Addendum
to the
Initial Study/Mitigated Negative Declaration
for
Soil Investigations for Data Collection in the Delta
June 2022

California Department of Water Resources

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Sacramento, CA 95814

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ADDENDUM
TO THE INITIAL STUDY/MITIGATED NEGATIVE DECLARATION FOR SOIL INVESTIGATIONS FOR DATA COLLECTION IN THE DELTA

PROJECT NAME:	Soil Investigations for Data Collection in the Delta	SCH #: 2019119073 Prev. Cert.: IS/MND
LEAD AGENCY:	California Department of Water Resources 715 P Street Sacramento, California 95814	
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PROJECT DESCRIPTION:	The primary objective of the project is to determine the composition, location, and soil properties of soil materials commonly found in the Delta which would inform the design, environmental analysis, and development of alternatives for a potential Delta conveyance project and contribute to DWR's overall understanding of Delta geology.	
ADDENDUM:	DWR is considering a project modification that would remove 30 soil investigation sites identified in the 2020 Final IS/MND and 2021 Addendum to the IS/MND and replace them with 30 new soil investigation sites in locations in and around the general study area of the Approved Project.	
LOCATION:	Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties	

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1.0 Introduction

The Department of Water Resources (DWR), as the Lead Agency under the California Environmental Quality Act (CEQA), for the Soil Investigations for Data Collection in the Delta Project adopted a Final Initial Study and Mitigated Negative Declaration (IS/MND) and filed a Notice of Determination (NOD) documenting project approval on July 9, 2020 (SCH. 2019119073; Attachment A and Attachment B, respectively).

A mitigation monitoring and reporting program (MMRP) was adopted for the Approved Project in July 2020 (Attachment C) as part of the project approval. Environmental impacts listed in the 2020 Final IS/MND were less than significant or had no effect on the environment with the exception of effects under biological resources, cultural resources, greenhouse gases, wildfire, hazards and hazardous materials, tribal resources, and mandatory findings of significance, which were clearly brought to less than significant with best management practices (BMPs), avoidance, and mitigation measures which were made conditions of the July 2020 project approval.

An Addendum to the IS/MND was prepared February 19, 2021 (2021 Addendum), based upon engineering considerations of alternative alignments for the proposed Delta Conveyance Project, that indicated modifications to soil information needs for preliminary design and to support environmental review. The modifications addressed in the 2021 Addendum included the removal of 60 soil investigation sites identified in the 2020 Final IS/MND and the replacement with 60 new soil investigation sites in locations that are in and around the general study area of the Approved Project but were not previously evaluated in the 2020 Final IS/MND. The 2021 Addendum was adopted, and an NOD filed February 19, 2021 (Attachment D and E respectively).

This 2022 Addendum to the 2020 CEQA IS/MND proposes replacing, moving, and/or deepening 30 previously approved boreholes or CPTs and analyzes the environmental impacts associated with the 30 relocated and/or deepened boreholes and CPTs. This addendum analyzes the potential impacts related to these Proposed Modifications – and discusses two additional modification types not previously analyzed - to add water quality sampling at 8 previously approved CPT locations, and a proposed 700-ft. angled borehole near Bethany Reservoir.

In addition to the records review already performed in consideration of the proposed project modifications and described in the Environmental Analysis (Section 2) of this 2022 Addendum, the Proposed Modification locations would be thoroughly surveyed by qualified scientific personnel to further evaluate the potential impacts to environmental resources prior to any soil investigation activities, as described in the 2020 Final IS/MND and consistent with the measures previously adopted for the July 2020 project approval (Attachment A, pp. 5-25). Just as with the project approved in July 2020, if sensitive resources are encountered during site clearance surveys, DWR would modify or move their work to either avoid the resources entirely or otherwise ensure less-than-significant impacts would occur (2020 Final IS/MND, pp. 5–7), or mitigate as described in the 2020 Final IS/MND (see MMRP: Attachment C), to ensure any potential environmental impacts clearly remain less than significant. In addition to avoiding impacts through specific siting of the soil investigation locations, and consistent with

measures in the adopted MMRP for the July 2020 project approval, an environmental monitor would survey the proposed modified sites immediately prior to soil investigation equipment entering the area and would be present for all soil investigation field activities (see MM BIO-2(g), MM BIO-6(c), MM BIO-13(b)(ii), MM BIO-18(c), MM GHG-1(b), MM HYD-1(f); 2020 MMRP, pp. 16, 20, 31, 41, 48, and 63).

