would include routine collection of samples of recharge water and recovered water for laboratory analysis to comply with requirements of the regulatory agencies, as discussed below. Groundwater levels would be monitored via the SCADA system to ensure levels do not exceed specific upper limits during recharge periods, as well as during recovery pumping periods.

2.7. Regulatory Requirements, Permits, and Approvals

As the CEQA lead agency, SCWA has the principal responsibility for approving and carrying out the proposed project and for ensuring that CEQA requirements and all other applicable regulations are met. Other permitting agencies that have permitting approval or review authority over portions of the proposed project are listed below:

- Central Valley Regional Water Quality Control Board (RWQCB), Region 5: Implementation of requirements for Water Quality Order 2012-0010-DWQ, General Waste Discharge Requirements for ASR Projects That Inject Drinking Water into Groundwater, including the Monitoring and Reporting Program (MRP).
- RWQCB: Implementation of Waste Discharge Requirements for Limited Threat Discharges to Surface Water, Order R5-2022-0006-03 under National Pollutant Discharge Elimination System CAG995002
- SWRCB, Division of Drinking Water: Amendment of existing Domestic Water Supply Permit (01-09-21-PER-008) for Public Water System No. 3410029 (SCWA – Laguna/Vineyard)
- Sacramento County Environmental Management Department: Permit to modify an existing well, install a new well, or to install/repair a pump
- South Sacramento Habitat Conservation Plan (SSHCP): Authorization from Environmental Coordinator to implement covered activities with implementation of avoidance minimization measures.

2.7.1. CEQA Plus Requirements

This IS/MND has been prepared in accordance with the CEQA-Plus requirements of the EPA to fulfill the requirement of potential Federal funding partners to comply with National Environmental Policy Act (NEPA). The CEQA-Plus requirements are intended to supplement CEQA and the CEQA Guidelines with specific requirements for environmental documents. They are not intended to supersede or replace CEQA Guidelines. See Chapter 4 “Federal Cross-Cutting Environmental Regulations Evaluation” for more further information and analysis.

3. Environmental Checklist

Table 3-1. Project Information

1. Project title:	ASR Project at the VSWTP
2. Lead agency name and address:	SCWA and EPA
3. Contact person and phone number:	Mitra Im; 916-874-5039
4. Project location:	The majority of the project would be located at the VSWTP, which sits at the intersection of Florin and Knox Roads, in eastern Sacramento County. The Excelsior wells are located less than one mile east of the VSWTP. The project site is located within the Sacramento Valley - SASb.
5. Project sponsor's name and address:	Same as above.
6. General plan designation:	General Agriculture (20 acres)
7. Zoning:	General Agriculture (160, 80, 40, and 20 acres)
8. Description of project: (Describe the whole action involved, including but not limited to later phases of the project, and any secondary, support, or off-site features necessary for its implementation. Attach additional sheets if necessary.)	The proposed project includes the conversion of one existing, inactive supply well (PW-1) at the VSWTP to ASR, and construction of associated pipelines to facilitate water conveyance. Additionally, the project includes four future ASR wells and associated pipelines, as well as the conversion of three existing off-site active supply wells (the Excelsior wells) to ASR.
9. Surrounding land uses and setting: Briefly describe the project's surroundings:	Open space and agriculture.
10. Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)	CVRWQCB, SWRCB, Sacramento County.
11. Have California Native American tribes traditionally and culturally affiliated with the project area requested consultation pursuant to PRC Section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to TCR, procedures regarding confidentiality, etc.? **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 TCR, and reduce the potential for delay and conflict in the environmental review process. (*See* PRC Section 21080.3.2.) Information may also be available from the California Native American Heritage Commission's (NAHCs) Sacred Lands File (SLF) per PRC Section 5097.96 and the California Historical Resources Information System administered by the California Office of Historic Preservation (OHP). **Please also note** that PRC Section 21082.3(c) contains provisions specific to confidentiality.	Yes. See Section 3.18 "Tribal Cultural Resources."

3.1. Aesthetics

Except as provided in PRC Section 21099, would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
1a. Have a substantial adverse effect on a scenic vista?				yes	
1b. Substantially damage scenic resources, including but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?				yes	
1c. In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from a 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?			yes		
1d. Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?			yes		

3.1.1. Environmental Setting

The majority of the proposed project would occur at the VSWTP, located at the intersection of Florin Road and Knox Road in eastern Sacramento County. The VSWTP is situated within a predominantly rural and agricultural landscape, with the surrounding land use consisting primarily of open fields, fallow agricultural lands, and scattered rural residences, with limited mature tree cover. The Excelsior wells, located east of the VSWTP along Excelsior Road, are situated within a similar agricultural setting characterized by barren fields and scattered parcels of irrigated crops. The flat terrain and sparse vegetation in the area allow for broad, open views. Existing built features within the viewshed include the VSWTP facilities, scattered farm buildings, and rural roadways. There are no State or County designated scenic highways in the immediate vicinity of the project site. The nearest designated scenic highways are State Route (SR) 160 and South River Road along the Sacramento River, approximately 10 miles west of the project site (Caltrans 2015, 2018). Public viewpoints in the project area are generally limited to local roads, such as Florin Road, Knox Road, and Excelsior Road. There are no scenic vistas or scenic resources in the vicinity of the project site (County of Sacramento 2010).

3.1.2. Discussion

a) Have a substantial adverse effect on a scenic vista?

A scenic vista is generally defined as an expansive view of highly valued landscape observable from a publicly accessible viewpoint. In the project vicinity, publicly accessible viewpoints are limited to public roadways. There are no scenic vistas in the vicinity of the project site and the project site's flat topography does not provide scenic views in the immediate area. The project would have **no impact**.

b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State scenic highway?

There are no scenic resources or designated scenic highways in the vicinity of the project site. The project would have **no impact**.

c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?

Construction of the proposed project would occur within the existing treatment plant facilities, where public views are limited, and at developed well sites. Above ground project features include new well heads, segments of above ground pipelines, though most would be buried underground, and other appurtenant facilities. The aboveground project features would appear similar to the existing surrounding infrastructure. During construction, heavy construction vehicles and equipment would be partially visible from nearby roads but would be obscured by the perimeter wall and fencing and existing buildings. However, construction activities would be temporary and would not be substantially different from existing conditions due to nearby agricultural operations. Therefore, due to the project component's similar visual characteristics to the existing features, the short-term duration of construction activities, and lack of substantial visual quality in the project area, this impact would be **less than significant**.

d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

Implementation of the project does not include new permanent lighting. The majority of the proposed project's construction activities would occur during daytime hours, and all proposed project features would use construction materials similar to existing nearby infrastructure. Construction of the future ASR wells would require 24-hour work to complete drilling operations and during the installation of screen, casing, and backfill materials. However, this work would occur within the VSWTP, which is not accessible to the public and has limited visibility outside of the VSWTP boundaries. Therefore, temporary construction lighting would be required during construction of the new wells, however, due to the lack of public views, it would not create new sources of substantial light or glare. This impact would be **less than significant**.

3.2. Agriculture and Forestry 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, as updated) prepared by the California Department of Conservation (DOC) 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 (CAL FIRE) 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:

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
2a. 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 (FMMP) of the California Resources Agency, to non-agricultural use?				yes	
2b. Conflict with existing zoning for agricultural use, or a Williamson Act contract?				yes	
2c. Conflict with existing zoning for, or cause rezoning of, forest land (as defined in PRC Section 12220(g)), timberland (as defined by PRC Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?				yes	
2d. Result in the loss of forest land or conversion of forest land to non-forest use?				yes	
2e. 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?				yes	

3.2.1. Environmental Setting

Important Farmland

The California DOC Farmland Mapping and Monitoring Program (FMMP) identifies lands that have agricultural value, and DOC maintains a statewide map of agricultural lands in its Important Farmland Inventory System (DOC 2004). The Important Farmland Inventory System classifies land based upon its productive capabilities, which is based on many characteristics, including fertility, slope, texture, drainage, depth, salt content, and availability of water for irrigation. Farmlands are divided into the following categories: Prime Farmland; Farmland of Statewide Importance; Unique Farmland; Farmland of Local Importance; Grazing Land; Urban and Built-up Land; and Other Land.

The project area is zoned for general agriculture (County of Sacramento 2011). The VSWTP is designated as urban and built-up land, the land immediately east of the VSWTP is designated as Farmland of Local Importance, and the Excelsior Wells and surrounding land are designated as grazing land on maps prepared for the FMMP (DOC 2018).

Williamson Act Contracts

The California Land Conservation Act of 1965, also known as the Williamson Act, is designed to preserve agricultural and open space lands by discouraging their premature and unnecessary conversion to urban uses. Williamson Act contracts, also known as agricultural preserves, create an arrangement whereby private landowners' contract with counties and cities to voluntarily restrict their land to agricultural and compatible open space uses. The project site and surrounding area consist of recreational and natural sparsely vegetated areas and local roadways. The project site does not currently support agricultural production or related uses and does not operate under a Williamson Act Contract (County of Sacramento 2019). The nearest active Williamson Act contracts are approximately 0.5 miles north of the VSWTP site.

Forestry Resources

Public Resources Code (PRC) Section 12220(g) defines "forest land" as land that can support 10 percent native tree cover and forest vegetation of any species including hardwoods under natural conditions and that allows for management of one or more forest resources, including timber, aesthetics, fish and wildlife, biodiversity, water quality, recreation, and other public benefits. As described above, the project area is zoned as general agriculture, which generally does not include native trees, forest vegetation, or forestland. The project site is surrounded by open space land, and the VSWTP is developed and built-up.

3.2.2. Discussion

a, b) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the FMMP of the California Resources Agency, to non-agricultural use? Conflict with existing zoning for agricultural use, or a Williamson Act contract?

The project site includes areas designated as farmland of local importance, but does not contain Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown in the FMMP

maps. There are no current agriculture activities within the project site. Therefore, the proposed project would not convert Farmland to non-agricultural use. The project site is zoned for agriculture but is not located within an area regulated by a Williamson Act Contract. Therefore, the proposed project would not conflict with existing zoning or agricultural use. There would be **no impact**.

c, d) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in PRC Section 12220(g)), timberland (as defined by PRC Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))? Result in the loss of forest land or conversion of forest land to non-forest use?

The project site does not contain forestland or timberland. Therefore, implementation of the proposed project would not remove any forest land or conflict with existing uses in the area. The proposed project would not remove forest land or convert forest land to non-forest use. There would be **no impact**.

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 does not contain any Farmland or forestland. The purpose of the project is to store potable water in the aquifer system at the VSWTP by using ASR wells during periods of high river flows (winter) and/or during above normal to wet WYs when surface water supply may be available. This process would raise local groundwater levels and increase the volume of stored water in the ground. Therefore, the project would have **no impact**.

3.3. Air Quality

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied on to make the following determinations.

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
3a. Conflict with or obstruct implementation of the applicable air quality plan?		yes			
3b. 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?		yes			
3c. Expose sensitive receptors to substantial pollutant concentrations?			yes		
3d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?				yes	

3.3.1. Environmental Setting

The project is located in Sacramento County within the Sacramento Valley Air Basin (SVAB) and is under the jurisdiction of the Sacramento Metropolitan Air Quality Management District (SMAQMD). The SMAQMD is the agency responsible for air quality planning and development of the air quality attainment plans in the study area. The SVAB is bounded on the west and north by the Coast Ranges, on the east by the southern portion of the Cascade Range and the northern portion of the Sierra Nevada, and on the south by the San Joaquin Valley Air Basin. Hot, dry summers and mild, rainy winters characterize the climate of the SVAB. Summer high temperatures are typically in the 90 °F range and winter low temperatures in the 30 °F range, sometimes below freezing. The regional rainy season occurs mainly from late October to early May in amounts that vary substantially from year to year and average approximately 20 inches per year. The rainy season is characterized by brief periods of rain interspersed with stagnant and sometimes foggy weather. The prevailing winds are moderate in strength and vary from moist clean breezes from the south to dry land flows from the north.

The ozone season (May through October) in the SVAB is characterized by stagnant morning air or light winds with San Francisco Bay and Delta breezes in the afternoon from the southwest. The afternoon and evening breezes transport air pollutants to the north and out of the SVAB. However, during about half of the days from July to September, a phenomenon called the “Schultz Eddy” causes the wind pattern to circle back to the south instead of allowing the prevailing wind patterns to move north and flush air pollution out of the SVAB. This phenomenon exacerbates the pollution levels in the area and increases the likelihood of violating the Federal and State air quality standards.

High concentrations of fine particulate matter (PM) with an aerodynamic diameter of 2.5 micrometers or less ($PM_{2.5}$) typically occur during late fall and winter (November through February) with stagnant inversion conditions. The stable air mass concentrates pollutants near the ground, and cooler temperatures and high humidity increase the secondary formation of fine particulates from the precursors of nitrogen oxides (NO_x), sulfur dioxide (SO_2), volatile organic compounds, and ammonia.

The EPA and the California Air Resource Board (CARB) have identified six air pollutants as being of nationwide and statewide concern: ozone (O_3), carbon monoxide (CO), nitrogen dioxide, sulfur dioxide, lead, and PM. PM is subdivided into two classes based on particle size: PM equal to or less than 10 micrometers in diameter (PM_{10}) and $PM_{2.5}$.

Health-based air quality standards have been established for these pollutants by EPA at the national level and by CARB at the State level. These standards are referred to as the national ambient air quality standards (NAAQS) and the California Ambient Air Quality Standards (CAAQS), respectively. The NAAQS and CAAQS were established to protect the public with a margin of safety from adverse health impacts caused by exposure to air pollution. Both EPA and CARB designate areas of the State as attainment, nonattainment, maintenance, or unclassified for the various pollutant standards according to the Federal Clean Air Act (CAA) and the California Clean Air Act (CCAA), respectively. An area is designated nonattainment/transitional to signify that the area is close to attaining the standard for that pollutant. The "unclassified" designation is used in an area that cannot be classified as meeting or not meeting the standards, based on available information.

The SVAB is in nonattainment for Federal and State standard O_3 (8-hour and 1-hour), State standard PM_{10} (24-hour and annual), and Federal $PM_{2.5}$ (24-hour). Due to the non-attainment designations for the SVAB, the SMAQMD is required to prepare State Implementation Plans (SIPs) for O_3 and $PM_{2.5}$ to establish how the area would attain the standards by dates specified within the plans. The SMAQMD is currently under a maintenance plan for PM_{10}, which must show maintenance of the NAAQS through 2033. The attainment plans establish the strategies that will be used to achieve compliance with the CAAQS in all areas within the SMAQMD's jurisdiction. All projects within SMAQMD's jurisdiction are subject to SMAQMD rules and regulations in effect at the time of construction and operation.

3.3.2. Discussion

a, b) Conflict with or obstruct implementation of the applicable air quality plan? Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable Federal or State ambient air quality standard?

The proposed project would result in an impact to an applicable air quality plan if it conflicts with or obstructs implementation of the attainment plan and/or applicable portions of the SIPs, which would lead to increases in the frequency or severity of existing air quality violations. The SMAQMD is the agency responsible for air quality planning and development of the air quality plan for the Sacramento County, where the project is located. The SMAQMD air quality plans establish the strategies used to achieve compliance with the NAAQS and CAAQS in all areas within SMAQMD's jurisdiction. SMAQMD has established recommended thresholds of significance for evaluating project-related air quality effects under CEQA (SMAQMD 2020). These significance thresholds represent the allowable amount of emissions each project could generate without impeding the region's air quality planning efforts to

maintain and attain ambient air quality standards. If the thresholds are exceeded, the project would be considered to conflict with or obstruct implementation of the applicable air quality plan. The thresholds pertinent to the evaluation of this project are 85 pounds per day of NOx, 80 pounds per day or 14.6 tons per year of PM_{10}, and 82 pounds per day or 15 tons per year of $PM_{2.5}$.

The California Emissions Estimator Model (CalEEMod) was used to estimate the construction-related emissions for the proposed project. Modeling outputs are provided in Appendix A. For near-term project-generated emissions, it is assumed that the PW-1 and associated pipeline would be constructed, as this option would generate the most emissions. If the Excelsior well were to be used instead, emissions would be slightly reduced. As for the Future Term implementation, it is assumed that up to two (2) future wells would be constructed and one (1) Excelsior well would be converted to ASR in a given year. This approach is conservative given the uncertainty of when program components would be implemented. As shown in **Table 3.3-1**, unmitigated project emissions would be below SMAQMD thresholds of significance for all criteria air pollutants, with the exception of PM emissions, for which SMAQMD requires implementation of Basic Construction Emission Control Practices or specifies a threshold of zero. With implementation of the Basic Construction Emission Control Practices, SMAQMD's thresholds are 80 pounds per day or 14.6 tons per year of PM_{10}, and 82 pounds per day or 15 tons per year of $PM_{2.5}$, as shown in **Table 3.3-1**. Without implementing the Basic Construction Emission Control Practices, the project would exceed SMAQMD's significance thresholds for PM_{10} and $PM_{2.5}$, obstructing implementation of air quality plans and resulting in a cumulatively considerable net increase in criteria air pollutants. This impact is considered **significant**. Implementing SMAQMD's Basic Construction Emissions Control Practices, included in Mitigation Measure AIR-1, would adjust significance thresholds and reduce this impact to a **less-than-significant level after mitigation**.

Table 3.3-1. Estimated Construction-related Criteria Pollutant Emissions

Project Component/Year	PM10 (pounds per day) unmitigated/ mitigated	PM10 (tons per year) unmitigated/ mitigated	PM2.5 (pounds per day) unmitigated/ mitigated	PM2.5 (tons per year) unmitigated/ mitigated	NOx (pounds per day) unmitigated/ mitigated
Near Term: PW-1 and associated pipeline and Excelsior Well (2026)	2.45/1.81	0.01/0.01	1.29/1.22	<0.01/<0.01	33.6/33.6
SMAQMD Threshold	80	14.6	82	15	85
Exceeds Threshold?	*No*	*No*	*No*	*No*	*No*
Future Term: Future ASR Wells and Excelsior Wells (in 5 to 10 years)	1.89/1.89	0.05/0.05	1.40/1.40	0.04/0.04	30.19/30.19
SMAQMD Threshold	80	14.6	82	15	85
Exceeds Threshold?	*No*	*No*	*No*	*No*	*No*

Notes: NO_x=oxides of nitrogen; PM_{10}=particulate matter with aerodynamic diameter less than 10 micrometers; $PM_{2.5}$=particulate matter with aerodynamic diameter less than 2.5 micrometers SMAQMD

Mitigation Measure AIR-1: SMAQMD Basic Construction Emission Control Practices

- Water all exposed surfaces twice daily. Exposed surfaces include but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads.
- Cover or maintain at least 2 feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered.
- Use wet power vacuum street sweepers to remove any visible track-out mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited.
- Limit vehicle speeds on unpaved roads to 15 miles per hour.
- All roadways, driveways, sidewalks, and parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.
- Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes [CRR, Title 13, sections 2449(d)(3) and 2485]. Provide clear signage that posts this requirement for workers at the entrances to the site.
- Provide current certificate(s) of compliance for CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation [CRR, Title 13, sections 2449 and 2449.1]. For more information contact CARB at 877-593-6677, doors@arb.ca.gov.
- Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.

Timing: During construction.

Responsibility: SCWA

c) Expose sensitive receptors to substantial pollutant concentrations?

Some people are especially sensitive to emissions of air pollutants and should be given special consideration during the evaluation of a project's air quality impacts. These people include children, older adults, any person with pre-existing respiratory or cardiovascular illness, and athletes and others who engage in frequent exercise. Sensitive receptors include residences, schools, playgrounds, childcare centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. In addition, human response to odors is subjective and sensitivity to odors varies greatly. Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, anxiety) to physiological (e.g., circulatory and respiratory reactions, nausea, vomiting, headaches). The proposed project would generate odor from the use of diesel fuels but no other emissions, such as those resulting in odors.

The nearest sensitive receptors include 2 rural residences located approximately 0.01-mile (52 feet) from Excelsior well #03, and approximately 0.14-mile (740 feet) from Area 4 where the PW-1 improvements would be implemented. Emissions during construction would be temporary, and the

project site would return to pre-project conditions following the completion of construction. Furthermore, the project would not generate emissions in excess of the applicable SMAQMD thresholds of significance. Therefore, this impact is considered **less than significant**.

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

Human response to odors is subjective, and sensitivity to odors varies greatly. Typically, odors are regarded as an annoyance rather than a health hazard. However, manifestations of a person's reaction to foul odors can range from psychological (e.g., irritation, anger, anxiety) to physiological (e.g., circulatory, respiratory reactions, nausea, vomiting, headaches). The construction of the proposed project would not generate any odor that would adversely affect a substantial number of people. There would be **no impact**.

3.4. Biological Resources

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
4a. 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 CDFW or U.S. Fish and Wildlife Service (USFWS)?		yes			
4b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the CDFW or USFWS?				yes	
4c. 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?				yes	
4d. 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?				yes	
4e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?			yes		
4f. Conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan?			yes		

3.4.1. Environmental Setting

Information on biological resources relevant to the proposed project is based on a site visit, database review, review of aerial photographs that address biological resources in the project vicinity, and review of documents, including the South Sacramento Habitat Conservation Plan (SSHCP) (County of Sacramento *et al*. 2018). A biologist from GEI conducted a reconnaissance survey of the site on August 14, 2025, to map and assess biological resources.

Queries of several online biological data sources, including the California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) (CDFW 2025a), the USFWS Information for Planning and Consultation (IPaC) tool (USFWS 2025a), the USFWS Critical Habitat Mapper (USFWS

2025b), the USFWS National Wetlands Inventory Wetlands Mapper (USFWS 2025c), the California Native Plant Society (CNPS) Inventory of Rare and Endangered Vascular Plants of California (CNPS 2025), the Federal Endangered Species Act (ESA) Critical Habitat Mapper (National Oceanic and Atmospheric Administration Fisheries [NOAA], 2025a), and the Essential Fish Habitat (EFH) Mapper (NOAA 2025b) inform the analyses. Additionally, review of several citizen science databases including eBird (eBird 2025), Bumble Bee Watch (Xerces 2025a), Western Monarch Milkweed Mapper (Xerces 2025b), and iNaturalist (iNaturalist 2025), help to inform recent species occurrence data. Lastly, review of specific individual plant and wildlife species documentation, as cited below, informs the analyses.

The biological study area (BSA) includes the entirety of the VSWTP, as well as the vicinity of the three (3) Excelsior wells (**Figures 2-1 and 2-3**).

The BSA is also located within the SSHCP area (County of Sacramento *et al.* 2018) which "addresses issues related to urban development, habitat conservation and agricultural protection throughout much of south Sacramento County…[and]…consolidate[s] efforts to protect and enhance wetlands (primarily vernal pools) and upland habitats to provide large, interconnected and ecologically viable conservation areas" (County of Sacramento *et al.* 2018). The Final SSHCP and Environmental Impact Statement/EIR were adopted by the Sacramento County Board of Supervisors on September 11, 2018. This HCP provides a streamlined permitting process to obtain permits and authorizations from the USFWS, the United States Army Corps of Engineers, CDFW, and CVRWQCB. The SSHCP encompasses a 317,000-acre area, including the cities of Galt and Rancho Cordova, and is divided into two components: the Urban Development Area (UDA), which is where most development and incidental take of plant and wildlife species would occur, and the areas outside the UDA, which is where no urban development, but a small number of specific infrastructure projects and most species conservation projects would occur. A total of 28 different plant and animal species, including 10 state and/or federally listed threatened or endangered, are identified within the SSHCP as Covered Species. The SSHCP area includes eight Preserve Planning Units (PPUs) that encompass areas where important Covered Species resources are present, and where habitat preservation will be planned. The BSA is within the UDA and PPU 3.

Habitat and Land Cover Types

The majority of the VSWTP-portion of the BSA includes disturbed land that is covered in gravel or developed as road or structures. Areas to the north and west of the VSWTP are disturbed and covered with annual grassland that is comprised of Spanish clover (*Acmispon americanus*), turkey mullein (*Croton setigerus*), pit-gland tarweed (*Holocarpha virgata*), and telegraphweed (*Heterotheca grandiflora*), as well as nonnative species, such as Russian knapweed (*Rhaponticum repens*) and stinkwort (*Dittrichia graveolens*). Two detention basins, which were dry at the time of the site survey, are located in the northeastern portion of the VSWTP. A retention pond at the southwest corner of the VSWTP appears to hold water permanently. Silt has accumulated on the bottom, but the bottom is presumed to be concrete. The area is dominated by riparian species including sandbar willow (*Salix exigua*), Goodding's black willow (*Salix gooddingii*), arroyo willow (*Salix lasiolepis*), Fremont cottonwood (*Populus fremontii*), and bulrush (*Typha sp*.). Small fish were observed in the pond.

The areas around the Excelsior wells are dominated by annual grassland, with freshwater emergent wetlands and signatures of potential seasonal wetlands and/or vernal pools (USFWS 2025c). Tributaries to Elder Creek extends east to west just north and south of Excelsior Well 01 and veer north and exits

the BSA. Gerber Creek is located tangentially to the southeastern corner of the VSWTP, flows south, and is the permitted discharge point for stormwater from the VSWTP. A wetland delineation was not conducted for this project.

Wildlife

Wildlife observed during the survey include house sparrow (*Passer domesticus*), black phoebe (*Sayornis nigricans*), mourning dove (*Zenaida macroura*), and honeybee (*Apis mellifera*). A large stick nest was observed on a tower approximately 100 feet north of the PW-1 area. The nest was unoccupied at time of survey but given the size, location, and habitat, it is likely a red-tailed hawk (*Buteo jamaicensis*) nest. No ground squirrel burrows were observed in or adjacent to the VSWTP or the Excelsior Well sites.

3.4.2. Sensitive Biological Resources

Sensitive biological resources addressed in this section include those species that are afforded consideration or protection under CEQA, California Fish and Game Code, California Endangered Species Act (CESA), ESA, Clean Water Act (CWA), and the Porter-Cologne Water Quality Control Act (Porter-Cologne Act).

Special-Status Species

Plants and animals addressed as special-status species in this analysis include taxa (distinct taxonomic categories or groups) that fall into any of the following categories:

Taxa officially listed, candidates for listing, or proposed for listing by the Federal government or the State of California as endangered, threatened, or rare;

Taxa meet the criteria for listing, even if not currently included on any list, as described in State CEQA Guidelines CRR Section 15380;

Wildlife identified by CDFW as species of special concern (SSC);

Species listed as Fully Protected under the California Fish and Game Code;

Species afforded protection under local or regional planning documents; and

Plant taxa considered by CDFW to be “rare, threatened, or endangered in California” and assigned a California Rare Plant Rank (CRPR).

The CRPR system includes six rarity, and endangerment ranks for categorizing plant species of concern. All plants with a CRPR are considered “special plants” by CDFW. The term “special plants” is a broad term used by CDFW to refer to all plant taxa inventoried in the CNDDB, regardless of their legal or protection status. Plants ranked as CRPR 1 or 2 may qualify as endangered, rare, or threatened species within the definition presented in Section 15380 of State CEQA Guidelines. CDFW recommends that potential impacts to CRPR 1 and 2 plant species be evaluated in CEQA documents. In general, CRPR 3 and 4 plants do not meet the definition of endangered, rare, or threatened pursuant to State CEQA Guidelines Section 15380. However, these species may be evaluated by the lead agency on a case-by-case basis. This section analyzes CRPR 1 and 2 plants.

The term "California SSC" is applied by CDFW to wildlife taxa not listed under the Federal ESA or CESA, but that are nonetheless declining at a rate that could result in listing, or that historically occurred in low numbers and have known threats to their persistence.

An initial list of special-status species that could potentially occur in or adjacent to the project site, given suitable habitat conditions are present, was developed through review of CNDDB (CDFW 2025a) and CNPS Rare Plant Inventory (CNPS 2025) records from the project vicinity and a list generated by the USFWS IPaC tool (USFWS 2025a). The CNDDB and CNPS inventory queries included the U.S. Geological Survey (USGS) *Carmichael* and *Elk Grove* 7.5-minute quadrangles, within which the BSA is located. Not all species tracked in the CNDDB and CNPS inventory meet the definition of special-status species described above. These database results are shown in **Appendix B "Biological Resources Database Searches**." **Table 3.4-1** summarizes, for each of the species with potential to occur, the regulatory status, habitat associations, and level of potential to occur in the BSA.

Table 3.4-1. Special-status Species Evaluated for Potential to Occur in BSA

Species Name	Legal Status Federal/ State/ CRPR[1]	Habitat Associations	Potential to Occur In Study Area and/or Project Site[2]
Plants			
dwarf downingia *Downingia pusilla*	–/–/2B.2	Vernal pools and mesic valley and foothill grassland. Elevation: 5 to 1,460 feet.	**Could occur**. Vernal pools may be present in the BSA outside of VSWTP.
Bogg's Lake hedge-hyssop *Gratiola heterosepala*	–/E/1B.2	Clay soils in vernal pools and lake margins of marshes and swamps. Elevation: 35 to 7,790 feet.	**Could occur**. Vernal pools may be present in the BSA outside of VSWTP.
Ahart's dwarf rush *Juncus leiospermus* var. *ahartii*	–/–/1B.2	Mesic soils in vernal pool grassland. Elevation: 95 to 750 feet.	**Could occur**. Vernal pools may be present in the BSA outside of VSWTP.
legenere *Legenere limosa*	–/–/1B.1	Vernal pools. Elevation: 5 to 2,885 feet	**Could occur**. Vernal pools may be present in the BSA outside of VSWTP.
slender Orcutt grass *Orcuttia tenuis*	T/E/1B.1	Often in gravelly soils in vernal pools. Elevation: 110 to 5,775 feet.	**Could occur**. Vernal pools may be present in the BSA outside of VSWTP.
Sacramento Orcutt grass *Orcuttia viscida*	E/E/1B.1	Vernal pools. Elevation: 98 to 328 feet.	**Could occur**. Vernal pools may be present in the BSA outside of VSWTP.
Sanford's arrowhead *Sagittaria sanfordii*	–/–/1B.2	Marshes and swamps (assorted shallow freshwater). Elevation 0 to 2,135 feet.	**Could occur**. Potential for suitable habitat in the BSA.
Invertebrates			
Crotch's bumble bee *Bombus crotchii*	–/C	Open grassland and scrub. Primarily nests underground and requires flowering plants for foraging.	**Could occur.** Flowering plants and grassland habitat suitable for foraging and nesting are present in and adjacent to the BSA.
conservancy fairy shrimp *Branchinecta conservatio*	E/–	Vernal pools and other seasonal wetlands.	**Could occur**. Vernal pools may be present in the BSA outside of VSWTP.
vernal pool fairy shrimp *Branchinecta lynchi*	T/–	Vernal pools and other seasonal wetlands.	**Could occur**. Vernal pools may be present in the BSA outside of VSWTP.
monarch butterfly *Danaus plexippus*	PT/–	Requires milkweed for egg laying and larval feeding and various nectar plants for feeding.	**Could occur.** Flowering plants suitable for foraging likely occur in grassland that is present in and adjacent to the BSA. No overwintering habitat is present.

Species Name	Legal Status Federal/ State/ CRPR[1]	Habitat Associations	Potential to Occur In Study Area and/or Project Site[2]
valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	T/–	Closely associated with blue elderberry (*Sambucus cerulea*), an obligate host for the beetle larvae.	**Unlikely to occur.** No elderberry shrubs were documented in the BSA. However, a focused survey has not occurred.
vernal pool tadpole shrimp *Lepidurus packardi*	E/–	Vernal pools and other seasonal wetlands.	**Could occur**. Vernal pools may be present in the BSA outside of VSWTP.
Fish			
steelhead – Central Valley DPS *Oncorhynchus mykiss irideus*	T/SSC	Spawning habitat includes gravel-bottomed, fast-flowing, well-oxygenated rivers and streams. Non-spawning habitat includes estuarine and marine waters.	**No potential to occur.** There is no suitable aquatic habitat within the BSA.
Amphibians and Reptiles			
northwestern pond turtle *Actinemys marmorata*	PT/SSC	Permanent or nearly permanent water bodies with abundant vegetation and rocky or muddy bottoms.	**Could occur**. Potential aquatic habitat occurs in the retention pond located in the southwestern portion of the VSWTP, and in freshwater emergent wetlands in the BSA outside of the VSWTP. Grasslands within the BSA outside of VSWTP provide suitable upland and nesting habitat.
western spadefoot *Spea hammondii*	PT/SSC	Generally found in grasslands, oak woodlands, coastal sage scrub, and chaparral in washes, floodplains, alluvial fans, playas, and alkali flats.	**Could occur**. Grasslands within the BSA outside of VSWTP provide suitable upland habitat.
giant garter snake *Thamnophis gigas*	T/T	Aquatic habitat with emergent herbaceous vegetation and adjacent upland habitat for cover and refuge from flooding.	**No potential to occur.** No suitable aquatic habitat occurs within the BSA, which is just outside this species' known distribution.
Birds			
tricolored blackbird *Agelaius tricolor*	–/T, SSC	Forages in grasslands, agricultural fields, and other open habitats. Nests in marshes and other dense vegetation.	**Known to occur.** Suitable foraging habitat is present in the BSA, and potential nesting habitat is present around wetted areas where there are cattails (*Typha* sp.) or Himalayan blackberry (*Rubus armeniacus*).
lesser sandhill crane *Antigone canadensis canadensis*	–/SSC	Does not nest in California. Present in California as a migrant and winter resident (mainly October through March). Forages in agricultural fields and grasslands. Roost sites are in a variety of wetland habitats, where cranes spend the night standing in shallow water.	**Unlikely to occur.** While suitable foraging habitat is present, there are no known occurrence within approximately 30 miles of the BSA (CDFW 2025a; iNaturalist 2025; eBird 2025).
greater sandhill crane *Antigone canadensis tabida*	–/T, FP	Does not nest in the Central Valley. Winters in annual and perennial grassland habitats, moist croplands with rice or corn stubble, and open, emergent wetlands. Prefers treeless plains.	**Unlikely to occur.** While suitable foraging habitat is present, there are no known occurrence within approximately 30 miles of the BSA (CDFW 2025a; iNaturalist 2025; eBird 2025).
golden eagle *Aquila chrysaetos*	–/FP	An uncommon migrant and winter resident in the Central Valley. Prefers rolling foothills and mountain terrain, wide arid plateaus deeply cut by streams and canyons, open mountain slopes, cliffs, and rock outcrops.	**Could occur**. Although no suitable nesting habitat is present in the BSA, this species could forage over the BSA.
long-eared owl *Asio otus*	–/SSC	Nests and roosts in dense stands of live oak (*Quercus* spp.) in riparian thickets with dense canopies near meadow edges. Also nests in dense stands of conifers at higher elevations.	**No potential to occur**. No suitable nesting or foraging habitat is present in the BSA.
burrowing owl *Athene cunicularia*	–/C, SSC	Nest and forages in grasslands and agricultural fields with natural or artificial burrows or friable soils.	**Could occur**. Suitable nesting and foraging habitat is present in grassland within and adjacent to the BSA.

Species Name	Legal Status Federal/ State/ CRPR[1]	Habitat Associations	Potential to Occur In Study Area and/or Project Site[2]
Swainson's hawk *Buteo swainsoni*	–/T	Forages in grasslands and agricultural fields; nests in open woodland or scattered trees.	**Known to occur.** Suitable habitat is present within and adjacent to the BSA where grassland (foraging) and trees (nesting) occur.
Vaux's swift *Chaetura vauxi*	–/SSC	Affinity for old-growth coast redwood (*Sequoia sempervirens*) and Douglas fir (*Pseudotsuga menziesii*) forests. Nests in large hollow trees and snags, especially tall, burnt-out stubs.	**No potential to occur**. No suitable nesting or foraging habitat is present in the BSA.
northern harrier *Circus hudsonius*	–/SSC	Nests and forages in grasslands, agricultural fields, and marshes.	**Could occur.** Suitable nesting and foraging habitat is present in and adjacent to the BSA where grassland occurs.
olive-sided flycatcher *Contopus cooperi*	–/SSC	Nests in a wide variety of forest and woodland habitats in the coastal and mountainous portions of California. Prefers forests and woodlands with adjacent meadows, lakes, or open terrain.	**No potential to occur.** No suitable nesting or foraging habitat is present in the BSA.
white-tailed kite *Elanus leucurus*	–/FP	Forages in grasslands and agricultural fields; nests in woodlands and isolated trees and.	**Likely to occur.** Suitable habitat is present in and adjacent to the BSA where grassland (foraging) and trees (nesting) occur.
bald eagle *Haliaeetus leucocephalus*	–/E, FP	Nests in large, old-growth, or dominant live trees with open branch work, especially ponderosa pine. Requires large bodies of water or rivers with abundant fish and adjacent snags.	**Could occur**. While suitable nesting habitat is not present, suitable foraging habitat is present in and adjacent to BSA.
loggerhead shrike *Lanius ludovicianus*	–/SSC	Shrublands and open woodlands with a fair amount of grass cover and areas of bare ground. Requires tall shrubs or trees, fences, or power lines for hunting perches and territorial advertisement. Also requires open areas of short grasses, forbs, or bare ground for hunting, large shrubs or trees for nest placement, and thorny vegetation or barbed wire fences for impaling prey.	**Could occur.** Suitable foraging and nesting habitat is present in and adjacent to BSA where grassland and shrubs or trees occur.
bank swallow *Riparia riparia*	–/T	Nests in vertical banks or bluffs of suitable soil, typically adjacent to water, and forages in adjacent open habitat.	**No potential to occur**. No suitable nesting or foraging habitat is present in the BSA.
Mammals			
American badger *Taxidea taxus*	–/SSC	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils.	**Could occur.** Suitable habitat is present in the BSA outside of the VSWTP where grasslands occur.

Notes: BSA = biological study area; DPS = distinct population segment; VSWTP = Vineyard Surface Water Treatment Plant

1 – Legal Status Definitions

C Species identified as a candidate species for listing under Federal and/or CESA.

E Species listed as Endangered under the Federal and/or CESA.

FP Species listed as Fully Protected under the California Fish and Game Code.

PT Species listing as threatened under Federal and/or CESA.

SSC Species listed as Species of Special Concern by CDFW.

T Species listed as Threatened under the Federal and/or CESA.

– No status under Federal and/or California laws and regulations.

CRPR

1B Plant species considered Rare, Threatened, or Endangered in California and elsewhere.

2B Plant species considered Rare or Endangered in California but more common elsewhere.

CRPR Extensions

.1 Seriously threatened in California.

.2 Moderately threatened in California.

2 – Potential for Occurrence Definitions

Known to occur: The species, or evidence of its presence, was observed in the project site during previous field surveys or was recently reported by others (as documented in various databases).

Could occur: Extant species distribution, habitat conditions, behavior of the species, known occurrences (as documented in various databases) in the vicinity, or other factors, indicate that the species could occur.

Unlikely to occur: Although the project site is located within the extant range of the species, the species is unlikely to be present because of very restricted distribution and/or because only low-quality habitat or very limited habitat is present in the project site and vicinity.

No potential to occur: The project site is located outside of the species extant distribution and/or potential habitat to support the species is not present.

Sources: CDFW 2025a; California Wildlife Habitat Relationships System (CWHR) Program Staff 2008a, 2008b; CNPS 2025; eBird 2025; iNaturalist 2025; Shuford and Gardali 2008; USFWS 2025a; Xerces 2025a, 2025b; data collected and compiled by GEI, in 2025

Plants

Seven special-status plant species were evaluated for their potential to occur in the BSA. All seven species could occur because of potentially suitable habitat (e.g., vernal pools) present in or adjacent to the BSA (**Table 3.4-1**).

Fish and Wildlife

A total of 25 special-status fish and wildlife species were evaluated for their potential to occur in the BSA (**Table 3.4-1**). Most of these species were determined to have none-to-little potential to occur because of an absence of suitable habitat or because the BSA is outside the known distribution or range of the species. A total of 16 special-status wildlife species were determined to have some potential to occur within the BSA, as discussed further below.

Invertebrates

Crotch's bumblebee (*Bombus crotchii*) and monarch butterfly (*Danaus plexippus*) have the potential to occur in the BSA. Grassland is present throughout the BSA, providing nesting opportunities for Crotch's bumblebee, and nectar plants in the grassland support potential foraging opportunities for both of these species.

Vernal pools, if they are present in the grasslands in and adjacent to the portion of the BSA outside the VSWTP, may support suitable habitat for vernal pool fairy shrimp (*Branchinecta lynchi)*, vernal pool tadpole shrimp (*Lepidurus packardi)*, and conservancy fairy shrimp (*Branchinecta conservatio*).

Amphibians and Reptiles

Potentially suitable aquatic habitat for northwestern pond turtle (*Actinemys marmorata*) includes the retention pond in the southwestern portion of the VSWTP and freshwater emergent wetlands outside of the VSWTP but within the BSA. The grasslands within the BSA provide suitable upland habitat for northwestern pond turtle and western spadefoot (*Spea hammondii).*

Birds

Several special-status birds are known to occur or were determined to have some potential to occur in or adjacent to the BSA, where potentially suitable foraging and/or nesting habitat is present.

While suitable nesting habitat is not present in the BSA for bald eagle (*Haliaeetus leucocephalus)* and golden eagle (*Aquila chrysaetos)*, grasslands in the BSA support suitable foraging habitat for these species.

There is potential nesting habitat and associated foraging habitat for tricolored blackbird (*Agelaius tricolor*) in areas where cattails or blackberry are growing on the edges of freshwater emergent wetlands within the BSA. Suitable nesting and foraging habitat for burrowing owl (*Athene cunicularia)* and northern harrier (*Circus hudsonius)* is present in grassland within and adjacent to the BSA. Suitable nesting habitat is present for Swainson's hawk (*Buteo swainsonii*), white-tailed kite (*Elanus leucurus*), and loggerhead shrike (*Lanius ludovicianus*), where scattered trees and large shrubs are present within the BSA, and grasslands within the BSA provide suitable foraging habitat for these species.

Mammals

American badger (*Taxidea taxus*) could occur in grasslands outside of the VSWTP but within the BSA.

Sensitive Habitats

Sensitive habitats include those that are of special concern to resource agencies or are afforded specific consideration through CEQA, Section 1602 of the California Fish and Game Code, Section 404 of the CWA, and the Porter-Cologne Act. Sensitive natural habitats may be of special concern for a variety of reasons including their locally or regionally declining status, or because they provide important habitat to common and special-status species.

Several aquatic resources occur in the BSA. These include Elder Creek, Gerber Creek, freshwater emergent wetlands, and potential vernal pools or seasonal wetlands. A delineation of aquatic resources has not been conducted of the BSA, and as a result, the precise location, extent, and jurisdictionally status of all aquatic resources has not been determined. However, several features in the BSA are likely to be considered Waters of the U.S. and/or State. In addition, CDFW regulates the channels and banks of any creek or other linear features.

There is no designated critical habitat for any special-status plant, fish, or wildlife species in the BSA. There is no EFH in the BSA.

Sensitive Natural Communities

CDFW maintains a list of terrestrial natural communities that are native to California – the *California Natural Community List* (CDFW 2025b). Within that list, CDFW identifies and ranks natural communities of special concern considered to be highly imperiled.

3.4.3. Discussion

Analysis Methodology

This analysis addresses biological resource impacts that could result from project construction activities, as well as project-related changes in the BSA. Potential to adversely affect special-status species and their habitats and other habitats considered sensitive by Federal, State, or local agencies are evaluated, in addition to the potential to substantially reduce the habitat or population of any fish or wildlife species or to eliminate a plant or animal community. This analysis considers temporary and permanent habitat loss and disturbance and potential for direct injury or death of individuals or a result of adverse effects on habitat quality. Impact conclusions consider the habitat quality, impact extent, impact duration, and impact intensity (e.g., level of harm, injury/loss, or degradation suffered by the resource).

Information on activities and habitat conditions that could adversely affect special-status species is based on scientific publications, agency documents, and other relevant sources.