1.1 Addendum Purpose

The purpose of the 2020 Soil Investigation for Data Collection in the Delta Project and 2021 Addendum, or "Approved Project", is to determine the composition, location, and geotechnical properties of soil materials commonly found in the Delta which would inform the design, environmental analysis, and development of alternatives for a potential Delta conveyance project and contribute to DWR's overall understanding of Delta geology. As stakeholder engagement and conceptual design for the proposed Delta Conveyance Project (DCP) has progressed, the associated data gaps and information needs have shifted from what was originally understood when the Approved Project was analyzed.

Based on current engineering considerations of alternative alignments for the proposed DCP, modifications to originally proposed soil investigation locations are needed to:

1. More fully investigate the feasibility of design and constructability of the proposed shafts,
2. Better understand subsurface conditions and ground improvement requirements in areas with proposed facilities,
3. Investigate cut off layers and liquefaction potential in proposed construction areas,
4. Fill in data gaps along the proposed Eastern and Bethany alignments,
5. Investigate and optimize proposed conveyance alternatives, alignments, and construction methods,
6. Better assess rock conditions and soil cover within proposed construction areas, and
7. Classify gas conditions in areas with proposed tunnel/shafts.

The Proposed Modifications include moving and/or extending the depth of multiple borings, or CPTs, from previously evaluated soil investigation sites to sites that are in and around the general study area of the Approved Project but that were not specifically evaluated in the 2020 Final IS/MND (Attachment A, Figures 2,2a-c) and/or 2021 Addendum (Attachment D, Figures 1, 1a-c). In addition, water quality sampling via CPT is proposed for up to 8 CPT locations previously identified in the Approved Project (Attachment A).

CEQA sets forth that once a CEQA document has been completed and project is approved, no additional CEQA is required unless additional discretionary decisions are required from a public agency and new information, changes in the project, or changes in circumstances require the agency to assess whether an additional CEQA analysis is

required. CEQA Guidelines sections 15162 and 15164 set forth criteria to assess which environmental document is appropriate; an Addendum, a Subsequent environmental impact report (EIR), or a MND (see also Public Resources Code section 21166). Further guidance is provided in case law. (*Friends of College of San Mateo Gardens v. San Mateo County Community College Dist.* (2016) 1 Cal.5th 937 (*Friends I*); and *Friends of College of San Mateo Gardens v. San Mateo County Community College Dist.* (2017) 11 Cal.App.5th 596 (*Friends II*).)

Environmental Analysis of the Proposed Modifications from the Approved Project is included in Section 2 of this 2022 Addendum. The 2022 environmental analysis of the proposed project modifications is used to support the determination made with respect to CEQA Guidelines sections 15162 and 15164 in Section 2 of this 2022 Addendum. Based upon the information presented in Section 2, which makes explicit determinations on criteria present in the CEQA Guidelines and associated case law, no conditions triggering a subsequent MND or EIR are present. As such, an addendum is appropriate. This Addendum has been prepared to address the environmental impacts of the Proposed Modifications made to the Approved Project, outlined in the 2020 Final IS/MND and 2021 Addendum.

1.2 Detailed Description of Proposed Modifications

The Approved Project as described in the 2020 Final IS/MND and 2021 Addendum consisted of both on-land and overwater soil investigations as well as several on-land geophysical surveys, including the following activities at specified locations:

- 165 soil borings from 50 feet to 200 feet (15 to 61 meters) below ground surface (158 of these from 125 to 200 feet)
- 2 soil borings up to 250 feet (61 meters) and 300 feet (91 meters) deep, respectively
- 103 cone penetration tests (CPTs) from approximately 50 feet to 200 feet (15 to 61 meters) below ground surface (101 of these from approximately 200 feet); and
- Up to 5 noninvasive geophysical survey investigation arrays on Bouldin Island.
- 56 overwater soil borings up to 200 feet (61 meters) below the slough or river bottom (measured at the mudline)

This 2022 Addendum evaluates what are referred to here as the" Proposed Modifications", which include:

The removal of:

- 17 soil borings up to 200 feet (61 meters)
- 10 cone penetration tests (CPT) up to 200 feet (61 meters) below ground surface

- 3 overwater soil borings up to 200 feet (61 meters) below the slough or river bottom (measured at the mudline)

The addition of:

- 9 soil borings up to 300 feet (92 meters):
    - 6 soil borings to move locations and increase the investigation depth to 300 feet (92 meters), from the previously approved 200 feet (61 meters)
    - 2 soil borings to increase the investigation depth to 300 feet (92 meters), from the previously approved 200 feet (61 meters), retaining their Approved Project location and identification numbers
    - 1 soil boring to re-locate within the parcel and retain its Approved Project identification number, but the investigation depth will extend to 300 feet (92 meters), from the previously approved 200 feet (61 meters)
- 7 soil borings at 200 feet (61 meters)
    - move from previously approved locations, but the depth will remain unchanged.
- 1 deep angled soil boring up to 700 feet (214 meters)
    - replace a 200-foot boring with an angled boring that will stage near a previously approved soil boring near Bethany Reservoir and will extend up to 700 feet sub-surface. (See Details in Section 1.2.2)
- 2 cone penetration tests (CPT) up to 300 feet (61 meters)
    - extend the depth to 300 feet (61 meters), from the previously approved 200 feet (61 meters), retaining previously Approved Project location and identification number.
- Ground water sampling at 8 cone penetration test (CPT) sites
    - 8 previously approved CPT sites will also employ an additional CPT groundwater sampling test. This would require an additional CPT push immediately adjacent to the previously approved CPT locations. (See Details in Section 1.2.1 below)
- 3 overwater soil borings up to 200 feet (61 meters) below the slough or river bottom (measured at the mudline)
    - move 3 previously approved sites within the same waterway. The depth will remain unchanged per previous Project approval

The Proposed Modifications would not result in a net increase in the number of soil investigations as compared to the Approved Project. The 30 soil investigation sites proposed to replace the 30 removed soil investigation sites are in various locations across Alameda, Sacramento, and San Joaquin Counties, and are within the general study area of the previously Approved Project and in accordance with methods described in Section 2.0 of the 2020 Final IS/MND (Attachment A, pp. 5-25) and 2021 Addendum (Attachment D, pp. 4-6). Refer to Table 1 (below) for a summary of modifications per county and Figures 1 and 1a-1c for maps showing the locations of the removed and replacement investigation sites.

Table 1: Proposed Modifications Per County.

County	Proposed Removal	Proposed Replacement	Net Change per County
Alameda	0	7	+7
Contra Costa	0	0	0
Sacramento	0	4	+4
San Joaquin	9	19	+10
Solano	0	0	0
Yolo	21	0	-21

Soil samples would be collected from borings using all the methods described in Section 2.1 through 2.2.1 of the 2020 Final IS/MND (Attachment A, pp. 12-25) and Section 3 of the 2021 Addendum (Attachment, pp. 3-5), with the addition of groundwater sampling at 8 previously approved CPT sites. As described in the 2021 Addendum (p. 5) limited downhole testing may occur in some of the deeper borings. An example is the Packer test (2021 Addendum, p. 5) that may be implemented if rock is encountered. This Packer test is likely to be implemented for the proposed 700 ft. angled borehole near Bethany Reservoir.

The duration of individual soil investigation activities for borings and CPTs remain as described in Sections 2.1.1 and 2.1.3 of the 2020 Final IS/MND (Attachment A, pp. 14 and 16) and 2021 Addendum (Attachment D, pp. 4-6). As such, the 300-foot borings would take up to 20 days as indicated in the 2021 Addendum and the 300-foot CPTs will be able to be executed in up to 4 days, which is the timeframe that was evaluated in the 2020 IS/MND for the 200-foot CPTs. However, the 700 ft angled boring is expected to require up to 35 days due to the depth, anticipated presence of rock and additional downhole testing (packer test) previously described in the 2021 Addendum (Attachment D, p. 5). More information on this angled borehole, and previously described downhole testing is provided in Section 1.2.2 below.

Other than the Proposed Modifications described above, all other components of the Approved Project remain as described in Section 2 of the 2020 Final IS/MND and Section 3 of the 2021 Addendum, including containment of all cuttings, excess drilling fluid, and water returned from the packer test (Attachment D, p.5, and Section 1.2.2 below) to be disposed of offsite at an appropriate landfill.

1.2.1 Water Quality Sampling via CPT

Water quality sampling via CPT is proposed for up to 8 CPT locations, previously identified in the Approved Project (Attachment A). This sampling technique would require an additional CPT push immediately adjacent to a soil CPT push. A sampler attachment is placed on the end of the cone (CPT) rods and pushed to the target depth. This attachment has a screen zone that allows water to enter an area where a stainless-steel bailer is inserted in the cone rods to retrieve the groundwater sample to test for gas and volatiles. This technique of a coupled soil push and water quality sampling CPT push would take the same amount of time as an average CPT, which was estimated at 4 days (IS/MND p. 16) but has been taking less time. Except for the sampler attachment, a CPT push for water quality sampling would be performed with all the same equipment and techniques as described in the Approved Project (Attachment A).

As described in the Project Description of the 2020 Final IS/MND, to conduct a CPT, a cone-tipped rod with a diameter of 1 to 2 inches (25 to 51 millimeters) is pushed through the ground. The temporary Impact Area is described as the work area plus the staging area (vehicle parking, drum storage, etc.) and is limited to approximately 0.05 to 0.22 acres per site. To conduct water quality sampling via CPT, a separate CPT push immediately adjacent to a soil investigation CPT push would be required. The additional CPT push would not require any modifications to the total size of the Impact Area per site. The Approved Project was evaluated conservatively with a maximum of 4 days per CPT. However, in practice, typical CPTs for the Approved Project have taken approximately one day. The addition of conducting water quality sampling via a second CPT push would not result in any modification to the maximum number of days for an individual CPT or an increase in the Impact Area as described in the Approved Project.