Within the VSWTP where new ASR wells could be installed, ground disturbance would be minimal; each would require well pads and small equipment areas, each limited to approximately 400 square feet, with work areas of approximately 100 square feet remaining after construction is completed. Some trenching of the VSWTP interior perimeter road would be required for installing conveyance piping for the new ASR wells, as well as for the PW-1. All project work at Excelsior Wells 01, 02, and 03 would be confined to the existing asphalt pads associated with each location, which range from 8,000 to 9,000 square feet in size, with no natural habitat disturbed. At these locations, above-ground piping would be constructed within the existing building or atop the existing asphalt pads. No portion of the project would alter the course of a stream or river, including Elder Creek and Gerber Creek.

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 CDFW or the USFWS?

Special-status Plants

Seven special-status plant species have the potential to occur in the grasslands in the BSA but outside the VSWTP. However, all project activities outside the VSWTP would occur within disturbed areas associated with Excelsior Wells 01, 02, and 03, and no grasslands, freshwater emergent wetlands, or potential vernal pools or seasonal wetlands would be disturbed. Therefore, there would be **no impact** on special-status plants.

Special-status Wildlife

Branchiopod species have the potential to occur in vernal pools, if the pools are present in the grasslands in the BSA but outside the VSWTP. However, all project activities outside the VSWTP would occur within disturbed areas associated with Excelsior Wells 01, 02, and 03, and no grasslands or potential vernal pools or seasonal wetlands would be disturbed. Therefore, there would be **no impact** on special-status branchiopods.

Crotch's bumblebee and monarch butterfly have the potential to forage in the grasslands in the BSA. These grasslands would be disturbed by project activities occurring within the VSWTP, however these grasslands are small and marginal quality, and more suitable foraging habitat is available outside the VSWTP. Therefore, there would be **no impact** to these species' foraging opportunities as a result of project implementation.

Since no grasslands, freshwater emergent wetlands, or potential vernal pools or seasonal wetlands would be disturbed in the BSA outside of the VSWTP, there would be no adverse effect to northwestern pond turtle or western spadefoot for project activities involving the Excelsior Wells. Potential habitat for northwestern pond turtles within the VSWTP includes the detention basins and the grasslands. Ground disturbance associated with the new ASR wells would be minimal (approximately 400 square feet per well). However, if northwestern pond turtle is in the area during construction, they could be adversely affected, which would result in a **significant impact**. Mitigation Measures BIO-1 and BIO-2 are presented below and have been identified to address impacts associated with northwestern pond turtles.

Several special-status birds may forage in or over the grasslands in the BSA, including golden eagle, Swainson's hawk, white-tailed kite, bald eagle, loggerhead shrike, tricolored blackbird, western burrowing owl, and northern harrier. None of this habitat would be disturbed by project activities occurring outside the VSWTP. The grasslands within the VSWTP are small and marginal quality, and more suitable foraging habitat is available outside the VSWTP. Therefore, there would be **no impact** to these species' foraging opportunities as a result of project implementation.

Special-status birds, including tricolored blackbird, western burrowing owl, loggerhead shrike, Swainson's hawk, white-tailed kite, and northern harrier, may nest in suitable habitats in the BSA or in the vicinity of the BSA. If an active nest or occupied burrow is present on or very close to the project areas, project activities could result in burrow or nest destruction or abandonment, reduced care of eggs or young, or premature fledging. Depending on the species and number of individuals that are affected, burrow abandonment or nest failure could be considered a substantial adverse effect, which would result in a **significant impact**. Mitigation Measures BIO-1, BIO-3a, and BIO-3b, presented below, have been identified to address impacts associated with special-status birds.

American badger has the potential to occur in the grasslands in the BSA but outside the VSWTP. However, all project activities outside the VSWTP would occur within disturbed areas associated with Excelsior Wells 01, 02, and 03, and no grassland would be disturbed. Therefore, there would be **no impact** on American badger.

The following mitigation measures have been identified to address impacts to special-status species, specifically northwestern pond turtle and special-status birds.

Mitigation Measure BIO-1: Conduct Worker Environmental Awareness Training.

To minimize potential effects of project construction on special-status wildlife, SCWA will ensure that an Environmental Awareness Program will be presented to all project personnel working in the field before project activities begin. The program will be presented by a qualified biologist with knowledge of special-status wildlife that could within the project area. The program will address each species biology and habitat needs; status of each species and their regulatory protections; and measures required to reduce impacts to the species during project construction. This training will be repeated on a yearly basis, as necessary.

Timing: Before construction.

Responsibility: SCWA.

Mitigation Measure BIO-2: Avoid and Minimize Impacts to Northwestern Pond Turtle and Its' Habitats.

1. **Initial Ground Disturbance Timing**. Initial ground disturbance (including vegetation removal and geotechnical boring) in suitable upland habitat within 500 feet of aquatic habitat for northwestern pond turtle shall be minimized to greatest extent feasible during the brumation season (December through February), when adult turtles may be in torpor and particularly susceptible to equipment strikes. The target period for riparian vegetation removal in these areas shall be fall (September through November), to the greatest extent practicable, when potential for turtle strikes and direct impacts on other special-status species are lowest.

If vegetation removal or ground disturbance occurs outside the ideal timing for this species, a designated biological monitor will be present during all ground disturbance or vegetation removal activities. Disturbance activities will occur at a speed that allows the designated monitor to scan for turtles in brumation, nest, and avoid direct impacts.

2. **Direct Impact Avoidance**. Measures shall be implemented to minimize potential for heavy equipment to destroy northwestern pond turtle nests and to encounter hatchling turtles. Feasible measures may vary depending on site-specific circumstances and could include, but not be limited to:

    a. Minimizing heavy equipment operation in upland habitat within 500 feet of aquatic habitat in February and March, when hatchling turtles emerge from nests and travel to aquatic habitat.

    b. Placing artificial ground cover that prevents female turtles from excavating nests in most likely nesting areas where ground disturbing activities shall occur before the following hatchling turtle emergence period.

    c. Fencing most likely nesting areas to exclude access by female turtles and/or enclose hatchlings after emergence. If active nests and hatchlings may be present, the fenced area shall be inspected daily by a qualified biologist and hatchling turtles shall be captured and relocated to suitable habitat at a pre-determined location.

3. **Monitoring**. A qualified biologist shall be present during initial ground disturbance, in-water work, and the hatchling emergence period to search for northwestern pond turtles and minimize encounters with heavy equipment.

4. **Stop Work if a Northwestern Pond Turtle is Observed in Ground Disturbing Area and Allow to Leave the Ground Disturbing Area on Their Own or Have Qualified Biologist Capture and Relocate.** If northwestern pond turtles or nests are observed on land within the project footprint during project activities, the contractor shall stop work within approximately 200 feet of the turtle, and a qualified biologist shall be notified immediately. If possible, the turtle shall be allowed to leave on its own and the qualified biologist shall remain in the area until the biologist deems his or her presence no longer necessary to ensure that the turtle is not harmed. Alternatively, with prior CDFW approval, the qualified biologist may capture and relocate the turtle unharmed to suitable habitat at a pre-determined location.

5. **Unintentional Nests Uncovered**. If a northwestern pond turtle nest is unintentionally uncovered during project activities, work shall stop in the vicinity of the nest and appropriate next steps, depending on the circumstances, shall be determined by a qualified biologist. These may include fencing and buffering the nest and/or rescue, rehabilitation, and relocation of affected turtles.

    Timing: Before and during project activities

    Responsibility: SCWA

Mitigation Measure BIO-3a: Conduct Focused Surveys for Nesting Special-Status Birds and Avoid Impacts.

Nesting bird surveys listed below shall be required prior to all project activities, including geotechnical investigations, that occur within the nesting bird season, from February 1 through August 31.

1. **Conduct Pre-Project Activity Surveys for Active Nests of Special-Status Birds in Areas of Suitable Habitat.** If project activities that could affect suitable habitat for special-status birds cannot be conducted outside of the respective nesting seasons, pre-project activity surveys for nesting birds shall be conducted. Surveys of all potential nesting habitat in the area shall be conducted by a qualified biologist during the nesting season. Surveys shall be conducted within suitable nesting habitat that could be affected by project activities and shall include a minimum buffer of 250-feet for passerines and 1,000-feet for raptors (or larger area if required by established survey protocol) surrounding these areas. Where appropriate, pre-activity surveys shall be conducted according to established survey protocols or guidelines including, but not limited to, the following:

    a. Tricolored Blackbird Survey Methods (Airola *et al.* 2024)

    b. Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (SHTAC 2000). One early-season survey shall be conducted in the period prior to the start of project's initiation. This survey should be conducted for a 0.5-mile radius around all project activities, and if nesting activity is identified within the 0.5-mile radius, consultation is required.

    c. Staff Report on Burrowing Owl Mitigation (CDFG 2012)

    If no established survey protocol exists, the qualified biologist shall complete surveys no more than five (5) days prior to the start of the activity, and that surveys are repeated if activities lapse for a period of seven (7) days or longer. If no nesting birds are detected during pre-activity surveys, no additional mitigation measures are required.

    Timing: Before and during project activities

    Responsibility: SCWA

Mitigation Measure BIO-3b: If Avoiding Project-Related Effects on Nesting Special-Status Birds is Infeasible, Implement Minimization Measures.

If the measures described above in Mitigation Measure BIO-3a have been completed and avoiding effects on nesting special-status birds is infeasible the measures described below shall be implemented to minimize effects of the project on nesting special-status birds, such that there is no direct loss of individuals of these species or project-related nest failure.

1. **Establish, Maintain, and Monitor Buffers Around Active Nest.** If any active nests, or behaviors indicating active nests, are observed, appropriate-sized avoidance buffers shall be established around the nest sites, to avoid nest failure resulting from project activities. The size and shape of the buffer shall depend on the species, nest location, nest stage, and specific project activities to be performed while the nest is active. The buffer shall be expanded if the birds are exhibiting agitated behavior, or the buffers may be adjusted

(reduced) if a qualified biologist determines it would not be likely to adversely affect the nest. If required, buffers shall be marked in the field by a qualified biologist using temporary fencing, high-visibility flagging, or other means that are equally effective in clearly delineating the buffer. Standard nest buffer sizes for migratory and common bird species include: 250-feet for passerine species, and 1,000-feet for raptors such as *Buteos*. Nesting special-status avian species, such as Swainson's hawk, shall have a nest buffer up to a half a mile, while burrowing owl would receive a buffer of 1,640 feet.

2. **Monitoring Nest Activity**. Nest monitoring shall be conducted by a qualified biologist, either continuously or periodically during work, to confirm that project activity is not resulting in detectable adverse impacts on nesting birds or their young. A determination on monitoring frequency shall be based on environmental conditions such as physical barriers, project activities, and species tolerance to project activities. The qualified biologist shall be empowered to stop all project activities that, in the biologist's opinion, threaten to cause unanticipated and/or unpermitted adverse effects on special-status wildlife (e.g., nest abandonment). If project activities are stopped, the qualified biologist shall consult with CDFW to determine appropriate measures that shall be implemented to avoid adverse effects.

3. **Work Within Established Buffer Zones**. No project activity shall commence within the buffer areas until a qualified biologist has determined that the young have fledged or the nest site is otherwise no longer in use. If work must be conducted within a stated buffer zone a qualified biologist shall provide continuous monitoring to confirm that the project activity is not resulting in detectable adverse impacts.

Timing: Before and during project activities

Responsibility: SCWA

Mitigation Measure BIO-1 would reduce impacts to special-status species by requiring workers environmental awareness training prior to any construction activities. Additionally, BIO-2 would reduce impacts associated with northwestern pond turtles by minimizing potential for adverse effects through establishing appropriate work windows, avoiding direct impacts, requiring monitoring, and temporarily stopping work if a northwestern pond turtle is spotted. Lastly, BIO-3a and BIO-3b would reduce impacts associated with special-status birds by minimizing potential for violation of State and Federal regulations protecting birds and their nests. Therefore, impacts associated with special-status species would be **less than significant with mitigation incorporated**.

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by CDFW or USFWS?

There is no riparian habitat in the BSA. Vernal pool grasslands and freshwater emergent wetlands, which may occur in the BSA but outside the VSWTP, may be considered sensitive natural communities. All project activities outside the VSWTP would occur within disturbed areas associated with Excelsior Wells 01, 02, and 03. Therefore, the project would have **no impact** on riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by CDFW or USFWS.

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?

There are several waters and wetlands in the BSA, all outside the VSWTP. Tributaries to Elder Creek extend east to west north and south of Excelsior Well 01 and veers north and exits the BSA. Gerber Creek is located tangential to the southeastern corner of the VSWTP and is the permitted discharge point for stormwater from the VSWTP. Freshwater emergent wetlands and potential vernal pools occur in the grasslands. Removal, filling, and permanent loss of aquatic resources is not anticipated to occur as a result of the project. All project activities outside the VSWTP would occur within disturbed areas associated with Excelsior Wells 01, 02, and 03. Therefore, the project would have **no impact** on State or Federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means.

d) Interfere substantially with the movement of any 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?

A wildlife corridor is generally a topographical or landscape feature or movement area that connects two areas of habitat that otherwise would be entirely fragmented or isolated from one another. Creeks are adjacent to the BSA but are ephemeral and would only facilitate local movement of aquatic species during the wet season. However, no project work would occur in this aquatic habitat. Additional areas that would be affected by construction in the project area are not known to contain native wildlife nursery sites, such as colonial bird rookeries or bat maternity colonies. Therefore, there would be **no impact** on migratory corridors and movement of terrestrial or aquatic animals, or use of native wildlife nursery sites.

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

There are several local ordinances to consider for project's occurring with unincorporated Sacramento County.

Native oak trees within the unincorporated area of Sacramento County are protected by the County Tree Preservation Ordinance - Chapter 19.12 and the County General Plan Conservation Element. No trees would be removed as a result of project implementation.

The County General Plan policy requires that the project result in no net loss of wetlands. Project implementation will not result in impacts or loss of wetlands.

The County's Swainson's Hawk Ordinance requires evaluation of impacts to Swainson's hawk nesting and foraging habitat, and mitigation, as appropriate. No nesting or foraging habitat would be lost as a result of project implementation. Further, based on methodology developed by the County and CDFW, foraging habitat impacts are assessed when agricultural and agricultural-residential parcels are rezoned to smaller minimum parcel sizes. The project would not require any rezoning.

Therefore, implementation of the proposed project would not conflict with applicable adopted County ordinances protecting biological resources. This impact would be **less than significant.**

f) Conflict with the provisions of an adopted HCP, Natural Community Conservation Plan, or other approved local, regional, or State habitat conservation plan?

The BSA is within the SSHCP's UDA and PPU 3. The SSHCP provides a framework to improve conservation of natural resources, including endangered species habitat, while streamlining the permitting process for planned development, infrastructure, and maintenance activities. The local permittees include the County of Sacramento, the cities of Rancho Cordova and Galt, SCWA, and the Southeast Connector Joint Power Authority. The SSHCP identifies covered activities, such as construction projects, and acknowledges that they may directly and indirectly impact natural landcover types and species habitat. Covered activities may be carried out by the third-party project proponents with authorization of the Environmental Coordinator. The SSHCP includes a list of Avoidance and Minimization Measures designed to streamline permitting processes while ensuring long-term conservation.

The biological goals and measurable objectives of the SSHCP Conservation Strategy include:

- Biological Goal 1. Preserve and link intact landscapes that include the highest quality habitat for Covered Species within the Plan Area by maintaining existing heterogeneity of natural land covers present within the HCP Area, minimizing habitat fragmentation, and maintaining landscape ecosystem functions by establishing a system of large and interconnected preserves.
- Biological Goal 2. Maintain or improve physical, chemical, and biological functions of aquatic resources within the Plan Area by avoiding or minimizing impacts of future Covered Activities on HCP Area aquatic resources and to ensure "no net loss" of aquatic resources and aquatic functions by preserving existing aquatic resources and by re-establishing or establishing aquatic resources within the HCP Area. This includes protecting the remaining natural segments of several creeks, including Morrison Creek and its first and second order tributaries, within the UDA portion of the HCP Area.
- Biological Goal 3. Preserve, re-establish, and establish natural land covers that provide habitat for Covered Species by ensuring that adequate acreage of each natural land cover remains in the HCP Area to provide necessary breeding, foraging, and/or sheltering habitat for the Covered Species and other HCP Area native species that are associated with that land cover type.
- Biological Goal 4. Maintain or improve habitat value of natural land covers that are preserved within the HCP Area by providing appropriate management and monitoring of lands preserved by the HCP to ensure that natural communities remain functional in perpetuity for the benefit of Covered Species.
- Biological Goal 5. Maintain or expand the existing distribution of each Covered Species within the HCP Area by ensuring that each Covered Species persists within the HCP Area in perpetuity, and that unoccupied but suitable habitat for each Covered Species is preserved or re-established to provide for future Covered Species population growth and dispersal.

The PPUs were delineated to capture specific habitat or agricultural land cover types or areas identified as being important for a specific suite of species. PPU 3, located in isolated areas in the northern portion of the SSHCP Area, contains documented occurrences for many of the HCP's Covered Species, including several plant species, vernal pool shrimp species, burrowing owl, tricolored blackbird, and others. Preserves in PPU 3 focus primarily on preservation of valley grassland and vernal pool habitat.

The project would result in temporary disturbance and minor amount of land use conversions within the VSWTP where new ASR wells could be installed and where the VSWTP interior perimeter road would be

trenched to installed conveyance piping. Post-construction, these areas are expected to continue to provide the same amount and quality of habitat for the special-status species, including HCP Covered Species, as they currently do. These land use conversions would not cause a net loss in the habitat values provided by these lands for HCP Covered Species in the project study area and vicinity. The overall habitat quality for HCP Covered Species that use these habitats in the greater SSHCP area is unlikely to be adversely affected. All project work at Excelsior Wells 01, 02, and 03 would be confined to the existing 8,000 to 9,000 square foot asphalt pads associated with each location, with no natural habitat disturbed (Figure 2-3 illustrates the configuration of the wells and pads at Excelsior Wells 01, 02, and 03). No portion of the project would alter the course of a stream or river, including Elder Creek and Gerber Creek.

Project implementation would not jeopardize feasibility of any biological goals and measurable objectives of the South Sacramento HCP. Most impacts resulting from the relatively small footprint of project activities would be temporary, and project implementation would not preclude land in PPU 3 from being preserved and/or managed to achieve the HCP's goals and objectives.

As the SSHCP's goals were enacted primarily to prevent loss of habitat for covered species, special addition will need to be taken for any habitat being removed both temporarily and permanently. Removing habitat for SSHCP covered species or impacting the species themselves within the project site may be a **potentially significant impact**. The following mitigation measure has been identified to address this impact.

Mitigation Measure BIO-4: Comply with the South Sacramento Habitat Conservation Plan

SCWA is required to obtain a signed authorization form prior to any ground disturbing activities from the Sacramento County Environmental Coordinator for potential impacts to terrestrial and aquatic habitat. SCWA shall comply with all applicable SSHCP Avoidance and Minimization Measures and pay fees to mitigate impacts to species and habitat prior to construction.

Timing: Before and during construction.

Responsibility: SCWA

The project would not threaten the viability of populations of HCP-covered species, reduce the effectiveness of the HCP's conservation strategy, or adversely affect attainment of the goals and objectives of the HCP. SCWA shall comply with all avoidance and minimization measures identified within the SSHCP, therefore, implementation of the proposed project would not conflict with applicable HCP goals protecting biological resources. This impact would be **less than significant with mitigation incorporated.**

3.5. Cultural Resources

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
5a. Cause a substantial adverse change in the significance of a historical resource pursuant to CCR Section 15064.5?		yes			
5b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to CCR Section 15064.5?		yes			
5c. Disturb any human remains, including remains interred outside of dedicated cemeteries?		yes			

3.5.1. Environmental Setting

In this section, cultural resources are defined as buildings, sites, structures, or objects, each of which may have historic, architectural, archaeological, cultural, or scientific importance. The State CEQA Guidelines Section 15064.5(a)(1) defines a "historical resource" as any resource listed in or determined to be eligible for listing in the California Register of Historical Resources (CRHR).

Pre Contact Setting

The summaries provided here, for both the Sacramento and San Joaquin Valleys, are distilled from Fredrickson (1994), Moratto (1984), and Rosenthal et al. (2007). Period age ranges are adjusted to modern radiocarbon calibration curves (calibrated years Before Common Era [cal BCE] and calibrated years in the Common Era [cal CE]), following the scheme of Rosenthal et al. (2007).

The Paleo-Indian Period (11,550-8,000 cal BCE)

There is little evidence for terminal Pleistocene-early Holocene habitation in the Sacramento Valley. Changing climate at the end of the Pleistocene brought floods, which covered much of the Central Valley with layers of alluvial soils that buried evidence of human occupation. People living in the San Joaquin Valley during this time are thought to have been hunters and foragers, living in small groups and travelling often from camp to camp in response to seasonal availability of resources. Hunting, specifically big game hunting, is seen as the economic focus of these early groups. Sites are expected to have been primarily located along lakesides (Fredrickson 1994).

The Lower Archaic (8,550-5,550 cal BCE)

Like the Paleo-Indian Period, evidence for Lower Archaic occupation and activity is rare in Central California are usually found as isolates. Because of the presence of large projectile points, generally stemmed points similar to Lake Mojave, Silver Lake, and Pinto points more commonly found in the Great Basin, as well as other tools, such as crescents, as well as a lack of plant processing tools, it is believed that subsistence was focused on hunting artiodactyls (hooved animals). Lower Archaic remains are

found in many of the same valley locations as Paleo-Indian remains (Fenenga 1992; Wallace and Riddell 1991). This concurrence is true mainly regarding the valleys of Central California. Unfortunately, the transition from the Pleistocene to early Holocene resulted in large amounts of deposition in the valley floors, deeply burying much of any possible archaeological sites dating to this period. Further, a second climatic event resulted in even more deposition near the middle of the Holocene. Lower Archaic period artifacts found within the San Joaquin Valley are often found as isolates, without associated faunal bone or food processing tools, such as milling equipment.

The Middle Archaic (5,550-550 cal BCE)

Settlement patterns became more stable, especially along river corridors, towards the end of the Middle Archaic period (Rosenthal et al. 2007). Despite the increased visibility in the archaeological record at this time, because of climate change, the beginning of this period included considerable deposition resulting in little archaeological evidence for the first half of this period. Evidence Statewide and for the latter half of this period in the Central Valley indicates that two distinct economic strategies were at play during this period; one associated with foothill occupations and the other on valley floors. Evidence indicates an elaborate material culture and diverse technological and dietary assemblages. The later Middle Archaic shows a very distinct adaptive pattern indicating the emergence of very organized logistical subsistence practices and increased residential stability along river corridors. The pattern appears to have been fully formed by 6,000 years ago. However, details of this adaptation, such as its origins and spatial diversity, are essentially unknown. Settlement was wide ranging and integrated as evidenced by specialized tool assemblages, land features, nonutilitarian artifacts, numerous trade goods, and plant and animal remains that indicate year-round occupation of sites (Rosenthal 2007 et al.).

The Upper Archaic (550 cal BCE to cal CE 1100)

The Upper Archaic period coincides with the onset of the Late Holocene and ushered in a period of cooler, wetter, and more environmentally stable conditions. More alluvium was deposited over the earlier archaeological sites as rivers and lakes that had dried or shrunk grew and flooded. In Central California, this resulted in alluvial fan and floodplain deposition with corresponding soil development. In many areas, current surface soils developed during this time of Late Holocene alluvium capping the more erratic and weathered Middle Holocene landscape (Rosenthal and Meyer 2004; Rosenthal et al. 2007).

The Upper Archaic archaeological record is better represented than previous periods. An increase in sites probably partly reflects the greater preservation of more recent archaeological deposits, but the increase is also clear evidence of growing human populations throughout California. There appears to be a much greater diversity in site types and artifact diversity that is especially pronounced in various burial practices across the landscape. Some patterns that began in the Middle Archaic, such as manufacture of shell beads and other ornaments (saucer and saddle shaped beads), became more abundant and widespread as did production of obsidian bifaces and refined ceremonial blades. Polished and ground stone plummets became common in areas around rivers and marshlands. Several new technologies, such as new types of bone tools and implements like bone “wands”, tubes, and ornaments, began to appear and were widespread (Rosenthal et al. 2007). Cultural diversity and social complexity both developed during the Upper Archaic, and new variation is seen in burial contexts, artifact styles, bead types, and ground stone tool forms. Long distance trade networks were established (Fredrickson 1994).

The Emergent Period (cal A.D. 1,000 to the Historic Era)

Stable climates with the onset of the Late Holocene continue through the Emergent Period, though incidents of flooding and drought occurred in local areas (Rosenthal et al. 2007).

The Emergent Period is characterized by a richer archaeological record than any period before (Bennyhoff 1977; Fredrickson 1974; Kowta 1988; Milliken et al. 2007; Rosenthal et al. 2007). The Emergent Period was a time of economic development including the expansion of trade networks, the development of wealth systems and social inequity, and the introduction of clamshell disc beads as a symbolic currency. Trade networks were further strengthened as territorial boundaries (Fredrickson 1994). The Emergent Period is typically divided into two phases on the basis of certain artifact forms and evidence for expanding sociopolitical complexity (Heizer and Fenenga 1939; Lillard et al. 1939; Milliken et al. 2007; Rosenthal et al. 2007). The initial or Lower Emergent Period is marked by the appearance of the bow and arrow, banjo-shaped abalone ornaments, elaborately incised bird bone tubes/whistles, flanged pipes/sucking tubes, and rectangular Olivella sequin (Class M) beads. The later, Upper Emergent Period is distinguished by small corner-notched, side-notched, and triangular projectile points made of predominantly obsidian and chert, Olivella lipped (Class E) clamshell disk, and magnesite cylinder beads, hopper mortars, and sites with house pits (Beardsley 1954; Elsasser 1978; Fredrickson 1974; Moratto 1984).

Historic Setting

Early History and Settlement

European American settlement of Sacramento began as early as 1839 when John Sutter established a colonial outpost at the confluence of the American and Sacramento rivers. He named this outpost New Helvetia, though it is now known as Sutter's Fort. Sutter expanded his claim in 1841 when he secured a Mexican land grant that encompassed the northern part of present-day Sacramento County, as well as large parts of present-day Sutter and Yuba counties (Hurtado 2006:52-56; Plat of the New Helvetia Rancho 1859). Two years later, Sutter leased the northern portion of his land grant to Theodore Cordua, who established the city of Marysville at the confluence of the Feather and Yuba Rivers (Hurtado 2006:52-56).

John Sutter's son, August, established the city of Sacramento in late 1848. Anticipating an influx of miners and businesses related to mining after Samuel Brannan, a newspaperman, publicized the discovery of gold in the American River. Lots sold quickly and the population grew by several thousand by the end of 1849 as newcomers and gold seekers established businesses and residences in Sacramento.

City of Sacramento

The City of Sacramento was incorporated in 1849 and served as an important gateway to California's gold fields during the Gold Rush years. The Central Pacific Railroad (CPRR) of California was formed and had a tremendous impact on Sacramento as it allowed for easier transport of goods, as well as passengers beyond the growing city (McGowan and Willis 1983:59).

Sacramento continued to grow and prosper in the 20th century. However, during the 1930s, the Great Depression impacted the community. The region suffered economically as unemployment greatly impacted Sacramento's major two industries: agricultural and railroad (Brechin and Simpson 2013:186–187). Shortly before the United States entered World War II in 1941, two local air bases, Mather Field and McClellan Air Force Base became operational and served as training repair and refitting facilities for combat aircraft (Herbert 2013:208; McGowan and Willis 1983:85).

Sacramento's post-war population increased dramatically as the suburban neighborhoods developed throughout the region. Freeway construction was also planned during this period (McGowan and Willis 1983:88–89). Sacramento continued growing into the 21st century, attracting new residents and businesses. By 2010, Sacramento encompassed more than 92 square miles and had more than 466,000 residents (U.S. Census Bureau 2014).

Transportation – Roads

As more people entered the area, trails used by Native Californians and followed by later explorers evolved into major transportation routes throughout California. In the years immediately following the Gold Rush, major waterways were inundated with boats, ferries, and rafts which transported goods and people from the valleys to the gold-bearing hills. Traffic proliferated along land routes as well, and included individuals on foot or mount, wagons, freighters, stagecoaches, and railroad cars.

Florin Road, in the project area, appears on historic topographic maps by 1894, and likely served as a maintenance route for surrounding agricultural fields for many years (USGS Lodi 1894). Sacramento was expanding by the end of World War II, and residential development began to take hold in the surrounding area. During this time, the road was likely paved due to vast road improvements that occurred throughout the nation during this post-war period (USGS Elk Grove 1952).

SCWA

The State Legislature created SCWA in 1952 by the SCWA Act. The purpose of SCWA is to distribute and store groundwater. The State Legislature also passed the Water Agency Act in 1985 which provided the District authority to create groundwater management zones in any area that may experience groundwater overdraft conditions. Today, SCWA supplies water to areas of unincorporated Sacramento County, Rancho Cordova, and a portion of Elk Grove (SCWA 2002: 3).

3.5.2. Methods of Analysis

Records Search and Archival Research

On September 27, 2025, GEI Archaeologist Andrea Nardin, Master of Arts, requested a records search at the California State University, Sacramento North Central Information Center (NCIC) of the California Historical Resources Information System. The records search included the project area and a 0.50-mile search radius. Reviewed materials included base maps indicating previous investigations and previously reported cultural resources, historic maps, and literature, and national and state cultural resource inventories.

The records search identified two resources within the project area, including P-34-003864 (a ranch complex) and P-34-003872 (a historic era well feature). Additional details on these resources are provided in Section 3.5.3, "Findings," and Section 4.1.3, "National Historic Preservation Act." The records search also identified five previous investigations which were within or intersected the project area.

GEI's architectural historians conducted archival research to identify historic events, trends, and individuals that may have been associated with the project area. Primary and secondary research included examining relevant documents and reports, as well as historic aerials, maps, and the OHP Built Environment Resource Directory. Additional research was conducted at the GEI cultural library.

Field Survey

On August 18, 2025, GEI archaeologist Andrea Nardin conducted an intensive pedestrian survey, survey transects spaced every 15 meters or closer, of the project site. Paper and electronic maps (kmz files loaded onto Google Earth on a mobile device) were carried out to ensure adequate survey coverage as well as pin flags to mark any identified artifacts and a Trimble Global Positioning System to record the location of any identified resources with submeter accuracy.

On August 18, 2025, a GEI architectural historian conducted a field survey of the project site. Historic-era (more than 45 years) built environment resources were recorded through photography and written notes.

3.5.3. Findings

During the archaeological pedestrian survey, archaeological cultural resources were not identified. The two resources identified during the records search, P-34-003864 and P-34-003872, were not found in their locations as plotted by the NCIC. Both resources had surface components (a ranch complex and a well feature) which should be visible during a pedestrian survey. These resources appear to be no longer extant within the project area.

As a result of the field survey, one historic-era built environment resource was identified—a segment of Knox Road. The segment is paved, has two lanes, and travels along the west side of the project area. The road dates to circa 1909 and originally led to a non-extant ranch property and provides access to the VSWTP facility (USGS Elk Grove 1909; NETR 2012). The segment in the project area was evaluated for CRHR eligibility as an evaluation of the entire length is beyond the scope of this project. Under Criterion 1, the road segment as part of a larger resource serves a valuable purpose as a local transportation road and as an access route for the water facility. However, it is one of many local routes and is not directly associated with events that have made a significant contribution to the broad patterns of history. Therefore, Knox Road does not appear to meet CRHR Criterion 1 and does not appear eligible under Criterion 2 as it is not known to be associated with the lives of any individuals who are historically important. Under Criterion 3, as a utilitarian road segment, the resource is not a unique example of a type, period, or method of engineering or construction. Lastly, it does not appear eligible under Criterion 4 as having yielded information important in prehistory or history. Little information is available on the resource, and it is not possible to determine if specific important research questions can be answered by data contained in the road segment. In summary, the road segment does not appear to meet any significance criteria for the CRHR, individually or as part of a larger resource.

3.5.4. Discussion

a, b) Cause a substantial adverse change in the significance of a historical resource pursuant to in CCR Section 15064.5? Cause a substantial adverse change in the significance of an archaeological resource pursuant to CCR Section 15064.5?

Under CEQA, public agencies must consider the effects of their actions on "historical resources." CEQA defines a "historical resource" as any resource listed in or determined to be eligible for listing in the CRHR. The CRHR includes resources listed in or formally determined eligible for listing in the National Register of Historic Places (NRHP), as well as some California Historical Landmarks and Points of Historical Interest. Properties of local significance that have been designated under a local preservation ordinance (local landmarks or landmark districts) or that have been identified in a local historical resources inventory may be eligible for listing in the CRHR and are presumed to be significant resources for purposes of CEQA unless a preponderance of evidence indicates otherwise (California PRC Section 5024.1, 14 CCR Section 4850). The eligibility criteria for listing in the CRHR are similar to those for NRHP listing but focus on the importance of the resources to California history and heritage. A cultural resource may be eligible for listing on the CRHR 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, resources eligible for listing in the CRHR must retain enough of their historic character or appearance to be recognizable as historical resources and to convey the reasons for their significance. Integrity is evaluated with regard to the retention of location, design, setting, materials, workmanship, feeling, and association (OHP 1999).

One historic-era built environment resource, a segment of Knox Road, is in the project area. The resource does not appear eligible for the CRHR and is not considered a historical resource for the purposes of CEQA.

In addition to the obligation to consider impacts on "historical resources," CEQA and the CEQA Guidelines require consideration of unique archaeological sites (PRC Section 21083.2, Section 15064.5). A "unique archaeological resource" is defined in CEQA (PRC Section 21083.2[g]) as:

> …an archaeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:
>
> 1. Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.

2. It has a special and particular quality such as being the oldest of its type or the best available example of its type.
3. It is directly associated with a scientifically recognized important prehistoric or historic event or person.

There are no unique archaeological resources identified within the project area. Two previous resources were identified during the records search conducted at the NCIC, but those two resources, P-34-003864 and P-34-003872, were not found during the pedestrian survey and do not appear to be extant within the project area.

In addition, given the nature of the project location, which was constructed during the late 2000s, new cultural resources would not likely be identified because they would now be covered by modern facilities including pavement, modern structures, and landscaped areas. Ground disturbance by the project would be limited to soils previously disturbed by the original VSWTP construction, making it unlikely that intact subsurface archaeological resources might be encountered. Despite the low-likelihood of an inadvertent discovery, such a discovery could result in a **significant** impact. Mitigation Measure TCR-1: Inadvertent Discovery of Tribal Cultural Resources, has been identified to address this impact.

> **Mitigation Measure TCR-1: Inadvertent Discovery of Tribal Cultural Resources**
>
> Please refer to Section 3.18, "Tribal Cultural Resources," for the full text of this mitigation measure.

If the project did impact a previously undiscovered archaeological resource, this mitigation measure would reduce the impact by engaging Native American Tribes, preserve the resource in place if possible or requiring that the resource be assessed and treated in accordance with professional standards. This impact would be **less than significant with mitigation incorporated.**

c) Disturb any human remains, including remains interred outside of dedicated cemeteries?

The CEQA Guidelines (Section 15064.5[e]) require that excavation activities be stopped whenever human remains are uncovered, and that the county coroner be called in to assess the remains. If the county coroner determines that the remains are those of Native Americans, the NAHC must be contacted within 24 hours. At that time, the CEQA Guidelines (Section 15064.5[d]) direct the lead agency to consult with any appropriate Native Americans as identified by the NAHC in a timely manner, and direct the lead agency (or applicant), under certain circumstances, to develop an agreement with the Native Americans for the treatment and disposition of the remains.

No human remains have been identified within the project site. Given the nature and context of project components, it is extremely unlikely that human remains might be discovered during project-related ground-disturbing activities. However unlikely, it is possible that human remains may be encountered; if this were to occur it would be a **significant** impact. Mitigation Measure TCR-1: Inadvertent Discovery of Tribal Cultural Resources, has been identified to address this impact.

Mitigation Measure TCR-1: Inadvertent Discovery of Tribal Cultural Resources

Please refer to Section 3.18, "Tribal Cultural Resources," for the full text of this mitigation measure.

If the project did impact human remains, this mitigation measure would reduce the impact by following State regulations regarding human remains and engage Native American Tribes to ensure proper disposition of the human remains if the remains were determined to be Native American in origin. This impact would be **less than significant with mitigation incorporated.**

3.6. Energy

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
6a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?			yes		
6b. Conflict with or obstruct a State or local plan for renewable energy or energy efficiency?			yes		

3.6.1. Environmental Setting

Pacific Gas and Electric Company (PG&E) supplies natural gas, and SMUD supplies electrical service to Sacramento County. The California Energy Commission (CEC) shows that Sacramento County consumed approximately 10,981 million kilowatts per hour in 2023 (CEC 2025). The project site currently contains an active water treatment plant, which requires electric power for lights, motors, pumps, and other devices.

3.6.2. Discussion

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 involve the use of gas- and diesel-fueled vehicles and equipment during construction activities and during the import and export of materials to and from the project site. Construction activities would occur intermittently over a 5- to 10-year period. Construction work for PW-1 and associated pipelines and Excelsior well 03 would take approximately 2 weeks, and construction of the future wells and remaining Excelsior wells would occur in future years (approximately in 5- to 10-years) and would require 4 to 6 weeks per well, and up to 2 weeks for pipeline installation. See Tables 2-1 and 2-2 within Chapter 2, "Project Description," for information regarding construction equipment uses during each stage of construction. Project construction would temporarily increase fuel consumption. However, it is anticipated that fuel would only be used to the extent it is needed to complete construction activities and would not be consumed in a wasteful manner during construction. Additionally, the selected construction contractor(s) would use the best available engineering techniques, construction practices, and equipment operating procedures. The project's use of energy resources during construction would be non-recoverable but temporary and would not include unnecessary, inefficient, or wasteful energy use.

Additionally, construction of PW-1 would include the installation of a 100 horsepower (hp) pump, and the future new wells would also include a 100 hp pump at each new well location, all of which would require electrical consumption for operation. This additional energy usage will support the conveyance

of drinking water and would be a critical aspect of the proposed project and is necessary to achieve the project goals. Overall, the increase in energy usage would be small and purposeful, and not be considered wasteful, inefficient, or unnecessary. This impact would be **less than significant**.

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

Sacramento County has not adopted a local plan for renewable energy or energy efficiency. However, the State's Climate Commitment is a greenhouse gas (GHG) reduction target of 40 percent below 1990 levels by 2030, and 85 percent below 1990 levels by 2045 (CARB 2022). The proposed project includes the installation and operation of a 100 hp pump at PW-1 and each of the new well locations. Therefore, the proposed project includes the cumulative use of several additional pumps resulting in an overall small but necessary increase in energy consumption. Due to the small nature of the increase in energy consumption needed to maintain a more resilient supply of potable water, the project would not conflict or obstruct the State's Climate Commitment. Therefore, the project would not conflict with any State standards or renewable energy plans. The project would result in a **less than significant** impact**.**

3.7. Geology and Soils

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
7a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				yes	
7a. 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 California Geological Survey (CGS) Special Publication 42.)				yes	
7a. ii. Strong seismic ground shaking?				yes	
7a. iii. Seismic-related ground failure, including liquefaction?				yes	
7a. iv. Landslides?				yes	
7b. Result in substantial soil erosion or the loss of topsoil?			yes		
7c. 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?			yes		
7d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as updated), creating substantial direct or indirect risks to life or property?			yes		
7e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?			yes		
7f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?		yes			

3.7.1. Environmental Setting

The project site is located on several soil types including San Joaquin silt loam, Durixeralfs, Red Bluff loam, and Xerarents complexes of the former and latter soils (NRCS 2025). The three Excelsior well sites are located on the Red Bluff-Redding complex and/or Redding gravelly loam. These soils are described as moderately well drained to well-drained, but are considered expansive due to their clay content,

which increase in volume when water is absorbed and shrink when dried (NRCS 2025). This shrink-swell condition can damage building foundations and other components that don't anticipate the variable conditions (County of Sacramento 2017). The shrink-swell potential varies with soil depth and ranges throughout much of the project site (U.S. Department of Agriculture [USDA]-SCS, 1993).

The southeastern end of the Willows fault is located nearly 2.6 miles west of PW-1. The Willows fault is a concealed/buried, late-Cenozoic, and steeply dipping reverse fault (east side up) that was discovered in the late 1950s in a borehole log (Harwood and Helley, 1987). The Bear Mountains Fault Zone is located 16 miles northeast to 22 miles east of the project site (CGS 2015a). This portion of the fault zone is considered pre-Quaternary although portions further northeast and southeast are mapped as late Quaternary displacement (CGS, 2025). There are no Alquist Priolo Fault Zones in the vicinity of the project site, and the project is not located in a liquefaction or landslide zone (CGS 2025). The uppermost geologic formation underlying the soils in the project area is the Tertiary Laguna Formation comprised of consolidated alluvial deposits (Wagner et. al, 1981). The project site is underlain by Pliocene-Pleistocene era non-marine sediments consisting of sandstone, shale, and gravel deposits, which are mostly loosely consolidated (CGS 2015b). All prior published paleontological resources discovered within Sacramento County have been found within Pleistocene resources. Therefore, the project site is considered sensitive for paleontological resources (County of Sacramento 2010). However, unique geological features were not identified in the Sacramento County General Plan or the CGS Geologic Map of California (CGS 2015b).

3.7.2. Discussion

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? (Refer to CGS Special Publication 42.)

The project site is not located within an Alquist-Priolo Earthquake Fault Zone, nor is it in the vicinity of any active faults. Further, the project would not introduce habitable structures that would expose people to the risk of injury or harm. There would be **no impact**.

ii, iii, iv) Strong seismic ground shaking, Seismic-related ground failure, including liquefaction, or Landsides?

Strong earthquakes generally create ground shaking, effects of which are reduced with increased distance from the earthquake epicenter. The earthquakes intensity, duration, and distance from the project site will determine the area affected by ground shaking. The Sacramento County General Plan (2017) states that because no major faults transect Sacramento County, the County is less affected by seismic events than other portions of the state. Nevertheless, some property damage has occurred in the past largely due to major seismic events occurring in adjacent areas (County of Sacramento 2017). Although there are no active faults in the vicinity of the project site, there is still potential for ground shaking to occur. The project site is not located within an Alquist-Priolo Fault Zone, nor does it overlie any known active or potentially active fault traces (CGS 2015, 2025). The nearest mapped Pre-Quaternary faults include the southeastern end of the buried Willows fault, located approximately 3

miles west and part of the Bear Mountains fault zone, located approximately 22 miles east of the site. Given this distance and the lack of active surface faulting in the project area, the potential for surface fault rupture at the site is negligible. The project site is not located within a mapped liquefaction or landslide hazard zone. Additionally, the project site is located in an area of relatively flat topography with 0 to 2 percent slopes and does not present conditions prone to seismically induced landslides. Based on the absence of active faults, flat topography, and the lack of mapped liquefaction or landslide hazards, the proposed project would not directly or indirectly cause substantial adverse effects related to strong seismic ground shaking, liquefaction, or landslides. The project would have **no impact**.

b) Result in substantial soil erosion or the loss of topsoil?

The soils underlaying the project site are not highly susceptible to erosion under normal conditions and are currently paved or protected with a gravel ground cover. Construction activities associated with well installation, trenching for pipelines, and other ground disturbance could temporarily expose soils to wind or water erosion. However, the relatively flat topography of the project site limits the potential for substantial erosion. All construction activities would be required to comply with the Construction General Permit (Order 2022-0057-DWQ, as amended), which requires preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP would include best management practices (BMPs), such as silt fencing, fiber rolls, stabilized construction entrances, and proper stockpile management to minimize erosion and control sediment transport during construction. Upon completion of ground-disturbing activities, disturbed areas would be restored to approximate pre-construction conditions, further reducing long-term erosion potential. During operations, the project would not substantially increase impervious surfaces or change site drainage patterns that would cause substantial erosion or the loss of topsoil. With implementation of standard erosion control measures and compliance with regulatory requirements, the project would not result in substantial soil erosion or the loss of topsoil. Impacts would be **less than significant**.

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?