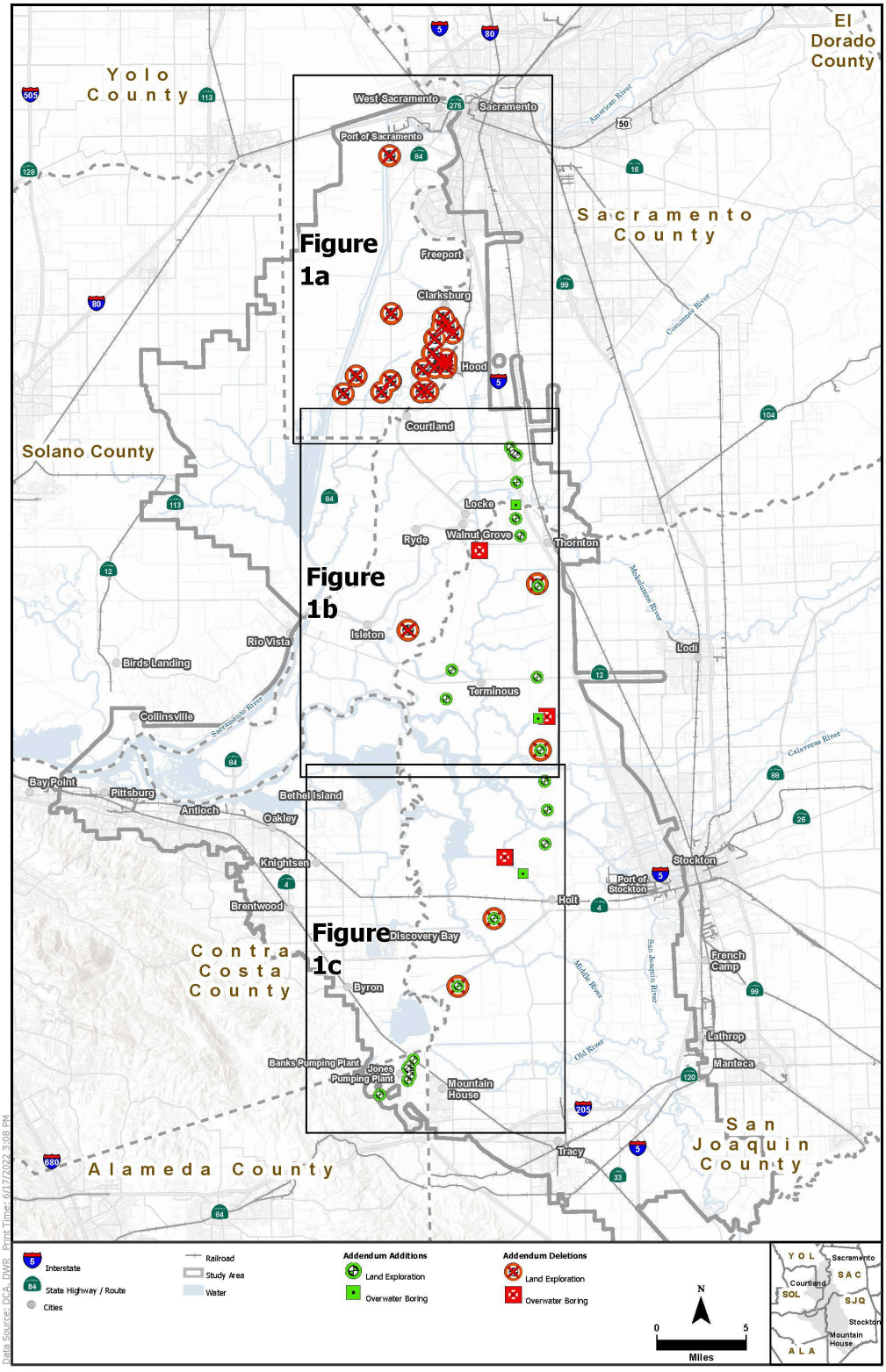
CPTs do not include drilling, and water quality sampling via CPT is not at all equivalent to drilling water wells. However, as noted in Master Response 6 of the July 2020 Final IS/MND (Attachment A, Master Response to Comments p. 6), the County of Sacramento claimed, and followed up in a suit against DWR, that DWR must obtain a County permit and follow County water well ordinance requirements when conducting its soil investigation drilling. DWR argued, and both the San Joaquin Superior Court and Third District Court of Appeals agreed, that the State Water Code grants DWR sovereign immunity to conduct this work. Any expansion of a County water well ordinance to attempt to regulate these activities does not expand the scope of the limited waiver of sovereign immunity that is set forth in State Water Code, Section 13801, subdivision (c) (requiring the state to comply with local water well standards only). Therefore, DWR has not triggered the limited waiver and has no legal requirement to comply with local water well standards for soil drilling, or other soil investigation activities associated with the Approved Project or the Proposed Modifications. However, it is DWR's intention for the soil investigation work, to be consistent with the substantive provisions of the County requirements where feasible.