The soils and the relatively flat topography of the project site are not prone to landslides or lateral spreading. The project site is not mapped within a landslide or liquefaction hazard zone. The proposed project is designed to recharge the aquifer with potable water during wet years and withdraw water in dry years. Because the project would increase groundwater storage rather than contribute to overdraft, the potential for regional subsidence to occur as a result of the project is low. Construction activities, such as well drilling and trenching, would be temporary, small in scale, and would not alter the stability of underlying geologic units. The project would not be located on, nor is it likely to create unstable geologic units or soils that could result in landslide, lateral spreading, liquefaction, collapse, or substantial subsidence. Impacts would be less than significant.

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

Expansive soils shrink and swell with changes in moisture content, which can create risks to structures if not properly managed. The project site is underlain by San Joaquin silt loam, Durixeralfs, and Red Bluff loam, and the Excelsior wells are underlain by the Red Bluff-Redding complex and/or Redding gravelly

loam (NRCS 2025). These soils are characterized as well-drained but may have some expansive potential. The project does not include the construction of any above-ground structures that would be inhabited by people; therefore, there is no risk to life. However, subsurface well installations and pipelines could be adversely affected by expansive soils that could jeopardize structural integrity. The project would adhere to applicable building and engineering standards, and construction practices thereby reducing risks to property. Therefore, impacts would be **less than significant**.

e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

The project would not require the use of on-site wastewater treatment or disposal. There would be **no impact**.

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

There are no known unique geologic features on the project site. However, based on the County of Sacramento General Plan and known geologic units underlain at the project site, it is considered sensitive for paleontological resources. The project would involve ground disturbance of up to 700 feet below ground surface for well drilling at locations that have already been previously disturbed by existing infrastructure and long-term agricultural use. Excavation could extend beyond the surface soil layer into native Pleistocene sediments that are regionally sensitive for paleontological resources. Since the upper soil layer at the project site has been disturbed by agricultural activities, the likelihood of encountering fossils is considered low to moderate. However, given the sensitivity of underlying formations, the following mitigation measure has been developed.

Mitigation Measure GEO-1: Conduct Construction Personnel Education, Stop Work if Paleontological Resources are Discovered, Assess the Significance of the Find, and Prepare and Implement a Recovery Plan as Required.

SCWA and its construction contractor(s) will implement the following measures to minimize potential adverse effects on previously unknown, potentially unique, and scientifically important paleontological resources:

- Before the start of any earthmoving activities, SCWA will retain a qualified paleontologist or archaeologist to train all construction personnel involved with earthmoving activities that would disturb at least 5 vertical feet in areas of sensitive geologic deposits, including the site superintendent, regarding the possibility of encountering fossils, the appearance and types of fossils likely to be seen during construction, and proper notification procedures should fossils be encountered.

- If paleontological resources are discovered during earthmoving activities, the construction crew will immediately cease work in the vicinity of the find and notify SCWA. SCWA will retain a qualified paleontologist to evaluate the resource and prepare a recovery plan in accordance with SVP guidelines (SVP 2010). The recovery plan might include but would not be limited to, a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of

findings. Recommendations in the recovery plan that are determined by SCWA to be necessary and feasible will be implemented before construction activities can resume at the site where the paleontological resources were discovered.

Timing: Before and during ground-disturbing activities.

Responsibility: SCWA and its construction contractor(s).

Implementing Mitigation Measure GEO-1 would reduce potentially significant impacts related to damage to or destruction of unique paleontological resources, and if resources were encountered, fossil specimens would be recovered and recorded and would undergo appropriate curation in accordance with SVP guidelines. Therefore, the project would have a **less than significant impact with mitigation incorporated**.

3.8. Greenhouse Gas Emissions

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
8a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			yes		
8b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?			yes		

3.8.1. Environmental Setting

Certain gases in the earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. A portion of the solar radiation that enters the atmosphere is absorbed by the earth's surface, and a smaller portion of this radiation is reflected back toward space. Infrared radiation (thermal heat) is absorbed by GHGs in the atmosphere; as a result, infrared radiation released from the earth that otherwise would have escaped back into space is instead "trapped," resulting in a warming of the atmosphere. This phenomenon, known as the "greenhouse effect," is responsible for maintaining a habitable climate on Earth.

GHGs are present in the atmosphere naturally, released by natural sources, and formed from secondary reactions taking place in the atmosphere. GHG emissions associated with human activities are highly likely responsible for intensifying the greenhouse effect and have led to a trend of unnatural warming of the earth's atmosphere and oceans, with corresponding effects on global circulation patterns and climate (Intergovernmental Panel on Climate Change [IPCC], 2023).

Sacramento County adopted a Climate Action Plan (CAP) in November 2024 (Sacramento County 2024). The CAP details specific measures that will be implemented in Sacramento County by 2030 GHG emissions from communitywide activities and government operations. It also includes an adaptation plan that recommends actions to reduce the community's vulnerability to the anticipated impacts of climate change.

3.8.2. Discussion

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

The SMAQMD has adopted a CEQA threshold of 1,100 metric tons (MT) of carbon dioxide equivalent per year (CO_2e) for construction-related GHG emissions related to land development and construction, and stationary source construction and operation (SMAQMD 2021). Implementing the proposed project would generate temporary construction-related GHG emissions that would cease following construction of the proposed project. Construction emissions would be generated by vehicle engine exhaust from

heavy-duty construction equipment, haul trips, and construction worker trips. Construction would be temporary and short-term Construction-related GHG emissions were modeled using CalEEMod Version A2022.1. Modeling results show that the proposed project's total construction-related GHG emissions in 2026 would be 30.7 MT CO_2e, additional Future Term emissions would result in 306 MT CO_2e per year.

Because the total construction emissions would not exceed SMAQMD's threshold of significance, the proposed project would not generate GHG emissions, either directly or indirectly, that would have a significant impact on the physical environment. Therefore, this impact would be **less than significant**, and no mitigation would be required.

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

Although implementing the proposed project would cause temporary construction-related GHG emissions, the project's intent, purpose, and function align with the goals of the Assembly Bill (AB) 32 Scoping Plan to protect against the detrimental effects of climate change. CARB's Scoping Plan includes measures that would indirectly address GHG emissions from construction activities, including the phasing-in of cleaner technology for diesel engine fleets (including construction equipment) and the development of a Low Carbon Fuel Standard. Policies formulated under the mandate of AB 32 that apply to construction-related activity, either directly or indirectly, are assumed to be implemented Statewide and would affect the proposed project should those policies be implemented before construction begins. The proposed project's construction emissions would comply with any mandate or standards set forth by the Scoping Plan. The impact would be **less than significant**.

3.9. Hazards and Hazardous Materials

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
9a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			yes		
9b. 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?			yes		
9c. Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				yes	
9d. 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?				yes	
9e. 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?				yes	
9f. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?				yes	
9g. Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?				yes	

3.9.1. Environmental Setting

To identify the potential for exposure to hazardous materials along the project alignment, Federal, State, and local databases were reviewed to evaluate current and historic land uses and identify the presence of hazardous materials sites listed pursuant to Government Code 65962.5 (Cortese List). These

sources include the GeoTracker database, a groundwater information management system that is maintained by the SWRCB; the Hazardous Waste and Substances Site List (i.e., the EnviroStor database), maintained by the California Department of Toxic Substances Control (DTSC); and EPA's Superfund Site database (DTSC 2025a and 2025b, SWRCB 2025a and 2025b, CalEPA 2025). There are no hazardous materials sites identified within 0.25-miles of the proposed project site.

The proposed project is not located in an area identified as more likely to contain asbestos by the California DOC (DOC 2000). This issue is not discussed further in this IS/MND.

The project site is located in a rural agricultural area of Sacramento County with few residents nearby. The nearest sensitive receptors include a residence about 0.1 mile from the proposed modifications to the existing Excelsior wells and residences on the south side of Florin Road, approximately 0.1 mile south of the VSWTP. There are no schools within one-quarter mile of the project site. The nearest school is the Arnold Adreani Elementary School located approximately 1.9 miles south of the project site.

The project site is located about 3 miles south of the Sacramento Mather Airport, which is within the Airport Land Use Compatibility Plan (ALUCP) Airport Influence Area (AIA) "Review Area 2" (Sacramento County Association of Governments [SACOG] 2022). The AIA is defined as the area or areas in which current or future airport-related noise, over flight, safety, and/or airspace protection factors may significantly affect land uses or necessitate restrictions on those uses. Review Area 2 is limited to airspace protection, wildlife hazard, and overflight notification policies (SACOG 2022). This area does not include noise or safety compatibility zones, and therefore no noise or safety restrictions apply.

Primary evacuation routes in Sacramento County consist of the major interstates, highways, and arterials (County of Sacramento 2018). The nearest evacuation route to the project site is State Route (SR) 16, approximately 1.3 miles north. The project site is located in a moderate Fire Hazard Severity Zone (FHSZ) (CAL FIRE, 2025).

3.9.2. Discussion

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

Proposed project construction activities would involve the storage, transport, and use of small amounts of hazardous substances necessary to operate and maintain construction vehicles and equipment, such as oils, lubricants, and fuel. The routine use or an accidental spill of these hazardous materials could result in inadvertent releases, which could adversely affect construction workers, the public, and the environment. However, the transport and use of hazardous materials are strictly regulated by Federal, State, local and agencies to minimize adverse hazards from accidental release. The EPA, DTSC, California Highway Patrol, and Caltrans implement and enforce State and Federal laws regarding hazardous material transportation. Contractors would be required to use, store, and dispose of any hazardous materials in accordance with all applicable regulations. Since compliance with existing hazardous materials regulations and programs are mandatory, project construction activities are not expected to create a potentially significant hazard to construction workers, the public, or the environment. The

proposed project would not involve routine or long-term transport or disposal of hazardous materials, after construction. Therefore, this impact is considered **less than significant**.

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

There are no schools located within one-quarter mile of the project site, and the nearest school is located nearly 2 miles away. There would be **no impact**.

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?

The proposed project site is not identified on lists compiled pursuant to Government Code Section 65962.5. There would be **no impact**.

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 located within Review Area 2 of the Sacramento Mather Airport ALUCP, which is limited to airspace protection, wildlife hazard, and overflight notification policies. Review Area 2 does not include noise or safety compatibility zones. Therefore, the project would not result in a safety hazard or expose people residing or working in the project area to excessive noise. There would be **no impact**.

f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

The nearest designated evacuation route is SR 16, located approximately 1.3 miles north of the project site. Project construction and operation would not block or otherwise interfere with access to SR 16 or other local roadways used for evacuation. Therefore, the project would not impair implementation of or physically interfere with an adopted emergency response or evacuation plan. There would be **no impact.**

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

The project site is not located within a very high FHSZ. The project site is located in a rural agricultural area with minimal residences and limited vegetation that could serve as a fuel source for wildfires. Construction and operation of the proposed project would not increase the risk of loss, injury or death from wildland fires at the project site or within the vicinity. There would be **no impact.**

3.10. Hydrology and Water Quality

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
10a. Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?			yes		
10b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			yes		
10c. 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:			yes		
10c. i. result in substantial erosion or siltation on- or off-site;			yes		
10c. ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;			yes		
10c. 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			yes		
10c. iv. impede or redirect flood flows?			yes		
10d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?				yes	
10e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?			yes		

3.10.1. Environmental Setting

The proposed project is located at the VSWTP, which obtains its source water from the Sacramento River. Water is diverted from the Freeport Intake Facility and conveyed approximately 10 miles east to the plant via a transmission pipeline (GEI 2023).

The project site is in the SASb of the Sacramento Valley Basin (California Department of Water Resources [DWR] Basin No. 5-021.65). Under the Sustainable Groundwater Management Act (SGMA), the subbasin is classified as "High Priority" but is not considered "Critically Overdrafted" (DWR 2019). Groundwater management in the area is overseen by the Sacramento Central Groundwater Authority. Water bearing formations in the SASb include younger alluvium (consisting of flood basin deposits, dredge tailings, and Holocene stream channel deposits), older alluvium, and Miocene/Pliocene volcanics (DWR 2004). Areas of recharge generally occur along active stream channels where flood deposits and channel deposits consist of unconsolidated silt, fine- to medium-grained sand, and gravel (DWR 2004). The VSWTP is situated near the perimeter of a large cone of depression in the regional Sacramento Valley Groundwater Basin (SVGB), which has developed due to long-term pumping from municipal and agricultural supply wells south and southwest of the site. Groundwater levels in the project area are currently greater than 100 feet below ground surface (GEI 2023).

Local groundwater is characterized as mixed-cation-bicarbonate water with a TDS concentration of approximately 150 mg/L. Sacramento River water is generally of higher quality, with a calcium-magnesium-bicarbonate character and a TDS concentration of approximately 75 mg/L (GEI 2023). The Sacramento River and Delta Waterways (northern portion) in the vicinity of the Freeport Intake Facility, is on the CWA 303(d) list for legacy pesticides (including chlordane, Dichlorodiphenyltrichloroethane, diazinon, and dieldrin), mercury, polychlorinated biphenyls, invasive species, and general toxicity (SWRCB 2020).

Groundwater and surface water quality are regulated by the RWQCB under the Porter-Cologne Act. The SWRCB has also adopted General Order 2012-0010, which provides requirements for ASR programs to protect water quality from DBPs and other constituents. Drinking water quality is regulated under federal and state Safe Drinking Water Act standards.

Sacramento County Stormwater Utility is responsible for stormwater management in the project area. Drainage features in the vicinity include Gerber Creek, which flows north-south and crosses Florin Road near the southeastern corner of the VSWTP, as well as an east-west reach of Elder Creek north of the plant. Additional unnamed ephemeral streams cross Excelsior Road adjacent to the proposed Excelsior wells. The project site is mapped in Federal Emergency Management Agency (FEMA) Flood Hazard Zone X, or Area of Minimal Hazard (FEMA 2025). The project area is not located in a tsunami hazard area (DOC 2025). A seiche is a standing wave oscillation of the surface of an enclosed or partially enclosed body of water (such as a lake or reservoir), typically caused by seismic activity, strong winds, atmospheric pressure changes, or landslides. There are no large, enclosed bodies of water in the project area that could cause a seiche.

The proposed project would utilize the aquifer system to store potable water when it is plentiful and then recover most of the stored water when drought conditions limit the availability of surface water. The recharge period in California is typically during the wet months (November to April) while the

recovery period would be in the drier months (August to October). Groundwater levels will rise during the recharge period and will be drawn down during the recovery period. The proposed project is located within an existing treatment facility that produces potable water from river water and existing potable water supply wells.

At the VSWTP, the upper portion of the Mehrten Formation is the target aquifer, where the depth to groundwater is approximately 110 feet below grade. ASR operations typically leave 20 percent of the recharged water in the aquifer to serve as a buffer and mixing zone between native groundwater and the 'bubble' of recharged water.

ASR pilot testing indicates that the compositions of the potable water and native groundwater were fairly compatible, but the potable water could dissolve probable sulfide minerals in the aquifer to increase sulfate concentrations somewhat and mobilize arsenic. Sulfate concentrations in the recovered water were well below the drinking water standard (11 parts per million [ppm] versus 250 ppm, respectively), while arsenic concentrations increased to nearly the drinking water standard (9 parts per trillion [ppt] versus 10 ppt, respectively). This latter condition would likely require quarterly sampling and analysis for arsenic instead of the usual annual sampling and analysis. In addition, the field pH of the recovered water increased temporarily to 8.9, which would limit the discharge of this water to Gerber Creek but would be beneficial to the conveyance piping since the higher pH water would not be as corrosive to the piping. Laboratory values of pH were equal to or less the discharge limitation of 8.5 for pH.

3.10.2. Discussion

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

Construction of ASR wells and associated pipelines could lead to temporary soil disturbance and localized runoff during storm events. Accidental releases of fuels, lubricants, or drilling fluids could enter stormwater runoff if not properly contained. These activities would occur within the developed VSWTP property, but in the event of heavy rain, disturbed soils and contaminants could be carried in surface runoff to the site drainage system, including the stormwater retention basins, leading to increased turbidity or pollutant concentrations. To minimize construction-related water quality impacts, SCWA and its contractors are required to comply with the SWRCB Construction General Permit by preparing and implementing a SWPPP. The SWPPP will specify BMPs for erosion prevention, spill prevention, and proper storage of fuels and other fluids with contaminants. Implementation of these measures would reduce the risk of pollutants from entering waterways or otherwise degrading surface or groundwater quality.

Operation of the ASR system involves seasonal recharge and withdrawal of potable water treated at the VSWTP. Potable water would typically be recharged (injected) into the aquifer during winter in above-normal to wet WYs and withdrawn in summer or during below-normal to critical WYs. The system would be backflushed periodically (e.g., weekly, twice monthly) to remove potential build-up of fine particulates, and water withdrawn from the aquifer would be pumped into the existing distribution system and will likely require disinfection. Operation also includes routine collection of samples for

laboratory analysis and monitoring of groundwater levels, in compliance with requirements of the SWRCB Division of Drinking Water and the Central Valley RWQCB.

Source water for recharge is the Sacramento River, which generally has lower concentrations of TDS, manganese, and other trace constituents compared to local groundwater. Therefore, recharge water would not degrade baseline groundwater quality. The primary constituents of concern are DBPs, including trihalomethanes and haloacetic acids, which are regulated under state and federal drinking water standards. General Water Quality Order 2012-0010 provides specific requirements for ASR projects to ensure injected water remains protective of groundwater quality (SWRCB 2012). The RWQCB will issue a Notice of Applicability that includes a MRP, and SCWA will be required to comply with all permit conditions (SWRCB 2012, GEI 2023). The MRP requires routine groundwater sampling and reporting to the RWQCB to demonstrate ongoing compliance with applicable water quality standards. Together, compliance with the SWPPP requirements during construction and adherence to the General Water Quality Order and its MRP during operation, would reduce potential impacts on surface and groundwater quality. Therefore, project impacts related to water quality would be **less than significant**.

The ASR pilot test indicated that ASR could be a viable means to improve groundwater conditions in the VSWTP vicinity. DBPs are not likely to be an issue for an ASR operation. The pilot test did identify the potential to mobilize arsenic where concentrations could exceed drinking water standards, which would require treatment prior to distribution to the public. In addition, the pH of the recovered water could be high enough to limit discharge to Gerber Creek during backflushing operation.

These issues will be addressed by two permitting processes:

- RWQCB review of the SCWA Notice of Intent to implement an ASR project. The Notice of Applicability will include a Monitoring and Reporting Program.
- SWRCB Division of Drinking Water review of an Amendment to the Domestic Water Supply Permit to include an ASR well as a source for drinking water.

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

ASR is intended to increase the volume of groundwater in the VSWTP vicinity via the recharge of potable water and provide a more resilient supply, primarily for County Zone 40 customers. Private well owners may experience somewhat higher water levels (and lower pumping costs) during recharge and storage periods, depending on their distance from the ASR wells. The ASR activities would not include any new surface water rights or change to the treatment capacity at the VSWTP.

Construction of the ASR wells and pipelines would not involve dewatering or permanent groundwater extraction and therefore would not decrease groundwater supplies during construction. Implementation of the project does not involve creation of new impervious surfaces that would reduce natural recharge from existing conditions.

During operation, the project would involve seasonal recharge and storage of potable surface water treated at the VSWTP and the subsequent withdrawal of that stored water. Source water is diverted from the Sacramento River under SCWA's existing rights, therefore the project would not require new

water rights and would not change the treatment capacity of the VSWTP. The purpose of the ASR program is to increase the volume of groundwater in the vicinity of the VSWTP and to provide a more resilient supply. The recharge function would benefit regional groundwater conditions by raising groundwater levels near the ASR wells and extending outward. Private well owners in the vicinity may experience somewhat higher water levels and reduced pumping costs during recharge and storage periods. These operations are consistent with sustainable groundwater management practices and would not result in a net reduction of groundwater storage.

The SASb is designated as a High Priority basin under SGMA but is not considered critically overdrafted (DWR 2019). By increasing managed recharge and providing additional water supply reliability in drought years through conjunctive use, the proposed project would contribute to long-term groundwater sustainability. Therefore, the project would not substantially deplete groundwater supplies or interfere with recharge in a way that would impede sustainable groundwater management of the basin. Impacts would be **less than significant**, and implementation of the project would also provide beneficial effects by raising groundwater levels near the VSWTP and contributing to long-term supply reliability.

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, ii, iii, iv) Result in substantial erosion or siltation on or offsite; Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on or offsite; 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 Impede or redirect flood flows?

The project is located within an 80-acre existing water treatment facility with its own system for managing stormwater runoff. The project will not alter drainage patterns or significantly increase the area of impervious surfaces. The project will not substantially increase erosion or runoff and will not increase flooding or exceed the capacity of existing stormwater systems.

Construction of the ASR wells would occur within the already developed VSWTP property. Construction activities would involve temporary ground disturbance for well pads, trenching for short lengths of pipeline, and installation of pumps and associated infrastructure. The total disturbed area would be relatively small, and no alteration of streams or rivers would occur. Construction activities could result in short-term increases in surface runoff or erosion if not properly managed. However, SCWA and its contractors are required to comply with the SWRCB General Construction Permit by preparing and implementing a SWPPP. The SWPPP includes BMPs, such as erosion and sediment control, stabilization of disturbed sediments, and proper storage for fuels and other fluids that could be considered contaminants. Implementation of these measures would prevent pollutants from being transported into onsite runoff control system and would control discharge during construction. During operation, the project would not introduce substantial new impervious surfaces beyond well pads and small equipment areas, with pads and areas totaling approximately 100 square feet. These minimal areas of added impervious surface would not noticeably alter site drainage patterns or increase runoff volumes. No portion of the project would alter the course of a stream or river, and stormwater runoff from the VSWTP would continue to be controlled by the existing retention basins prior to discharge to Gerber

Creek. The project site is mapped in FEMA Flood Hazard Zone X (Area of Minimal Flood Hazard) and would not be prone to substantial flooding. The proposed ASR program would not create new sources of polluted runoff, as recharge and recovery pumping activities are fully contained within the well system and existing treatment and distribution infrastructure. Implementation of the BMPs required by the SWPPP would ensure impacts related to erosion from short-term construction activities are minimized. The project would not alter natural drainage features, substantially increase runoff, or impede flood flows. Therefore, project impacts would be **less than significant**.

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

The project site is located well inland within unincorporated Sacramento County and is not within a tsunami hazard zone. The project site is mapped as Flood Hazard Zone X (Area of Minimal Flood Hazard) and is not adjacent to large waterbodies that could generate a seismic seiche. The proposed project would not construct buildings or store materials onsite where they could be inundated by tsunami, floodwater, or seiche. There would be **no impact**.

The project site is not subject to inundation from surface water flooding, tsunami, or seiche because potential flooding (100-year) from Elder Creek does not extend into the VSWTP or the Excelsior well sites. A tsunami will not impact the project site because the Pacific Ocean is located 80 miles to the west with considerable area and attenuation features, including the ground surface elevation of more than 70 feet at the VSWTP. A seiche will not be an impact because the project sites is not located adjacent to a lake or reservoir.

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

The project will not conflict or obstruct with the water quality control plan for the SVGB or with the groundwater sustainability plan (GSP) for the SASb of the SVGB. ASR is generally discussed in the SASb GSP as a means of improving sustainability, but the proposed project is not described specifically.

Please refer to the discussion above under (a) and (b). The project would not result in other effects that would conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. This impact would be **less than significant**.

3.11. Land Use and Planning

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
11a. Physically divide an established community?				yes	
11b. 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?			yes		

3.11.1. Environmental Setting

The majority of the project site is located at the current VSWTP, with the Excelsior wells located in the near vicinity. The project site is surrounded by open space and grazing land and is designated by FMMP as farmland of local importance, grazing land, and built-up/developed (DOC 2018). The County of Sacramento designated the land use of the project area as general agriculture (20 acres), which is defined as land that is generally suitable for agricultural production with the specific intent to provide an opportunity for starter farms or large hobby farms according to the General Plan (County of Sacramento 2011 and 2022). The VSWTP parcel is zoned Agriculture, 80 acres (AG-80) and the location of the Excelsior Wells 1 and 2 are zoned Agriculture, 20 acres (AG-20) and Well 3 Agriculture, 160 acres / Surface Mining (AG-160 (SM)). The areas surrounding the project sites are similarly zoned.

West Jackson Highway Master Plan

In June 2025, the West Jackson Highway Master Plan (PLNP2008-00240, SCH No. 2013092021) was adopted by the Sacramento County Board of Supervisors. The Master Plan covers approximately 5,913 acres south of U.S. Highway 50 and southwest of Mather Airport, including portions of the Vineyard community, and establishes specific land uses, policies, and standards for development within the plan area, with the anticipation of the area developing to urban levels of use. The eastern boundary of the Master Plan area runs along Excelsior Road. Land uses within the Master Plan area are consistent with County Zoning and the growth potential of the area at full buildout.

The VSWTP site, as well as Excelsior Well 03, are located within the boundaries of the West Jackson Highway Master Plan area.

Vineyard Community

The Vineyard Community Plan was adopted in June 1985 (Res No. 85-899) to identify specific goals and objectives for the development of the community. The Vineyard Community Plan spans approximately 37 square miles and is generally bounded by SR-16, Sunrise Boulevard / Grant Line Road, Calvine Road, and Elk Grove-Florin Road. The Vineyard Community Plan was developed to provide guidance for the

future growth and development of the Vineyard area and includes community goals and objectives, policies and programs, and a recommended pattern of future land uses.

Land use designations in the Vineyard Community Plan are generally consistent with the land use designations in the General Plan Land Use Element. An exception to this is in the far southwest corner of the Vineyard community where land use was amended as part of the Vineyard Community Plan to allow for urbanization.

3.11.2. Discussion

a) Physically divide an established community?

The physical division of an established community generally refers to the construction of a feature, such as an interstate highway or railroad tracks, or removal of a means of access, such as a local road or bridge that would impact mobility within an existing community or between a community and outlying area. Implementation of the project would not construct any permanent linear physical structures that would result in dividing the Vineyard community. Therefore, the proposed project would result in **no impact** to the physical division of an established community.

b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

In the Sacramento County Zoning Code, areas zoned for general agriculture (20 acres), include some approved industrial uses, including major and minor utility use (County of Sacramento 2025). The proposed project would utilize existing buildings, development, and infrastructure within the project site, and would also include the construction of new wells at a future time. Construction of the new future wells would occur within the confines of the VSWTP. Additionally, the project site is located within the Sacramento County Urban Services Boundary, which was established in 1993 as a permanent boundary for urbanization. Within this boundary, planning and development are compatible land uses, including for activities such as public services and water provision. Therefore, the proposed project is compatible with this plan. The proposed project would provide long-term benefits of increased water access and reliability in the area and would not have a long-term detrimental impact on the management or use of surrounding natural resources. Upon project completion, utilization of the land would be functionally similar to pre-construction conditions, with the addition of the constructed new wells. The proposed project would not change the overall rural character of lands in the vicinity of the project site or result in land use inconsistencies with local and regional plans. Therefore, this impact would be l**ess than significant**.

3.12. Mineral Resources

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
12a. 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?			yes		
12b. 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?				yes	

3.12.1. Environmental Setting

In compliance with the Surface and Mining Reclamation Act, the CGS established a Mineral Resource Zones (MRZ) classification system to denote location and significance of key extractive resources. Lands throughout Sacramento County are classified as MRZs of varying significance. The MRZ categories are as follows:

MRZ-1: Areas where adequate information indicates that no significant mineral deposits are present or where it is judged that little likelihood exists for their presence.

MRZ-2: Areas where adequate information indicates significant mineral deposits are present, or where it is judged that a high likelihood exists for their presence.

MRZ-3: Areas containing mineral deposits the significance of which cannot be evaluated from available data.

MRZ-4: Areas where available information is inadequate for assignment to any other MRZ.

The project site is in the Greater Sacramento Area Production-Consumption Region and is designated as MRZ-2, 3, and 4, meaning there are significant mineral deposits (CGS 2023; O'Neal, M. and Gius, F. 2018a). Specifically, the project site is located near an aggregate mine (< 1,000 feet) for Teichert Aggregates (O'Neal M. and Gius, F. 2018b). Sand and gravel mined in Sacramento County is exclusively used for construction (County of Sacramento 2017).

3.12.2. Discussion

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?

The project site and adjacent land are designated MRZ-2, -3, and -4, which means there is high likelihood of significant mineral resources. However, the proposed project would be constructed within the

existing VSWTP facility and utilize the existing Excelsior wellfield but would not impact the nearby aggregate mining site. Implementation of the proposed project would not impede future access of subsurface mineral resources of regional importance. The project would result in a **less than significant impact**.

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?

The project site is not located on a locally important mineral resource recovery site and would not impact the nearby aggregate mining site. There would be **no impact**.

3.13. Noise

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
13a. 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 in other applicable standards of other agencies?			yes		
13b. Generation of excessive groundborne vibration or groundborne noise levels?			yes		
13c. 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 2 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?				yes	

3.13.1. Environmental Setting

Noise and Vibration

Noise is defined as sound that is unwanted (loud, unexpected, or annoying). Excessive exposure to noise can result in adverse physical and psychological responses (e.g., hearing loss and other health effects, anger, and frustration); interfere with sleep, speech, and concentration; or diminish the quality of life.

The perceived loudness of sounds depends on many factors, including sound pressure level and frequency content. However, within the usual range of environmental sound levels, perception of loudness is relatively predictable, and can be approximated through frequency filtering using the standardized A-weighting network. There is a strong correlation between A-weighted sound levels (decibels expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard descriptor for environmental noise assessment. All noise levels reported in this section are in terms of A-weighting.

Groundborne vibration is energy transmitted in waves through the ground. Vibration attenuates at a rate of approximately 50 percent for each doubling of distance from the source. The Federal Transit Authority (FTA) has established maximum-acceptable vibration thresholds for different land uses. These guidelines recommend 72 vibration dB (VdB) for residential uses and buildings where people normally sleep when the source of vibrations is frequent in nature (FTA 2018).

Noise Sensitive Receptors

The project site is located in unincorporated Sacramento County, with few rural residences nearby. The nearest sensitive receptors include a residence about 0.1 mile from the proposed modifications to the existing Excelsior wells and residences on the south side of Florin Road, approximately 0.1 mile south of the VSWTP.

Existing Vibration Environment

The existing vibration environment on the project site is dominated by local agricultural operations and transportation-related vibration from roads and highways. These sources would generate low amounts of vibration, with infrequent noticeable vibration.

Sacramento County Noise Ordinance

Chapter 6.68 "Noise Control" of the Sacramento County Code of Ordinances includes acceptable exterior noise standards, as shown in **Table 3.13-1**. Additionally, Chapter 6.68 "Noise Control" states that that noise sources associated with construction, repair, remodeling, demolition, paving or grading of any real property, provided said activities do not take place between the hours of 8:00 p.m. and 6:00 a.m. on weekdays or from 8:00 p.m. to 7:00 a.m. on Saturdays and Saturdays are exempt from the provisions of this chapter. Additionally, when an unforeseen or unavoidable condition occurs during a construction project and the nature of the project necessitates that work in process be continued until a specific phase is completed, the contractor or owner shall be allowed to continue work after 8:00 p.m. and to operate machinery and equipment necessary until completion of the specific work in progress can be brought to conclusion under conditions, which will not jeopardize inspection acceptance or create undue financial hardships for the contractor or owner. (Sacramento County 2025)

Table 3.13-1. Exterior Noise Standards

Time Period	Exterior Noise Standard
7:00 a.m. to 10:00 p.m.	55 dBA
10:00 p.m. to 7:00 a.m.	50 dBA

Notes: dBA = A-weighted decibels
Source: Sacramento County 2025

3.13.2. Discussion

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 in other applicable standards of other agencies?

The proposed project would generate temporary and short-term construction noise from equipment operating on the project site, and from the transport of construction equipment, materials, and workers to and from the site. Noise levels from the project-related construction would be audible but would not increase substantially over existing levels. The list of construction equipment that may be used for project construction activities is shown in **Table 3.13-2** with typical noise levels generated at 50 feet from the equipment (reference levels). Project construction activities are considered exempt from the Sacramento County Noise Ordinance. Noise generated at the nearby sensitive receptors would be short-

term and not substantially different than noise generated from VSWTP operations and nearby agricultural operations. The nearest sensitive receptors are located approximately 500 feet from construction activities. Considering standard distance attenuation of 6 dBA per doubling of distance (FTA 2018) and using the most noise-generating piece of equipment (bulldozer and grader at 85 dBA at 50 feet), noise levels at sensitive receptors would be approximately 67 dBA. Although this is higher than the Sacramento County acceptable exterior noise levels, which state 55 dBA between the hours of 7:00 a.m. to 10:00 p.m., and 50 dBA between the hours of 10:00 p.m. and 7:00 a.m., construction noise is exempt from the Sacramento County Noise Ordinance. Additionally, construction noise would be temporary in nature and following completion of the project, noise levels within the project site would return to pre-project levels. Therefore, this impact is considered **less than significant**.

Table 3.13-2. Construction Equipment and Typical Equipment Noise Levels.

Type of Equipment	Typical Noise Levels (dBA) L_{max} at 50 Feet
Bulldozer	85
Compactor	82
Drill Rig	-
Excavator	-
Generator	82
Grader	85
Front End Loader	80
Pump	82
Truck	84

Notes: dBA = A-weighted decibels; - = no value provided. Leq = 1-hour equivalent sound level (the sound energy averaged over a continuous 1-hour period)

Source: Construction equipment list based on FTA 2018, adapted by GEI in 2024

b) Generation of excessive groundborne vibration or groundborne noise levels?

The proposed project would generate construction vibration from equipment operating on the project site, and from the transport of construction equipment, materials, and workers to and from the site. Project construction-related vibration would result from the use of heavy earthmoving equipment for construction and grading. These activities produce a vibration level of approximately 87 VdB (0.089 in/sec peak particle velocity) at a distance of 25 feet (which is the reference vibration level for operation of a large bulldozer [FTA 2018; Caltrans 2020]). The distance between proposed construction activities and the closest acoustically sensitive uses would be approximately 500 feet. Given that vibration levels decrease by half by each doubling of distance, the project-related construction vibration level at the nearest receptors would not be approximately 69 VdB. Given that guidance recommends 72 VdB for residential uses and buildings where people normally sleep when the source of vibrations is frequent in nature. Therefore, construction activities would not result in a significant vibration level at nearby acoustically sensitive uses.

Construction of the proposed project would result in additional vehicle trips on the local roadway network as workers commute and equipment and materials are transported. Heavy truck traffic can

generate groundborne vibration, which varies considerably depending on vehicle type, weight, and pavement conditions. However, groundborne vibration levels generated from vehicular traffic are not typically perceptible outside of the road right-of-way for rubber-tired vehicles. Therefore, this impact would be **less than significant**.

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 2 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. The nearest public airport is the Sacramento Mather Airport, located approximately 3 miles north of the project site. Given the distance to the nearest airport, the proposed project would not expose people working in the project site to excessive noise levels. For these reasons, the project would have **no impact**.

3.14. Population and Housing

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
14a. Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?			yes		
14b. Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?			yes		

3.14.1. Environmental Setting

The project site is located in unincorporated Sacramento County, outside the nearby cities of Sacramento, Elk Grove, and Rancho Cordova. As previously discussed, the project is located within the Vineyard Community Plan area and part of the West Jackson Highway Master Plan area, both of which were developed to provide guidance for the future growth and development of the area. The population of Sacramento County was estimated in the 2020 census to be 1,585,055 people (U.S. Census Bureau 2025). There are no residual buildings within or near the project site.

3.14.2. Discussion

a) Induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

The proposed project does not include construction of new homes or businesses that would result in a direct increase in population or create a substantial number of jobs. While the proposed project could result in temporary employment during construction activities, the on-site workforce for construction is negligible over the temporary construction period. The construction workers would come from the existing labor pool within the cities of Sacramento, Elk Grove, Rancho Cordova, and surrounding Sacramento areas. As such, the proposed project would not require construction of housing to accommodate workers, since they would commute to the sites.

The current use of the project site would not be changed by the proposed project, and VSWTP operations would still be subject to all applicable regulations and best use practices. Direct or indirect population growth initiated by improvement from the proposed project is not anticipated. Furthermore, implementation of the proposed project would increase water reliability to support existing and planned development within Sacramento County. This impact would be **less than significant**.

b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

The project site is located in a remote, agricultural area. There are few residences nearby, including a residence about 0.1 mile from the proposed modifications to the existing Excelsior wells and residences on the south side of Florin Road, approximately 0.1 mile south of the VSWTP. No residences would be displaced by the proposed project. Therefore, the proposed project would not displace people or housing necessitating the construction of replacement housing elsewhere. There would be a **less than significant impact**.

3.15. Public Services

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
15a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the 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:				yes	
Fire protection?				yes	
Police protection?				yes	
Schools?				yes	
Parks?				yes	
Other public facilities?				yes	

3.15.1. Environmental Setting

Fire Services

Fire protection services in Sacramento County are provided by CAL FIRE, U.S. Forest Service (USFS), and several local fire protection agencies. The project site is serviced by the Sacramento Metropolitan Fire District (County of Sacramento 2011).

Police Services

The Sacramento County Sheriff's Department, Eastern District provides police protection services to areas within the Sacramento County. The nearest office is located at 2897 Kilgore Road, approximately 7 miles north of the VSWTP.

Schools

The nearest school facility to the project site is the Arnold Adreani Elementary School, located approximately 1.8 miles southwest of the project site.

Parks

Parks throughout Sacramento County, including those in unincorporated areas, are managed by Sacramento County Department of Regional Parks or through local park districts (County of Sacramento

2019). The nearest park is the Don and Brenda Nottoli Community Park, located approximately 1.80 miles southwest of the project site.

3.15.2. Discussion

a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the 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:

The proposed project would convert the existing, inactive PW-1 and Excelsior wells to ASR, as well as construct four (4) new ASR wells as part of the VSWTP to improve water supply resiliency and availability in Sacramento County. These changes would not result in adverse physical impacts associated with the provisions of new or physically altered government facilities, due to the small nature of the proposed project and lack of change to existing demand for public services described above due to implementation of the proposed project. The proposed project would not result in a permanent increase to employees or population to the project site. Workers already employed at the VSWTP would be able to operate and maintain these new project features. The proposed project would not substantially increase the need for new or expanded public services and facilities as compared to existing conditions. There would be **no impact**.

3.16. Recreation

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
16a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?				yes	
16b. Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?				yes	

3.16.1. Environmental Setting

The project site is located within the existing VSWTP and includes the nearby Excelsior wells (3) along with related infrastructure, and open space. The project site and its vicinity are not typically used for recreation activities. The nearest recreation area would be the Mather Golf Course, located approximately 4 miles northeast and the adjoining Mather Regional Park. The American River Parkway and its related facilities are located approximately 5.3 miles northwest of the project site, on the north side of Rancho Cordova.

3.16.2. Discussion

a, b) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated or include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

The proposed project would not directly induce population growth but may lead to slight indirect increases in population growth (see Section 3.14, "Population and Housing"). Furthermore, no existing recreational facilities would be closed due to project implementation. Therefore, recreational visitors would not be deterred from the area or increase the use of other recreational facilities in the area such that physical deterioration of the facility would occur or be accelerated. The proposed project does not involve construction or expansion of any existing or new recreational facilities. There would be **no impact**.

3.17. Transportation

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
17a. Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?			yes		
17b. Conflict or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?			yes		
17c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?				yes	
17d. Result in inadequate emergency access?				yes	

3.17.1. Environmental Setting

The project site is located along Florin Road between Bradshaw Road and Excelsior Road, and along Excelsior Road, in unincorporated Sacramento County. Access to the project site is provided via SR 16, SR 99, and local roads. Sacramento Regional Transit provides buses and light rail throughout Sacramento County. However, there are no transit routes near the project site (Sacramento County 2022). Bike facilities in the project area include Class II bike lanes on Bradshaw Road (Sacramento County 2011).

3.17.2. Discussion

a and b) Conflict with a program plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities, or be inconsistent with CEQA Guidelines Section 15064.3, subdivision (b)?

The Office of Planning and Research (now Land Use and Climate Innovation) Technical Advisory on Evaluating Transportation Impacts in CEQA contains screening thresholds for land use projects and suggests lead agencies may screen out vehicle miles traveled (VMT) impacts using project size, maps, and transit availability (Office of Planning and Research, 2018). For small projects, absent substantial evidence indicating that a project would generate a potentially significant level of VMT or inconsistency with a Sustainable Communities Strategy or general plan, and projects that generate or attract fewer than 110 trips per day generally, may be assumed to cause a less-than-significant impact. Operation of the project can be considered a “small project” pursuant to the Technical Advisory, given that it would result in a minimal increase in VMT, would not be inconsistent with the General Plan, and would not generate more than 110 daily trips.

The proposed project site is in a rural agricultural area with variable vehicle traffic. Project-related construction-related worker commutes would be minimal with approximately 3 to 8 workers at the

project site on a given day, depending on the activity. The project would generate about 1 truck trip per day for 13 days during construction. During operations, the project would not require any new regular onsite employees. Operational activities would require periodic monitoring and maintenance but would not substantially increase the number of vehicle trips to the project site. Implementation of the proposed project would not conflict with any applicable plans, programs, or policies related to transportation. Impacts would be **less-than-significant**.

c) Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Implementation of the proposed project would not result in any changes to local roadways. The proposed project site would be accessed via Florin Road, Knox Road, and/or Excelsior Road, which are paved public roads. There would be no increase in hazards due to a geometric design feature or incompatible uses. There would be **no impact**.

d) Result in inadequate emergency access?

All construction staging would occur within the limits of the project site and would not result in the closure of any roadways. Additionally, a small number of truck trips would be made as part of the proposed project. However, they would not substantially slow traffic or result in decreased response times. Once operational, the project would not change roadway configurations or result in long-term effects on emergency access. There would be **no impact**.

3.18. Tribal Cultural Resources

Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, or 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:

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
18a. Listed or eligible for listing in the CRHR, or in a local register of historical resources as defined in PRC Section 5020.1(k), or		yes			
18b. 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 PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.		yes			

3.18.1. Environmental Setting

Native American Precontact Setting

See Section 3.5. Cultural Resources for the full text of the Pre-Contact Setting.

Ethnohistoric Context

The project is situated in the traditional territory of three California Native American Tribes. Each is briefly described below.

The Eastern Miwok are one of two major subgroups of the Utian language family. Eastern Miwok peoples themselves are comprised of five distinctive linguistic and cultural groups. Eastern Miwok groups lived in the inner valleys of the Coast ranges, the Delta region between Sacramento and Stockton, the foothills of the Sierra Nevada Mountain Range, and the Sierra Nevada Mountain Range. Like most California tribes, they were organized into a tribelet system, with individuals identifying with tribelets (Levy 1978). Today, many Eastern Miwok are active with vibrant cultural and language programs, including the Federated Indians of the Graton Rancheria, Shingle Springs Rancheria, the United Auburn Indian Community, and the Wilton Rancheria. Shingle Springs Rancheria has language programs to revitalize the Miwok and Nisenan languages, has an exhibit and collections center, and maintains a Traditional Ecological Knowledge program that seek to learn about uses of plants and animals (Shingle Springs Band of Miwok Indians 2024, Departments May 2, 2024 [https://www.shinglespringsrancheria.com/departments/]).

The Maidu Tribes speak languages in the Penutian family, and occupied villages with semi-subterranean structures (Riddell 1978). Their neighbors to the south are the Nisenan, who occupied the Yuba, American, and Bear River Drainages. They also spoke languages of the Penutian family and lived in villages ranging from small family groups to very large settlements (Wilson and Towne 1978). All the tribes of the Sierra Foothills were severely impacted by territorial displacement and disease during the Gold Rush in the mid-nineteenth century. Today, Maidu Tribes are thriving in the area, including the Konkow Valley Band of Maidu Indians, the Tsi Akim Maidu, the Estom Yumeka Maidu Tribe of the Enterprise Rancheria, Mooretown Rancheria of Maidu Indians, Pakan'yani Maidu of Strawberry Valley Rancheria, and Mechoopda Indian Tribe. Most, like the Enterprise Rancheria, maintain websites offering information on the Tribe and services for Tribal members (Enterprise Rancheria Estom Yumeka Maidu Tribe 2024, Homepage April 19, 2024 [https://enterpriserancheria.org/]. The Nisenan Tribe maintain a strong presence in the Grass Valley-Nevada City vicinity.
[ttps://www.nevadacountyca.gov/2862/Nisenan-Heritage]

Assembly Bill 52

Assembly Bill (AB) 52, effective July 1, 2015, amended CEQA and added sections relating to Native American consultation and TCRs. PRC Section 21084.2 provides that a project with an effect that may cause a substantial adverse change in the significance of a TCR may have a significant effect on the environment. PRC Section 21080.3.1(b) requires the lead agency to begin consultation with California Native American Tribes that are traditionally and culturally affiliated with the geographic area of the project if the Tribe requests the lead agency, in writing, to be informed by the lead agency through formal notification of projects that are proposed in that geographic area, and the tribe subsequently requests consultation. PRC Section 21084.3 states that "public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.

There are several other state regulations that are pertinent to protection of TCRs including:

PRC Section 5097.5

PRC Section 5097.5 states that a person shall not knowingly and willfully excavate upon, remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, archeological or vertebrate paleontological sites, situated on public lands, except with the express permission of the public agency having jurisdiction over the lands.

PRC Section 5097.9

PRC Section 5097.9 states that no public agency or private party using public property or operating on public property, under a public license, grant, lease, or contract shall in any manner interfere with the free expression or exercise of Native American religion, as provided in the United States or California constitutions. It further states that no such agency or party shall cause irreparable damage to any Native American sanctified cemetery, place of worship, religious or ceremonial site, or sacred shrine located on public property.

PRC Section 5097.99

PRC Section 5097.99 states that no person shall obtain or possess any Native American artifacts or human remains which are taken from a Native American grave or cairn except as otherwise provided by law. Doing so constitutes a felony punishable by imprisonment as is removal of Native American artifacts or human remains with an intent to sell or dissect or with malice or wantonness.

PRC Section 5097.993 (Native American Historic Resource Protection Act)

PRC Section 5097.993, the Native American Historic Resource Protection Act, states that a person who unlawfully and maliciously excavates upon, removes, destroys, injures, or defaces a Native American historic, cultural, or sacred site that is listed or may be eligible for listing in the CRHR is guilty of a misdemeanor if the act was committed with specific intent to vandalize, efface, destroy, steal, convert, possess, collect, or sell. The act must have been committed on public land or by a non-landowner on private land.

3.18.2. Tribal Consultation

GEI archaeologist Andrea Nardin requested the NAHC to conduct a search of their SLF to determine if any Native American sacred sites have been previously reported in the area. SLF searches identify sacred sites within a section (one square mile area) that a given project occupies and not specifically within a project's area. The NAHC responded on August 14, 2025. In their response letter, the NAHC indicated that their results had come back positive (i.e., there is a Native American sacred site within one mile of the project area).

3.18.3. Discussion

a, b) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, or 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 CRHR, or in a local register of historical resources as defined in PRC Section 5020.1(k)? 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 PRC Section 5024.1. In applying the criteria set forth in subdivision (c) of PRC Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

The SLF search conducted by the NAHC had positive results, but the entire project area is either paved or covered in fill material. In addition, the records search conducted at the NCIC indicates that there are no Native American precontact sites within half a mile of the project area (see Section **3.5 Cultural Resources**). There are no identified TCRs within the project area and project components and context reduce the likelihood that any may be inadvertently discovered during project-related ground-disturbing activities. However, if a TCR were encountered then the project may have a **significant impact.** Mitigation Measure TCR-1 (Inadvertent Discovery of Tribal Cultural Resources) has been identified to address the possibility of inadvertent discoveries during project construction**.**

Mitigation Measure TCR-1: Inadvertent Discovery of Tribal Cultural Resources

In the event that human remains are discovered in any location other than a dedicated cemetery, work shall be halted, and the County Coroner contacted. For all other potential tribal cultural resources [TCRs], archaeological, or cultural resources discovered during project's ground disturbing activities, work shall be halted until a qualified archaeologist and/or tribal representative may evaluate the resource.

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

5. **Unanticipated tribal cultural resources**. In the event of an inadvertent discovery of cultural resources (excluding human remains) during construction, all work must halt within a 100-foot radius of the discovery. A qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeology, shall be retained at the Applicant's expense to evaluate the significance of the find. If it is determined due to the types of deposits discovered that a Native American monitor is required, the Guidelines for Monitors/Consultants of Native American Cultural, Religious, and Burial Sites as established by the Native American Heritage Commission shall be followed, and the monitor shall be retained at the Applicant's expense.

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

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

Timing: During construction.

Responsibility: SCWA

If the project did inadvertently encounter any Tribal Cultural Resources, Mitigation Measure TCR-1 would preserve the resource in place if possible or require it to be assessed and treated in accordance with professional standards. If human remains were encountered, Mitigation Measure TCR-1 would reduce the impact by following State regulations regarding human remains, engage Native American Tribes to ensure

proper disposition of the human remains if the remains were determined to be Native American in origin. This impact would be **less than significant with mitigation incorporated.**

3.19. Utilities and Service Systems

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
19a. Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?			yes		
19b. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?			yes		
19c. Result in a determination by the wastewater treatment provider that 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?				yes	
19d. 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?			yes		
19e. Comply with Federal, State, and local management and reduction statutes and regulations related to solid waste?			yes		

3.19.1. Environmental Setting

Water

SCWA produces drinking water (potable water) from Sacramento River water at the VSWTP. There are also three active supply wells, the Excelsior wells, and one inactive supply well (PW-1) within the project site that contribute to the VSWTP. Additional details regarding groundwater, flow, and hydrology can be found in section 3.10 "Hydrology and Water Quality."

Stormwater Drainage

Within the urban neighborhoods and communities of Sacramento County, there are engineered drainage systems consisting of pipes, gutters, swales, ditches, and graded land (Sacramento County 2010). However, the project is located outside these urban areas where stormwater drainage is engineered. Nevertheless, the VSWTP has an internal stormwater drainage system, including two stormwater retention basins that control the flow of stormwater to Gerber Creek.

Wastewater

Wastewater services in the unincorporated Sacramento County are provided by the Sacramento Area Sewer District, and the Sacramento Regional County Sanitation District. All wastewater is conveyed to the Sacramento Regional Wastewater Treatment Plant.

Electrical Service

SMUD provides electric services to Sacramento County and PG&E provides natural gas.

Solid Waste

Sacramento County Department of Waste Management and Recycling provides solid waste services to the unincorporated portions of the project site. Sacramento County owns and operates the Kiefer Landfill, located at Kiefer Boulevard and Grant Line Road. The Kiefer Landfill is the primary solid waste disposal facility in Sacramento County (Sacramento County 2010). As of 2023, the Kiefer Landfill had a remaining capacity of 102,300,000 tons (CalRecycle 2023). The Kiefer Landfill is located approximately 6.5 miles northeast of the project site, and accepts household waste some recyclable material, some household hazardous (special) waste, and hard to handle items (Sacramento County 2025).

3.19.2. Discussion

a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?

The proposed project involves the reconfiguration of the existing PW-1 at the VSWTP and nearby Excelsior wells to ASR, as well as construction of up to four new ASR wells. The reconfiguration of the PW-1, and/or one of the Excelsior well would occur over the next 2 years, and construction of the four new ASR wells and the use of the remaining two Excelsior wells during the next 5 to 10 years. Therefore, project construction impacts would be spread out over a 5- to 10-year window. The project would result in an increase in storage of potable water supply to service Sacramento County. During ASR operations, backflush pumping of the wells would likely occur on a weekly to twice monthly frequency to remove fine materials that might accumulate in the well filter pack and aquifer. The backflush water would be discharged to the stormwater system at the VSWTP. While the project includes new infrastructure at the VSWTP to enable ASR, there would be no change in treatment capacity, and the project would not result in a need for relocation or construction of new utilities including water, wastewater treatment, stormwater drainage, electrical power, natural gas, or telecommunication facilities. Therefore, this impact would be **less than significant**.

b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry, and multiple dry years?

The proposed project consists of reconfiguring the PW-1 or one of the Excelsior wells that are currently part of the VSWTP, as well as constructing four new ASR wells in the future. A temporary water supply would be necessary to facilitate these construction activities and would be obtained from the VSWTP hydrant system. However, no permanent water supply would be required to serve the proposed project.

The project itself would result in an increase in the storage of potable water and would improve the water supply resiliency through ASR operations. This impact would be l**ess than significant**.

c) Result in a determination by the wastewater treatment provider that 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?

During project construction, SCWA or its contractor may have portable toilet facilities available onsite temporarily for use by construction workers. Given the small construction workforce, this amount of waste would be minimal. Once construction is concluded, such portable facilities would be removed and the wastewater properly handled and transported for disposal in accordance with all applicable laws and regulations. The project will not require the expansion of the region's wastewater treatment capacity. Therefore, the proposed project does not require a wastewater treatment provider to serve the project. There would be **no impact**.

d and e) 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? Comply with Federal, State, and local management and reduction statues and regulations related to solid waste?

The proposed project would not generate a substantial amount of solid waste. Most soil and aggregate material would be reused on site. Solid waste generated during construction activities would be transported to the Kiefer Landfill. This landfill is the primary location for disposal of solid waste for Sacramento County. The Keifer Landfill would be more than adequate to service the short-term construction-related disposal needs of the proposed project. Additionally, the transportation and disposal of solid waste would be in accordance with applicable federal, state, and local statutes and regulations. Therefore, this impact would be **less than significant**.

3.20. Wildfire

If located in or near State responsibility areas or lands classified as very high fire hazard severity zones, would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
20a. Substantially impair an adopted emergency response plan or emergency evacuation plan?				yes	
20b. 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?				yes	
20c. 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?				yes	
20d. 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?				yes	

3.20.1. Environmental Setting

The project site is not located within or near a State Responsibility Area (SRA) and is not designated as very high fire hazard severity zone (CALFIRE 2007a and b). Fire protection services in Sacramento County are provided by CAL FIRE, USFS, and several local fire protection agencies. The project site is serviced by the Sacramento Metropolitan Fire District (County of Sacramento 2011).

3.20.2. Discussion

a, Substantially impair an adopted emergency response plan or emergency evacuation plan?

Primary evacuation routes in Sacramento County consist of the major interstates, highways, and arterials (County of Sacramento 2018). The nearest evacuation route to the project site is SR 16, approximately 1.3 miles north. Implementation of the proposed project would not require any closures of public or private roadways. Therefore, temporary construction activities would not impede use of roadways for emergency response and evacuation.

Operation and maintenance activities associated with the proposed project would be similar to current conditions. No operation-related activities would occur within surrounding rights-of-ways that could

impair or physically interfere with an adopted emergency response plan or emergency evacuation plan. As a result, project impacts would be **less than significant.**

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?

Implementation of the proposed project would not result in the installation of permanent roads, fuel breaks, emergency water sources, or new power lines which could exacerbate fire risk. Although the project does include modified use of the VSWTP, operations after construction would be functionally similar and pose no additional risk than the currently existing facility. All construction would comply with fire protection and prevention requirements specified by the CCR and the California Division of Occupational Safety and Health. These requirements include various measures, such as easy accessibility of firefighting equipment, proper storage of combustible liquids, no smoking in service and refueling areas, and worker training for firefighter extinguisher use. With adherence to applicable laws and regulations, impacts from the project would be **less than significant**.

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?

The project site is generally flat and is not located with a high or very high fire hazard severity zone. Additionally, the proposed project would include a small number of earth-moving activities for the modification and installation of wells and pipelines within an existing industrial facility **(Tables 2-1 and 2-2)**. Therefore, the project would not result in exposure of people or structure to significant risks from flooding or landslides following a wildfire. There would be **no impact**.

3.21. Mandatory Findings of Significance

Would the project:	Have Potentially Significant Impact?	Have Less-than-Significant Impact with Mitigation Incorporated?	Have Less-than-Significant Impact?	Have No Impact?	Have Beneficial Impact?
21a. 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 an endangered, rare, or threatened species; or eliminate important examples of the major periods of California history or prehistory?		yes			
21b. 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)?		yes			
21c. Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?			yes		

3.21.1. Discussion

a) Would 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 an endangered, rare, or threatened species; or eliminate important examples of the major periods of California history or prehistory?

The analysis conducted in this IS concludes that implementation of the proposed project would not have a significant impact on the environment with the implementation of mitigation measures. As evaluated in Chapter 3.4, "Biological Resources," potential impacts on biological resources would be less than significant or less-than-significant with mitigation incorporated. The proposed project would not 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; or reduce the number or restrict the range of an endangered, rare, or threatened species. As discussed in Chapter 3.5, "Cultural Resources," the proposed project would not eliminate important examples of the major periods of California history or prehistory. Therefore, project impacts would be **less-than-significant with mitigation incorporated**.

Once constructed, operation of the proposed project would have no long-term permanent impacts to biological or cultural resources.

b) Would 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.)

A cumulative impact could occur if the proposed project would result in an incrementally considerable contribution to a significant cumulative impact in consideration of past, present, and reasonably foreseeable future projects for each resource area. No direct significant impacts were identified for the proposed project that could not be mitigated to a less than significant level. However, when combined with other projects within the vicinity, the proposed project may result in contribution to a potentially significant cumulative impact.

The proposed project would result in no potential impacts to agriculture and forestry, public services, recreation, and wildfire. Additionally, impacts would be less than significant for aesthetics, cultural resources, energy, GHG, hazards and hazardous materials, hydrology and water quality, land use and planning, noise, population and housing, transportation, tribal cultural resources, and utilities and service systems.

Potential impacts to biological resources and geology and soils would only occur during construction of the proposed project. These potential construction impacts would be short term and would occur during construction activities. The project work itself would occur within the construction corridor and would be contained such that off-site impacts do not occur. As a result, the impacts of the proposed project would not combine together with other related projects in the vicinity to produce a significant environmental impact. Furthermore, the operation of the project would not result in any potential impacts to resources. Therefore, operation of the proposed project would not contribute to long-term cumulative impacts and their contribution to impacts would be less than cumulatively considerable.

Implementation of mitigation measures listed within Section 3.3, "Air Quality," Section 3.4, "Biological Resources," Section 3.7 "Geology and Soils," and Section 3.18, "Tribal Cultural Resources" would aim to reduce project impacts to sensitive natural resources. Impacts related to biological resources and geology and soils would be less than cumulatively considerable. Therefore, the proposed project would not result in any impacts that would be cumulatively considerable resulting from the proposed project. Cumulative impacts would be considered **less-than-significant with mitigation incorporated**.

c) Would the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?

The proposed project would not result in substantial adverse effects, either direct or indirect, on human beings. The project would increase water reliability and provide additional potable water to Sacramento County. As described in Section 3.3, "Air Quality," air emissions associated with the proposed project would not result in adverse health effects to sensitive receptors. Furthermore, as described in Section 3.13, "Noise," construction noise would not result in adverse effects to sensitive receptors. Impacts to human beings would be **less than significant.**

4. Federal Cross-Cutting Environmental Regulations Evaluation

The proposed project has received federal funding for this project via an earmark grant, which will be administered by EPA. In addition, the project may receive funding under a State program that also has a Federal funding component. Therefore, to assist in compliance with the federal environmental requirements for the funding program, this document includes analysis pertinent to several Federal cross-cutting regulations (also referred to as Federal cross-cutters or CEQA-Plus). This section describes the status of compliance with relevant Federal laws, executive orders, and policies, and the consultation that has occurred to date or will occur in the near future. The topics are based in part on the SWRCB's Clean Water SRF Program Federal Cross-cutting Environmental Regulations Evaluation Form for Environmental Review and Federal Coordination.

4.1.1. ESA, Section 7

Section 7 of the Federal ESA requires federal agencies, in consultation with the Secretary of the Interior, to ensure their actions do not jeopardize the continued existence of endangered or threatened species or result in the destruction or adverse modification of the critical habitat of these species. Under Section 7, a project that could result in incidental take of a listed threatened or endangered species must consult with the USFWS and/or National Marine Fisheries Service (NMFS) to obtain a Biological Opinion (BO). If the BO finds the project could jeopardize the existence of a listed species ("jeopardy opinion"), the agency cannot authorize the project until it is modified to obtain a "non-jeopardy" opinion.

Section 3.4, "Biological Resources", identifies special-status plant and wildlife species that have some potential to occur in the BSA. Special-status species typically have very specific habitat requirements, which may include but are not limited to, vegetation communities, elevation levels and topography, and availability of primary constituent elements (i.e., space for individual and population growth, breeding, foraging, and shelter). Given the high degree of disturbance and development within the BSA and lack of suitable habitat for each species, no special-status plant or fish species are expected to occur. However, some special-status wildlife species have some potential to occur, although no special-status species were detected during the field reconnaissance survey.

There is no critical habitat designated by the USFWS or NMFS within the BSA. The proposed project would not jeopardize any listed species, and the lead agency would be in compliance with the ESA.

4.1.2. Magnuson-Stevens Fishery Conservation and Management Act, EFH

The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) of 1976, as amended (16 U.S.C. § 1801 et seq.), is the primary act governing federal management of fisheries in Federal waters, from the three-nautical-mile state territorial sea limit to the outer limit of the U.S. Exclusive Economic Zone. It establishes exclusive U.S. management authority over all fishing within the Exclusive Economic Zone, all anadromous fish throughout their migratory range except when in a foreign nation's waters, and all fish on the continental shelf. The Act also requires Federal agencies to

consult with NMFS on actions that could damage EFH, as defined in the 1996 Sustainable Fisheries Act (Public Law 104-297).

The proposed project is not be located in or impact any U.S. Federal waters regulated under the Magnuson-Stevens Act. EFH includes those habitats that support the different life stages of each managed species. A single species may use many different habitats throughout its life to support breeding, spawning, nursery, feeding, and protection functions. EFH can consist of both the water column and the underlying surface (e.g., streambed) of a particular area. The project area is located in a previously disturbed area, and as described in Section 3.4, "Biological Resources", there are no resident or migratory fish or fish habitat in the project area. The project is therefore not expected to have adverse effect on resident or migratory fish or fish habitat.

4.1.3. National Historic Preservation Act (NHPA), Section 106:

The studies described in this report were conducted in compliance with the NHPA (54 U.S.C. Section 300101), Section 106 and its implementing regulations, 36 Code of Federal Regulations (CFR) Part 800, as amended. Section 106 requires that Federal agencies and entities that these agencies fund or permit consider the effects of their actions on properties that are listed in the NRHP or that may be eligible for such listing.

NRHP

The NRHP includes listings of buildings, structures, sites, objects, and districts that possess historic, architectural, engineering, archaeological, or cultural significance at the national, State, or local level. The NRHP criteria and associated definitions are outlined in the *National Register Bulletin: How to Apply the National Register Criteria for Evaluation* (NPS 1997). The following is a summary of that bulletin.

Properties (structures, sites, buildings, districts, and objects) more than 50 years of age can be listed in the NRHP provided they meet one of the evaluation criteria described below. However, properties less than 50 years of age that are of exceptional significance or are contributors to a district, that also meet the evaluation criteria, can be included in the NRHP.

The NRHP uses four criteria under which a property can be considered significant for listing.

a. Properties associated with events that have made a significant contribution to the broad patterns of history.

b. Properties associated with the lives of persons significant in our past.

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

d. Properties that have yielded or may likely yield information important in prehistory or history.

Properties can be listed individually or as contributors to a historic district. In addition to meeting one of the evaluation criteria, a property must also retain integrity to convey that significance. The NRHP

recognizes seven aspects of integrity: location, design, setting, materials, workmanship, feeling, and association.

For the project, identification efforts included a cultural resources pedestrian survey by an archaeologist and an architectural historian. One built environment resource, Knox Road, was identified and evaluated, but is recommended as not eligible for listing in the NRHP. A records search was conducted at the NCIC of the project area, or Area of Potential Effects (APE), and two previously identified resources were identified: P-34-003864 and P-34-003872.

P-34-003864 was a ranch complex located within the APE containing a single residence, shed, corrals, trailers, and farm equipment. However, the resource is no longer extant. No trace of the resource was identified during the pedestrian survey. The APE is covered in pavement or has mounds of fill material placed on the surface. P-34-003872 was a well feature, possibly associated with P-34-003864, but is also no longer extant.

The NAHC was contacted and a SLF search requested. The results were positive but there is nothing on the surface of the APE which is not modern and there are no other previously reported resources in the APE within a half-mile radius that are not historic-era resources; no precontact resources were recorded in the APE or surrounding half-mile radius.

Section 106 Native American consultation is the responsibility of the lead Federal agency. The NAHC response letter also contained a list of California Native American Tribes with affiliation to the APE that are Federally recognized.

4.1.4. Clean Air Act

The CAA requires the EPA to establish health-based air quality standards at the Federal level. The NAAQS were established for the following criteria pollutants: CO, O_3, SO_2, NO_2, PM_{10}, $PM_{2.5}$, and lead. Areas of the State are designated as attainment, non-attainment, maintenance, or unclassified for the various pollutant standards according to the CAA. As stated in Section 3.3 “Air Quality,” the SVAB is in nonattainment for Federal standard O_3 (8-hour and 1-hour), and $PM_{2.5}$ (24-hour). Due to the non-attainment designations for the SVAB, the SMAQMD is required to prepare SIPs for O_3 and $PM_{2.5}$ to establish how the area would attain the standards by dates specified within the plans.

Established under the CAA section 176(c)(4)), the General Conformity regulations at 40 CFR part 93 subpart B, play an important role in helping States and Tribes to protect air quality within their jurisdiction and authority that do not meet the NAAQS (nonattainment areas) and areas of vulnerable air quality (maintenance areas). Under the General Conformity regulations, Federal agencies must work with State, Tribal, and local agencies and governments when designing their projects that affect nonattainment or maintenance areas so that emissions caused by activities included in such projects, particularly construction activities, conform to the purpose of the air quality plans established within the applicable implementation plan. General Conformity *de minimis* thresholds established for the SVAB are shown in **Table 4-1**. Additionally, as shown in **Table 4-1**, the project would not result in an exceedance of SVAB *de minimis* thresholds. Therefore, the project will likely be compliant with the CAA.

Table 4-1. Estimated Annual Construction-related Emissions Compared to SVAB Federal *de minimus* Thresholds

Project Component/Year	CO (tons per year) unmitigated	Nox (tons per year) unmitigated	ROG (tons per year) unmitigated	PM10 (tons per year) unmitigated	PM2.5 (tons per year) unmitigated
Near Term: PW-1 and associated pipeline, and Excelsior Well (2026)	0.13	0.11	0.01	0.01	<0.01
General Conformity de minimis Threshold	100	25	25	100	100
Exceeds Threshold?	No	No	No	No	No
Future Term: Future ASR Wells and Excelsior Wells (in 5 to 10 years)	1.98	1.32	0.15	0.06	0.03
General Conformity de minimis Threshold	100	25	25	100	100
Exceeds Threshold?	No	No	No	No	No

Notes: CO = carbon monoxide, NO_X=oxides of nitrogen; ROG = reactive organic gases PM_{10}=particulate matter with aerodynamic diameter less than 10 micrometers; $PM_{2.5}$=particulate matter with aerodynamic diameter less than 2.5 micrometers

Sources: 40 CFR 93 Section 153 (b)(1)

4.1.5. Coastal Zone Management Act

The Coastal Zone Management Act (CZMA), passed by Congress in 1972 and managed by the NOAA Office of Ocean and Coastal Resource Management, is designed to balance completing land and water issues in coastal zones. It also aims to "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone." Within California, the CZMA is administered by the Bay Conservation and Development Commission, the California Coastal Conservancy, and the California Coastal Commission.

No portion of the proposed project is within the coastal zone. Therefore, the CZMA does not apply to the proposed project.

4.1.6. Coastal Barriers Resources Act

The Coastal Barrier Resources Act, enacted in 1982 law, seeks to conserve natural resources and reduce risk to human life and property by restricting federal expenditures and financial assistance that could encourage development in designated undeveloped coastal areas. The act, administered by the USFWS, does not prohibit private development but makes it ineligible for most federal funding, including flood insurance, to promote a free-market approach to conservation.

The project site is approximately 100 miles inland from the Pacific Ocean and is not within or near the Coastal Barrier Resources System or adjacent wetlands, marshes, or inlets.

4.1.7. Farmland Protection Policy Act (FPPA)

The FPPA was enacted in 1981 and acts as a protection measure for farmland across the U.S. The purpose of the FPPA is to minimize unnecessary and irreversible conversion of farmland to non-

agricultural uses. Specifically, this includes land designated as Prime Farmland, Unique Farmland, and Farmland of State or Local Importance. Activities subject to the FPPA include projects that receive assistance from Federal programs, such as acquiring or disposing of land, providing financing or loans, managing property, or providing technical assistance, and also irreversibly convert agricultural land as described above to non-agricultural uses. The proposed project area does is surrounded by land designated as Farmland of Local Importance. However, current uses do not currently support agricultural use. The proposed project would have no impact on the conversion or use of farmland.

4.1.8. Floodplain Management – Executive Order (EO) 11988

EO 11988 requires agencies to recognize the values of floodplains and to consider the public benefits from restoring and preserving floodplains. As described in Section 3.10, "Hydrology and Water Quality," the project site is located outside the 100-year floodplain. The project site is mapped by FEMA as Flood Hazard Zone X (Area of Minimal Flood Hazard) and would not construct buildings or expose people or structures to a significant risk of loss, injury, or death involving flooding. The proposed project would not diminish the public benefits associated with restoring and preserving floodplains. The lead agency would be in compliance with EO 11988.

4.1.9. Migratory Bird Treaty Act (MBTA)

The MBTA prohibits the take of migratory birds (or any part, nest, or eggs of any such bird).

As described in Section 3.4, "Biological Resources", migratory bird species may nest on or adjacent to the project area and could be directly or indirectly impacted. Potential special status species include red-tailed hawk and burrowing owl. To avoid impacts on nesting birds, avoidance of disturbance during the nesting season (generally February 1st through August 31st) is recommended. If avoidance of the nesting season is not feasible, a pre-construction survey for nesting birds will be required to avoid impacts to any active nests within the project site, as provided in Mitigation Measure BIO-3a above. If avoiding project-related effects on nesting special-status birds is Infeasible, Mitigation Measure BIO-3b has been identified and includes minimization measures to reduce impacts to nesting birds.

4.1.10. Protection of Wetlands – EO 11990

Under EO 11990, federal agencies must avoid affecting wetlands unless it is determined that no practicable alternative is available.

As described in Section 3.4, "Biological Resources", the project site does not support Federally protected wetlands as defined by CWA Section 404 and therefore no impacts would occur. Thus, the lead agency would be in compliance with EO 11990.

Further, there are no riparian habitats located on the site. Therefore, no impact is expected on riparian species or habitat, wetlands or other sensitive natural communities, including marshes or vernal pools or through direct removal, filling, or hydrological interruption of a natural drainage are anticipated.

4.1.11. Wild and Scenic Rivers Act

The Wild and Scenic Rivers Act was passed in 1968 to preserve and protect designated rivers for their natural, cultural, and recreational value.

Designated Wild and Scenic Rivers are not located within the project area, nor will any designated rivers be adversely affected by the proposed project. As a result, the Wild and Scenic Rivers Act does not apply to the proposed project.

4.1.12. Safe Drinking Water Act, Source Water Protection:

Section 1424(e) of the Safe Drinking Water Act established the EPA Sole Source Aquifer Program. This program protects communities from groundwater contamination from federally funded projects.

Within EPA's Region 9, which includes California, there are nine sole source aquifers, four of which are located within California. None of these sole source aquifers are located within the project area. Therefore, the Sole Source Aquifer Program does not apply to the proposed project, and the lead agency would be in compliance with Section 1424(e) of the Safe Drinking Water Act.

5. References

2.0 Project Description

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3.21 Mandatory Findings of Significance

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6. Report Preparers

Christine Burns	Project Manager, Document Review, Introduction, Project Description, Air Quality, Greenhouse Gas, Noise, and Mandatory Findings of Significance
Drew Sutton, AICP	Document Review
Rodney Fricke, PG, CHg	Document Review
Amanda Ibara	Agriculture and Forestry, Energy, Land Use and Planning, Minerals, Population and Housing, Public Services, Recreation, Utilities and Service Systems, and Wildfire.
Becky Dorff	Aesthetics, Geology and Soils, Agriculture and Forestry, Hazards and Hazardous Materials, and Transportation.
Hannah Dunn	Biological Resources
Kelly Fitzgerald-Holland	Biological Resources
Jesse Martinez, RPA	Cultural Resources (Archaeological Resources)
Madeline Bowen, RH	Cultural Resources (Historical Resources)
Ryan Snyder	Geographic Information Systems
Marguerite Myers	Document Production

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SCWA ASR Well Near Term V2 Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	SCWA ASR Well Near Term V2
Construction Start Date	7/7/2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70
Precipitation (days)	37.8
Location	38.50015775129154, -121.31429702381521
County	Sacramento
City	Unincorporated
Air District	Sacramento Metropolitan AQMD
Air Basin	Sacramento Valley
TAZ	708
EDFZ	13
Electric Utility	Sacramento Municipal Utility District
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.30

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
User Defined Industrial	1.00	User Defined Unit	2.40	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-10-A	Water Exposed Surfaces
Construction	C-10-C	Water Unpaved Construction Roads
Construction	C-11	Limit Vehicle Speeds on Unpaved Roads
Construction	C-12	Sweep Paved Roads

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.55	3.82	33.6	41.4	0.10	2.45	1.29	—	10,908	10,908	0.45	0.11	0.77	10,954
Mit.	4.55	3.82	33.6	41.4	0.10	1.81	1.22	—	10,908	10,908	0.45	0.11	0.77	10,954
% Reduced	—	—	—	—	—	26%	5%	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.08	0.07	0.59	0.74	< 0.005	0.03	0.02	—	185	185	0.01	< 0.005	0.01	185
Mit.	0.08	0.07	0.59	0.74	< 0.005	0.03	0.02	—	185	185	0.01	< 0.005	0.01	185
% Reduced	—	—	—	—	—	16%	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.02	0.01	0.11	0.13	< 0.005	0.01	< 0.005	—	30.6	30.6	< 0.005	< 0.005	< 0.005	30.7

Mit.	0.02	0.01	0.11	0.13	< 0.005	0.01	< 0.005	—	30.6	30.6	< 0.005	< 0.005	< 0.005	30.7
% Reduced	—	—	—	—	—	16%	3%	—	—	—	—	—	—	—
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	—	85.0	—	—	80.0	82.0	—	—	—	—	—	—	—
Unmit.	—	—	No	—	—	No	No	—	—	—	—	—	—	—
Mit.	—	—	No	—	—	No	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	—	85.0	—	—	80.0	82.0	—	—	—	—	—	—	—
Unmit.	—	—	No	—	—	No	No	—	—	—	—	—	—	—
Mit.	—	—	No	—	—	No	No	—	—	—	—	—	—	—
Exceeds (Annual)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	—	—	—	—	14.6	15.0	—	—	1,100	—	—	—	—
Unmit.	—	—	—	—	—	No	No	—	—	No	—	—	—	—
Mit.	—	—	—	—	—	No	No	—	—	No	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	4.55	3.82	33.6	41.4	0.10	2.45	1.29	—	10,908	10,908	0.45	0.11	0.77	10,954
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2026	0.08	0.07	0.59	0.74	< 0.005	0.03	0.02	—	185	185	0.01	< 0.005	0.01	185
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.02	0.01	0.11	0.13	< 0.005	0.01	< 0.005	—	30.6	30.6	< 0.005	< 0.005	< 0.005	30.7

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	4.55	3.82	33.6	41.4	0.10	1.81	1.22	—	10,908	10,908	0.45	0.11	0.77	10,954
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.08	0.07	0.59	0.74	< 0.005	0.03	0.02	—	185	185	0.01	< 0.005	0.01	185
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.02	0.01	0.11	0.13	< 0.005	0.01	< 0.005	—	30.6	30.6	< 0.005	< 0.005	< 0.005	30.7

3. Construction Emissions Details

3.1. Pump and/or ASR Valve Installation (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.33	1.96	18.8	22.8	0.05	0.70	0.64	—	5,448	5,448	0.22	0.04	—	5,466

Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.10	0.12	< 0.005	< 0.005	< 0.005	—	29.9	29.9	< 0.005	< 0.005	—	30.0
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	4.94	4.94	< 0.005	< 0.005	—	4.96
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.02	0.34	0.00	0.06	0.01	—	66.8	66.8	< 0.005	< 0.005	0.24	67.7
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.33	0.33	< 0.005	< 0.005	< 0.005	0.34
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.06	0.06	< 0.005	< 0.005	< 0.005	0.06

Vendor	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
Hauling	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

3.2. Pump and/or ASR Valve Installation (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.33	1.96	18.8	22.8	0.05	0.70	0.64	—	5,448	5,448	0.22	0.04	—	5,466
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.10	0.12	< 0.005	< 0.005	< 0.005	—	29.9	29.9	< 0.005	< 0.005	—	30.0
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	4.94	4.94	< 0.005	< 0.005	—	4.96
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.02	0.34	0.00	0.06	0.01	—	66.8	66.8	< 0.005	< 0.005	0.24	67.7

Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.33	0.33	< 0.005	< 0.005	< 0.005	0.34
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.06	0.06	< 0.005	< 0.005	< 0.005	0.06
Vendor	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
Hauling	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

3.3. Piping and Bedding (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.09	1.76	16.6	18.8	0.04	0.63	0.58	—	4,841	4,841	0.20	0.04	—	4,857
Dust From Material Movement	—	—	—	—	—	1.06	0.11	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.14	0.15	< 0.005	0.01	< 0.005	—	39.8	39.8	< 0.005	< 0.005	—	39.9
Dust From Material Movement	—	—	—	—	—	0.01	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.03	< 0.005	< 0.005	< 0.005	—	6.59	6.59	< 0.005	< 0.005	—	6.61
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.02	0.45	0.00	0.08	0.02	—	89.0	89.0	< 0.005	< 0.005	0.32	90.3
Vendor	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
Hauling	0.01	< 0.005	0.13	0.05	< 0.005	0.02	0.01	—	72.5	72.5	0.01	0.01	0.15	76.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.67	0.67	< 0.005	< 0.005	< 0.005	0.68
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.60	0.60	< 0.005	< 0.005	< 0.005	0.63
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.11	0.11	< 0.005	< 0.005	< 0.005	0.11

Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.10	0.10	< 0.005	< 0.005	< 0.005	0.10

3.4. Piping and Bedding (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.09	1.76	16.6	18.8	0.04	0.63	0.58	—	4,841	4,841	0.20	0.04	—	4,857
Dust From Material Movement	—	—	—	—	—	0.41	0.04	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.14	0.15	< 0.005	0.01	< 0.005	—	39.8	39.8	< 0.005	< 0.005	—	39.9
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.03	< 0.005	< 0.005	< 0.005	—	6.59	6.59	< 0.005	< 0.005	—	6.61

Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.02	0.45	0.00	0.08	0.02	—	89.0	89.0	< 0.005	< 0.005	0.32	90.3
Vendor	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
Hauling	0.01	< 0.005	0.13	0.05	< 0.005	0.02	0.01	—	72.5	72.5	0.01	0.01	0.15	76.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.67	0.67	< 0.005	< 0.005	< 0.005	0.68
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.60	0.60	< 0.005	< 0.005	< 0.005	0.63
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.11	0.11	< 0.005	< 0.005	< 0.005	0.11
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.10	0.10	< 0.005	< 0.005	< 0.005	0.10

3.5. Backfill and Compaction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	2.86	2.38	18.4	23.0	0.05	0.66	0.61	—	5,120	5,120	0.21	0.04	—	5,138
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.15	0.19	< 0.005	0.01	< 0.005	—	42.1	42.1	< 0.005	< 0.005	—	42.2
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	—	6.97	6.97	< 0.005	< 0.005	—	6.99
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.02	0.34	0.00	0.06	0.01	—	66.8	66.8	< 0.005	< 0.005	0.24	67.7
Vendor	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
Hauling	0.01	< 0.005	0.13	0.05	< 0.005	0.02	0.01	—	72.5	72.5	0.01	0.01	0.15	76.3

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.50	0.50	< 0.005	< 0.005	< 0.005	0.51
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.60	0.60	< 0.005	< 0.005	< 0.005	0.63
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.08	0.08	< 0.005	< 0.005	< 0.005	0.08
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.10	0.10	< 0.005	< 0.005	< 0.005	0.10

3.6. Backfill and Compaction (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.86	2.38	18.4	23.0	0.05	0.66	0.61	—	5,120	5,120	0.21	0.04	—	5,138
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.02	0.02	0.15	0.19	< 0.005	0.01	< 0.005	—	42.1	42.1	< 0.005	< 0.005	—	42.2
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	—	6.97	6.97	< 0.005	< 0.005	—	6.99
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.02	0.34	0.00	0.06	0.01	—	66.8	66.8	< 0.005	< 0.005	0.24	67.7
Vendor	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
Hauling	0.01	< 0.005	0.13	0.05	< 0.005	0.02	0.01	—	72.5	72.5	0.01	0.01	0.15	76.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.50	0.50	< 0.005	< 0.005	< 0.005	0.51
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.60	0.60	< 0.005	< 0.005	< 0.005	0.63
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.08	0.08	< 0.005	< 0.005	< 0.005	0.08
Vendor	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

Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.10	0.10	< 0.005	< 0.005	< 0.005	0.10

3.7. Surface Restoration and Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.59	1.34	10.5	14.7	0.04	0.41	0.37	—	3,791	3,791	0.15	0.03	—	3,804
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.08	< 0.005	< 0.005	< 0.005	—	20.8	20.8	< 0.005	< 0.005	—	20.8
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	3.44	3.44	< 0.005	< 0.005	—	3.45
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.02	0.45	0.00	0.08	0.02	—	89.0	89.0	< 0.005	< 0.005	0.32	90.3
Vendor	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
Hauling	0.01	< 0.005	0.13	0.05	< 0.005	0.02	0.01	—	72.5	72.5	0.01	0.01	0.15	76.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.44	0.44	< 0.005	< 0.005	< 0.005	0.45
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.40	0.40	< 0.005	< 0.005	< 0.005	0.42
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.07	0.07	< 0.005	< 0.005	< 0.005	0.07
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.07	0.07	< 0.005	< 0.005	< 0.005	0.07

3.8. Surface Restoration and Paving (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.59	1.34	10.5	14.7	0.04	0.41	0.37	—	3,791	3,791	0.15	0.03	—	3,804
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.08	< 0.005	< 0.005	< 0.005	—	20.8	20.8	< 0.005	< 0.005	—	20.8
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	3.44	3.44	< 0.005	< 0.005	—	3.45
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.02	0.45	0.00	0.08	0.02	—	89.0	89.0	< 0.005	< 0.005	0.32	90.3
Vendor	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
Hauling	0.01	< 0.005	0.13	0.05	< 0.005	0.02	0.01	—	72.5	72.5	0.01	0.01	0.15	76.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.44	0.44	< 0.005	< 0.005	< 0.005	0.45
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.40	0.40	< 0.005	< 0.005	< 0.005	0.42
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.07	0.07	< 0.005	< 0.005	< 0.005	0.07

Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.07	0.07	< 0.005	< 0.005	< 0.005	0.07

3.9. Excavation and Trenching (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.39	2.01	16.7	21.8	0.05	0.60	0.55	—	5,789	5,789	0.23	0.05	—	5,808
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.14	0.18	< 0.005	< 0.005	< 0.005	—	47.6	47.6	< 0.005	< 0.005	—	47.7
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	—	7.88	7.88	< 0.005	< 0.005	—	7.90
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.01	0.23	0.00	0.04	0.01	—	44.5	44.5	< 0.005	< 0.005	0.16	45.1

Vendor	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
Hauling	0.01	< 0.005	0.13	0.05	< 0.005	0.02	0.01	—	72.5	72.5	0.01	0.01	0.15	76.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.33	0.33	< 0.005	< 0.005	< 0.005	0.34
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.60	0.60	< 0.005	< 0.005	< 0.005	0.63
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.06	0.06	< 0.005	< 0.005	< 0.005	0.06
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.10	0.10	< 0.005	< 0.005	< 0.005	0.10

3.10. Excavation and Trenching (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.39	2.01	16.7	21.8	0.05	0.60	0.55	—	5,789	5,789	0.23	0.05	—	5,808
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.02	0.02	0.14	0.18	< 0.005	< 0.005	< 0.005	—	47.6	47.6	< 0.005	< 0.005	—	47.7
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	—	7.88	7.88	< 0.005	< 0.005	—	7.90
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.01	0.23	0.00	0.04	0.01	—	44.5	44.5	< 0.005	< 0.005	0.16	45.1
Vendor	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
Hauling	0.01	< 0.005	0.13	0.05	< 0.005	0.02	0.01	—	72.5	72.5	0.01	0.01	0.15	76.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.33	0.33	< 0.005	< 0.005	< 0.005	0.34
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.60	0.60	< 0.005	< 0.005	< 0.005	0.63
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.06	0.06	< 0.005	< 0.005	< 0.005	0.06
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.10	0.10	< 0.005	< 0.005	< 0.005	0.10

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Pump and/or ASR Valve Installation	Site Preparation	7/7/2026	7/8/2026	6.00	2.00	—
Piping and Bedding	Site Preparation	7/9/2026	7/27/2026	6.00	3.00	—
Backfill and Compaction	Grading	7/28/2026	7/30/2026	6.00	3.00	—
Surface Restoration and Paving	Paving	7/31/2026	8/1/2026	6.00	2.00	—
Excavation and Trenching	Trenching	7/10/2026	7/13/2026	6.00	3.00	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Pump and/or ASR Valve Installation	Cranes	Diesel	Average	1.00	14.0	367	0.29
Pump and/or ASR Valve Installation	Other Material Handling Equipment	Diesel	Average	3.00	14.0	93.0	0.40
Pump and/or ASR Valve Installation	Scrapers	Diesel	Average	1.00	8.00	423	0.48
Piping and Bedding	Other Material Handling Equipment	Diesel	Average	2.00	14.0	93.0	0.40
Piping and Bedding	Cranes	Diesel	Average	1.00	14.0	367	0.29

Piping and Bedding	Scrapers	Diesel	Average	1.00	8.00	423	0.48
Backfill and Compaction	Tractors/Loaders/Backhoes	Diesel	Average	1.00	14.0	84.0	0.37
Backfill and Compaction	Plate Compactors	Diesel	Average	1.00	14.0	148	0.41
Backfill and Compaction	Other Material Handling Equipment	Diesel	Average	2.00	14.0	93.0	0.40
Backfill and Compaction	Off-Highway Trucks	Diesel	Average	1.00	14.0	376	0.38
Surface Restoration and Paving	Off-Highway Trucks	Diesel	Average	1.00	14.0	376	0.38
Surface Restoration and Paving	Pavers	Diesel	Average	1.00	14.0	81.0	0.42
Surface Restoration and Paving	Other Material Handling Equipment	Diesel	Average	1.00	14.0	93.0	0.40
Surface Restoration and Paving	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36
Excavation and Trenching	Other Material Handling Equipment	Diesel	Average	2.00	14.0	93.0	0.40
Excavation and Trenching	Tractors/Loaders/Backhoes	Diesel	Average	1.00	14.0	84.0	0.37
Excavation and Trenching	Off-Highway Trucks	Diesel	Average	1.00	14.0	376	0.38
Excavation and Trenching	Cranes	Diesel	Average	1.00	14.0	367	0.29

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Pump and/or ASR Valve Installation	Cranes	Diesel	Average	1.00	14.0	367	0.29
Pump and/or ASR Valve Installation	Other Material Handling Equipment	Diesel	Average	3.00	14.0	93.0	0.40
Pump and/or ASR Valve Installation	Scrapers	Diesel	Average	1.00	8.00	423	0.48