1.2.2 Deep Angled Borehole

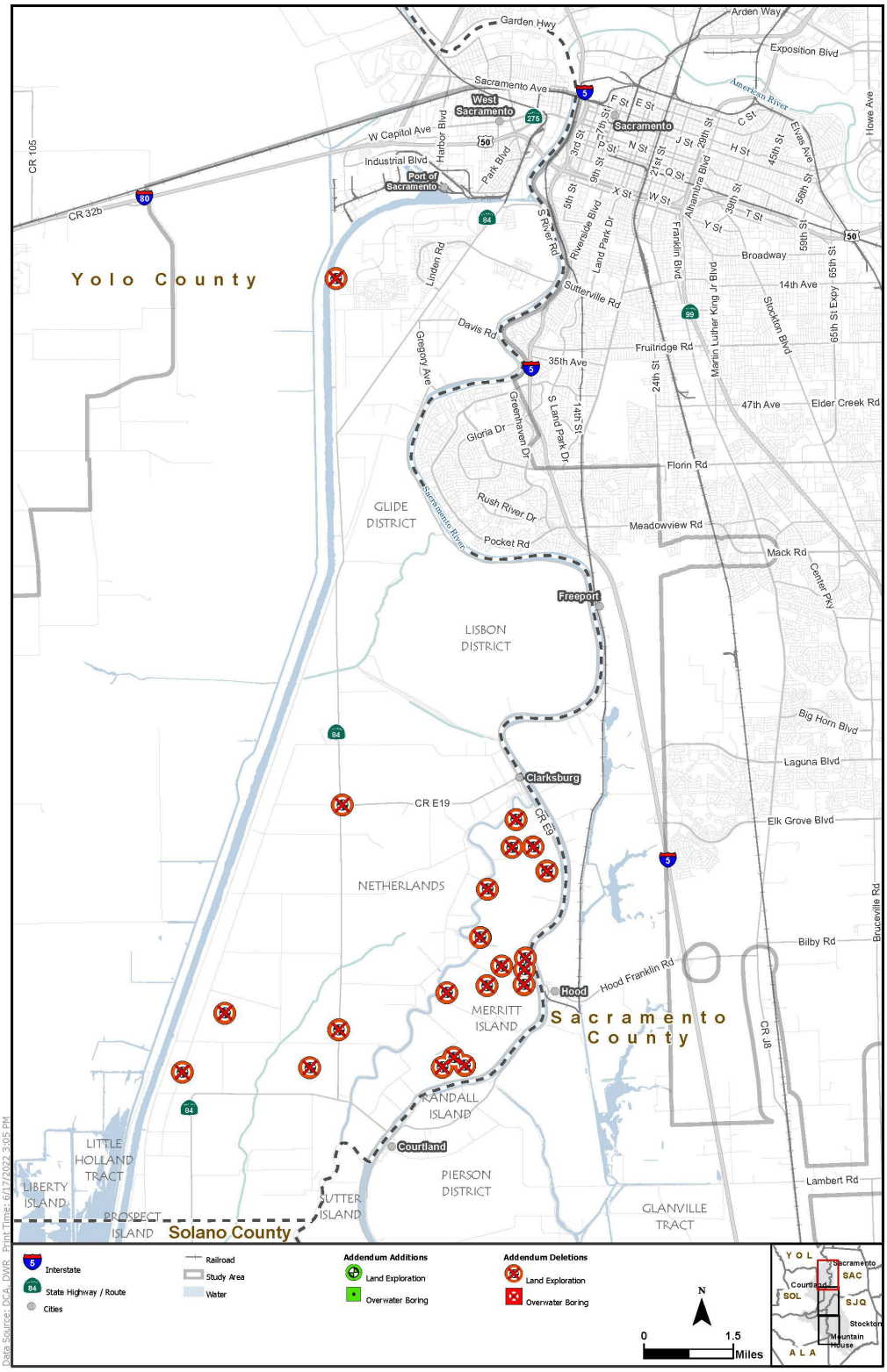
As mentioned under Section 1.2, above, the Proposed Modifications include a 700 ft. angled borehole near Bethany Reservoir. A deeper, angled borehole is proposed to investigate the soils on a portion of DWR property that has a surface conservation easement related to mitigation for a previous project. The conservation easement generally restricts surface and subsurface activities that are inconsistent with the purposes of the conservation easement. Therefore, a deeper angled borehole would avoid conflicts with the easement and avoid any possibility of significant impacts to the species habitat covered by the conservation easement.