Piping and Bedding	Other Material Handling Equipment	Diesel	Average	2.00	14.0	93.0	0.40
Piping and Bedding	Cranes	Diesel	Average	1.00	14.0	367	0.29
Piping and Bedding	Scrapers	Diesel	Average	1.00	8.00	423	0.48
Backfill and Compaction	Tractors/Loaders/Backhoes	Diesel	Average	1.00	14.0	84.0	0.37
Backfill and Compaction	Plate Compactors	Diesel	Average	1.00	14.0	148	0.41
Backfill and Compaction	Other Material Handling Equipment	Diesel	Average	2.00	14.0	93.0	0.40
Backfill and Compaction	Off-Highway Trucks	Diesel	Average	1.00	14.0	376	0.38
Surface Restoration and Paving	Off-Highway Trucks	Diesel	Average	1.00	14.0	376	0.38
Surface Restoration and Paving	Pavers	Diesel	Average	1.00	14.0	81.0	0.42
Surface Restoration and Paving	Other Material Handling Equipment	Diesel	Average	1.00	14.0	93.0	0.40
Surface Restoration and Paving	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36
Excavation and Trenching	Other Material Handling Equipment	Diesel	Average	2.00	14.0	93.0	0.40
Excavation and Trenching	Tractors/Loaders/Backhoes	Diesel	Average	1.00	14.0	84.0	0.37
Excavation and Trenching	Off-Highway Trucks	Diesel	Average	1.00	14.0	376	0.38
Excavation and Trenching	Cranes	Diesel	Average	1.00	14.0	367	0.29

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix

Pump and/or ASR Valve Installation	—	—	—	—
Pump and/or ASR Valve Installation	Worker	6.00	14.3	LDA,LDT1,LDT2
Pump and/or ASR Valve Installation	Vendor	—	8.80	HHDT,MHDT
Pump and/or ASR Valve Installation	Hauling	0.00	20.0	HHDT
Pump and/or ASR Valve Installation	Onsite truck	—	—	HHDT
Excavation and Trenching	—	—	—	—
Excavation and Trenching	Worker	4.00	14.3	LDA,LDT1,LDT2
Excavation and Trenching	Vendor	—	8.80	HHDT,MHDT
Excavation and Trenching	Hauling	1.00	20.0	HHDT
Excavation and Trenching	Onsite truck	—	—	HHDT
Piping and Bedding	—	—	—	—
Piping and Bedding	Worker	8.00	14.3	LDA,LDT1,LDT2
Piping and Bedding	Vendor	—	8.80	HHDT,MHDT
Piping and Bedding	Hauling	1.00	20.0	HHDT
Piping and Bedding	Onsite truck	—	—	HHDT
Backfill and Compaction	—	—	—	—
Backfill and Compaction	Worker	6.00	14.3	LDA,LDT1,LDT2
Backfill and Compaction	Vendor	—	8.80	HHDT,MHDT
Backfill and Compaction	Hauling	1.00	20.0	HHDT
Backfill and Compaction	Onsite truck	—	—	HHDT
Surface Restoration and Paving	—	—	—	—
Surface Restoration and Paving	Worker	8.00	14.3	LDA,LDT1,LDT2
Surface Restoration and Paving	Vendor	—	8.80	HHDT,MHDT
Surface Restoration and Paving	Hauling	1.00	20.0	HHDT
Surface Restoration and Paving	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix

Pump and/or ASR Valve Installation	—	—	—	—
Pump and/or ASR Valve Installation	Worker	6.00	14.3	LDA,LDT1,LDT2
Pump and/or ASR Valve Installation	Vendor	—	8.80	HHDT,MHDT
Pump and/or ASR Valve Installation	Hauling	0.00	20.0	HHDT
Pump and/or ASR Valve Installation	Onsite truck	—	—	HHDT
Excavation and Trenching	—	—	—	—
Excavation and Trenching	Worker	4.00	14.3	LDA,LDT1,LDT2
Excavation and Trenching	Vendor	—	8.80	HHDT,MHDT
Excavation and Trenching	Hauling	1.00	20.0	HHDT
Excavation and Trenching	Onsite truck	—	—	HHDT
Piping and Bedding	—	—	—	—
Piping and Bedding	Worker	8.00	14.3	LDA,LDT1,LDT2
Piping and Bedding	Vendor	—	8.80	HHDT,MHDT
Piping and Bedding	Hauling	1.00	20.0	HHDT
Piping and Bedding	Onsite truck	—	—	HHDT
Backfill and Compaction	—	—	—	—
Backfill and Compaction	Worker	6.00	14.3	LDA,LDT1,LDT2
Backfill and Compaction	Vendor	—	8.80	HHDT,MHDT
Backfill and Compaction	Hauling	1.00	20.0	HHDT
Backfill and Compaction	Onsite truck	—	—	HHDT
Surface Restoration and Paving	—	—	—	—
Surface Restoration and Paving	Worker	8.00	14.3	LDA,LDT1,LDT2
Surface Restoration and Paving	Vendor	—	8.80	HHDT,MHDT
Surface Restoration and Paving	Hauling	1.00	20.0	HHDT
Surface Restoration and Paving	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Piping and Bedding	13.0	0.00	0.00	0.00	—
Backfill and Compaction	22.0	0.00	2.40	0.00	—
Surface Restoration and Paving	0.00	0.00	0.00	0.00	0.00

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
User Defined Industrial	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2026	0.00	375	0.01	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	20.2	annual days of extreme heat
Extreme Precipitation	5.80	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	2	0	0	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	0	0	N/A
Flooding	0	0	0	N/A
Drought	0	0	0	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	2	1	1	3
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	1	1	2
Flooding	1	1	1	2
Drought	1	1	1	2
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	48.6

AQ-PM	23.7
AQ-DPM	22.3
Drinking Water	78.8
Lead Risk Housing	41.2
Pesticides	73.8
Toxic Releases	30.3
Traffic	28.5
Effect Indicators	—
CleanUp Sites	86.5
Groundwater	88.9
Haz Waste Facilities/Generators	99.8
Impaired Water Bodies	51.2
Solid Waste	99.9
Sensitive Population	—
Asthma	50.2
Cardio-vascular	53.9
Low Birth Weights	36.4
Socioeconomic Factor Indicators	—
Education	47.5
Housing	61.9
Linguistic	43.9
Poverty	58.5
Unemployment	62.4

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—

Above Poverty	36.84075452
Employed	20.45425382
Median HI	23.26446811
Education	—
Bachelor's or higher	39.34300013
High school enrollment	100
Preschool enrollment	18.64493776
Transportation	—
Auto Access	37.4566919
Active commuting	70.79430258
Social	—
2-parent households	14.75683306
Voting	58.51405107
Neighborhood	—
Alcohol availability	64.62209675
Park access	12.70370846
Retail density	22.81534711
Supermarket access	13.65327858
Tree canopy	2.065956628
Housing	—
Homeownership	60.60567176
Housing habitability	41.69126139
Low-inc homeowner severe housing cost burden	38.58591043
Low-inc renter severe housing cost burden	7.737713332
Uncrowded housing	46.38778391
Health Outcomes	—
Insured adults	43.96253048
Arthritis	0.0

Asthma ER Admissions	49.9
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	16.0
Cognitively Disabled	21.0
Physically Disabled	7.2
Heart Attack ER Admissions	53.7
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	98.4
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	59.5
Elderly	21.1
English Speaking	31.0
Foreign-born	59.3

Outdoor Workers	28.8
Climate Change Adaptive Capacity	—
Impervious Surface Cover	91.1
Traffic Density	37.8
Traffic Access	23.0
Other Indices	—
Hardship	62.5
Other Decision Support	—
2016 Voting	63.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	70.0
Healthy Places Index Score for Project Location (b)	29.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Anticipated construction phasing based on information provided by client and engineer.
Construction: Off-Road Equipment	Anticipated construction equipment mix based on construction activities.
Construction: Dust From Material Movement	Anticipated import and export based on construction activities.
Land Use	Adjusted based on project description
Construction: Trips and VMT	Anticipated one way trips based on project description

SCWA ASR Well Future Term V2 v2 Detailed Report

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3.2.1. Onsite - Unmitigated

3.2.2. Offsite - Unmitigated

3.2.3. Onsite - Mitigated

3.2.4. Offsite - Mitigated

3.3. Piping and Bedding (2027)

3.3.1. Onsite - Unmitigated

3.3.2. Offsite - Unmitigated

3.3.3. Onsite - Mitigated

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3.4. Backfill and Compaction (2027)

3.4.1. Onsite - Unmitigated

3.4.2. Offsite - Unmitigated

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6.1. Climate Risk Summary

6.2. Initial Climate Risk Scores

6.3. Adjusted Climate Risk Scores

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

7.2. Healthy Places Index Scores

7.3. Overall Health & Equity Scores

7.4. Health & Equity Measures

7.5. Evaluation Scorecard

7.6. Health & Equity Custom Measures

8. User Changes to Default Data

8.1. Justifications

8.3. Land Use

8.4. Construction

8.4.2. Off-Road Equipment

8.4.4. Dust from Material Movement

8.4.6. Trips and VMT

1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	SCWA ASR Well Future Term V2 v2
Construction Start Date	7/6/2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70000
Precipitation (days)	37.8000
Location	38.501753632607944, -121.30291753973538
County	Sacramento
City	Unincorporated
Air District	Sacramento Metropolitan AQMD
Air Basin	Sacramento Valley
TAZ	708
EDFZ	13
Electric Utility	Sacramento Municipal Utility District
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.41

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
User Defined Industrial	1.000000	User Defined Unit	1.80000	500.000	0.00000	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-10-A	Water Exposed Surfaces
Construction	C-10-C	Water Unpaved Construction Roads
Construction	C-11	Limit Vehicle Speeds on Unpaved Roads
Construction	C-12	Sweep Paved Roads

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.42841	4.50781	30.1937	48.9387	0.09983	1.89260	1.39644	—	11,272.8	11,272.8	0.49512	0.27406	3.06990	11,357.5
Mit.	5.42841	4.50781	30.1937	48.9387	0.09983	1.88610	1.39546	—	11,272.8	11,272.8	0.49512	0.27406	3.06990	11,357.5
% Reduced	—	—	—	—	—	< 0.5%	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.81331	3.15668	24.3434	40.0900	0.08972	1.30595	0.97651	—	10,054.9	10,054.9	0.43891	0.19326	0.04825	10,123.5
Mit.	3.81331	3.15668	24.3434	40.0900	0.08972	1.30182	0.97588	—	10,054.9	10,054.9	0.43891	0.19326	0.04825	10,123.5
% Reduced	—	—	—	—	—	< 0.5%	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	0.76024	0.62854	5.15014	7.74103	0.01471	0.25389	0.19715	—	1,594.23	1,594.23	0.07042	0.03337	0.13902	1,606.07
Mit.	0.76024	0.62854	5.15014	7.74103	0.01471	0.25328	0.19706	—	1,594.23	1,594.23	0.07042	0.03337	0.13902	1,606.07
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.13874	0.11471	0.93990	1.41274	0.00268	0.04634	0.03598	—	263.942	263.942	0.01166	0.00552	0.02302	265.903
Mit.	0.13874	0.11471	0.93990	1.41274	0.00268	0.04622	0.03596	—	263.942	263.942	0.01166	0.00552	0.02302	265.903
% Reduced	—	—	—	—	—	< 0.5%	< 0.5%	—	—	—	—	—	—	—
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	—	85.0000	—	—	80.0000	82.0000	—	—	—	—	—	—	—
Unmit.	—	—	No	—	—	No	No	—	—	—	—	—	—	—
Mit.	—	—	No	—	—	No	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	—	85.0000	—	—	80.0000	82.0000	—	—	—	—	—	—	—
Unmit.	—	—	No	—	—	No	No	—	—	—	—	—	—	—
Mit.	—	—	No	—	—	No	No	—	—	—	—	—	—	—
Exceeds (Annual)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	—	—	—	—	14.6000	15.0000	—	—	—	—	—	—	1,100.00
Unmit.	—	—	—	—	—	No	No	—	—	—	—	—	—	No
Mit.	—	—	—	—	—	No	No	—	—	—	—	—	—	No

2.2. Construction Emissions by Year

2.2.1. Total Construction Emissions by Year, Unmitigated

Includes both onsite and offsite emissions.

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	5.42841	4.50781	30.1937	48.9387	0.09983	1.89260	1.39644	—	11,272.8	11,272.8	0.49512	0.27406	3.06990	11,357.5
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.81331	3.15668	24.3434	40.0900	0.08972	1.30595	0.97651	—	10,054.9	10,054.9	0.43891	0.19326	0.04825	10,123.5
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.76024	0.62854	5.15014	7.74103	0.01471	0.25389	0.19715	—	1,594.23	1,594.23	0.07042	0.03337	0.13902	1,606.07
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.13874	0.11471	0.93990	1.41274	0.00268	0.04634	0.03598	—	263.942	263.942	0.01166	0.00552	0.02302	265.903

2.2.2. Onsite Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	5.25204	4.41317	28.6074	47.3540	0.09388	1.35728	1.24052	—	10,165.8	10,165.8	0.41237	0.08247	0.00000	10,200.7
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.68178	3.09372	23.0078	39.0521	0.08509	0.96124	0.87915	—	9,211.43	9,211.43	0.37366	0.07473	0.00000	9,243.04
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.73807	0.61875	4.91007	7.57153	0.01385	0.19744	0.18087	—	1,443.52	1,443.52	0.05856	0.01171	0.00000	1,448.48
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.13470	0.11292	0.89609	1.38180	0.00253	0.03603	0.03301	—	238.992	238.992	0.00969	0.00194	0.00000	239.812

2.2.3. Offsite Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.21377	0.09761	2.24243	1.74872	0.00851	0.53532	0.15593	—	1,475.74	1,475.74	0.11676	0.21361	3.06990	1,545.38
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.13154	0.06297	1.33560	1.03789	0.00463	0.34471	0.09736	—	843.469	843.469	0.06526	0.11852	0.04825	880.469
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.02218	0.00978	0.24007	0.16950	0.00086	0.05646	0.01628	—	150.701	150.701	0.01186	0.02166	0.13902	157.591
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.00405	0.00179	0.04381	0.03093	0.00016	0.01030	0.00297	—	24.9503	24.9503	0.00196	0.00359	0.02302	26.0909

2.2.4. Total Construction Emissions by Year, Mitigated

Includes both onsite and offsite emissions.

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	5.42841	4.50781	30.1937	48.9387	0.09983	1.88610	1.39546	—	11,272.8	11,272.8	0.49512	0.27406	3.06990	11,357.5
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.81331	3.15668	24.3434	40.0900	0.08972	1.30182	0.97588	—	10,054.9	10,054.9	0.43891	0.19326	0.04825	10,123.5
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.76024	0.62854	5.15014	7.74103	0.01471	0.25328	0.19706	—	1,594.23	1,594.23	0.07042	0.03337	0.13902	1,606.07

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.13874	0.11471	0.93990	1.41274	0.00268	0.04622	0.03596	—	263.942	263.942	0.01166	0.00552	0.02302	265.903

2.2.5. Onsite Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	5.25204	4.41317	28.6074	47.3540	0.09388	1.35079	1.23953	—	10,165.8	10,165.8	0.41237	0.08247	0.00000	10,200.7
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.68178	3.09372	23.0078	39.0521	0.08509	0.95712	0.87852	—	9,211.43	9,211.43	0.37366	0.07473	0.00000	9,243.04
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.73807	0.61875	4.91007	7.57153	0.01385	0.19682	0.18078	—	1,443.52	1,443.52	0.05856	0.01171	0.00000	1,448.48
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.13470	0.11292	0.89609	1.38180	0.00253	0.03592	0.03299	—	238.992	238.992	0.00969	0.00194	0.00000	239.812

2.2.6. Offsite Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.21377	0.09761	2.24243	1.74872	0.00851	0.53532	0.15593	—	1,475.74	1,475.74	0.11676	0.21361	3.06990	1,545.38
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.13154	0.06297	1.33560	1.03789	0.00463	0.34471	0.09736	—	843.469	843.469	0.06526	0.11852	0.04825	880.469

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.02218	0.00978	0.24007	0.16950	0.00086	0.05646	0.01628	—	150.701	150.701	0.01186	0.02166	0.13902	157.591
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.00405	0.00179	0.04381	0.03093	0.00016	0.01030	0.00297	—	24.9503	24.9503	0.00196	0.00359	0.02302	26.0909

3. Construction Emissions Details

3.1. Installation of New ASR Well (2027)

3.1.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.90771	2.44328	20.7066	35.5695	0.05459	0.90636	0.83385	—	5,910.56	5,910.56	0.23976	0.04795	—	5,930.85
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16729	0.14057	1.19134	2.04647	0.00314	0.05215	0.04797	—	340.060	340.060	0.01379	0.00276	—	341.227
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03053	0.02565	0.21742	0.37348	0.00057	0.00952	0.00876	—	56.3008	56.3008	0.00228	0.00046	—	56.4940

Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.1.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02362	0.02323	0.01519	0.31837	0.00000	0.06062	0.01421	—	65.5825	65.5825	0.00093	0.00229	0.21667	66.5043
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00123	0.00109	0.00100	0.01374	0.00000	0.00340	0.00080	—	3.43920	3.43920	0.00006	0.00013	0.00538	3.48534
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00022	0.00020	0.00018	0.00251	0.00000	0.00062	0.00015	—	0.56940	0.56940	0.00001	0.00002	0.00089	0.57704
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.1.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	2.90771	2.44328	20.7066	35.5695	0.05459	0.90636	0.83385	—	5,910.56	5,910.56	0.23976	0.04795	—	5,930.85
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16729	0.14057	1.19134	2.04647	0.00314	0.05215	0.04797	—	340.060	340.060	0.01379	0.00276	—	341.227
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03053	0.02565	0.21742	0.37348	0.00057	0.00952	0.00876	—	56.3008	56.3008	0.00228	0.00046	—	56.4940
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.1.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02362	0.02323	0.01519	0.31837	0.00000	0.06062	0.01421	—	65.5825	65.5825	0.00093	0.00229	0.21667	66.5043
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.00123	0.00109	0.00100	0.01374	0.00000	0.00340	0.00080	—	3.43920	3.43920	0.00006	0.00013	0.00538	3.48534
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00022	0.00020	0.00018	0.00251	0.00000	0.00062	0.00015	—	0.56940	0.56940	0.00001	0.00002	0.00089	0.57704
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.2. Development and Testing of ASR Well (2027)

3.2.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.68969	2.22289	21.3763	24.9369	0.04718	0.44950	0.41354	—	3,649.69	3,649.69	0.14805	0.02961	—	3,662.22
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10317	0.08526	0.81991	0.95648	0.00181	0.01724	0.01586	—	139.988	139.988	0.00568	0.00114	—	140.469
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01883	0.01556	0.14963	0.17456	0.00033	0.00315	0.00289	—	23.1766	23.1766	0.00094	0.00019	—	23.2562

Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.2.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01575	0.01549	0.01012	0.21224	0.00000	0.04041	0.00947	—	43.7217	43.7217	0.00062	0.00153	0.14444	44.3362
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00055	0.00048	0.00044	0.00611	0.00000	0.00151	0.00035	—	1.52853	1.52853	0.00003	0.00006	0.00239	1.54904
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00010	0.00009	0.00008	0.00111	0.00000	0.00028	0.00006	—	0.25307	0.25307	< 0.000005	0.00001	0.00040	0.25646
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.2.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	2.68969	2.22289	21.3763	24.9369	0.04718	0.44950	0.41354	—	3,649.69	3,649.69	0.14805	0.02961	—	3,662.22
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10317	0.08526	0.81991	0.95648	0.00181	0.01724	0.01586	—	139.988	139.988	0.00568	0.00114	—	140.469
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01883	0.01556	0.14963	0.17456	0.00033	0.00315	0.00289	—	23.1766	23.1766	0.00094	0.00019	—	23.2562
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.2.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01575	0.01549	0.01012	0.21224	0.00000	0.04041	0.00947	—	43.7217	43.7217	0.00062	0.00153	0.14444	44.3362
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.00055	0.00048	0.00044	0.00611	0.00000	0.00151	0.00035	—	1.52853	1.52853	0.00003	0.00006	0.00239	1.54904
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00010	0.00009	0.00008	0.00111	0.00000	0.00028	0.00006	—	0.25307	0.25307	< 0.000005	0.00001	0.00040	0.25646
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.3. Piping and Bedding (2027)

3.3.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.22872	1.03246	7.91226	15.7568	0.02292	0.39938	0.36743	—	2,481.68	2,481.68	0.10067	0.02013	—	2,490.19
Dust From Material Movement	—	—	—	—	—	0.00256	0.00039	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.22872	1.03246	7.91226	15.7568	0.02292	0.39938	0.36743	—	2,481.68	2,481.68	0.10067	0.02013	—	2,490.19
Dust From Material Movement	—	—	—	—	—	0.00256	0.00039	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08416	0.07072	0.54194	1.07923	0.00157	0.02735	0.02517	—	169.978	169.978	0.00690	0.00138	—	170.561
Dust From Material Movement	—	—	—	—	—	0.00018	0.00003	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01536	0.01291	0.09890	0.19696	0.00029	0.00499	0.00459	—	28.1418	28.1418	0.00114	0.00023	—	28.2383
Dust From Material Movement	—	—	—	—	—	0.00003	< 0.000005	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.3.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03150	0.03097	0.02025	0.42449	0.00000	0.08083	0.01895	—	87.4434	87.4434	0.00123	0.00305	0.28889	88.6724
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00820	0.00194	0.11978	0.04894	0.00046	0.02033	0.00642	—	70.7612	70.7612	0.00622	0.01129	0.13556	74.4160
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02868	0.02527	0.02635	0.31089	0.00000	0.08083	0.01895	—	77.6716	77.6716	0.00176	0.00323	0.00750	78.6850
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00814	0.00187	0.12895	0.04938	0.00046	0.02033	0.00642	—	70.7544	70.7544	0.00622	0.01129	0.00351	74.2771

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00195	0.00173	0.00158	0.02181	0.00000	0.00540	0.00126	—	5.45904	5.45904	0.00010	0.00021	0.00855	5.53228
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00056	0.00013	0.00867	0.00336	0.00003	0.00137	0.00043	—	4.84646	4.84646	0.00043	0.00077	0.00400	5.09151
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00036	0.00032	0.00029	0.00398	0.00000	0.00099	0.00023	—	0.90381	0.90381	0.00002	0.00003	0.00142	0.91593
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00010	0.00002	0.00158	0.00061	0.00001	0.00025	0.00008	—	0.80239	0.80239	0.00007	0.00013	0.00066	0.84296

3.3.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.22872	1.03246	7.91226	15.7568	0.02292	0.39938	0.36743	—	2,481.68	2,481.68	0.10067	0.02013	—	2,490.19
Dust From Material Movement	—	—	—	—	—	0.00100	0.00015	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.22872	1.03246	7.91226	15.7568	0.02292	0.39938	0.36743	—	2,481.68	2,481.68	0.10067	0.02013	—	2,490.19
Dust From Material Movement	—	—	—	—	—	0.00100	0.00015	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08416	0.07072	0.54194	1.07923	0.00157	0.02735	0.02517	—	169.978	169.978	0.00690	0.00138	—	170.561
Dust From Material Movement	—	—	—	—	—	0.00007	0.00001	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01536	0.01291	0.09890	0.19696	0.00029	0.00499	0.00459	—	28.1418	28.1418	0.00114	0.00023	—	28.2383
Dust From Material Movement	—	—	—	—	—	0.00001	< 0.000005	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.3.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03150	0.03097	0.02025	0.42449	0.00000	0.08083	0.01895	—	87.4434	87.4434	0.00123	0.00305	0.28889	88.6724
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00820	0.00194	0.11978	0.04894	0.00046	0.02033	0.00642	—	70.7612	70.7612	0.00622	0.01129	0.13556	74.4160
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02868	0.02527	0.02635	0.31089	0.00000	0.08083	0.01895	—	77.6716	77.6716	0.00176	0.00323	0.00750	78.6850
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00814	0.00187	0.12895	0.04938	0.00046	0.02033	0.00642	—	70.7544	70.7544	0.00622	0.01129	0.00351	74.2771

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00195	0.00173	0.00158	0.02181	0.00000	0.00540	0.00126	—	5.45904	5.45904	0.00010	0.00021	0.00855	5.53228
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00056	0.00013	0.00867	0.00336	0.00003	0.00137	0.00043	—	4.84646	4.84646	0.00043	0.00077	0.00400	5.09151
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00036	0.00032	0.00029	0.00398	0.00000	0.00099	0.00023	—	0.90381	0.90381	0.00002	0.00003	0.00142	0.91593
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00010	0.00002	0.00158	0.00061	0.00001	0.00025	0.00008	—	0.80239	0.80239	0.00007	0.00013	0.00066	0.84296

3.4. Backfill and Compaction (2027)

3.4.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.45306	2.06125	15.0956	23.2954	0.06217	0.55510	0.51069	—	6,729.75	6,729.75	0.27299	0.05460	—	6,752.85
Dust From Material Movement	—	—	—	—	—	0.00420	0.00064	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.45306	2.06125	15.0956	23.2954	0.06217	0.55510	0.51069	—	6,729.75	6,729.75	0.27299	0.05460	—	6,752.85
Dust From Material Movement	—	—	—	—	—	0.00420	0.00064	—	—	—	—	—	—	—

Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16802	0.14118	1.03394	1.59557	0.00426	0.03802	0.03498	—	460.942	460.942	0.01870	0.00374	—	462.524
Dust From Material Movement	—	—	—	—	—	0.00029	0.00004	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03066	0.02577	0.18869	0.29119	0.00078	0.00694	0.00638	—	76.3142	76.3142	0.00310	0.00062	—	76.5761
Dust From Material Movement	—	—	—	—	—	0.00005	0.00001	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.4.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02362	0.02323	0.01519	0.31837	0.00000	0.06062	0.01421	—	65.5825	65.5825	0.00093	0.00229	0.21667	66.5043
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.07381	0.01746	1.07799	0.44048	0.00417	0.18293	0.05779	—	636.851	636.851	0.05595	0.10159	1.22006	669.744
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02151	0.01896	0.01976	0.23317	0.00000	0.06062	0.01421	—	58.2537	58.2537	0.00132	0.00242	0.00563	59.0137

Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.07322	0.01687	1.16054	0.44445	0.00417	0.18293	0.05779	—	636.790	636.790	0.05595	0.10159	0.03161	668.494
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00146	0.00130	0.00119	0.01636	0.00000	0.00405	0.00095	—	4.09428	4.09428	0.00007	0.00016	0.00641	4.14921
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00504	0.00118	0.07801	0.03028	0.00029	0.01232	0.00391	—	43.6182	43.6182	0.00383	0.00696	0.03603	45.8235
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00027	0.00024	0.00022	0.00299	0.00000	0.00074	0.00017	—	0.67786	0.67786	0.00001	0.00003	0.00106	0.68695
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00092	0.00022	0.01424	0.00553	0.00005	0.00225	0.00071	—	7.22149	7.22149	0.00063	0.00115	0.00597	7.58661

3.4.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.45306	2.06125	15.0956	23.2954	0.06217	0.55510	0.51069	—	6,729.75	6,729.75	0.27299	0.05460	—	6,752.85
Dust From Material Movement	—	—	—	—	—	0.00164	0.00025	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.45306	2.06125	15.0956	23.2954	0.06217	0.55510	0.51069	—	6,729.75	6,729.75	0.27299	0.05460	—	6,752.85
Dust From Material Movement	—	—	—	—	—	0.00164	0.00025	—	—	—	—	—	—	—

Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16802	0.14118	1.03394	1.59557	0.00426	0.03802	0.03498	—	460.942	460.942	0.01870	0.00374	—	462.524
Dust From Material Movement	—	—	—	—	—	0.00011	0.00002	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03066	0.02577	0.18869	0.29119	0.00078	0.00694	0.00638	—	76.3142	76.3142	0.00310	0.00062	—	76.5761
Dust From Material Movement	—	—	—	—	—	0.00002	< 0.000005	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.4.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02362	0.02323	0.01519	0.31837	0.00000	0.06062	0.01421	—	65.5825	65.5825	0.00093	0.00229	0.21667	66.5043
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.07381	0.01746	1.07799	0.44048	0.00417	0.18293	0.05779	—	636.851	636.851	0.05595	0.10159	1.22006	669.744
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02151	0.01896	0.01976	0.23317	0.00000	0.06062	0.01421	—	58.2537	58.2537	0.00132	0.00242	0.00563	59.0137

Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.07322	0.01687	1.16054	0.44445	0.00417	0.18293	0.05779	—	636.790	636.790	0.05595	0.10159	0.03161	668.494
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00146	0.00130	0.00119	0.01636	0.00000	0.00405	0.00095	—	4.09428	4.09428	0.00007	0.00016	0.00641	4.14921
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00504	0.00118	0.07801	0.03028	0.00029	0.01232	0.00391	—	43.6182	43.6182	0.00383	0.00696	0.03603	45.8235
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00027	0.00024	0.00022	0.00299	0.00000	0.00074	0.00017	—	0.67786	0.67786	0.00001	0.00003	0.00106	0.68695
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00092	0.00022	0.01424	0.00553	0.00005	0.00225	0.00071	—	7.22149	7.22149	0.00063	0.00115	0.00597	7.58661

3.5. Surface Restoration and Paving (2027)

3.5.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.57026	1.31946	5.59953	8.30193	0.00879	0.39065	0.35940	—	954.397	954.397	0.03871	0.00774	—	957.672
Dust From Material Movement	—	—	—	—	—	0.00132	0.00020	—	—	—	—	—	—	—
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09465	0.07953	0.33751	0.50039	0.00053	0.02355	0.02166	—	57.5253	57.5253	0.00233	0.00047	—	57.7227
Dust From Material Movement	—	—	—	—	—	0.00008	0.00001	—	—	—	—	—	—	—
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01727	0.01451	0.06159	0.09132	0.00010	0.00430	0.00395	—	9.52396	9.52396	0.00039	0.00008	—	9.55665
Dust From Material Movement	—	—	—	—	—	0.00001	< 0.000005	—	—	—	—	—	—	—
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.5.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01575	0.01549	0.01012	0.21224	0.00000	0.04041	0.00947	—	43.7217	43.7217	0.00062	0.00153	0.14444	44.3362
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.02349	0.00556	0.34300	0.14015	0.00133	0.05821	0.01839	—	202.634	202.634	0.01780	0.03232	0.38820	213.100
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00086	0.00076	0.00070	0.00960	0.00000	0.00238	0.00056	—	2.40198	2.40198	0.00004	0.00009	0.00376	2.43420
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00141	0.00033	0.02184	0.00848	0.00008	0.00345	0.00109	—	12.2131	12.2131	0.00107	0.00195	0.01009	12.8306
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00016	0.00014	0.00013	0.00175	0.00000	0.00043	0.00010	—	0.39768	0.39768	0.00001	0.00002	0.00062	0.40301
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00026	0.00006	0.00399	0.00155	0.00001	0.00063	0.00020	—	2.02202	2.02202	0.00018	0.00032	0.00167	2.12425

3.5.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.57026	1.31946	5.59953	8.30193	0.00879	0.39065	0.35940	—	954.397	954.397	0.03871	0.00774	—	957.672
Dust From Material Movement	—	—	—	—	—	0.00052	0.00008	—	—	—	—	—	—	—
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09465	0.07953	0.33751	0.50039	0.00053	0.02355	0.02166	—	57.5253	57.5253	0.00233	0.00047	—	57.7227

Dust From Material Movement	—	—	—	—	—	0.00003	< 0.000005	—	—	—	—	—	—	—
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01727	0.01451	0.06159	0.09132	0.00010	0.00430	0.00395	—	9.52396	9.52396	0.00039	0.00008	—	9.55665
Dust From Material Movement	—	—	—	—	—	0.00001	< 0.000005	—	—	—	—	—	—	—
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.5.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01575	0.01549	0.01012	0.21224	0.00000	0.04041	0.00947	—	43.7217	43.7217	0.00062	0.00153	0.14444	44.3362
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.02349	0.00556	0.34300	0.14015	0.00133	0.05821	0.01839	—	202.634	202.634	0.01780	0.03232	0.38820	213.100
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00086	0.00076	0.00070	0.00960	0.00000	0.00238	0.00056	—	2.40198	2.40198	0.00004	0.00009	0.00376	2.43420
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00141	0.00033	0.02184	0.00848	0.00008	0.00345	0.00109	—	12.2131	12.2131	0.00107	0.00195	0.01009	12.8306

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00016	0.00014	0.00013	0.00175	0.00000	0.00043	0.00010	—	0.39768	0.39768	0.00001	0.00002	0.00062	0.40301
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00026	0.00006	0.00399	0.00155	0.00001	0.00063	0.00020	—	2.02202	2.02202	0.00018	0.00032	0.00167	2.12425

3.6. Excavation and Trenching (2027)

3.6.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.76346	1.48180	14.3873	20.3434	0.03709	0.55660	0.51207	—	4,015.45	4,015.45	0.16288	0.03258	—	4,029.23
Dust From Material Movement	—	—	—	—	—	0.00676	0.00102	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12078	0.10149	0.98543	1.39339	0.00254	0.03812	0.03507	—	275.031	275.031	0.01116	0.00223	—	275.975
Dust From Material Movement	—	—	—	—	—	0.00046	0.00007	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.02204	0.01852	0.17984	0.25429	0.00046	0.00696	0.00640	—	45.5345	45.5345	0.00185	0.00037	—	45.6908
Dust From Material Movement	—	—	—	—	—	0.00008	0.00001	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.6.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01575	0.01549	0.01012	0.21224	0.00000	0.04041	0.00947	—	43.7217	43.7217	0.00062	0.00153	0.14444	44.3362
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.11908	0.02817	1.73916	0.71065	0.00672	0.29513	0.09323	—	1,027.45	1,027.45	0.09027	0.16390	1.96836	1,080.52
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00098	0.00087	0.00079	0.01091	0.00000	0.00270	0.00063	—	2.72952	2.72952	0.00005	0.00010	0.00427	2.76614
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00813	0.00191	0.12585	0.04885	0.00046	0.01987	0.00630	—	70.3707	70.3707	0.00618	0.01123	0.05813	73.9287
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00018	0.00016	0.00014	0.00199	0.00000	0.00049	0.00012	—	0.45190	0.45190	0.00001	0.00002	0.00071	0.45797
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00148	0.00035	0.02297	0.00892	0.00008	0.00363	0.00115	—	11.6507	11.6507	0.00102	0.00186	0.00962	12.2397

3.6.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.76346	1.48180	14.3873	20.3434	0.03709	0.55660	0.51207	—	4,015.45	4,015.45	0.16288	0.03258	—	4,029.23
Dust From Material Movement	—	—	—	—	—	0.00264	0.00040	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12078	0.10149	0.98543	1.39339	0.00254	0.03812	0.03507	—	275.031	275.031	0.01116	0.00223	—	275.975
Dust From Material Movement	—	—	—	—	—	0.00018	0.00003	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02204	0.01852	0.17984	0.25429	0.00046	0.00696	0.00640	—	45.5345	45.5345	0.00185	0.00037	—	45.6908
Dust From Material Movement	—	—	—	—	—	0.00003	< 0.000005	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.6.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01575	0.01549	0.01012	0.21224	0.00000	0.04041	0.00947	—	43.7217	43.7217	0.00062	0.00153	0.14444	44.3362
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.11908	0.02817	1.73916	0.71065	0.00672	0.29513	0.09323	—	1,027.45	1,027.45	0.09027	0.16390	1.96836	1,080.52
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00098	0.00087	0.00079	0.01091	0.00000	0.00270	0.00063	—	2.72952	2.72952	0.00005	0.00010	0.00427	2.76614
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00813	0.00191	0.12585	0.04885	0.00046	0.01987	0.00630	—	70.3707	70.3707	0.00618	0.01123	0.05813	73.9287
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00018	0.00016	0.00014	0.00199	0.00000	0.00049	0.00012	—	0.45190	0.45190	0.00001	0.00002	0.00071	0.45797
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00148	0.00035	0.02297	0.00892	0.00008	0.00363	0.00115	—	11.6507	11.6507	0.00102	0.00186	0.00962	12.2397

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Installation of New ASR Well	Site Preparation	7/6/2027	7/29/2027	6.00000	21.0000	—
Development and Testing of ASR Well	Site Preparation	7/30/2027	8/14/2027	6.00000	14.0000	—
Piping and Bedding	Grading	9/13/2027	10/11/2027	6.00000	25.0000	—
Backfill and Compaction	Grading	9/17/2027	10/15/2027	6.00000	25.0000	—
Surface Restoration and Paving	Paving	8/27/2027	9/21/2027	6.00000	22.0000	—
Excavation and Trenching	Trenching	8/15/2027	9/13/2027	6.00000	25.0000	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Installation of New ASR Well	Other Material Handling Equipment	Diesel	Average	3.00000	14.0000	148.000	0.41000
Installation of New ASR Well	Tractors/Loaders/Backhoes	Diesel	Average	1.000000	14.0000	84.0000	0.37000
Installation of New ASR Well	Other Construction Equipment	Diesel	Average	1.000000	14.0000	82.0000	0.42000
Installation of New ASR Well	Rubber Tired Dozers	Diesel	Average	1.000000	7.00000	367.000	0.40000
Installation of New ASR Well	Bore/Drill Rigs	Diesel	Average	1.000000	14.0000	83.0000	0.50000
Development and Testing of ASR Well	Pumps	Diesel	Average	2.00000	24.0000	148.000	0.41000
Piping and Bedding	Cranes	Diesel	Average	1.000000	14.0000	84.0000	0.37000
Piping and Bedding	Other Material Handling Equipment	Diesel	Average	2.00000	14.0000	148.000	0.41000

Backfill and Compaction	Tractors/Loaders/Back	Diesel	Average	1.000000	14.0000	148.000	0.41000
Backfill and Compaction	Other Construction Equipment	Diesel	Average	1.000000	14.0000	367.000	0.40000
Backfill and Compaction	Other Material Handling Equipment	Diesel	Average	2.00000	14.0000	84.0000	0.37000
Backfill and Compaction	Off-Highway Trucks	Diesel	Average	1.000000	14.0000	376.000	0.38000
Surface Restoration and Paving	Off-Highway Trucks	Diesel	Average	1.000000	14.0000	84.0000	0.37000
Surface Restoration and Paving	Other Material Handling Equipment	Diesel	Average	2.00000	14.0000	10.00000	0.56000
Surface Restoration and Paving	Pavers	Diesel	Average	1.000000	14.0000	36.0000	0.38000
Excavation and Trenching	Tractors/Loaders/Back hoes	Diesel	Average	1.000000	14.0000	84.0000	0.37000
Excavation and Trenching	Cranes	Diesel	Average	1.000000	14.0000	367.000	0.29000
Excavation and Trenching	Other Construction Equipment	Diesel	Average	1.000000	14.0000	82.0000	0.42000
Excavation and Trenching	Other Material Handling Equipment	Diesel	Average	2.00000	14.0000	93.0000	0.40000

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Installation of New ASR Well	Other Material Handling Equipment	Diesel	Average	3.00000	14.0000	148.000	0.41000
Installation of New ASR Well	Tractors/Loaders/Back hoes	Diesel	Average	1.000000	14.0000	84.0000	0.37000
Installation of New ASR Well	Other Construction Equipment	Diesel	Average	1.000000	14.0000	82.0000	0.42000
Installation of New ASR Well	Rubber Tired Dozers	Diesel	Average	1.000000	7.00000	367.000	0.40000

Installation of New ASR Well	Bore/Drill Rigs	Diesel	Average	1.000000	14.0000	83.0000	0.50000
Development and Testing of ASR Well	Pumps	Diesel	Average	2.00000	24.0000	148.000	0.41000
Piping and Bedding	Cranes	Diesel	Average	1.000000	14.0000	84.0000	0.37000
Piping and Bedding	Other Material Handling Equipment	Diesel	Average	2.00000	14.0000	148.000	0.41000
Backfill and Compaction	Tractors/Loaders/Backhoes	Diesel	Average	1.000000	14.0000	148.000	0.41000
Backfill and Compaction	Other Construction Equipment	Diesel	Average	1.000000	14.0000	367.000	0.40000
Backfill and Compaction	Other Material Handling Equipment	Diesel	Average	2.00000	14.0000	84.0000	0.37000
Backfill and Compaction	Off-Highway Trucks	Diesel	Average	1.000000	14.0000	376.000	0.38000
Surface Restoration and Paving	Off-Highway Trucks	Diesel	Average	1.000000	14.0000	84.0000	0.37000
Surface Restoration and Paving	Other Material Handling Equipment	Diesel	Average	2.00000	14.0000	10.00000	0.56000
Surface Restoration and Paving	Pavers	Diesel	Average	1.000000	14.0000	36.0000	0.38000
Excavation and Trenching	Tractors/Loaders/Backhoes	Diesel	Average	1.000000	14.0000	84.0000	0.37000
Excavation and Trenching	Cranes	Diesel	Average	1.000000	14.0000	367.000	0.29000
Excavation and Trenching	Other Construction Equipment	Diesel	Average	1.000000	14.0000	82.0000	0.42000
Excavation and Trenching	Other Material Handling Equipment	Diesel	Average	2.00000	14.0000	93.0000	0.40000

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Installation of New ASR Well	Worker	6.00000	14.3000	LDA,LDT1,LDT2
Installation of New ASR Well	Vendor	—	8.80000	HHDT,MHDT
Installation of New ASR Well	Hauling	0.00000	20.0000	HHDT
Installation of New ASR Well	Onsite truck	—	—	HHDT
Development and Testing of ASR Well	Worker	4.00000	14.3000	LDA,LDT1,LDT2
Development and Testing of ASR Well	Vendor	—	8.80000	HHDT,MHDT
Development and Testing of ASR Well	Hauling	0.00000	20.0000	HHDT
Development and Testing of ASR Well	Onsite truck	—	—	HHDT
Piping and Bedding	Worker	8.00000	14.3000	LDA,LDT1,LDT2
Piping and Bedding	Vendor	—	8.80000	HHDT,MHDT
Piping and Bedding	Hauling	1.000000	20.0000	HHDT
Piping and Bedding	Onsite truck	—	—	HHDT
Backfill and Compaction	Worker	6.00000	14.3000	LDA,LDT1,LDT2
Backfill and Compaction	Vendor	—	8.80000	HHDT,MHDT
Backfill and Compaction	Hauling	9.00000	20.0000	HHDT
Backfill and Compaction	Onsite truck	—	—	HHDT
Surface Restoration and Paving	Worker	4.00000	14.3000	LDA,LDT1,LDT2
Surface Restoration and Paving	Vendor	—	8.80000	HHDT,MHDT
Surface Restoration and Paving	Hauling	2.86364	20.0000	HHDT
Surface Restoration and Paving	Onsite truck	—	—	HHDT
Excavation and Trenching	Worker	4.00000	14.3000	LDA,LDT1,LDT2
Excavation and Trenching	Vendor	—	8.80000	HHDT,MHDT
Excavation and Trenching	Hauling	14.5200	20.0000	HHDT
Excavation and Trenching	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Installation of New ASR Well	Worker	6.00000	14.3000	LDA,LDT1,LDT2
Installation of New ASR Well	Vendor	—	8.80000	HHDT,MHDT
Installation of New ASR Well	Hauling	0.00000	20.0000	HHDT
Installation of New ASR Well	Onsite truck	—	—	HHDT
Development and Testing of ASR Well	Worker	4.00000	14.3000	LDA,LDT1,LDT2
Development and Testing of ASR Well	Vendor	—	8.80000	HHDT,MHDT
Development and Testing of ASR Well	Hauling	0.00000	20.0000	HHDT
Development and Testing of ASR Well	Onsite truck	—	—	HHDT
Piping and Bedding	Worker	8.00000	14.3000	LDA,LDT1,LDT2
Piping and Bedding	Vendor	—	8.80000	HHDT,MHDT
Piping and Bedding	Hauling	1.000000	20.0000	HHDT
Piping and Bedding	Onsite truck	—	—	HHDT
Backfill and Compaction	Worker	6.00000	14.3000	LDA,LDT1,LDT2
Backfill and Compaction	Vendor	—	8.80000	HHDT,MHDT
Backfill and Compaction	Hauling	9.00000	20.0000	HHDT
Backfill and Compaction	Onsite truck	—	—	HHDT
Surface Restoration and Paving	Worker	4.00000	14.3000	LDA,LDT1,LDT2
Surface Restoration and Paving	Vendor	—	8.80000	HHDT,MHDT
Surface Restoration and Paving	Hauling	2.86364	20.0000	HHDT
Surface Restoration and Paving	Onsite truck	—	—	HHDT
Excavation and Trenching	Worker	4.00000	14.3000	LDA,LDT1,LDT2
Excavation and Trenching	Vendor	—	8.80000	HHDT,MHDT
Excavation and Trenching	Hauling	14.5200	20.0000	HHDT

Excavation and Trenching	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Piping and Bedding	1,100.00	0.00000	1.80000	0.00000	0.00000
Backfill and Compaction	1,800.00	0.00000	1.80000	0.00000	0.00000
Surface Restoration and Paving	500.000	0.00000	1.80000	0.00000	0.00000
Excavation and Trenching	0.00000	2,900.00	1.80000	0.00000	0.00000

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Phase Name	Land Use	Area Paved (acres)	% Asphalt
Surface Restoration and Paving	User Defined Industrial	0.00000	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O

2027	0.00000	374.840	0.01290	0.00170

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	21.7600	annual days of extreme heat
Extreme Precipitation	5.50000	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	3.74000	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	2	0	0	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	0	0	N/A
Flooding	0	0	0	N/A
Drought	0	0	0	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	2	1	1	3
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	1	1	2
Flooding	1	1	1	2
Drought	1	1	1	2
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	48.5999

AQ-PM	23.6839
AQ-DPM	22.3149
Drinking Water	78.7811
Lead Risk Housing	41.1720
Pesticides	73.7931
Toxic Releases	30.3326
Traffic	28.4750
Effect Indicators	—
CleanUp Sites	86.5435
Groundwater	88.8594
Haz Waste Facilities/Generators	99.8015
Impaired Water Bodies	51.2180
Solid Waste	99.9084
Sensitive Population	—
Asthma	50.1994
Cardio-vascular	53.9008
Low Birth Weights	36.4126
Socioeconomic Factor Indicators	—
Education	47.5070
Housing	61.9392
Linguistic	43.8760
Poverty	58.5050
Unemployment	62.4024

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—

Above Poverty	36.84075452
Employed	20.45425382
Median HI	23.26446811
Education	—
Bachelor's or higher	39.34300013
High school enrollment	100
Preschool enrollment	18.64493776
Transportation	—
Auto Access	37.4566919
Active commuting	70.79430258
Social	—
2-parent households	14.75683306
Voting	58.51405107
Neighborhood	—
Alcohol availability	64.62209675
Park access	12.70370846
Retail density	22.81534711
Supermarket access	13.65327858
Tree canopy	2.065956628
Housing	—
Homeownership	60.60567176
Housing habitability	41.69126139
Low-inc homeowner severe housing cost burden	38.58591043
Low-inc renter severe housing cost burden	7.737713332
Uncrowded housing	46.38778391
Health Outcomes	—
Insured adults	43.96253048
Arthritis	0.0

Asthma ER Admissions	49.9
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	16.0
Cognitively Disabled	21.0
Physically Disabled	7.2
Heart Attack ER Admissions	53.7
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	98.4
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	59.5
Elderly	21.1
English Speaking	31.0
Foreign-born	59.3

Outdoor Workers	28.8
Climate Change Adaptive Capacity	—
Impervious Surface Cover	91.1
Traffic Density	37.8
Traffic Access	23.0
Other Indices	—
Hardship	62.5
Other Decision Support	—
2016 Voting	63.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	70.0000
Healthy Places Index Score for Project Location (b)	29.0000
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

8.1. Justifications

Screen	Justification
Land Use	Adjusted building square feet based on project description
Construction: Construction Phases	Anticipated construction phasing based on information provided by client and engineer.
Construction: Off-Road Equipment	Anticipated construction equipment mix based on construction activities.
Construction: Dust From Material Movement	Anticipated import and export based on construction activities
Construction: Trips and VMT	Anticipated one way trips per day based on project description
Construction: Architectural Coatings	There will be no architectural coating for this project

8.3. Land Use

Model Parameter	Units	Default Value	New Value
Lot Area	acre	0.00000	1.80000
Building Area	sq. ft	0.00000	500.000
Landscape Area	sq. ft	—	0.00000

8.4. Construction

8.4.2. Off-Road Equipment

Phase Name	Equipment Type	Model Parameter	Default Value	New Value
Installation of New ASR Well	Other Material Handling Equipment	Number per Day	1.000000	3.00000
Installation of New ASR Well	Other Material Handling Equipment	Hours Per Day	8.00000	14.0000
Development and Testing of ASR Well	Pumps	Number per Day	1.000000	2.00000
Development and Testing of ASR Well	Pumps	Hours Per Day	8.00000	24.0000
Piping and Bedding	Cranes	Number per Day	2.00000	1.000000
Piping and Bedding	Cranes	Hours Per Day	7.00000	14.0000
Piping and Bedding	Other Material Handling Equipment	Number per Day	1.000000	2.00000

Piping and Bedding	Other Material Handling Equipment	Hours Per Day	8.00000	14.0000
Backfill and Compaction	Tractors/Loaders/Backhoes	Hours Per Day	8.00000	14.0000
Backfill and Compaction	Other Construction Equipment	Hours Per Day	8.00000	14.0000
Backfill and Compaction	Other Material Handling Equipment	Hours Per Day	7.00000	14.0000
Surface Restoration and Paving	Off-Highway Trucks	Hours Per Day	8.00000	14.0000
Surface Restoration and Paving	Other Material Handling Equipment	Number per Day	1.000000	2.00000
Surface Restoration and Paving	Other Material Handling Equipment	Hours Per Day	6.00000	14.0000
Surface Restoration and Paving	Pavers	Hours Per Day	7.00000	14.0000

8.4.4. Dust from Material Movement

Phase Name	Model Parameter	Units	Default Value	New Value
Piping and Bedding	Material Imported	Cubic Yards	—	1,100.00
Piping and Bedding	Material Exported	Cubic Yards	—	0.00000
Piping and Bedding	Total Acres Graded	acres	0.00000	1.80000
Backfill and Compaction	Material Imported	Cubic Yards	—	1,800.00
Backfill and Compaction	Material Exported	Cubic Yards	—	0.00000
Backfill and Compaction	Total Acres Graded	acres	0.00000	1.80000

8.4.6. Trips and VMT

Phase Name	Trip Type	Model Parameter	Default Value	New Value
Installation of New ASR Well	Worker	One-Way Trips per Day	17.5000	6.00000
Development and Testing of ASR Well	Worker	One-Way Trips per Day	5.00000	4.00000
Piping and Bedding	Worker	One-Way Trips per Day	7.50000	8.00000
Piping and Bedding	Hauling	One-Way Trips per Day	5.52000	1.000000
Backfill and Compaction	Worker	One-Way Trips per Day	12.5000	6.00000
Surface Restoration and Paving	Worker	One-Way Trips per Day	10.00000	4.00000
Excavation and Trenching	Worker	One-Way Trips per Day	12.5000	4.00000

Appendix B. Biological Resources Database Searches

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Carmichael (3812153) OR Elk Grove (3812143))
 AND Taxonomic Group IS (Fish OR Amphibians OR Reptiles OR Birds OR Mammals OR Mollusks OR Arachnids OR Crustaceans OR Insects)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
American bumble bee *Bombus pensylvanicus*	IIHYM24260	None	None	G3G4	S2	
bank swallow *Riparia riparia*	ABPAU08010	None	Threatened	G5	S3	
burrowing owl *Athene cunicularia*	ABNSB10010	None	Candidate Endangered	G4	S2	SSC
California linderiella *Linderiella occidentalis*	ICBRA06010	None	None	G2G3	S2S3	
Cooper's hawk *Astur cooperii*	ABNKC12040	None	None	G5	S4	WL
Crotch's bumble bee *Bombus crotchii*	IIHYM24480	None	Candidate Endangered	G2	S2	
ferruginous hawk *Buteo regalis*	ABNKC19120	None	None	G4	S3S4	WL
giant gartersnake *Thamnophis gigas*	ARADB36150	Threatened	Threatened	G2	S2	
golden eagle *Aquila chrysaetos*	ABNKC22010	None	None	G5	S3	FP
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
great egret *Ardea alba*	ABNGA04040	None	None	G5	S4	
hairy water flea *Dumontia oregonensis*	ICBRA23010	None	None	G1G3	S1	
midvalley fairy shrimp *Branchinecta mesovallensis*	ICBRA03150	None	None	G2	S2S3	
northwestern pond turtle *Actinemys marmorata*	ARAAD02031	Proposed Threatened	None	G2	SNR	SSC
Ricksecker's water scavenger beetle *Hydrochara rickseckeri*	IICOL5V010	None	None	G2?	S2?	
steelhead - Central Valley DPS *Oncorhynchus mykiss irideus pop. 11*	AFCHA0209K	Threatened	None	G5T2Q	S2	SSC
Swainson's hawk *Buteo swainsoni*	ABNKC19070	None	Threatened	G5	S4	

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Threatened	G1G2	S2	SSC
valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	IICOL48011	Threatened	None	G3T3	S3	
vernal pool fairy shrimp *Branchinecta lynchi*	ICBRA03030	Threatened	None	G3	S3	
vernal pool tadpole shrimp *Lepidurus packardi*	ICBRA10010	Endangered	None	G3	S3	
western spadefoot *Spea hammondii*	AAABF02020	Proposed Threatened	None	G2G3	S3S4	SSC
white-tailed kite *Elanus leucurus*	ABNKC06010	None	None	G5	S3S4	FP

Record Count: 24

CALIFORNIA NATIVE PLANT SOCIETY

CNPS Rare Plant Inventory

Search Results

7 matches found. Click on scientific name for details

Search Criteria: , CRPR is one of [**1A:1B:2A:2B:3**] , Quad is one of [**3812153:3812143**]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	CA ENDEMIC	DATE ADDED	PHOTO
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	Mar-May	None	None	GU	S2	2B.2		1980-01-01	 © 2013 Aaron Arthur
Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	annual herb	Apr-Aug	None	CE	G2	S2	1B.2		1974-01-01	 ©2004 Carol W. Witham
Juncus leiospermus var. *ahartii*	Ahart's dwarf rush	Juncaceae	annual herb	Mar-May	None	None	G2T1	S1	1B.2	Yes	1984-01-01	 © 2004 Carol W. Witham
Legenere limosa	legenere	Campanulaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.1	Yes	1974-01-01	 © 2025 Adam Searcy
Orcuttia tenuis	slender Orcutt grass	Poaceae	annual herb	May-Sep(Oct)	FT	CE	G2	S2	1B.1	Yes	1974-01-01	 © 2013 Justy Leppert

Orcuttia viscida	Sacramento Orcutt grass	Poaceae	annual herb	Apr-Jul(Sep)	FE	CE	G1	S1	1B.1	Yes	1974-01-01	 © Rick York and CNPS
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May-Oct(Nov)	None	None	G3	S3	1B.2	Yes	1984-01-01	 ©2013 Debra L. Cook

Showing 1 to 7 of 7 entries

Go to top

Suggested Citation:

California Native Plant Society, Rare Plant Program. 2025. Rare Plant Inventory (online edition, v9.5.1). Website https://www.rareplants.cnps.org [accessed 2 October 2025].

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IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

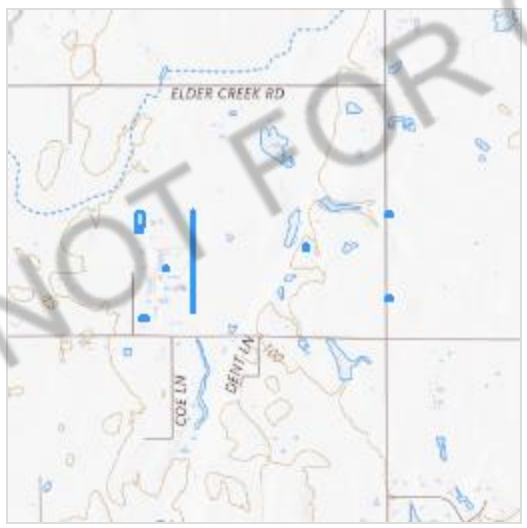
This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Sacramento County, California



Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building

2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

NOT FOR CONSULTATION

The following species are potentially affected by activities in this location:

Reptiles

NAME	STATUS
Northwestern Pond Turtle Actinemys marmorata Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

Amphibians

NAME	STATUS
Western Spadefoot Spea hammondii No critical habitat has been designated for this species.	Proposed Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened
Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp Branchinecta conservatio Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8246	Endangered

NOT FOR CONSULTATION

Vernal Pool Fairy Shrimp Branchinecta lynchi — Threatened
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/498

Vernal Pool Tadpole Shrimp Lepidurus packardi — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/2246

Flowering Plants

NAME	STATUS

Sacramento Orcutt Grass Orcuttia viscida — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/5507

Slender Orcutt Grass Orcuttia tenuis — Threatened
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/1063

NOT FOR CONSULTATION

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are Bald Eagles and/or Golden Eagles in your project area.

Measures for Proactively Minimizing Eagle Impacts
For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the National Bald Eagle Management Guidelines. You may employ the timing and activity-specific distance recommendations in this document when designing your project/activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to Bald Eagle Nesting and Sensitivity to Human Activity.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

If disturbance or take of eagles cannot be avoided, an incidental take permit may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the Do I Need A Permit Tool. For assistance making this determination for golden eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

Ensure Your Eagle List is Accurate and Complete
If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

NOT FOR CONSULTATION

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

NOT FOR CONSULTATION

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

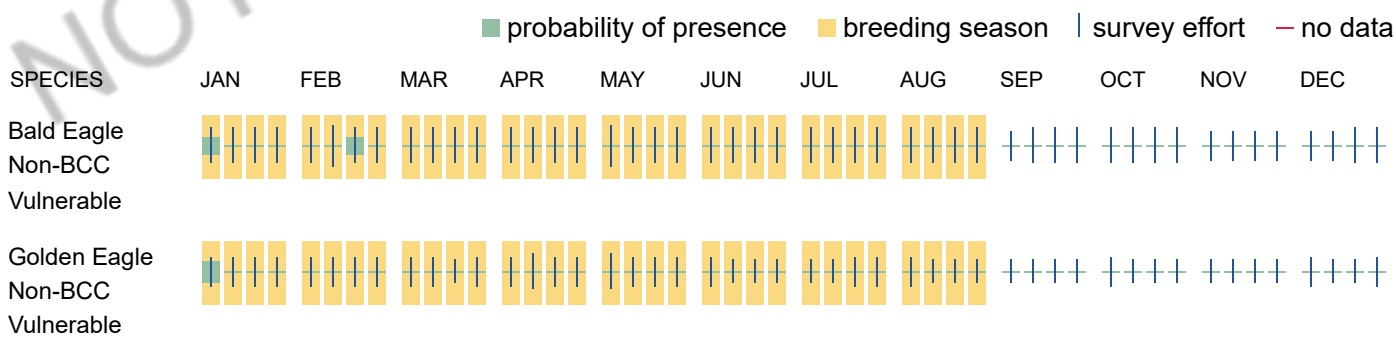
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



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Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle (Bald and Golden Eagle Protection Act requirements may apply).

Proper interpretation and use of your eagle report

On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

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Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Migratory birds

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Measures for Proactively Minimizing Migratory Bird Impacts

Your IPaC Migratory Bird list showcases birds of concern, including Birds of Conservation Concern (BCC), in your project location. This is not a comprehensive list of all birds found in your project area. However, you can help proactively minimize significant impacts to all birds at your project location by implementing the measures in the Nationwide avoidance and minimization measures for birds document, and any other project-specific avoidance and minimization measures suggested at the link Measures for avoiding and minimizing impacts to birds for the birds of concern on your list below.

Ensure Your Migratory Bird List is Accurate and Complete

If your project area is in a poorly surveyed area, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory

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Birds and Eagles document, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Belding's Savannah Sparrow Passerculus sandwichensis beldingi This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8	Breeds Apr 1 to Aug 15
Bullock's Oriole Icterus bullockii This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Jul 25
California Gull Larus californicus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31
Clark's Grebe Aechmophorus clarkii This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Aug 31
Common Yellowthroat Geothlypis trichas sinuosa This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31

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Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lawrence's Goldfinch Spinus lawrencei — Breeds Mar 20 to Sep 20

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Northern Harrier Circus hudsonius — Breeds Apr 1 to Sep 15

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/8350

Nuttall's Woodpecker Dryobates nuttallii — Breeds Apr 1 to Jul 20

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Santa Barbara Song Sparrow Melospiza melodia graminea — Breeds Mar 1 to Sep 5

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/5513

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Western Screech-owl Megascops kennicottii cardonensis — Breeds Mar 1 to Jun 30

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

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Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Yellow-billed Magpie Pica nuttalli — Breeds Apr 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9726

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

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Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

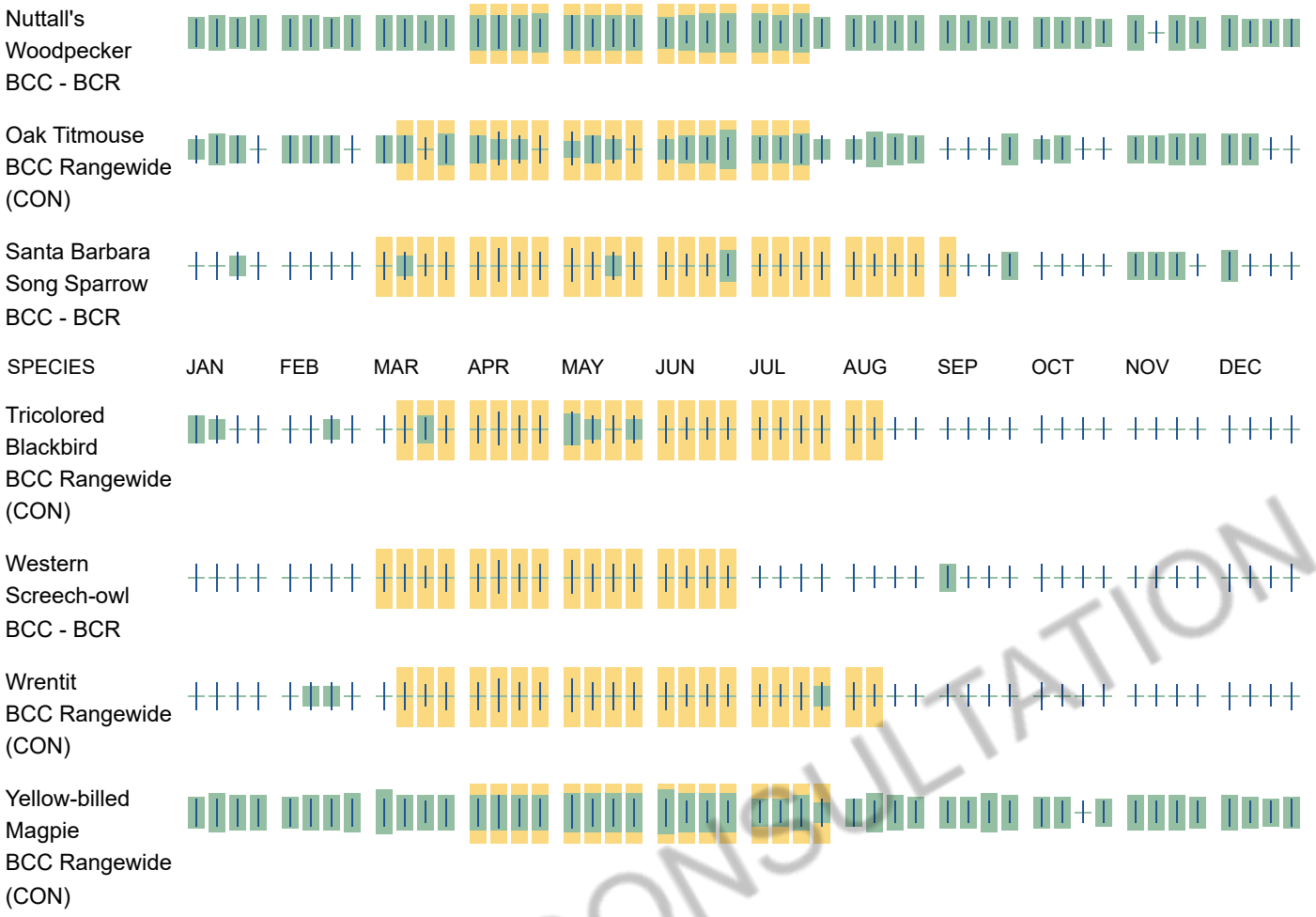
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



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Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Avoidance & Minimization Measures for Birds describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the Bald and Golden Eagle Protection Act and those species marked as “Vulnerable”. See the FAQ “What are the levels of concern for migratory birds?” for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your

project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle (Bald and Golden Eagle Protection Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the Rapid Avian Information Locator (RAIL) Tool.

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Bald and Golden Eagle Protection Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

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Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ “Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds”.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs
Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:
The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

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The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

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For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND
PEM1A

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in

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activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

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Mitigation Monitoring and Reporting Program

Aquifer Storage and Recovery Project, Vineyard Surface Water Treatment Plant

Prepared for:

Sacramento County Water Agency

August 2026

Prepared by:

GEI Consultants

Consulting Engineers and Scientists

Mitigation Monitoring and Reporting Program

Aquifer Storage and Recovery Project, Vineyard Surface Water Treatment Plant

Prepared for:

Sacramento County Water Agency

10151 Florin Road
Sacramento, CA 95829

Contact:

Matt Satow
Director of Water Resources
(916) 874-8913

Prepared by:

GEI Consultants
2868 Prospect Park Drive, Suite 400
Sacramento, CA 95670

Contact:

Rodney Fricke
Senior Hydrogeologist
(916) 431-9138

August 18, 2026

Project No. 2100205

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Mitigation Monitoring and Reporting Program

In accordance with the California Environmental Quality Act (CEQA), the Sacramento County Water Agency (SCWA) prepared an Initial Study/proposed Mitigated Negative Declaration (IS/MND) in September 2026 to provide the public and responsible and trustee agencies with information about the potential environmental impacts associated with implementation of the Aquifer Storage and Recovery Project (hereafter referred to as the "project" or "proposed project") at the Vineyard Surface Water Treatment Plant.

The IS/MND concludes that implementation of the proposed project would generate significant and potentially significant adverse effects on the environment. The IS/MND identifies feasible mitigation measures that avoid, mitigate, or reduce these impacts to a less-than-significant level.

Section 21081.6(a)(1) of the California Public Resources Code and Section 15097 of the State CEQA Guidelines require a public agency to adopt a reporting and monitoring program on the revisions which it has required in the project and the measures it has imposed to mitigate or avoid significant environmental impacts on the physical environment.

This Mitigation Monitoring and Reporting Program will be used by SCWA to ensure that mitigation measures identified in the MND are implemented as described and that their implementation is documented.

The Mitigation Monitoring and Reporting Program is presented in tabular format. The table columns contain the following information:

Mitigation Number: Lists the mitigation measures by number, as designated in the MND.

Mitigation Measure: Provides the text of the mitigation measures, each of which has been adopted and incorporated into the project.

Timing/Schedule: Lists the time frame in which the mitigation measure is expected to take place.

Implementation Responsibility: Identifies the entity responsible for implementing the mitigation measure.

Completion of Implementation: SCWA is responsible for reporting on implementation of the mitigation measures. The "Completion of Implementation" column is to be used by SCWA to indicate when implementation of a mitigation measure has been completed. SCWA, at their discretion, may delegate implementation responsibility or portions thereof to qualified consultants or contractors.

Table 1. Mitigation Monitoring and Reporting Program for the Project

Mitigation Number	Mitigation Measure	Timing/ Schedule	Implementation Responsibility	Completion of Implementation
Air Quality				
AIR-1	**SMAQMD Basic Construction Emission Control Practices** ▪ Water all exposed surfaces two times daily. Exposed surfaces include but are not limited to soil piles, graded areas, unpaved parking areas, staging areas, and access roads. ▪ Cover or maintain at least two feet of free board space on haul trucks transporting soil, sand, or other loose material on the site. Any haul trucks that would be traveling along freeways or major roadways should be covered. ▪ Use wet power vacuum street sweepers to remove any visible track-out mud or dirt onto adjacent public roads at least once a day. Use of dry power sweeping is prohibited. ▪ Limit vehicle speeds on unpaved roads to 15 miles per hour. ▪ All roadways, driveways, sidewalks, and parking lots to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used. ▪ Minimize idling time either by shutting equipment off when not in use or reducing the time of idling to 5 minutes [CRR, Title 13, sections 2449(d)(3) and 2485]. Provide clear signage that posts this requirement for workers at the entrances to the site. ▪ Provide current certificate(s) of compliance for CARB's In-Use Off-Road Diesel-Fueled Fleets Regulation [CRR, Title 13, sections 2449 and 2449.1]. For more information contact CARB at 877-593-6677, doors@arb.ca.gov. ▪ Maintain all construction equipment in proper working condition according to manufacturer's specifications. The equipment must be checked by a certified mechanic and determined to be running in proper condition before it is operated.	During construction	SCWA	
Biological Resources				
BIO-1	**Conduct Worker Environmental Awareness Training.** To minimize potential effects of project construction on special-status wildlife, SCWA will ensure that an Environmental Awareness Program will be presented to all project personnel working in the field before project activities begin. The program will be presented by a qualified biologist with knowledge of special-status wildlife that could within the project area. The program will address each species biology and habitat needs; status of each species and their regulatory protections; and measures required to reduce impacts to the species during project construction. This training will be repeated on a yearly basis, as necessary.	Before construction	SCWA	
BIO-2	**Avoid and Minimize Impacts to Northwestern Pond Turtle and Its' Habitats.** ▪ **Initial Ground Disturbance Timing**. Initial ground disturbance (including vegetation removal and geotechnical boring) in suitable upland habitat within 500 feet of aquatic habitat for	Before and during construction	SCWA	

Mitigation Number	Mitigation Measure	Timing/ Schedule	Implementation Responsibility	Completion of Implementation
	northwestern pond turtle shall be minimized to greatest extent feasible during the brumation season (December through February), when adult turtles may be in torpor and particularly susceptible to equipment strikes. The target period for riparian vegetation removal in these areas shall be fall (September through November), to the greatest extent practicable, when potential for turtle strikes and direct impacts on other special-status species are lowest. 1. If vegetation removal or ground disturbance occurs outside the ideal timing for this species, a designated biological monitor will be present during all ground disturbance or vegetation removal activities. Disturbance activities will occur at a speed that allows the designated monitor to scan for turtles in brumation, nest, and avoid direct impacts. 2. Direct Impact Avoidance. Measures shall be implemented to minimize potential for heavy equipment to destroy northwestern pond turtle nests and to encounter hatchling turtles. Feasible measures may vary depending on site-specific circumstances and could include, but not be limited to: a. Minimizing heavy equipment operation in upland habitat within 500 feet of aquatic habitat in February and March, when hatchling turtles emerge from nests and travel to aquatic habitat. b. Placing artificial ground cover that prevents female turtles from excavating nests in most likely nesting areas where ground disturbing activities shall occur before the following hatchling turtle emergence period. c. Fencing most likely in nesting areas to exclude access by female turtles and/or enclose hatchlings after emergence. If active nests and hatchlings may be present, the fenced area shall be inspected daily by a qualified biologist, and hatchling turtles shall be captured and relocated to suitable habitat at a pre-determined location. 3. **Monitoring**. A qualified biologist shall be present during initial ground disturbance, in-water work, and the hatchling emergence period to search for northwestern pond turtles and minimize encounters with heavy equipment. 4. **Stop Work if a Northwestern Pond Turtle is Observed in Ground Disturbing Area and Allow to Leave the Ground Disturbing Area on Their Own or Have Qualified Biologist Capture and Relocate.** If northwestern pond turtles or nests are observed on land within the project footprint during project activities, the contractor shall stop work within approximately 200 feet of the turtle, and a qualified biologist shall be notified immediately. If possible, the turtle shall be allowed to leave on its own and the qualified biologist shall remain in the area until the biologist deems his or her presence no longer necessary to ensure that the turtle is not harmed. Alternatively, with prior California Department of Fish and Wildlife (CDFW) approval, the qualified biologist may capture and relocate the turtle unharmed to suitable habitat at a pre-determined location. 5. **Unintentional Nests Uncovered.** If a northwestern pond turtle nest is unintentionally uncovered during project activities, work shall stop in the vicinity of the nest and			

Mitigation Number	Mitigation Measure	Timing/ Schedule	Implementation Responsibility	Completion of Implementation
	appropriate next steps, depending on the circumstances, shall be determined by a qualified biologist. These may include fencing and buffering the nest and/or rescue, rehabilitation, and relocation of affected turtles.			
BIO-3a	**Conduct Focused Surveys for Nesting Special-Status Birds and Avoid Impacts.** Nesting bird surveys listed below shall be required prior to all project activities including geotechnical investigations that occur within the nesting bird season, from February 1 through August 31. 1. **Conduct Pre-Project Activity Surveys for Active Nests of Special-Status Birds in Areas of Suitable Habitat.** If project activities that could affect suitable habitat for special-status birds cannot be conducted outside of the respective nesting seasons, pre-project activity surveys for nesting birds shall be conducted. Surveys of all potential nesting habitat in the area shall be conducted by a qualified biologist during the nesting season. Surveys shall be conducted within suitable nesting habitat that could be affected by project activities and shall include a minimum buffer of 250 feet for passerines and 1,000 feet for raptors (or larger area if required by established survey protocol) surrounding these areas. Where appropriate, pre-activity surveys shall be conducted according to established survey protocols or guidelines, including but not limited to the following: a. Tricolored Blackbird Survey Methods (Airola *et al.* 2024) b. Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (Swainson's Hawk Technical Advisory Committee [SHTAC] 2000). One early-season survey shall be conducted in the period prior to the start of project's initiation. This survey should be conducted for a 0.5-mile radius around all project activities, and if nesting activity is identified within the 0.5-mile radius, consultation is required. c. Staff Report on Burrowing Owl Mitigation (California Department of Fish and Game [CDFG] 2012). If no established survey protocol exists, the qualified biologist shall complete surveys no more than five (5) days prior to the start of the activity and that surveys are repeated if activities lapse for a period of seven (7) days or longer. If no nesting birds are detected during pre-activity surveys, no additional mitigation measures are required.	Before and during construction	SCWA	
BIO-3b	**If Avoiding Project-related Effects on Nesting Special-status Birds is Infeasible, Implement Minimization Measures.** If the measures described above in Mitigation Measure BIO-3a have been completed and avoiding effects on nesting special-status birds is infeasible, the measures described below shall be implemented to minimize effects of the project on nesting special-status birds, such that there is no direct loss of individuals of these species or project-related nest failure. ▪ **Establish, Maintain, and Monitor Buffers Around Active Nest.** If any active nests or behaviors indicating active nests are observed, appropriate-sized avoidance buffers shall be established	Before and during construction	SCWA	

Mitigation Number	Mitigation Measure	Timing/ Schedule	Implementation Responsibility	Completion of Implementation
	around the nest sites to avoid nest failure resulting from project activities. The size and shape of the buffer shall depend on the species, nest location, nest stage, and specific project activities to be performed while the nest is active. The buffer shall be expanded if the birds are exhibiting agitated behavior or the buffers may be adjusted (reduced) if a qualified biologist determines it would not be likely to adversely affect the nest. If required, buffers shall be marked in the field by a qualified biologist using temporary fencing, high-visibility flagging, or other means that are equally effective in clearly delineating the buffer. Standard nest buffer sizes for migratory and common bird species include 250 feet for passerine species and 1,000 feet for raptors, such as *Buteos*. Nesting special-status avian species, such as Swainson's hawk, shall have a nest buffer up to a half a mile, while burrowing owls would receive a buffer of 1,640 feet. ▪ **Monitoring Nest Activity**. Nest monitoring shall be conducted by a qualified biologist, either continuously or periodically during work to confirm that project activity is not resulting in detectable adverse impacts on nesting birds or their young. A determination on monitoring frequency shall be based on environmental conditions, such as physical barriers, project activities, and species tolerance to project activities. The qualified biologist shall be empowered to stop all project activities that, in the biologist's opinion, threaten to cause unanticipated and/or unpermitted adverse effects on special-status wildlife (e.g., nest abandonment). If project activities are stopped, the qualified biologist shall consult with CDFW to determine appropriate measures that shall be implemented to avoid adverse effects. ▪ **Work Within Established Buffer Zones**. No project activity shall commence within the buffer areas until a qualified biologist has determined that the young have fledged or the nest site is otherwise no longer in use. If work must be conducted within a stated buffer zone a qualified biologist shall provide continuous monitoring to confirm that the project activity is not resulting in detectable adverse impacts.			
BIO-4	Comply with the South Sacramento Habitat Conservation Plan During project design and construction, SCWA shall comply with all applicable Avoidance and Minimization Measures identified within the SSHCP, as well as pay fees to mitigate impacts to species and habitat prior to construction.	Before and during construction	SCWA	
Geology and Soils				
GEO-1	**Conduct Construction Personnel Education, Stop Work if Paleontological Resources are Discovered, Assess the Significance of the Find, and Prepare and Implement a Recovery Plan as Required.** SCWA and its construction contractor(s) will implement the following measures to minimize potential adverse effects on previously unknown, potentially unique, and scientifically important paleontological resources: ▪ Before the start of any earthmoving activities, SCWA will retain a qualified paleontologist or archaeologist to train all construction personnel involved with earthmoving activities that would disturb at least 5 vertical feet in areas of sensitive geologic deposits, including the site	Before and during ground-disturbing activities	SCWA and it's construction contractor	

Mitigation Number	Mitigation Measure	Timing/ Schedule	Implementation Responsibility	Completion of Implementation
	superintendent, regarding the possibility of encountering fossils, the appearance and types of fossils likely to be seen during construction, and proper notification procedures should fossils be encountered. ▪ If paleontological resources are discovered during earthmoving activities, the construction crew will immediately cease work in the vicinity of the find and notify SCWA. SCWA will retain a qualified paleontologist to evaluate the resource and prepare a recovery plan in accordance with Society of Vertebrate Paleontology (SVP) guidelines (SVP 2010). The recovery plan might include but would not be limited to, a field survey, construction monitoring, sampling and data recovery procedures, museum storage coordination for any specimen recovered, and a report of findings. Recommendations in the recovery plan that are determined by SCWA to be necessary and feasible will be implemented before construction activities can resume at the site where the paleontological resources were discovered.			
Tribal Cultural Resources				
TCR-1	**Inadvertent Discovery of Tribal Cultural Resources** In the event that human remains are discovered in any location other than a dedicated cemetery, work shall be halted, and the County Coroner contacted. For all other potential tribal cultural resources [TCRs], archaeological, or cultural resources discovered during project's ground disturbing activities, work shall be halted until a qualified archaeologist and/or tribal representative may evaluate the resource. 1. **Unanticipated human remains**. Pursuant to Sections 5097.97 and 5097.98 of the State Public Resources Code, and Section 7050.5 of the State Health and Safety Code, if a human bone or bone of unknown origin is found during construction, all work is to stop, and the County Coroner and the Planning and Environmental Review shall be immediately notified. If the remains are determined to be Native American, the coroner shall notify the Native American Heritage Commission within 24 hours, and the Native American Heritage Commission shall identify the person or persons it believes to be the most likely descendent from the deceased Native American. The most likely descendent may make recommendations to the landowner or the person responsible for the excavation work, for means of treating or disposition of, with appropriate dignity, the human remains and any associated grave goods. 2. **Unanticipated tribal cultural resources**. In the event of an inadvertent discovery of cultural resources (excluding human remains) during construction, all work must halt within a 100-foot radius of the discovery. A qualified professional archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards for prehistoric and historic archaeology, shall be retained at the Applicant's expense to evaluate the significance of the find. If it is determined due to the types of deposits discovered that a Native American monitor is required, the Guidelines for Monitors/Consultants of Native American Cultural, Religious, and Burial Sites as established by the Native American Heritage Commission shall be followed, and the monitor shall be retained at the Applicant's expense.	During construction	SCWA	

Mitigation Number	Mitigation Measure	Timing/ Schedule	Implementation Responsibility	Completion of Implementation
	a. Work cannot continue within the 100-foot radius of the discovery site until the archaeologist and/or tribal monitor conducts sufficient research and data collection to make a determination that the resource is either 1) not cultural in origin; or 2) not potentially eligible for listing on the National Register of Historic Places or California Register of Historical Resources. b. If a potentially eligible resource is encountered, then the archaeologist and/or tribal monitor, Planning and Environmental Review staff, and project proponent shall arrange for either 1) total avoidance of the resource, if possible; or 2) test excavations or total data recovery as mitigation. The determination shall be formally documented in writing and submitted to the County Environmental Coordinator as verification that the provisions of CEQA for managing unanticipated discoveries have been met.			

SCWA ASR Well Near Term V2 Detailed Report

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	SCWA ASR Well Near Term V2
Construction Start Date	7/7/2026
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70
Precipitation (days)	37.8
Location	38.50015775129154, -121.31429702381521
County	Sacramento
City	Unincorporated
Air District	Sacramento Metropolitan AQMD
Air Basin	Sacramento Valley
TAZ	708
EDFZ	13
Electric Utility	Sacramento Municipal Utility District
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.30

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
User Defined Industrial	1.00	User Defined Unit	2.40	0.00	0.00	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-10-A	Water Exposed Surfaces
Construction	C-10-C	Water Unpaved Construction Roads
Construction	C-11	Limit Vehicle Speeds on Unpaved Roads
Construction	C-12	Sweep Paved Roads

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	4.55	3.82	33.6	41.4	0.10	2.45	1.29	—	10,908	10,908	0.45	0.11	0.77	10,954
Mit.	4.55	3.82	33.6	41.4	0.10	1.81	1.22	—	10,908	10,908	0.45	0.11	0.77	10,954
% Reduced	—	—	—	—	—	26%	5%	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.08	0.07	0.59	0.74	< 0.005	0.03	0.02	—	185	185	0.01	< 0.005	0.01	185
Mit.	0.08	0.07	0.59	0.74	< 0.005	0.03	0.02	—	185	185	0.01	< 0.005	0.01	185
% Reduced	—	—	—	—	—	16%	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.02	0.01	0.11	0.13	< 0.005	0.01	< 0.005	—	30.6	30.6	< 0.005	< 0.005	< 0.005	30.7

Mit.	0.02	0.01	0.11	0.13	< 0.005	0.01	< 0.005	—	30.6	30.6	< 0.005	< 0.005	< 0.005	30.7
% Reduced	—	—	—	—	—	16%	3%	—	—	—	—	—	—	—
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	—	85.0	—	—	80.0	82.0	—	—	—	—	—	—	—
Unmit.	—	—	No	—	—	No	No	—	—	—	—	—	—	—
Mit.	—	—	No	—	—	No	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	—	85.0	—	—	80.0	82.0	—	—	—	—	—	—	—
Unmit.	—	—	No	—	—	No	No	—	—	—	—	—	—	—
Mit.	—	—	No	—	—	No	No	—	—	—	—	—	—	—
Exceeds (Annual)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	—	—	—	—	14.6	15.0	—	—	1,100	—	—	—	—
Unmit.	—	—	—	—	—	No	No	—	—	No	—	—	—	—
Mit.	—	—	—	—	—	No	No	—	—	No	—	—	—	—

2.2. Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	4.55	3.82	33.6	41.4	0.10	2.45	1.29	—	10,908	10,908	0.45	0.11	0.77	10,954
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—

2026	0.08	0.07	0.59	0.74	< 0.005	0.03	0.02	—	185	185	0.01	< 0.005	0.01	185
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.02	0.01	0.11	0.13	< 0.005	0.01	< 0.005	—	30.6	30.6	< 0.005	< 0.005	< 0.005	30.7

2.3. Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	4.55	3.82	33.6	41.4	0.10	1.81	1.22	—	10,908	10,908	0.45	0.11	0.77	10,954
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.08	0.07	0.59	0.74	< 0.005	0.03	0.02	—	185	185	0.01	< 0.005	0.01	185
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2026	0.02	0.01	0.11	0.13	< 0.005	0.01	< 0.005	—	30.6	30.6	< 0.005	< 0.005	< 0.005	30.7

3. Construction Emissions Details

3.1. Pump and/or ASR Valve Installation (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.33	1.96	18.8	22.8	0.05	0.70	0.64	—	5,448	5,448	0.22	0.04	—	5,466

Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.10	0.12	< 0.005	< 0.005	< 0.005	—	29.9	29.9	< 0.005	< 0.005	—	30.0
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	4.94	4.94	< 0.005	< 0.005	—	4.96
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.02	0.34	0.00	0.06	0.01	—	66.8	66.8	< 0.005	< 0.005	0.24	67.7
Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.33	0.33	< 0.005	< 0.005	< 0.005	0.34
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.06	0.06	< 0.005	< 0.005	< 0.005	0.06

Vendor	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
Hauling	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

3.2. Pump and/or ASR Valve Installation (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.33	1.96	18.8	22.8	0.05	0.70	0.64	—	5,448	5,448	0.22	0.04	—	5,466
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.10	0.12	< 0.005	< 0.005	< 0.005	—	29.9	29.9	< 0.005	< 0.005	—	30.0
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.02	< 0.005	< 0.005	< 0.005	—	4.94	4.94	< 0.005	< 0.005	—	4.96
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.02	0.34	0.00	0.06	0.01	—	66.8	66.8	< 0.005	< 0.005	0.24	67.7

Vendor	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
Hauling	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.33	0.33	< 0.005	< 0.005	< 0.005	0.34
Vendor	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
Hauling	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.06	0.06	< 0.005	< 0.005	< 0.005	0.06
Vendor	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
Hauling	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

3.3. Piping and Bedding (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.09	1.76	16.6	18.8	0.04	0.63	0.58	—	4,841	4,841	0.20	0.04	—	4,857
Dust From Material Movement	—	—	—	—	—	1.06	0.11	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.14	0.15	< 0.005	0.01	< 0.005	—	39.8	39.8	< 0.005	< 0.005	—	39.9
Dust From Material Movement	—	—	—	—	—	0.01	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.03	< 0.005	< 0.005	< 0.005	—	6.59	6.59	< 0.005	< 0.005	—	6.61
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.02	0.45	0.00	0.08	0.02	—	89.0	89.0	< 0.005	< 0.005	0.32	90.3
Vendor	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
Hauling	0.01	< 0.005	0.13	0.05	< 0.005	0.02	0.01	—	72.5	72.5	0.01	0.01	0.15	76.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.67	0.67	< 0.005	< 0.005	< 0.005	0.68
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.60	0.60	< 0.005	< 0.005	< 0.005	0.63
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.11	0.11	< 0.005	< 0.005	< 0.005	0.11

Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.10	0.10	< 0.005	< 0.005	< 0.005	0.10

3.4. Piping and Bedding (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.09	1.76	16.6	18.8	0.04	0.63	0.58	—	4,841	4,841	0.20	0.04	—	4,857
Dust From Material Movement	—	—	—	—	—	0.41	0.04	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.01	0.14	0.15	< 0.005	0.01	< 0.005	—	39.8	39.8	< 0.005	< 0.005	—	39.9
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.02	0.03	< 0.005	< 0.005	< 0.005	—	6.59	6.59	< 0.005	< 0.005	—	6.61

Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.02	0.45	0.00	0.08	0.02	—	89.0	89.0	< 0.005	< 0.005	0.32	90.3
Vendor	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
Hauling	0.01	< 0.005	0.13	0.05	< 0.005	0.02	0.01	—	72.5	72.5	0.01	0.01	0.15	76.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.67	0.67	< 0.005	< 0.005	< 0.005	0.68
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.60	0.60	< 0.005	< 0.005	< 0.005	0.63
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.11	0.11	< 0.005	< 0.005	< 0.005	0.11
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.10	0.10	< 0.005	< 0.005	< 0.005	0.10

3.5. Backfill and Compaction (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	2.86	2.38	18.4	23.0	0.05	0.66	0.61	—	5,120	5,120	0.21	0.04	—	5,138
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.15	0.19	< 0.005	0.01	< 0.005	—	42.1	42.1	< 0.005	< 0.005	—	42.2
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	—	6.97	6.97	< 0.005	< 0.005	—	6.99
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.02	0.34	0.00	0.06	0.01	—	66.8	66.8	< 0.005	< 0.005	0.24	67.7
Vendor	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
Hauling	0.01	< 0.005	0.13	0.05	< 0.005	0.02	0.01	—	72.5	72.5	0.01	0.01	0.15	76.3