Investigations in this borehole would employ the same equipment evaluated in the 2020 IS/MND Section 2.1 (pp. 12-14) including the use of a rock coring sampler (2021 Addendum p. 4), and the same in-situ hydraulic testing previously described in the 2021 Addendum (Packer test, p 5). Rock coring collects bedrock cores for engineering and geological data so that DWR may better understand, from an engineering standpoint, the geological nature of the rock formation to properly assess the potential for a water conveyance alignment which proposes tunneling under a neighboring conservation easement. This angled borehole would eliminate potential surface impacts and shallow sub-surface impacts to this neighboring parcel. This boring is proposed to be drilled near a previously investigated borehole. While rock coring samplers utilize a different downhole sample tool, the collection of that sample would not be significantly different than sampling methods described in section 2.1.1 of the 2020 Final IS/MND (pp. 13-14). This boring will proceed at an angle that is +/- 71 degrees from vertical, entering the sub-surface parcel boundary at +/- 80 ft. below the ground surface.

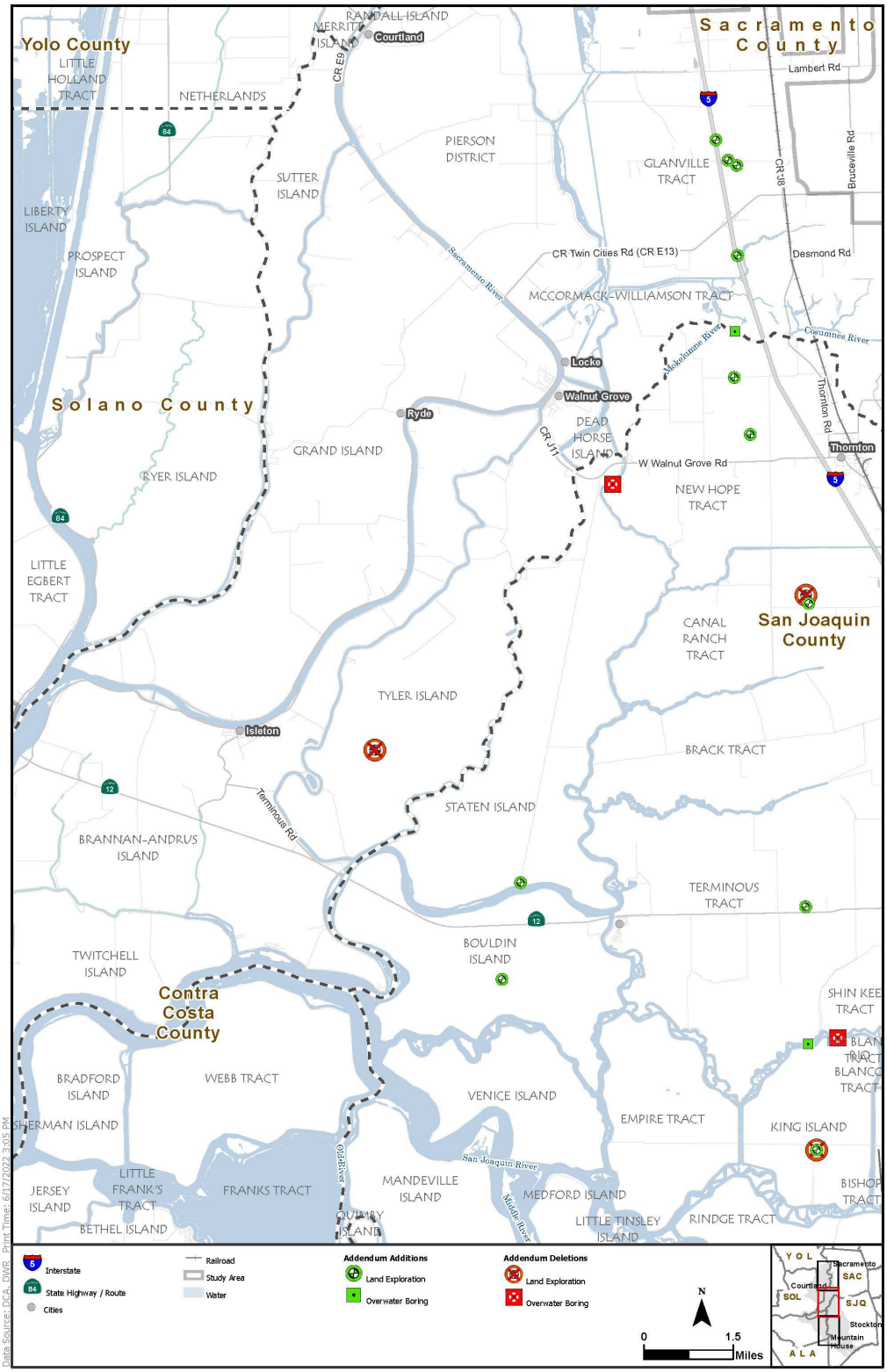
Though the increased depth will lead to additional time (up to 35 days) on site, increased emissions, and additional cuttings for disposal, the determinations made in the Approved Project will not change, per the evaluations in Section 2.0 of this 2022 Addendum.