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.50	0.50	< 0.005	< 0.005	< 0.005	0.51
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.60	0.60	< 0.005	< 0.005	< 0.005	0.63
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.08	0.08	< 0.005	< 0.005	< 0.005	0.08
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.10	0.10	< 0.005	< 0.005	< 0.005	0.10

3.6. Backfill and Compaction (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.86	2.38	18.4	23.0	0.05	0.66	0.61	—	5,120	5,120	0.21	0.04	—	5,138
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.02	0.02	0.15	0.19	< 0.005	0.01	< 0.005	—	42.1	42.1	< 0.005	< 0.005	—	42.2
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	—	6.97	6.97	< 0.005	< 0.005	—	6.99
Dust From Material Movement	—	—	—	—	—	< 0.005	< 0.005	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03	0.02	0.02	0.34	0.00	0.06	0.01	—	66.8	66.8	< 0.005	< 0.005	0.24	67.7
Vendor	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
Hauling	0.01	< 0.005	0.13	0.05	< 0.005	0.02	0.01	—	72.5	72.5	0.01	0.01	0.15	76.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.50	0.50	< 0.005	< 0.005	< 0.005	0.51
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.60	0.60	< 0.005	< 0.005	< 0.005	0.63
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.08	0.08	< 0.005	< 0.005	< 0.005	0.08
Vendor	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

Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.10	0.10	< 0.005	< 0.005	< 0.005	0.10

3.7. Surface Restoration and Paving (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.59	1.34	10.5	14.7	0.04	0.41	0.37	—	3,791	3,791	0.15	0.03	—	3,804
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.08	< 0.005	< 0.005	< 0.005	—	20.8	20.8	< 0.005	< 0.005	—	20.8
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	3.44	3.44	< 0.005	< 0.005	—	3.45
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.02	0.45	0.00	0.08	0.02	—	89.0	89.0	< 0.005	< 0.005	0.32	90.3
Vendor	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
Hauling	0.01	< 0.005	0.13	0.05	< 0.005	0.02	0.01	—	72.5	72.5	0.01	0.01	0.15	76.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.44	0.44	< 0.005	< 0.005	< 0.005	0.45
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.40	0.40	< 0.005	< 0.005	< 0.005	0.42
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.07	0.07	< 0.005	< 0.005	< 0.005	0.07
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.07	0.07	< 0.005	< 0.005	< 0.005	0.07

3.8. Surface Restoration and Paving (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.59	1.34	10.5	14.7	0.04	0.41	0.37	—	3,791	3,791	0.15	0.03	—	3,804
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01	0.01	0.06	0.08	< 0.005	< 0.005	< 0.005	—	20.8	20.8	< 0.005	< 0.005	—	20.8
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.01	0.01	< 0.005	< 0.005	< 0.005	—	3.44	3.44	< 0.005	< 0.005	—	3.45
Paving	0.00	0.00	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.04	0.03	0.02	0.45	0.00	0.08	0.02	—	89.0	89.0	< 0.005	< 0.005	0.32	90.3
Vendor	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
Hauling	0.01	< 0.005	0.13	0.05	< 0.005	0.02	0.01	—	72.5	72.5	0.01	0.01	0.15	76.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.44	0.44	< 0.005	< 0.005	< 0.005	0.45
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.40	0.40	< 0.005	< 0.005	< 0.005	0.42
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.07	0.07	< 0.005	< 0.005	< 0.005	0.07

Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.07	0.07	< 0.005	< 0.005	< 0.005	0.07

3.9. Excavation and Trenching (2026) - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.39	2.01	16.7	21.8	0.05	0.60	0.55	—	5,789	5,789	0.23	0.05	—	5,808
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02	0.02	0.14	0.18	< 0.005	< 0.005	< 0.005	—	47.6	47.6	< 0.005	< 0.005	—	47.7
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	—	7.88	7.88	< 0.005	< 0.005	—	7.90
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.01	0.23	0.00	0.04	0.01	—	44.5	44.5	< 0.005	< 0.005	0.16	45.1

Vendor	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
Hauling	0.01	< 0.005	0.13	0.05	< 0.005	0.02	0.01	—	72.5	72.5	0.01	0.01	0.15	76.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.33	0.33	< 0.005	< 0.005	< 0.005	0.34
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.60	0.60	< 0.005	< 0.005	< 0.005	0.63
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.06	0.06	< 0.005	< 0.005	< 0.005	0.06
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.10	0.10	< 0.005	< 0.005	< 0.005	0.10

3.10. Excavation and Trenching (2026) - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Onsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.39	2.01	16.7	21.8	0.05	0.60	0.55	—	5,789	5,789	0.23	0.05	—	5,808
Onsite truck	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
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.02	0.02	0.14	0.18	< 0.005	< 0.005	< 0.005	—	47.6	47.6	< 0.005	< 0.005	—	47.7
Onsite truck	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
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	< 0.005	< 0.005	0.03	0.03	< 0.005	< 0.005	< 0.005	—	7.88	7.88	< 0.005	< 0.005	—	7.90
Onsite truck	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
Offsite	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02	0.02	0.01	0.23	0.00	0.04	0.01	—	44.5	44.5	< 0.005	< 0.005	0.16	45.1
Vendor	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
Hauling	0.01	< 0.005	0.13	0.05	< 0.005	0.02	0.01	—	72.5	72.5	0.01	0.01	0.15	76.3
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.33	0.33	< 0.005	< 0.005	< 0.005	0.34
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.60	0.60	< 0.005	< 0.005	< 0.005	0.63
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	< 0.005	< 0.005	< 0.005	< 0.005	0.00	< 0.005	< 0.005	—	0.06	0.06	< 0.005	< 0.005	< 0.005	0.06
Vendor	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
Hauling	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	—	0.10	0.10	< 0.005	< 0.005	< 0.005	0.10

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Pump and/or ASR Valve Installation	Site Preparation	7/7/2026	7/8/2026	6.00	2.00	—
Piping and Bedding	Site Preparation	7/9/2026	7/27/2026	6.00	3.00	—
Backfill and Compaction	Grading	7/28/2026	7/30/2026	6.00	3.00	—
Surface Restoration and Paving	Paving	7/31/2026	8/1/2026	6.00	2.00	—
Excavation and Trenching	Trenching	7/10/2026	7/13/2026	6.00	3.00	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Pump and/or ASR Valve Installation	Cranes	Diesel	Average	1.00	14.0	367	0.29
Pump and/or ASR Valve Installation	Other Material Handling Equipment	Diesel	Average	3.00	14.0	93.0	0.40
Pump and/or ASR Valve Installation	Scrapers	Diesel	Average	1.00	8.00	423	0.48
Piping and Bedding	Other Material Handling Equipment	Diesel	Average	2.00	14.0	93.0	0.40
Piping and Bedding	Cranes	Diesel	Average	1.00	14.0	367	0.29

Piping and Bedding	Scrapers	Diesel	Average	1.00	8.00	423	0.48
Backfill and Compaction	Tractors/Loaders/Backhoes	Diesel	Average	1.00	14.0	84.0	0.37
Backfill and Compaction	Plate Compactors	Diesel	Average	1.00	14.0	148	0.41
Backfill and Compaction	Other Material Handling Equipment	Diesel	Average	2.00	14.0	93.0	0.40
Backfill and Compaction	Off-Highway Trucks	Diesel	Average	1.00	14.0	376	0.38
Surface Restoration and Paving	Off-Highway Trucks	Diesel	Average	1.00	14.0	376	0.38
Surface Restoration and Paving	Pavers	Diesel	Average	1.00	14.0	81.0	0.42
Surface Restoration and Paving	Other Material Handling Equipment	Diesel	Average	1.00	14.0	93.0	0.40
Surface Restoration and Paving	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36
Excavation and Trenching	Other Material Handling Equipment	Diesel	Average	2.00	14.0	93.0	0.40
Excavation and Trenching	Tractors/Loaders/Backhoes	Diesel	Average	1.00	14.0	84.0	0.37
Excavation and Trenching	Off-Highway Trucks	Diesel	Average	1.00	14.0	376	0.38
Excavation and Trenching	Cranes	Diesel	Average	1.00	14.0	367	0.29

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Pump and/or ASR Valve Installation	Cranes	Diesel	Average	1.00	14.0	367	0.29
Pump and/or ASR Valve Installation	Other Material Handling Equipment	Diesel	Average	3.00	14.0	93.0	0.40
Pump and/or ASR Valve Installation	Scrapers	Diesel	Average	1.00	8.00	423	0.48

Piping and Bedding	Other Material Handling Equipment	Diesel	Average	2.00	14.0	93.0	0.40
Piping and Bedding	Cranes	Diesel	Average	1.00	14.0	367	0.29
Piping and Bedding	Scrapers	Diesel	Average	1.00	8.00	423	0.48
Backfill and Compaction	Tractors/Loaders/Backhoes	Diesel	Average	1.00	14.0	84.0	0.37
Backfill and Compaction	Plate Compactors	Diesel	Average	1.00	14.0	148	0.41
Backfill and Compaction	Other Material Handling Equipment	Diesel	Average	2.00	14.0	93.0	0.40
Backfill and Compaction	Off-Highway Trucks	Diesel	Average	1.00	14.0	376	0.38
Surface Restoration and Paving	Off-Highway Trucks	Diesel	Average	1.00	14.0	376	0.38
Surface Restoration and Paving	Pavers	Diesel	Average	1.00	14.0	81.0	0.42
Surface Restoration and Paving	Other Material Handling Equipment	Diesel	Average	1.00	14.0	93.0	0.40
Surface Restoration and Paving	Paving Equipment	Diesel	Average	1.00	8.00	89.0	0.36
Excavation and Trenching	Other Material Handling Equipment	Diesel	Average	2.00	14.0	93.0	0.40
Excavation and Trenching	Tractors/Loaders/Backhoes	Diesel	Average	1.00	14.0	84.0	0.37
Excavation and Trenching	Off-Highway Trucks	Diesel	Average	1.00	14.0	376	0.38
Excavation and Trenching	Cranes	Diesel	Average	1.00	14.0	367	0.29

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix

Pump and/or ASR Valve Installation	—	—	—	—
Pump and/or ASR Valve Installation	Worker	6.00	14.3	LDA,LDT1,LDT2
Pump and/or ASR Valve Installation	Vendor	—	8.80	HHDT,MHDT
Pump and/or ASR Valve Installation	Hauling	0.00	20.0	HHDT
Pump and/or ASR Valve Installation	Onsite truck	—	—	HHDT
Excavation and Trenching	—	—	—	—
Excavation and Trenching	Worker	4.00	14.3	LDA,LDT1,LDT2
Excavation and Trenching	Vendor	—	8.80	HHDT,MHDT
Excavation and Trenching	Hauling	1.00	20.0	HHDT
Excavation and Trenching	Onsite truck	—	—	HHDT
Piping and Bedding	—	—	—	—
Piping and Bedding	Worker	8.00	14.3	LDA,LDT1,LDT2
Piping and Bedding	Vendor	—	8.80	HHDT,MHDT
Piping and Bedding	Hauling	1.00	20.0	HHDT
Piping and Bedding	Onsite truck	—	—	HHDT
Backfill and Compaction	—	—	—	—
Backfill and Compaction	Worker	6.00	14.3	LDA,LDT1,LDT2
Backfill and Compaction	Vendor	—	8.80	HHDT,MHDT
Backfill and Compaction	Hauling	1.00	20.0	HHDT
Backfill and Compaction	Onsite truck	—	—	HHDT
Surface Restoration and Paving	—	—	—	—
Surface Restoration and Paving	Worker	8.00	14.3	LDA,LDT1,LDT2
Surface Restoration and Paving	Vendor	—	8.80	HHDT,MHDT
Surface Restoration and Paving	Hauling	1.00	20.0	HHDT
Surface Restoration and Paving	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix

Pump and/or ASR Valve Installation	—	—	—	—
Pump and/or ASR Valve Installation	Worker	6.00	14.3	LDA,LDT1,LDT2
Pump and/or ASR Valve Installation	Vendor	—	8.80	HHDT,MHDT
Pump and/or ASR Valve Installation	Hauling	0.00	20.0	HHDT
Pump and/or ASR Valve Installation	Onsite truck	—	—	HHDT
Excavation and Trenching	—	—	—	—
Excavation and Trenching	Worker	4.00	14.3	LDA,LDT1,LDT2
Excavation and Trenching	Vendor	—	8.80	HHDT,MHDT
Excavation and Trenching	Hauling	1.00	20.0	HHDT
Excavation and Trenching	Onsite truck	—	—	HHDT
Piping and Bedding	—	—	—	—
Piping and Bedding	Worker	8.00	14.3	LDA,LDT1,LDT2
Piping and Bedding	Vendor	—	8.80	HHDT,MHDT
Piping and Bedding	Hauling	1.00	20.0	HHDT
Piping and Bedding	Onsite truck	—	—	HHDT
Backfill and Compaction	—	—	—	—
Backfill and Compaction	Worker	6.00	14.3	LDA,LDT1,LDT2
Backfill and Compaction	Vendor	—	8.80	HHDT,MHDT
Backfill and Compaction	Hauling	1.00	20.0	HHDT
Backfill and Compaction	Onsite truck	—	—	HHDT
Surface Restoration and Paving	—	—	—	—
Surface Restoration and Paving	Worker	8.00	14.3	LDA,LDT1,LDT2
Surface Restoration and Paving	Vendor	—	8.80	HHDT,MHDT
Surface Restoration and Paving	Hauling	1.00	20.0	HHDT
Surface Restoration and Paving	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

Phase Name	Residential Interior Area Coated (sq ft)	Residential Exterior Area Coated (sq ft)	Non-Residential Interior Area Coated (sq ft)	Non-Residential Exterior Area Coated (sq ft)	Parking Area Coated (sq ft)

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Piping and Bedding	13.0	0.00	0.00	0.00	—
Backfill and Compaction	22.0	0.00	2.40	0.00	—
Surface Restoration and Paving	0.00	0.00	0.00	0.00	0.00

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Land Use	Area Paved (acres)	% Asphalt
User Defined Industrial	0.00	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O
2026	0.00	375	0.01	< 0.005

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	20.2	annual days of extreme heat
Extreme Precipitation	5.80	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	0.00	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	2	0	0	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	0	0	N/A
Flooding	0	0	0	N/A
Drought	0	0	0	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	2	1	1	3
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	1	1	2
Flooding	1	1	1	2
Drought	1	1	1	2
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	48.6

AQ-PM	23.7
AQ-DPM	22.3
Drinking Water	78.8
Lead Risk Housing	41.2
Pesticides	73.8
Toxic Releases	30.3
Traffic	28.5
Effect Indicators	—
CleanUp Sites	86.5
Groundwater	88.9
Haz Waste Facilities/Generators	99.8
Impaired Water Bodies	51.2
Solid Waste	99.9
Sensitive Population	—
Asthma	50.2
Cardio-vascular	53.9
Low Birth Weights	36.4
Socioeconomic Factor Indicators	—
Education	47.5
Housing	61.9
Linguistic	43.9
Poverty	58.5
Unemployment	62.4

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—

Above Poverty	36.84075452
Employed	20.45425382
Median HI	23.26446811
Education	—
Bachelor's or higher	39.34300013
High school enrollment	100
Preschool enrollment	18.64493776
Transportation	—
Auto Access	37.4566919
Active commuting	70.79430258
Social	—
2-parent households	14.75683306
Voting	58.51405107
Neighborhood	—
Alcohol availability	64.62209675
Park access	12.70370846
Retail density	22.81534711
Supermarket access	13.65327858
Tree canopy	2.065956628
Housing	—
Homeownership	60.60567176
Housing habitability	41.69126139
Low-inc homeowner severe housing cost burden	38.58591043
Low-inc renter severe housing cost burden	7.737713332
Uncrowded housing	46.38778391
Health Outcomes	—
Insured adults	43.96253048
Arthritis	0.0

Asthma ER Admissions	49.9
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	16.0
Cognitively Disabled	21.0
Physically Disabled	7.2
Heart Attack ER Admissions	53.7
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	98.4
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	59.5
Elderly	21.1
English Speaking	31.0
Foreign-born	59.3

Outdoor Workers	28.8
Climate Change Adaptive Capacity	—
Impervious Surface Cover	91.1
Traffic Density	37.8
Traffic Access	23.0
Other Indices	—
Hardship	62.5
Other Decision Support	—
2016 Voting	63.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	70.0
Healthy Places Index Score for Project Location (b)	29.0
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

Screen	Justification
Construction: Construction Phases	Anticipated construction phasing based on information provided by client and engineer.
Construction: Off-Road Equipment	Anticipated construction equipment mix based on construction activities.
Construction: Dust From Material Movement	Anticipated import and export based on construction activities.
Land Use	Adjusted based on project description
Construction: Trips and VMT	Anticipated one way trips based on project description

SCWA ASR Well Future Term V2 v2 Detailed Report

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3.2.1. Onsite - Unmitigated

3.2.2. Offsite - Unmitigated

3.2.3. Onsite - Mitigated

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3.3.1. Onsite - Unmitigated

3.3.2. Offsite - Unmitigated

3.3.3. Onsite - Mitigated

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3.4.1. Onsite - Unmitigated

3.4.2. Offsite - Unmitigated

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1. Basic Project Information

1.1. Basic Project Information

Data Field	Value
Project Name	SCWA ASR Well Future Term V2 v2
Construction Start Date	7/6/2027
Lead Agency	—
Land Use Scale	Project/site
Analysis Level for Defaults	County
Windspeed (m/s)	2.70000
Precipitation (days)	37.8000
Location	38.501753632607944, -121.30291753973538
County	Sacramento
City	Unincorporated
Air District	Sacramento Metropolitan AQMD
Air Basin	Sacramento Valley
TAZ	708
EDFZ	13
Electric Utility	Sacramento Municipal Utility District
Gas Utility	Pacific Gas & Electric
App Version	2022.1.1.41

1.2. Land Use Types

Land Use Subtype	Size	Unit	Lot Acreage	Building Area (sq ft)	Landscape Area (sq ft)	Special Landscape Area (sq ft)	Population	Description
User Defined Industrial	1.000000	User Defined Unit	1.80000	500.000	0.00000	—	—	—

1.3. User-Selected Emission Reduction Measures by Emissions Sector

Sector	#	Measure Title
Construction	C-2*	Limit Heavy-Duty Diesel Vehicle Idling
Construction	C-10-A	Water Exposed Surfaces
Construction	C-10-C	Water Unpaved Construction Roads
Construction	C-11	Limit Vehicle Speeds on Unpaved Roads
Construction	C-12	Sweep Paved Roads

* Qualitative or supporting measure. Emission reductions not included in the mitigated emissions results.

2. Emissions Summary

2.1. Construction Emissions Compared Against Thresholds

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Un/Mit.	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	5.42841	4.50781	30.1937	48.9387	0.09983	1.89260	1.39644	—	11,272.8	11,272.8	0.49512	0.27406	3.06990	11,357.5
Mit.	5.42841	4.50781	30.1937	48.9387	0.09983	1.88610	1.39546	—	11,272.8	11,272.8	0.49512	0.27406	3.06990	11,357.5
% Reduced	—	—	—	—	—	< 0.5%	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	3.81331	3.15668	24.3434	40.0900	0.08972	1.30595	0.97651	—	10,054.9	10,054.9	0.43891	0.19326	0.04825	10,123.5
Mit.	3.81331	3.15668	24.3434	40.0900	0.08972	1.30182	0.97588	—	10,054.9	10,054.9	0.43891	0.19326	0.04825	10,123.5
% Reduced	—	—	—	—	—	< 0.5%	—	—	—	—	—	—	—	—
Average Daily (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Unmit.	0.76024	0.62854	5.15014	7.74103	0.01471	0.25389	0.19715	—	1,594.23	1,594.23	0.07042	0.03337	0.13902	1,606.07
Mit.	0.76024	0.62854	5.15014	7.74103	0.01471	0.25328	0.19706	—	1,594.23	1,594.23	0.07042	0.03337	0.13902	1,606.07
% Reduced	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Unmit.	0.13874	0.11471	0.93990	1.41274	0.00268	0.04634	0.03598	—	263.942	263.942	0.01166	0.00552	0.02302	265.903
Mit.	0.13874	0.11471	0.93990	1.41274	0.00268	0.04622	0.03596	—	263.942	263.942	0.01166	0.00552	0.02302	265.903
% Reduced	—	—	—	—	—	< 0.5%	< 0.5%	—	—	—	—	—	—	—
Exceeds (Daily Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	—	85.0000	—	—	80.0000	82.0000	—	—	—	—	—	—	—
Unmit.	—	—	No	—	—	No	No	—	—	—	—	—	—	—
Mit.	—	—	No	—	—	No	No	—	—	—	—	—	—	—
Exceeds (Average Daily)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	—	85.0000	—	—	80.0000	82.0000	—	—	—	—	—	—	—
Unmit.	—	—	No	—	—	No	No	—	—	—	—	—	—	—
Mit.	—	—	No	—	—	No	No	—	—	—	—	—	—	—
Exceeds (Annual)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Threshold	—	—	—	—	—	14.6000	15.0000	—	—	—	—	—	—	1,100.00
Unmit.	—	—	—	—	—	No	No	—	—	—	—	—	—	No
Mit.	—	—	—	—	—	No	No	—	—	—	—	—	—	No

2.2. Construction Emissions by Year

2.2.1. Total Construction Emissions by Year, Unmitigated

Includes both onsite and offsite emissions.

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	5.42841	4.50781	30.1937	48.9387	0.09983	1.89260	1.39644	—	11,272.8	11,272.8	0.49512	0.27406	3.06990	11,357.5
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.81331	3.15668	24.3434	40.0900	0.08972	1.30595	0.97651	—	10,054.9	10,054.9	0.43891	0.19326	0.04825	10,123.5
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.76024	0.62854	5.15014	7.74103	0.01471	0.25389	0.19715	—	1,594.23	1,594.23	0.07042	0.03337	0.13902	1,606.07
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.13874	0.11471	0.93990	1.41274	0.00268	0.04634	0.03598	—	263.942	263.942	0.01166	0.00552	0.02302	265.903

2.2.2. Onsite Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	5.25204	4.41317	28.6074	47.3540	0.09388	1.35728	1.24052	—	10,165.8	10,165.8	0.41237	0.08247	0.00000	10,200.7
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.68178	3.09372	23.0078	39.0521	0.08509	0.96124	0.87915	—	9,211.43	9,211.43	0.37366	0.07473	0.00000	9,243.04
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.73807	0.61875	4.91007	7.57153	0.01385	0.19744	0.18087	—	1,443.52	1,443.52	0.05856	0.01171	0.00000	1,448.48
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.13470	0.11292	0.89609	1.38180	0.00253	0.03603	0.03301	—	238.992	238.992	0.00969	0.00194	0.00000	239.812

2.2.3. Offsite Construction Emissions by Year, Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.21377	0.09761	2.24243	1.74872	0.00851	0.53532	0.15593	—	1,475.74	1,475.74	0.11676	0.21361	3.06990	1,545.38
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.13154	0.06297	1.33560	1.03789	0.00463	0.34471	0.09736	—	843.469	843.469	0.06526	0.11852	0.04825	880.469
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.02218	0.00978	0.24007	0.16950	0.00086	0.05646	0.01628	—	150.701	150.701	0.01186	0.02166	0.13902	157.591
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.00405	0.00179	0.04381	0.03093	0.00016	0.01030	0.00297	—	24.9503	24.9503	0.00196	0.00359	0.02302	26.0909

2.2.4. Total Construction Emissions by Year, Mitigated

Includes both onsite and offsite emissions.

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	5.42841	4.50781	30.1937	48.9387	0.09983	1.88610	1.39546	—	11,272.8	11,272.8	0.49512	0.27406	3.06990	11,357.5
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.81331	3.15668	24.3434	40.0900	0.08972	1.30182	0.97588	—	10,054.9	10,054.9	0.43891	0.19326	0.04825	10,123.5
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.76024	0.62854	5.15014	7.74103	0.01471	0.25328	0.19706	—	1,594.23	1,594.23	0.07042	0.03337	0.13902	1,606.07

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.13874	0.11471	0.93990	1.41274	0.00268	0.04622	0.03596	—	263.942	263.942	0.01166	0.00552	0.02302	265.903

2.2.5. Onsite Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	5.25204	4.41317	28.6074	47.3540	0.09388	1.35079	1.23953	—	10,165.8	10,165.8	0.41237	0.08247	0.00000	10,200.7
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	3.68178	3.09372	23.0078	39.0521	0.08509	0.95712	0.87852	—	9,211.43	9,211.43	0.37366	0.07473	0.00000	9,243.04
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.73807	0.61875	4.91007	7.57153	0.01385	0.19682	0.18078	—	1,443.52	1,443.52	0.05856	0.01171	0.00000	1,448.48
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.13470	0.11292	0.89609	1.38180	0.00253	0.03592	0.03299	—	238.992	238.992	0.00969	0.00194	0.00000	239.812

2.2.6. Offsite Construction Emissions by Year, Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Year	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily - Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.21377	0.09761	2.24243	1.74872	0.00851	0.53532	0.15593	—	1,475.74	1,475.74	0.11676	0.21361	3.06990	1,545.38
Daily - Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.13154	0.06297	1.33560	1.03789	0.00463	0.34471	0.09736	—	843.469	843.469	0.06526	0.11852	0.04825	880.469

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.02218	0.00978	0.24007	0.16950	0.00086	0.05646	0.01628	—	150.701	150.701	0.01186	0.02166	0.13902	157.591
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
2027	0.00405	0.00179	0.04381	0.03093	0.00016	0.01030	0.00297	—	24.9503	24.9503	0.00196	0.00359	0.02302	26.0909

3. Construction Emissions Details

3.1. Installation of New ASR Well (2027)

3.1.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.90771	2.44328	20.7066	35.5695	0.05459	0.90636	0.83385	—	5,910.56	5,910.56	0.23976	0.04795	—	5,930.85
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16729	0.14057	1.19134	2.04647	0.00314	0.05215	0.04797	—	340.060	340.060	0.01379	0.00276	—	341.227
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03053	0.02565	0.21742	0.37348	0.00057	0.00952	0.00876	—	56.3008	56.3008	0.00228	0.00046	—	56.4940

Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.1.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02362	0.02323	0.01519	0.31837	0.00000	0.06062	0.01421	—	65.5825	65.5825	0.00093	0.00229	0.21667	66.5043
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00123	0.00109	0.00100	0.01374	0.00000	0.00340	0.00080	—	3.43920	3.43920	0.00006	0.00013	0.00538	3.48534
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00022	0.00020	0.00018	0.00251	0.00000	0.00062	0.00015	—	0.56940	0.56940	0.00001	0.00002	0.00089	0.57704
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.1.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	2.90771	2.44328	20.7066	35.5695	0.05459	0.90636	0.83385	—	5,910.56	5,910.56	0.23976	0.04795	—	5,930.85
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16729	0.14057	1.19134	2.04647	0.00314	0.05215	0.04797	—	340.060	340.060	0.01379	0.00276	—	341.227
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03053	0.02565	0.21742	0.37348	0.00057	0.00952	0.00876	—	56.3008	56.3008	0.00228	0.00046	—	56.4940
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.1.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02362	0.02323	0.01519	0.31837	0.00000	0.06062	0.01421	—	65.5825	65.5825	0.00093	0.00229	0.21667	66.5043
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.00123	0.00109	0.00100	0.01374	0.00000	0.00340	0.00080	—	3.43920	3.43920	0.00006	0.00013	0.00538	3.48534
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00022	0.00020	0.00018	0.00251	0.00000	0.00062	0.00015	—	0.56940	0.56940	0.00001	0.00002	0.00089	0.57704
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.2. Development and Testing of ASR Well (2027)

3.2.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.68969	2.22289	21.3763	24.9369	0.04718	0.44950	0.41354	—	3,649.69	3,649.69	0.14805	0.02961	—	3,662.22
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10317	0.08526	0.81991	0.95648	0.00181	0.01724	0.01586	—	139.988	139.988	0.00568	0.00114	—	140.469
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01883	0.01556	0.14963	0.17456	0.00033	0.00315	0.00289	—	23.1766	23.1766	0.00094	0.00019	—	23.2562

Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.2.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01575	0.01549	0.01012	0.21224	0.00000	0.04041	0.00947	—	43.7217	43.7217	0.00062	0.00153	0.14444	44.3362
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00055	0.00048	0.00044	0.00611	0.00000	0.00151	0.00035	—	1.52853	1.52853	0.00003	0.00006	0.00239	1.54904
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00010	0.00009	0.00008	0.00111	0.00000	0.00028	0.00006	—	0.25307	0.25307	< 0.000005	0.00001	0.00040	0.25646
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.2.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	2.68969	2.22289	21.3763	24.9369	0.04718	0.44950	0.41354	—	3,649.69	3,649.69	0.14805	0.02961	—	3,662.22
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.10317	0.08526	0.81991	0.95648	0.00181	0.01724	0.01586	—	139.988	139.988	0.00568	0.00114	—	140.469
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01883	0.01556	0.14963	0.17456	0.00033	0.00315	0.00289	—	23.1766	23.1766	0.00094	0.00019	—	23.2562
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.2.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01575	0.01549	0.01012	0.21224	0.00000	0.04041	0.00947	—	43.7217	43.7217	0.00062	0.00153	0.14444	44.3362
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Worker	0.00055	0.00048	0.00044	0.00611	0.00000	0.00151	0.00035	—	1.52853	1.52853	0.00003	0.00006	0.00239	1.54904
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00010	0.00009	0.00008	0.00111	0.00000	0.00028	0.00006	—	0.25307	0.25307	< 0.000005	0.00001	0.00040	0.25646
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.3. Piping and Bedding (2027)

3.3.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.22872	1.03246	7.91226	15.7568	0.02292	0.39938	0.36743	—	2,481.68	2,481.68	0.10067	0.02013	—	2,490.19
Dust From Material Movement	—	—	—	—	—	0.00256	0.00039	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.22872	1.03246	7.91226	15.7568	0.02292	0.39938	0.36743	—	2,481.68	2,481.68	0.10067	0.02013	—	2,490.19
Dust From Material Movement	—	—	—	—	—	0.00256	0.00039	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08416	0.07072	0.54194	1.07923	0.00157	0.02735	0.02517	—	169.978	169.978	0.00690	0.00138	—	170.561
Dust From Material Movement	—	—	—	—	—	0.00018	0.00003	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01536	0.01291	0.09890	0.19696	0.00029	0.00499	0.00459	—	28.1418	28.1418	0.00114	0.00023	—	28.2383
Dust From Material Movement	—	—	—	—	—	0.00003	< 0.000005	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.3.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03150	0.03097	0.02025	0.42449	0.00000	0.08083	0.01895	—	87.4434	87.4434	0.00123	0.00305	0.28889	88.6724
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00820	0.00194	0.11978	0.04894	0.00046	0.02033	0.00642	—	70.7612	70.7612	0.00622	0.01129	0.13556	74.4160
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02868	0.02527	0.02635	0.31089	0.00000	0.08083	0.01895	—	77.6716	77.6716	0.00176	0.00323	0.00750	78.6850
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00814	0.00187	0.12895	0.04938	0.00046	0.02033	0.00642	—	70.7544	70.7544	0.00622	0.01129	0.00351	74.2771

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00195	0.00173	0.00158	0.02181	0.00000	0.00540	0.00126	—	5.45904	5.45904	0.00010	0.00021	0.00855	5.53228
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00056	0.00013	0.00867	0.00336	0.00003	0.00137	0.00043	—	4.84646	4.84646	0.00043	0.00077	0.00400	5.09151
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00036	0.00032	0.00029	0.00398	0.00000	0.00099	0.00023	—	0.90381	0.90381	0.00002	0.00003	0.00142	0.91593
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00010	0.00002	0.00158	0.00061	0.00001	0.00025	0.00008	—	0.80239	0.80239	0.00007	0.00013	0.00066	0.84296

3.3.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.22872	1.03246	7.91226	15.7568	0.02292	0.39938	0.36743	—	2,481.68	2,481.68	0.10067	0.02013	—	2,490.19
Dust From Material Movement	—	—	—	—	—	0.00100	0.00015	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.22872	1.03246	7.91226	15.7568	0.02292	0.39938	0.36743	—	2,481.68	2,481.68	0.10067	0.02013	—	2,490.19
Dust From Material Movement	—	—	—	—	—	0.00100	0.00015	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.08416	0.07072	0.54194	1.07923	0.00157	0.02735	0.02517	—	169.978	169.978	0.00690	0.00138	—	170.561
Dust From Material Movement	—	—	—	—	—	0.00007	0.00001	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01536	0.01291	0.09890	0.19696	0.00029	0.00499	0.00459	—	28.1418	28.1418	0.00114	0.00023	—	28.2383
Dust From Material Movement	—	—	—	—	—	0.00001	< 0.000005	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.3.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.03150	0.03097	0.02025	0.42449	0.00000	0.08083	0.01895	—	87.4434	87.4434	0.00123	0.00305	0.28889	88.6724
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00820	0.00194	0.11978	0.04894	0.00046	0.02033	0.00642	—	70.7612	70.7612	0.00622	0.01129	0.13556	74.4160
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02868	0.02527	0.02635	0.31089	0.00000	0.08083	0.01895	—	77.6716	77.6716	0.00176	0.00323	0.00750	78.6850
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00814	0.00187	0.12895	0.04938	0.00046	0.02033	0.00642	—	70.7544	70.7544	0.00622	0.01129	0.00351	74.2771

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00195	0.00173	0.00158	0.02181	0.00000	0.00540	0.00126	—	5.45904	5.45904	0.00010	0.00021	0.00855	5.53228
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00056	0.00013	0.00867	0.00336	0.00003	0.00137	0.00043	—	4.84646	4.84646	0.00043	0.00077	0.00400	5.09151
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00036	0.00032	0.00029	0.00398	0.00000	0.00099	0.00023	—	0.90381	0.90381	0.00002	0.00003	0.00142	0.91593
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00010	0.00002	0.00158	0.00061	0.00001	0.00025	0.00008	—	0.80239	0.80239	0.00007	0.00013	0.00066	0.84296

3.4. Backfill and Compaction (2027)

3.4.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.45306	2.06125	15.0956	23.2954	0.06217	0.55510	0.51069	—	6,729.75	6,729.75	0.27299	0.05460	—	6,752.85
Dust From Material Movement	—	—	—	—	—	0.00420	0.00064	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.45306	2.06125	15.0956	23.2954	0.06217	0.55510	0.51069	—	6,729.75	6,729.75	0.27299	0.05460	—	6,752.85
Dust From Material Movement	—	—	—	—	—	0.00420	0.00064	—	—	—	—	—	—	—

Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16802	0.14118	1.03394	1.59557	0.00426	0.03802	0.03498	—	460.942	460.942	0.01870	0.00374	—	462.524
Dust From Material Movement	—	—	—	—	—	0.00029	0.00004	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03066	0.02577	0.18869	0.29119	0.00078	0.00694	0.00638	—	76.3142	76.3142	0.00310	0.00062	—	76.5761
Dust From Material Movement	—	—	—	—	—	0.00005	0.00001	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.4.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02362	0.02323	0.01519	0.31837	0.00000	0.06062	0.01421	—	65.5825	65.5825	0.00093	0.00229	0.21667	66.5043
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.07381	0.01746	1.07799	0.44048	0.00417	0.18293	0.05779	—	636.851	636.851	0.05595	0.10159	1.22006	669.744
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02151	0.01896	0.01976	0.23317	0.00000	0.06062	0.01421	—	58.2537	58.2537	0.00132	0.00242	0.00563	59.0137

Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.07322	0.01687	1.16054	0.44445	0.00417	0.18293	0.05779	—	636.790	636.790	0.05595	0.10159	0.03161	668.494
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00146	0.00130	0.00119	0.01636	0.00000	0.00405	0.00095	—	4.09428	4.09428	0.00007	0.00016	0.00641	4.14921
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00504	0.00118	0.07801	0.03028	0.00029	0.01232	0.00391	—	43.6182	43.6182	0.00383	0.00696	0.03603	45.8235
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00027	0.00024	0.00022	0.00299	0.00000	0.00074	0.00017	—	0.67786	0.67786	0.00001	0.00003	0.00106	0.68695
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00092	0.00022	0.01424	0.00553	0.00005	0.00225	0.00071	—	7.22149	7.22149	0.00063	0.00115	0.00597	7.58661

3.4.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.45306	2.06125	15.0956	23.2954	0.06217	0.55510	0.51069	—	6,729.75	6,729.75	0.27299	0.05460	—	6,752.85
Dust From Material Movement	—	—	—	—	—	0.00164	0.00025	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	2.45306	2.06125	15.0956	23.2954	0.06217	0.55510	0.51069	—	6,729.75	6,729.75	0.27299	0.05460	—	6,752.85
Dust From Material Movement	—	—	—	—	—	0.00164	0.00025	—	—	—	—	—	—	—

Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.16802	0.14118	1.03394	1.59557	0.00426	0.03802	0.03498	—	460.942	460.942	0.01870	0.00374	—	462.524
Dust From Material Movement	—	—	—	—	—	0.00011	0.00002	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.03066	0.02577	0.18869	0.29119	0.00078	0.00694	0.00638	—	76.3142	76.3142	0.00310	0.00062	—	76.5761
Dust From Material Movement	—	—	—	—	—	0.00002	< 0.000005	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.4.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02362	0.02323	0.01519	0.31837	0.00000	0.06062	0.01421	—	65.5825	65.5825	0.00093	0.00229	0.21667	66.5043
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.07381	0.01746	1.07799	0.44048	0.00417	0.18293	0.05779	—	636.851	636.851	0.05595	0.10159	1.22006	669.744
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.02151	0.01896	0.01976	0.23317	0.00000	0.06062	0.01421	—	58.2537	58.2537	0.00132	0.00242	0.00563	59.0137

Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.07322	0.01687	1.16054	0.44445	0.00417	0.18293	0.05779	—	636.790	636.790	0.05595	0.10159	0.03161	668.494
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00146	0.00130	0.00119	0.01636	0.00000	0.00405	0.00095	—	4.09428	4.09428	0.00007	0.00016	0.00641	4.14921
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00504	0.00118	0.07801	0.03028	0.00029	0.01232	0.00391	—	43.6182	43.6182	0.00383	0.00696	0.03603	45.8235
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00027	0.00024	0.00022	0.00299	0.00000	0.00074	0.00017	—	0.67786	0.67786	0.00001	0.00003	0.00106	0.68695
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00092	0.00022	0.01424	0.00553	0.00005	0.00225	0.00071	—	7.22149	7.22149	0.00063	0.00115	0.00597	7.58661

3.5. Surface Restoration and Paving (2027)

3.5.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.57026	1.31946	5.59953	8.30193	0.00879	0.39065	0.35940	—	954.397	954.397	0.03871	0.00774	—	957.672
Dust From Material Movement	—	—	—	—	—	0.00132	0.00020	—	—	—	—	—	—	—
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09465	0.07953	0.33751	0.50039	0.00053	0.02355	0.02166	—	57.5253	57.5253	0.00233	0.00047	—	57.7227
Dust From Material Movement	—	—	—	—	—	0.00008	0.00001	—	—	—	—	—	—	—
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01727	0.01451	0.06159	0.09132	0.00010	0.00430	0.00395	—	9.52396	9.52396	0.00039	0.00008	—	9.55665
Dust From Material Movement	—	—	—	—	—	0.00001	< 0.000005	—	—	—	—	—	—	—
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.5.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01575	0.01549	0.01012	0.21224	0.00000	0.04041	0.00947	—	43.7217	43.7217	0.00062	0.00153	0.14444	44.3362
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.02349	0.00556	0.34300	0.14015	0.00133	0.05821	0.01839	—	202.634	202.634	0.01780	0.03232	0.38820	213.100
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00086	0.00076	0.00070	0.00960	0.00000	0.00238	0.00056	—	2.40198	2.40198	0.00004	0.00009	0.00376	2.43420
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00141	0.00033	0.02184	0.00848	0.00008	0.00345	0.00109	—	12.2131	12.2131	0.00107	0.00195	0.01009	12.8306
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00016	0.00014	0.00013	0.00175	0.00000	0.00043	0.00010	—	0.39768	0.39768	0.00001	0.00002	0.00062	0.40301
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00026	0.00006	0.00399	0.00155	0.00001	0.00063	0.00020	—	2.02202	2.02202	0.00018	0.00032	0.00167	2.12425

3.5.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.57026	1.31946	5.59953	8.30193	0.00879	0.39065	0.35940	—	954.397	954.397	0.03871	0.00774	—	957.672
Dust From Material Movement	—	—	—	—	—	0.00052	0.00008	—	—	—	—	—	—	—
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.09465	0.07953	0.33751	0.50039	0.00053	0.02355	0.02166	—	57.5253	57.5253	0.00233	0.00047	—	57.7227

Dust From Material Movement	—	—	—	—	—	0.00003	< 0.000005	—	—	—	—	—	—	—
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.01727	0.01451	0.06159	0.09132	0.00010	0.00430	0.00395	—	9.52396	9.52396	0.00039	0.00008	—	9.55665
Dust From Material Movement	—	—	—	—	—	0.00001	< 0.000005	—	—	—	—	—	—	—
Paving	0.00000	0.00000	—	—	—	—	—	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.5.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01575	0.01549	0.01012	0.21224	0.00000	0.04041	0.00947	—	43.7217	43.7217	0.00062	0.00153	0.14444	44.3362
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.02349	0.00556	0.34300	0.14015	0.00133	0.05821	0.01839	—	202.634	202.634	0.01780	0.03232	0.38820	213.100
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00086	0.00076	0.00070	0.00960	0.00000	0.00238	0.00056	—	2.40198	2.40198	0.00004	0.00009	0.00376	2.43420
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00141	0.00033	0.02184	0.00848	0.00008	0.00345	0.00109	—	12.2131	12.2131	0.00107	0.00195	0.01009	12.8306

Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00016	0.00014	0.00013	0.00175	0.00000	0.00043	0.00010	—	0.39768	0.39768	0.00001	0.00002	0.00062	0.40301
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00026	0.00006	0.00399	0.00155	0.00001	0.00063	0.00020	—	2.02202	2.02202	0.00018	0.00032	0.00167	2.12425

3.6. Excavation and Trenching (2027)

3.6.1. Onsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.76346	1.48180	14.3873	20.3434	0.03709	0.55660	0.51207	—	4,015.45	4,015.45	0.16288	0.03258	—	4,029.23
Dust From Material Movement	—	—	—	—	—	0.00676	0.00102	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12078	0.10149	0.98543	1.39339	0.00254	0.03812	0.03507	—	275.031	275.031	0.01116	0.00223	—	275.975
Dust From Material Movement	—	—	—	—	—	0.00046	0.00007	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Off-Road Equipment	0.02204	0.01852	0.17984	0.25429	0.00046	0.00696	0.00640	—	45.5345	45.5345	0.00185	0.00037	—	45.6908
Dust From Material Movement	—	—	—	—	—	0.00008	0.00001	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.6.2. Offsite - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01575	0.01549	0.01012	0.21224	0.00000	0.04041	0.00947	—	43.7217	43.7217	0.00062	0.00153	0.14444	44.3362
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.11908	0.02817	1.73916	0.71065	0.00672	0.29513	0.09323	—	1,027.45	1,027.45	0.09027	0.16390	1.96836	1,080.52
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00098	0.00087	0.00079	0.01091	0.00000	0.00270	0.00063	—	2.72952	2.72952	0.00005	0.00010	0.00427	2.76614
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00813	0.00191	0.12585	0.04885	0.00046	0.01987	0.00630	—	70.3707	70.3707	0.00618	0.01123	0.05813	73.9287
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00018	0.00016	0.00014	0.00199	0.00000	0.00049	0.00012	—	0.45190	0.45190	0.00001	0.00002	0.00071	0.45797
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00148	0.00035	0.02297	0.00892	0.00008	0.00363	0.00115	—	11.6507	11.6507	0.00102	0.00186	0.00962	12.2397

3.6.3. Onsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	1.76346	1.48180	14.3873	20.3434	0.03709	0.55660	0.51207	—	4,015.45	4,015.45	0.16288	0.03258	—	4,029.23
Dust From Material Movement	—	—	—	—	—	0.00264	0.00040	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.12078	0.10149	0.98543	1.39339	0.00254	0.03812	0.03507	—	275.031	275.031	0.01116	0.00223	—	275.975
Dust From Material Movement	—	—	—	—	—	0.00018	0.00003	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Off-Road Equipment	0.02204	0.01852	0.17984	0.25429	0.00046	0.00696	0.00640	—	45.5345	45.5345	0.00185	0.00037	—	45.6908
Dust From Material Movement	—	—	—	—	—	0.00003	< 0.000005	—	—	—	—	—	—	—
Onsite truck	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

3.6.4. Offsite - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Location	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.01575	0.01549	0.01012	0.21224	0.00000	0.04041	0.00947	—	43.7217	43.7217	0.00062	0.00153	0.14444	44.3362
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.11908	0.02817	1.73916	0.71065	0.00672	0.29513	0.09323	—	1,027.45	1,027.45	0.09027	0.16390	1.96836	1,080.52
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Average Daily	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00098	0.00087	0.00079	0.01091	0.00000	0.00270	0.00063	—	2.72952	2.72952	0.00005	0.00010	0.00427	2.76614
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00813	0.00191	0.12585	0.04885	0.00046	0.01987	0.00630	—	70.3707	70.3707	0.00618	0.01123	0.05813	73.9287
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Worker	0.00018	0.00016	0.00014	0.00199	0.00000	0.00049	0.00012	—	0.45190	0.45190	0.00001	0.00002	0.00071	0.45797
Vendor	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	—	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Hauling	0.00148	0.00035	0.02297	0.00892	0.00008	0.00363	0.00115	—	11.6507	11.6507	0.00102	0.00186	0.00962	12.2397

4. Operations Emissions Details

4.10. Soil Carbon Accumulation By Vegetation Type

4.10.1. Soil Carbon Accumulation By Vegetation Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.2. Above and Belowground Carbon Accumulation by Land Use Type - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.3. Avoided and Sequestered Emissions by Species - Unmitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.4. Soil Carbon Accumulation By Vegetation Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Vegetation	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e

Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.5. Above and Belowground Carbon Accumulation by Land Use Type - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Land Use	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Total	—	—	—	—	—	—	—	—	—	—	—	—	—	—

4.10.6. Avoided and Sequestered Emissions by Species - Mitigated

Criteria Pollutants (lb/day for daily, ton/yr for annual) and GHGs (lb/day for daily, MT/yr for annual)

Species	TOG	ROG	NOx	CO	SO2	PM10T	PM2.5T	BCO2	NBCO2	CO2T	CH4	N2O	R	CO2e
Daily, Summer (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—

Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Daily, Winter (Max)	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Annual	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Avoided	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Sequestered	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Removed	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Subtotal	—	—	—	—	—	—	—	—	—	—	—	—	—	—
—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

5. Activity Data

5.1. Construction Schedule

Phase Name	Phase Type	Start Date	End Date	Days Per Week	Work Days per Phase	Phase Description
Installation of New ASR Well	Site Preparation	7/6/2027	7/29/2027	6.00000	21.0000	—
Development and Testing of ASR Well	Site Preparation	7/30/2027	8/14/2027	6.00000	14.0000	—
Piping and Bedding	Grading	9/13/2027	10/11/2027	6.00000	25.0000	—
Backfill and Compaction	Grading	9/17/2027	10/15/2027	6.00000	25.0000	—
Surface Restoration and Paving	Paving	8/27/2027	9/21/2027	6.00000	22.0000	—
Excavation and Trenching	Trenching	8/15/2027	9/13/2027	6.00000	25.0000	—

5.2. Off-Road Equipment

5.2.1. Unmitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Installation of New ASR Well	Other Material Handling Equipment	Diesel	Average	3.00000	14.0000	148.000	0.41000
Installation of New ASR Well	Tractors/Loaders/Backhoes	Diesel	Average	1.000000	14.0000	84.0000	0.37000
Installation of New ASR Well	Other Construction Equipment	Diesel	Average	1.000000	14.0000	82.0000	0.42000
Installation of New ASR Well	Rubber Tired Dozers	Diesel	Average	1.000000	7.00000	367.000	0.40000
Installation of New ASR Well	Bore/Drill Rigs	Diesel	Average	1.000000	14.0000	83.0000	0.50000
Development and Testing of ASR Well	Pumps	Diesel	Average	2.00000	24.0000	148.000	0.41000
Piping and Bedding	Cranes	Diesel	Average	1.000000	14.0000	84.0000	0.37000
Piping and Bedding	Other Material Handling Equipment	Diesel	Average	2.00000	14.0000	148.000	0.41000

Backfill and Compaction	Tractors/Loaders/Back	Diesel	Average	1.000000	14.0000	148.000	0.41000
Backfill and Compaction	Other Construction Equipment	Diesel	Average	1.000000	14.0000	367.000	0.40000
Backfill and Compaction	Other Material Handling Equipment	Diesel	Average	2.00000	14.0000	84.0000	0.37000
Backfill and Compaction	Off-Highway Trucks	Diesel	Average	1.000000	14.0000	376.000	0.38000
Surface Restoration and Paving	Off-Highway Trucks	Diesel	Average	1.000000	14.0000	84.0000	0.37000
Surface Restoration and Paving	Other Material Handling Equipment	Diesel	Average	2.00000	14.0000	10.00000	0.56000
Surface Restoration and Paving	Pavers	Diesel	Average	1.000000	14.0000	36.0000	0.38000
Excavation and Trenching	Tractors/Loaders/Back hoes	Diesel	Average	1.000000	14.0000	84.0000	0.37000
Excavation and Trenching	Cranes	Diesel	Average	1.000000	14.0000	367.000	0.29000
Excavation and Trenching	Other Construction Equipment	Diesel	Average	1.000000	14.0000	82.0000	0.42000
Excavation and Trenching	Other Material Handling Equipment	Diesel	Average	2.00000	14.0000	93.0000	0.40000

5.2.2. Mitigated

Phase Name	Equipment Type	Fuel Type	Engine Tier	Number per Day	Hours Per Day	Horsepower	Load Factor
Installation of New ASR Well	Other Material Handling Equipment	Diesel	Average	3.00000	14.0000	148.000	0.41000
Installation of New ASR Well	Tractors/Loaders/Back hoes	Diesel	Average	1.000000	14.0000	84.0000	0.37000
Installation of New ASR Well	Other Construction Equipment	Diesel	Average	1.000000	14.0000	82.0000	0.42000
Installation of New ASR Well	Rubber Tired Dozers	Diesel	Average	1.000000	7.00000	367.000	0.40000

Installation of New ASR Well	Bore/Drill Rigs	Diesel	Average	1.000000	14.0000	83.0000	0.50000
Development and Testing of ASR Well	Pumps	Diesel	Average	2.00000	24.0000	148.000	0.41000
Piping and Bedding	Cranes	Diesel	Average	1.000000	14.0000	84.0000	0.37000
Piping and Bedding	Other Material Handling Equipment	Diesel	Average	2.00000	14.0000	148.000	0.41000
Backfill and Compaction	Tractors/Loaders/Backhoes	Diesel	Average	1.000000	14.0000	148.000	0.41000
Backfill and Compaction	Other Construction Equipment	Diesel	Average	1.000000	14.0000	367.000	0.40000
Backfill and Compaction	Other Material Handling Equipment	Diesel	Average	2.00000	14.0000	84.0000	0.37000
Backfill and Compaction	Off-Highway Trucks	Diesel	Average	1.000000	14.0000	376.000	0.38000
Surface Restoration and Paving	Off-Highway Trucks	Diesel	Average	1.000000	14.0000	84.0000	0.37000
Surface Restoration and Paving	Other Material Handling Equipment	Diesel	Average	2.00000	14.0000	10.00000	0.56000
Surface Restoration and Paving	Pavers	Diesel	Average	1.000000	14.0000	36.0000	0.38000
Excavation and Trenching	Tractors/Loaders/Backhoes	Diesel	Average	1.000000	14.0000	84.0000	0.37000
Excavation and Trenching	Cranes	Diesel	Average	1.000000	14.0000	367.000	0.29000
Excavation and Trenching	Other Construction Equipment	Diesel	Average	1.000000	14.0000	82.0000	0.42000
Excavation and Trenching	Other Material Handling Equipment	Diesel	Average	2.00000	14.0000	93.0000	0.40000

5.3. Construction Vehicles

5.3.1. Unmitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Installation of New ASR Well	Worker	6.00000	14.3000	LDA,LDT1,LDT2
Installation of New ASR Well	Vendor	—	8.80000	HHDT,MHDT
Installation of New ASR Well	Hauling	0.00000	20.0000	HHDT
Installation of New ASR Well	Onsite truck	—	—	HHDT
Development and Testing of ASR Well	Worker	4.00000	14.3000	LDA,LDT1,LDT2
Development and Testing of ASR Well	Vendor	—	8.80000	HHDT,MHDT
Development and Testing of ASR Well	Hauling	0.00000	20.0000	HHDT
Development and Testing of ASR Well	Onsite truck	—	—	HHDT
Piping and Bedding	Worker	8.00000	14.3000	LDA,LDT1,LDT2
Piping and Bedding	Vendor	—	8.80000	HHDT,MHDT
Piping and Bedding	Hauling	1.000000	20.0000	HHDT
Piping and Bedding	Onsite truck	—	—	HHDT
Backfill and Compaction	Worker	6.00000	14.3000	LDA,LDT1,LDT2
Backfill and Compaction	Vendor	—	8.80000	HHDT,MHDT
Backfill and Compaction	Hauling	9.00000	20.0000	HHDT
Backfill and Compaction	Onsite truck	—	—	HHDT
Surface Restoration and Paving	Worker	4.00000	14.3000	LDA,LDT1,LDT2
Surface Restoration and Paving	Vendor	—	8.80000	HHDT,MHDT
Surface Restoration and Paving	Hauling	2.86364	20.0000	HHDT
Surface Restoration and Paving	Onsite truck	—	—	HHDT
Excavation and Trenching	Worker	4.00000	14.3000	LDA,LDT1,LDT2
Excavation and Trenching	Vendor	—	8.80000	HHDT,MHDT
Excavation and Trenching	Hauling	14.5200	20.0000	HHDT
Excavation and Trenching	Onsite truck	—	—	HHDT

5.3.2. Mitigated

Phase Name	Trip Type	One-Way Trips per Day	Miles per Trip	Vehicle Mix
Installation of New ASR Well	Worker	6.00000	14.3000	LDA,LDT1,LDT2
Installation of New ASR Well	Vendor	—	8.80000	HHDT,MHDT
Installation of New ASR Well	Hauling	0.00000	20.0000	HHDT
Installation of New ASR Well	Onsite truck	—	—	HHDT
Development and Testing of ASR Well	Worker	4.00000	14.3000	LDA,LDT1,LDT2
Development and Testing of ASR Well	Vendor	—	8.80000	HHDT,MHDT
Development and Testing of ASR Well	Hauling	0.00000	20.0000	HHDT
Development and Testing of ASR Well	Onsite truck	—	—	HHDT
Piping and Bedding	Worker	8.00000	14.3000	LDA,LDT1,LDT2
Piping and Bedding	Vendor	—	8.80000	HHDT,MHDT
Piping and Bedding	Hauling	1.000000	20.0000	HHDT
Piping and Bedding	Onsite truck	—	—	HHDT
Backfill and Compaction	Worker	6.00000	14.3000	LDA,LDT1,LDT2
Backfill and Compaction	Vendor	—	8.80000	HHDT,MHDT
Backfill and Compaction	Hauling	9.00000	20.0000	HHDT
Backfill and Compaction	Onsite truck	—	—	HHDT
Surface Restoration and Paving	Worker	4.00000	14.3000	LDA,LDT1,LDT2
Surface Restoration and Paving	Vendor	—	8.80000	HHDT,MHDT
Surface Restoration and Paving	Hauling	2.86364	20.0000	HHDT
Surface Restoration and Paving	Onsite truck	—	—	HHDT
Excavation and Trenching	Worker	4.00000	14.3000	LDA,LDT1,LDT2
Excavation and Trenching	Vendor	—	8.80000	HHDT,MHDT
Excavation and Trenching	Hauling	14.5200	20.0000	HHDT

Excavation and Trenching	Onsite truck	—	—	HHDT

5.4. Vehicles

5.4.1. Construction Vehicle Control Strategies

Non-applicable. No control strategies activated by user.

5.5. Architectural Coatings

5.6. Dust Mitigation

5.6.1. Construction Earthmoving Activities

Phase Name	Material Imported (Cubic Yards)	Material Exported (Cubic Yards)	Acres Graded (acres)	Material Demolished (sq. ft.)	Acres Paved (acres)
Piping and Bedding	1,100.00	0.00000	1.80000	0.00000	0.00000
Backfill and Compaction	1,800.00	0.00000	1.80000	0.00000	0.00000
Surface Restoration and Paving	500.000	0.00000	1.80000	0.00000	0.00000
Excavation and Trenching	0.00000	2,900.00	1.80000	0.00000	0.00000

5.6.2. Construction Earthmoving Control Strategies

Non-applicable. No control strategies activated by user.

5.7. Construction Paving

Phase Name	Land Use	Area Paved (acres)	% Asphalt
Surface Restoration and Paving	User Defined Industrial	0.00000	0%

5.8. Construction Electricity Consumption and Emissions Factors

kWh per Year and Emission Factor (lb/MWh)

Year	kWh per Year	CO2	CH4	N2O

2027	0.00000	374.840	0.01290	0.00170

5.18. Vegetation

5.18.1. Land Use Change

5.18.1.1. Unmitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Vegetation Land Use Type	Vegetation Soil Type	Initial Acres	Final Acres

5.18.1. Biomass Cover Type

5.18.1.1. Unmitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.1.2. Mitigated

Biomass Cover Type	Initial Acres	Final Acres

5.18.2. Sequestration

5.18.2.1. Unmitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

5.18.2.2. Mitigated

Tree Type	Number	Electricity Saved (kWh/year)	Natural Gas Saved (btu/year)

6. Climate Risk Detailed Report

6.1. Climate Risk Summary

Cal-Adapt midcentury 2040–2059 average projections for four hazards are reported below for your project location. These are under Representation Concentration Pathway (RCP) 8.5 which assumes GHG emissions will continue to rise strongly through 2050 and then plateau around 2100.

Climate Hazard	Result for Project Location	Unit
Temperature and Extreme Heat	21.7600	annual days of extreme heat
Extreme Precipitation	5.50000	annual days with precipitation above 20 mm
Sea Level Rise	—	meters of inundation depth
Wildfire	3.74000	annual hectares burned

Temperature and Extreme Heat data are for grid cell in which your project are located. The projection is based on the 98th historical percentile of daily maximum/minimum temperatures from observed historical data (32 climate model ensemble from Cal-Adapt, 2040–2059 average under RCP 8.5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Extreme Precipitation data are for the grid cell in which your project are located. The threshold of 20 mm is equivalent to about ¾ an inch of rain, which would be light to moderate rainfall if received over a full day or heavy rain if received over a period of 2 to 4 hours. Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.
Sea Level Rise data are for the grid cell in which your project are located. The projections are from Radke et al. (2017), as reported in Cal-Adapt (Radke et al., 2017, CEC-500-2017-008), and consider inundation location and depth for the San Francisco Bay, the Sacramento-San Joaquin River Delta and California coast resulting different increments of sea level rise coupled with extreme storm events. Users may select from four scenarios to view the range in potential inundation depth for the grid cell. The four scenarios are: No rise, 0.5 meter, 1.0 meter, 1.41 meters
Wildfire data are for the grid cell in which your project are located. The projections are from UC Davis, as reported in Cal-Adapt (2040–2059 average under RCP 8.5), and consider historical data of climate, vegetation, population density, and large (> 400 ha) fire history. Users may select from four model simulations to view the range in potential wildfire probabilities for the grid cell. The four simulations make different assumptions about expected rainfall and temperature are: Warmer/drier (HadGEM2-ES), Cooler/wetter (CNRM-CM5), Average conditions (CanESM2), Range of different rainfall and temperature possibilities (MIROC5). Each grid cell is 6 kilometers (km) by 6 km, or 3.7 miles (mi) by 3.7 mi.

6.2. Initial Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	0	0	N/A
Extreme Precipitation	2	0	0	N/A
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	0	0	N/A
Flooding	0	0	0	N/A
Drought	0	0	0	N/A
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	0	0	0	N/A

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores do not include implementation of climate risk reduction measures.

6.3. Adjusted Climate Risk Scores

Climate Hazard	Exposure Score	Sensitivity Score	Adaptive Capacity Score	Vulnerability Score
Temperature and Extreme Heat	1	1	1	2
Extreme Precipitation	2	1	1	3
Sea Level Rise	N/A	N/A	N/A	N/A
Wildfire	1	1	1	2
Flooding	1	1	1	2
Drought	1	1	1	2
Snowpack Reduction	N/A	N/A	N/A	N/A
Air Quality Degradation	1	1	1	2

The sensitivity score reflects the extent to which a project would be adversely affected by exposure to a climate hazard. Exposure is rated on a scale of 1 to 5, with a score of 5 representing the greatest exposure.
The adaptive capacity of a project refers to its ability to manage and reduce vulnerabilities from projected climate hazards. Adaptive capacity is rated on a scale of 1 to 5, with a score of 5 representing the greatest ability to adapt.
The overall vulnerability scores are calculated based on the potential impacts and adaptive capacity assessments for each hazard. Scores include implementation of climate risk reduction measures.

6.4. Climate Risk Reduction Measures

7. Health and Equity Details

7.1. CalEnviroScreen 4.0 Scores

The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Exposure Indicators	—
AQ-Ozone	48.5999

AQ-PM	23.6839
AQ-DPM	22.3149
Drinking Water	78.7811
Lead Risk Housing	41.1720
Pesticides	73.7931
Toxic Releases	30.3326
Traffic	28.4750
Effect Indicators	—
CleanUp Sites	86.5435
Groundwater	88.8594
Haz Waste Facilities/Generators	99.8015
Impaired Water Bodies	51.2180
Solid Waste	99.9084
Sensitive Population	—
Asthma	50.1994
Cardio-vascular	53.9008
Low Birth Weights	36.4126
Socioeconomic Factor Indicators	—
Education	47.5070
Housing	61.9392
Linguistic	43.8760
Poverty	58.5050
Unemployment	62.4024

7.2. Healthy Places Index Scores

The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

Indicator	Result for Project Census Tract
Economic	—

Above Poverty	36.84075452
Employed	20.45425382
Median HI	23.26446811
Education	—
Bachelor's or higher	39.34300013
High school enrollment	100
Preschool enrollment	18.64493776
Transportation	—
Auto Access	37.4566919
Active commuting	70.79430258
Social	—
2-parent households	14.75683306
Voting	58.51405107
Neighborhood	—
Alcohol availability	64.62209675
Park access	12.70370846
Retail density	22.81534711
Supermarket access	13.65327858
Tree canopy	2.065956628
Housing	—
Homeownership	60.60567176
Housing habitability	41.69126139
Low-inc homeowner severe housing cost burden	38.58591043
Low-inc renter severe housing cost burden	7.737713332
Uncrowded housing	46.38778391
Health Outcomes	—
Insured adults	43.96253048
Arthritis	0.0

Asthma ER Admissions	49.9
High Blood Pressure	0.0
Cancer (excluding skin)	0.0
Asthma	0.0
Coronary Heart Disease	0.0
Chronic Obstructive Pulmonary Disease	0.0
Diagnosed Diabetes	0.0
Life Expectancy at Birth	16.0
Cognitively Disabled	21.0
Physically Disabled	7.2
Heart Attack ER Admissions	53.7
Mental Health Not Good	0.0
Chronic Kidney Disease	0.0
Obesity	0.0
Pedestrian Injuries	98.4
Physical Health Not Good	0.0
Stroke	0.0
Health Risk Behaviors	—
Binge Drinking	0.0
Current Smoker	0.0
No Leisure Time for Physical Activity	0.0
Climate Change Exposures	—
Wildfire Risk	0.0
SLR Inundation Area	0.0
Children	59.5
Elderly	21.1
English Speaking	31.0
Foreign-born	59.3

Outdoor Workers	28.8
Climate Change Adaptive Capacity	—
Impervious Surface Cover	91.1
Traffic Density	37.8
Traffic Access	23.0
Other Indices	—
Hardship	62.5
Other Decision Support	—
2016 Voting	63.7

7.3. Overall Health & Equity Scores

Metric	Result for Project Census Tract
CalEnviroScreen 4.0 Score for Project Location (a)	70.0000
Healthy Places Index Score for Project Location (b)	29.0000
Project Located in a Designated Disadvantaged Community (Senate Bill 535)	Yes
Project Located in a Low-Income Community (Assembly Bill 1550)	Yes
Project Located in a Community Air Protection Program Community (Assembly Bill 617)	No

a: The maximum CalEnviroScreen score is 100. A high score (i.e., greater than 50) reflects a higher pollution burden compared to other census tracts in the state.
b: The maximum Health Places Index score is 100. A high score (i.e., greater than 50) reflects healthier community conditions compared to other census tracts in the state.

7.4. Health & Equity Measures

No Health & Equity Measures selected.

7.5. Evaluation Scorecard

Health & Equity Evaluation Scorecard not completed.

7.6. Health & Equity Custom Measures

No Health & Equity Custom Measures created.

8. User Changes to Default Data

8.1. Justifications

Screen	Justification
Land Use	Adjusted building square feet based on project description
Construction: Construction Phases	Anticipated construction phasing based on information provided by client and engineer.
Construction: Off-Road Equipment	Anticipated construction equipment mix based on construction activities.
Construction: Dust From Material Movement	Anticipated import and export based on construction activities
Construction: Trips and VMT	Anticipated one way trips per day based on project description
Construction: Architectural Coatings	There will be no architectural coating for this project

8.3. Land Use

Model Parameter	Units	Default Value	New Value
Lot Area	acre	0.00000	1.80000
Building Area	sq. ft	0.00000	500.000
Landscape Area	sq. ft	—	0.00000

8.4. Construction

8.4.2. Off-Road Equipment

Phase Name	Equipment Type	Model Parameter	Default Value	New Value
Installation of New ASR Well	Other Material Handling Equipment	Number per Day	1.000000	3.00000
Installation of New ASR Well	Other Material Handling Equipment	Hours Per Day	8.00000	14.0000
Development and Testing of ASR Well	Pumps	Number per Day	1.000000	2.00000
Development and Testing of ASR Well	Pumps	Hours Per Day	8.00000	24.0000
Piping and Bedding	Cranes	Number per Day	2.00000	1.000000
Piping and Bedding	Cranes	Hours Per Day	7.00000	14.0000
Piping and Bedding	Other Material Handling Equipment	Number per Day	1.000000	2.00000

Piping and Bedding	Other Material Handling Equipment	Hours Per Day	8.00000	14.0000
Backfill and Compaction	Tractors/Loaders/Backhoes	Hours Per Day	8.00000	14.0000
Backfill and Compaction	Other Construction Equipment	Hours Per Day	8.00000	14.0000
Backfill and Compaction	Other Material Handling Equipment	Hours Per Day	7.00000	14.0000
Surface Restoration and Paving	Off-Highway Trucks	Hours Per Day	8.00000	14.0000
Surface Restoration and Paving	Other Material Handling Equipment	Number per Day	1.000000	2.00000
Surface Restoration and Paving	Other Material Handling Equipment	Hours Per Day	6.00000	14.0000
Surface Restoration and Paving	Pavers	Hours Per Day	7.00000	14.0000

8.4.4. Dust from Material Movement

Phase Name	Model Parameter	Units	Default Value	New Value
Piping and Bedding	Material Imported	Cubic Yards	—	1,100.00
Piping and Bedding	Material Exported	Cubic Yards	—	0.00000
Piping and Bedding	Total Acres Graded	acres	0.00000	1.80000
Backfill and Compaction	Material Imported	Cubic Yards	—	1,800.00
Backfill and Compaction	Material Exported	Cubic Yards	—	0.00000
Backfill and Compaction	Total Acres Graded	acres	0.00000	1.80000

8.4.6. Trips and VMT

Phase Name	Trip Type	Model Parameter	Default Value	New Value
Installation of New ASR Well	Worker	One-Way Trips per Day	17.5000	6.00000
Development and Testing of ASR Well	Worker	One-Way Trips per Day	5.00000	4.00000
Piping and Bedding	Worker	One-Way Trips per Day	7.50000	8.00000
Piping and Bedding	Hauling	One-Way Trips per Day	5.52000	1.000000
Backfill and Compaction	Worker	One-Way Trips per Day	12.5000	6.00000
Surface Restoration and Paving	Worker	One-Way Trips per Day	10.00000	4.00000
Excavation and Trenching	Worker	One-Way Trips per Day	12.5000	4.00000

APPENDIX B

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Carmichael (3812153) OR Elk Grove (3812143))
 AND Taxonomic Group IS (Fish OR Amphibians OR Reptiles OR Birds OR Mammals OR Mollusks OR Arachnids OR Crustaceans OR Insects)

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
American badger *Taxidea taxus*	AMAJF04010	None	None	G5	S3	SSC
American bumble bee *Bombus pensylvanicus*	IIHYM24260	None	None	G3G4	S2	
bank swallow *Riparia riparia*	ABPAU08010	None	Threatened	G5	S3	
burrowing owl *Athene cunicularia*	ABNSB10010	None	Candidate Endangered	G4	S2	SSC
California linderiella *Linderiella occidentalis*	ICBRA06010	None	None	G2G3	S2S3	
Cooper's hawk *Astur cooperii*	ABNKC12040	None	None	G5	S4	WL
Crotch's bumble bee *Bombus crotchii*	IIHYM24480	None	Candidate Endangered	G2	S2	
ferruginous hawk *Buteo regalis*	ABNKC19120	None	None	G4	S3S4	WL
giant gartersnake *Thamnophis gigas*	ARADB36150	Threatened	Threatened	G2	S2	
golden eagle *Aquila chrysaetos*	ABNKC22010	None	None	G5	S3	FP
great blue heron *Ardea herodias*	ABNGA04010	None	None	G5	S4	
great egret *Ardea alba*	ABNGA04040	None	None	G5	S4	
hairy water flea *Dumontia oregonensis*	ICBRA23010	None	None	G1G3	S1	
midvalley fairy shrimp *Branchinecta mesovallensis*	ICBRA03150	None	None	G2	S2S3	
northwestern pond turtle *Actinemys marmorata*	ARAAD02031	Proposed Threatened	None	G2	SNR	SSC
Ricksecker's water scavenger beetle *Hydrochara rickseckeri*	IICOL5V010	None	None	G2?	S2?	
steelhead - Central Valley DPS *Oncorhynchus mykiss irideus pop. 11*	AFCHA0209K	Threatened	None	G5T2Q	S2	SSC
Swainson's hawk *Buteo swainsoni*	ABNKC19070	None	Threatened	G5	S4	

Selected Elements by Common Name

California Department of Fish and Wildlife

California Natural Diversity Database

Species	Element Code	Federal Status	State Status	Global Rank	State Rank	Rare Plant Rank/CDFW SSC or FP
tricolored blackbird *Agelaius tricolor*	ABPBXB0020	None	Threatened	G1G2	S2	SSC
valley elderberry longhorn beetle *Desmocerus californicus dimorphus*	IICOL48011	Threatened	None	G3T3	S3	
vernal pool fairy shrimp *Branchinecta lynchi*	ICBRA03030	Threatened	None	G3	S3	
vernal pool tadpole shrimp *Lepidurus packardi*	ICBRA10010	Endangered	None	G3	S3	
western spadefoot *Spea hammondii*	AAABF02020	Proposed Threatened	None	G2G3	S3S4	SSC
white-tailed kite *Elanus leucurus*	ABNKC06010	None	None	G5	S3S4	FP

Record Count: 24

CALIFORNIA NATIVE PLANT SOCIETY

CNPS Rare Plant Inventory

Search Results

7 matches found. Click on scientific name for details

Search Criteria: , CRPR is one of [**1A:1B:2A:2B:3**] , Quad is one of [**3812153:3812143**]

▲ SCIENTIFIC NAME	COMMON NAME	FAMILY	LIFEFORM	BLOOMING PERIOD	FED LIST	STATE LIST	GLOBAL RANK	STATE RANK	CA RARE PLANT RANK	CA ENDEMIC	DATE ADDED	PHOTO
Downingia pusilla	dwarf downingia	Campanulaceae	annual herb	Mar-May	None	None	GU	S2	2B.2		1980-01-01	 © 2013 Aaron Arthur
Gratiola heterosepala	Boggs Lake hedge-hyssop	Plantaginaceae	annual herb	Apr-Aug	None	CE	G2	S2	1B.2		1974-01-01	 ©2004 Carol W. Witham
Juncus leiospermus var. *ahartii*	Ahart's dwarf rush	Juncaceae	annual herb	Mar-May	None	None	G2T1	S1	1B.2	Yes	1984-01-01	 © 2004 Carol W. Witham
Legenere limosa	legenere	Campanulaceae	annual herb	Apr-Jun	None	None	G2	S2	1B.1	Yes	1974-01-01	 © 2025 Adam Searcy
Orcuttia tenuis	slender Orcutt grass	Poaceae	annual herb	May-Sep(Oct)	FT	CE	G2	S2	1B.1	Yes	1974-01-01	 © 2013 Justy Leppert

Orcuttia viscida	Sacramento Orcutt grass	Poaceae	annual herb	Apr-Jul(Sep)	FE	CE	G1	S1	1B.1	Yes	1974-01-01	 © Rick York and CNPS
Sagittaria sanfordii	Sanford's arrowhead	Alismataceae	perennial rhizomatous herb (emergent)	May-Oct(Nov)	None	None	G3	S3	1B.2	Yes	1984-01-01	 ©2013 Debra L. Cook

Showing 1 to 7 of 7 entries

Go to top

Suggested Citation:

California Native Plant Society, Rare Plant Program. 2025. Rare Plant Inventory (online edition, v9.5.1). Website https://www.rareplants.cnps.org [accessed 2 October 2025].

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IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

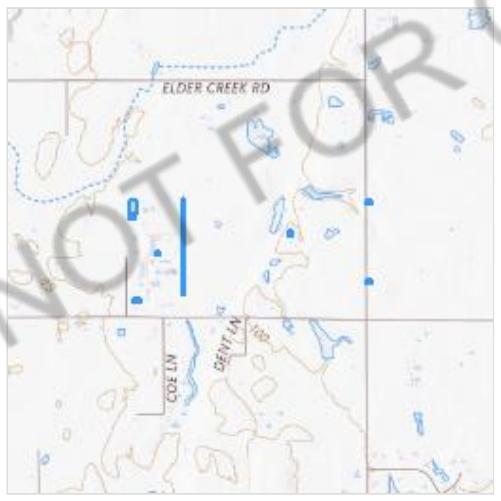
This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Location

Sacramento County, California



Local office

Sacramento Fish And Wildlife Office

(916) 414-6600
(916) 414-6713

Federal Building

2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

NOT FOR CONSULTATION

Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of influence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly affected by activities in that area (e.g., placing a dam upstream of a fish population even if that fish does not occur at the dam site, may indirectly impact the species by reducing or eliminating water flow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential effects to species, additional site-specific and project-specific information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local office and a species list which fulfills this requirement can **only** be obtained by requesting an official species list from either the Regulatory Review section in IPaC (see directions below) or from the local field office directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an official species list by doing the following:

1. Draw the project location and click CONTINUE.
2. Click DEFINE PROJECT.
3. Log in (if directed to do so).
4. Provide a name and description for your project.
5. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the fisheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

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1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

NOT FOR CONSULTATION

The following species are potentially affected by activities in this location:

Reptiles

NAME	STATUS
Northwestern Pond Turtle Actinemys marmorata Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/1111	Proposed Threatened

Amphibians

NAME	STATUS
Western Spadefoot Spea hammondii No critical habitat has been designated for this species.	Proposed Threatened

Insects

NAME	STATUS
Monarch Butterfly Danaus plexippus Wherever found There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/9743	Proposed Threatened
Valley Elderberry Longhorn Beetle Desmocerus californicus dimorphus Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/7850	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp Branchinecta conservatio Wherever found There is **final** critical habitat for this species. Your location does not overlap the critical habitat. https://ecos.fws.gov/ecp/species/8246	Endangered

NOT FOR CONSULTATION

Vernal Pool Fairy Shrimp Branchinecta lynchi — Threatened
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/498

Vernal Pool Tadpole Shrimp Lepidurus packardi — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/2246

Flowering Plants

NAME	STATUS

Sacramento Orcutt Grass Orcuttia viscida — Endangered
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/5507

Slender Orcutt Grass Orcuttia tenuis — Threatened
Wherever found
There is **final** critical habitat for this species. Your location does not overlap the critical habitat.
https://ecos.fws.gov/ecp/species/1063

NOT FOR CONSULTATION

Critical habitats

Potential effects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

You are still required to determine if your project(s) may have effects on all above listed species.

Bald & Golden Eagles

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

There are Bald Eagles and/or Golden Eagles in your project area.

Measures for Proactively Minimizing Eagle Impacts
For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the National Bald Eagle Management Guidelines. You may employ the timing and activity-specific distance recommendations in this document when designing your project/activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to Bald Eagle Nesting and Sensitivity to Human Activity.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

If disturbance or take of eagles cannot be avoided, an incidental take permit may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the Do I Need A Permit Tool. For assistance making this determination for golden eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

Ensure Your Eagle List is Accurate and Complete
If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

NOT FOR CONSULTATION

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Golden Eagle Aquila chrysaetos This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

NOT FOR CONSULTATION

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

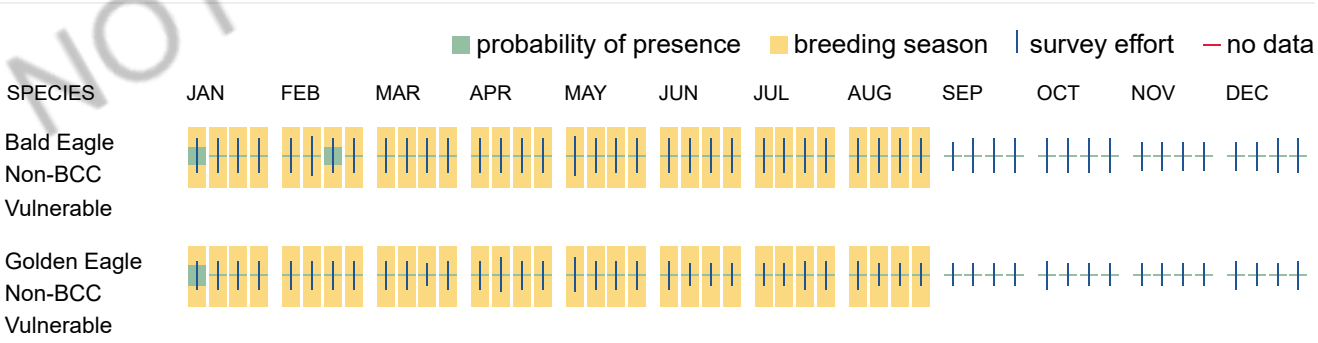
Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Bald & Golden Eagles FAQs

What does IPaC use to generate the potential presence of bald and golden eagles in my specified location?

NOT FOR CONSULTATION

The potential for eagle presence is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are an eagle (Bald and Golden Eagle Protection Act requirements may apply).

Proper interpretation and use of your eagle report

On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort line or no data line (red horizontal) means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide you in knowing when to implement avoidance and minimization measures to eliminate or reduce potential impacts from your project activities or get the appropriate permits should presence be confirmed.

How do I know if eagles are breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If an eagle on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()

Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()

NOT FOR CONSULTATION

Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Migratory birds

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

Measures for Proactively Minimizing Migratory Bird Impacts

Your IPaC Migratory Bird list showcases birds of concern, including Birds of Conservation Concern (BCC), in your project location. This is not a comprehensive list of all birds found in your project area. However, you can help proactively minimize significant impacts to all birds at your project location by implementing the measures in the Nationwide avoidance and minimization measures for birds document, and any other project-specific avoidance and minimization measures suggested at the link Measures for avoiding and minimizing impacts to birds for the birds of concern on your list below.

Ensure Your Migratory Bird List is Accurate and Complete

If your project area is in a poorly surveyed area, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory

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Birds and Eagles document, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

Review the FAQs

The FAQs below provide important additional information and resources.

NAME	BREEDING SEASON
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Jan 1 to Aug 31
Belding's Savannah Sparrow Passerculus sandwichensis beldingi This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8	Breeds Apr 1 to Aug 15
Bullock's Oriole Icterus bullockii This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA	Breeds Mar 21 to Jul 25
California Gull Larus californicus This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Mar 1 to Jul 31
Clark's Grebe Aechmophorus clarkii This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds Jun 1 to Aug 31
Common Yellowthroat Geothlypis trichas sinuosa This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/2084	Breeds May 20 to Jul 31

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Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31

This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lawrence's Goldfinch Spinus lawrencei — Breeds Mar 20 to Sep 20

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9464

Northern Harrier Circus hudsonius — Breeds Apr 1 to Sep 15

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/8350

Nuttall's Woodpecker Dryobates nuttallii — Breeds Apr 1 to Jul 20

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9410

Oak Titmouse Baeolophus inornatus — Breeds Mar 15 to Jul 15

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9656

Santa Barbara Song Sparrow Melospiza melodia graminea — Breeds Mar 1 to Sep 5

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/5513

Tricolored Blackbird Agelaius tricolor — Breeds Mar 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/3910

Western Screech-owl Megascops kennicottii cardonensis — Breeds Mar 1 to Jun 30

This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA

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Wrentit Chamaea fasciata — Breeds Mar 15 to Aug 10

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Yellow-billed Magpie Pica nuttalli — Breeds Apr 1 to Jul 31

This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9726

Probability of Presence Summary

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (■)

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Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

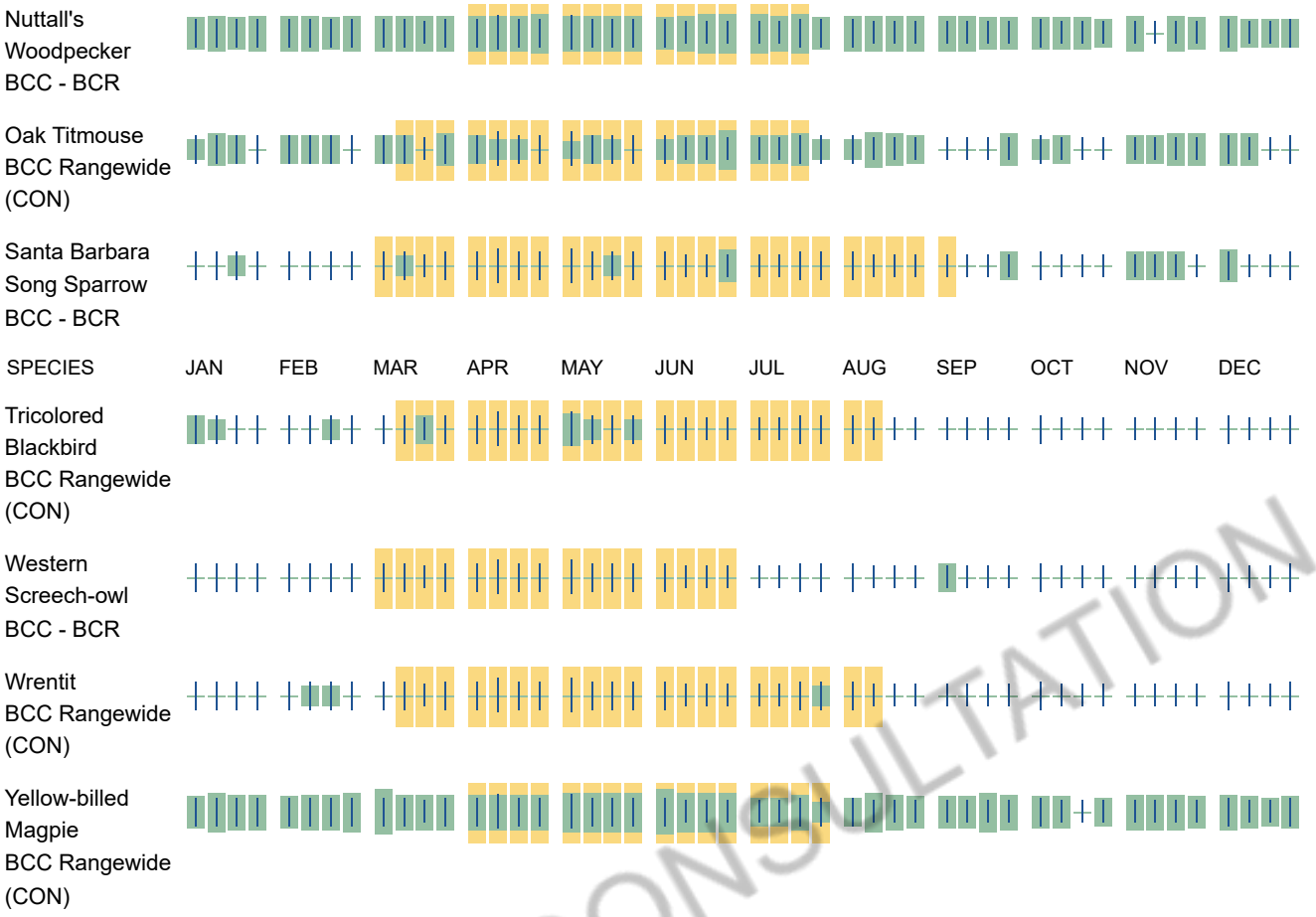
To see a bar's survey effort range, simply hover your mouse cursor over the bar.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



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Migratory Bird FAQs

Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Avoidance & Minimization Measures for Birds describes measures that can help avoid and minimize impacts to all birds at any location year-round. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is one of the most effective ways to minimize impacts. To see when birds are most likely to occur and breed in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?

The Migratory Bird Resource List is comprised of Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location, such as those listed under the Endangered Species Act or the Bald and Golden Eagle Protection Act and those species marked as “Vulnerable”. See the FAQ “What are the levels of concern for migratory birds?” for more information on the levels of concern covered in the IPaC migratory bird species list.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) with which your

project intersects. These species have been identified as warranting special attention because they are BCC species in that area, an eagle (Bald and Golden Eagle Protection Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, and to verify survey effort when no results present, please visit the Rapid Avian Information Locator (RAIL) Tool.

Why are subspecies showing up on my list?

Subspecies profiles are included on the list of species present in your project area because observations in the AKN for **the species** are being detected. If the species are present, that means that the subspecies may also be present. If a subspecies shows up on your list, you may need to rely on other resources to determine if that subspecies may be present (e.g. your local FWS field office, state surveys, your own surveys).

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go to the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering, or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating, or resident), you may query your location using the RAIL Tool and view the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your IPaC migratory bird species list has a breeding season associated with it (indicated by yellow vertical bars on the phenology graph in your “IPaC PROBABILITY OF PRESENCE SUMMARY” at the top of your results list), there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Bald and Golden Eagle Protection Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

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Although it is important to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially BCC species. For more information on avoidance and minimization measures you can implement to help avoid and minimize migratory bird impacts, please see the FAQ “Tell me more about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds”.

Details about birds that are potentially affected by offshore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Proper interpretation and use of your migratory bird report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please look carefully at the survey effort (indicated by the black vertical line) and for the existence of the "no data" indicator (a red horizontal line). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list does not represent all birds present in your project area. It is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list and associated information help you know what to look for to confirm presence and helps guide implementation of avoidance and minimization measures to eliminate or reduce potential impacts from your project activities, should presence be confirmed. To learn more about avoidance and minimization measures, visit the FAQ "Tell me about avoidance and minimization measures I can implement to avoid or minimize impacts to migratory birds".

Interpreting the Probability of Presence Graphs

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. A taller bar indicates a higher probability of species presence. The survey effort can be used to establish a level of confidence in the presence score.

How is the probability of presence score calculated? The calculation is done in three steps:

The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.

To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.

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The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season ()
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort ()
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data ()
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

Facilities

National Wildlife Refuge lands

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

There are no refuge lands at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

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For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

This location overlaps the following wetlands:

FRESHWATER EMERGENT WETLAND
PEM1A

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuberficid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in

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activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

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