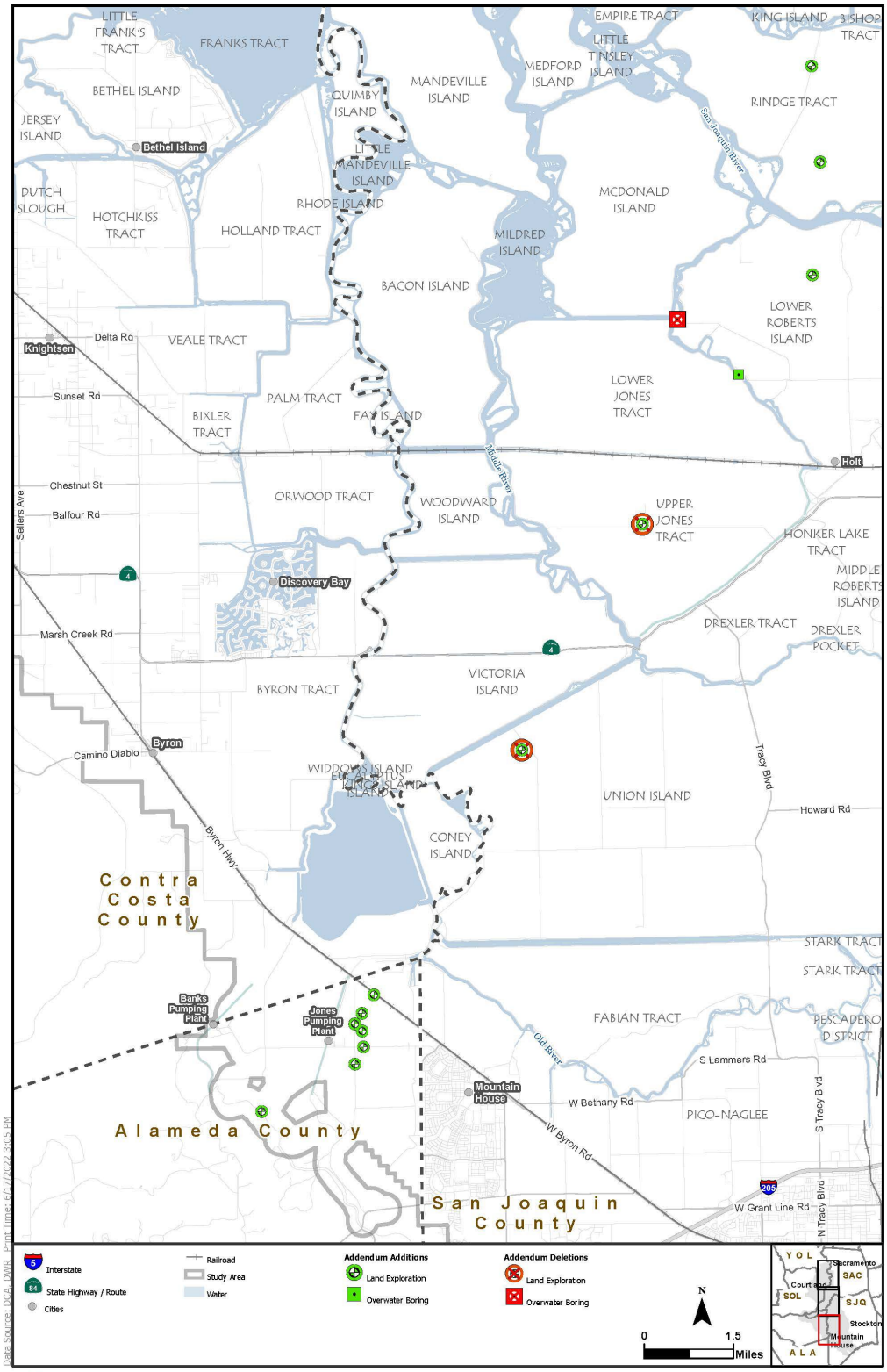
Soil Investigations in the Delta
2022 Addendum
Figure 1



Soil Investigations in the Delta
2022 Addendum
Figure 1a



Soil Investigations in the Delta
2022 Addendum
Figure 1b



Soil Investigations in the Delta
2022 Addendum
Figure 1c

2.0 Environmental Analysis

The following section evaluates the potential for impacts to environmental resources as they relate to the Proposed Modifications described in Section 1.2 and for which an Environmental Determination is made in Section 3 of this Addendum.

2.1 Aesthetics

Would the project have a substantial adverse effect on a scenic vista?

Consistent with the analysis in the 2020 Final IS/MND (p. 27) and the 2021 Addendum (p. 10), the Proposed Modifications are not expected to have a substantial adverse effect to any scenic vistas within the region due to the temporary nature of the work, and lack of permanent structures associated with the project. The footprint of each individual Impact Area will be small, short in duration, and will be returned to pre-project conditions following the active work. Implementation of Mitigation Measure AES-1 (2020 MMRP, pp. 2) would further avoid, minimize and/or reduce potential impacts.

Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

As with the Impact Areas evaluated in the 2020 Final IS/MND (pp. 6-7, 27-28) and the 2021 Addendum (pp. 10), the Proposed Modifications would avoid all historical structures, trees, and rock outcroppings and would not substantially damage scenic resources during project activities. Implementation of Mitigation Measure AES-1 (2020 MMRP, p. 2) would further avoid, minimize and/or reduce potential impacts.

Would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings?

The Proposed Modifications would not substantially degrade the existing visual character or quality of the area, scenic resources, or its surroundings. Each Impact Area associated with the Proposed Modifications has a small project footprint, is of a short duration, and is temporary by nature, with no associated permanent structures Proposed Modifications. Therefore, there would be no substantial adverse effect on scenic vistas, public views, or existing visual character of the Study Area.

Consistent with the analysis in the 2020 Final IS/MND (pp. 27-28) and the 2021 Addendum to the IS/MND (pp. 10-11), there would be a less than significant impact on scenic resources and visual character, and implementation of Mitigation Measure AES-1 (2020 MMRP, p. 2) would further avoid, minimize and/or reduce potential impacts.

Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

The equipment used for the Project does not have substantial reflective properties and there would be no nighttime work associated with the Proposed Modifications, and as such there is no substantial effect on day or nighttime views in the area (2020 Final IS/MND, p. 28). Consistent with the analysis in the 2020 Final IS/MND

(p. 28) and the 2021 Addendum (p. 11), there would be no impact on permanent day or nighttime views in the area, and implementation of Mitigation Measures AES-1 and AES-2 (2020 MMRP, pp. 2-3) would further avoid, minimize and/or reduce the potential for any glare-related impacts.

Conclusion

The conclusion regarding a less than significant impact on Aesthetics from the 2020 Final IS/MND (pp. 26-28) and the 2021 Addendum (p. 11) remains unchanged, as the Proposed Modifications do not result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Aesthetics that could result in any new potentially significant impacts.

2.2 Agricultural & Forestry

Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

The Proposed Modifications would not convert prime farmland, unique farmland, or farmland of Statewide importance. On-land Impact Areas associated with the Proposed Modifications are primarily located on agricultural access roads, public roads, and road right of ways, and Impact Areas that are located within agricultural fields would be temporary and would not require a conversion of land use. Consistent with the analysis in the 2020 Final IS/MND (pp. 31-32) and the 2021 Addendum (p. 11), there would be no impact to Prime Farmland, Unique Farmland, or Farmland of Statewide Importance, and implementation of Mitigation Measure *AGR-1* (2020 MMRP, p. 3) would further ensure no impacts to agricultural resources.

Would the project conflict with existing zoning for agricultural use or a Williamson Act contract?

As with the activities outlined for the Approved Project in the 2020 Final IS/MND, Impact Areas associated with the Proposed Modifications would not affect existing zoning for agricultural use or a Williamson Act contract. Consistent with the analysis in the 2020 Final IS/MND (p. 32) and the 2021 Addendum (p. 12), there would be no impact on existing zoning for agricultural use or a Williamson Act contract, and implementation of Mitigation Measure AGR-1 (2020 Final IS/MND p. 32; 2020 MMRP, p. 3) would further avoid, minimize and/or reduce the potential for impacts.

Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

The Proposed Modifications would not conflict with existing zoning or cause rezoning to take place as part of the project activities. Consistent with the analysis in the 2020 Final IS/MND (p. 32) and the 2021 Addendum (p. 12), there would be no impact to existing zoning for forest land, timberland or timberland zoned Timberland Production, and implementation of Mitigation Measure AGR-1 (2020 MMRP, p. 3) would further avoid, minimize and/or reduce the potential for impacts.

Would the project result in the loss of forest land or conversion of forest land to non-forest use?

The Proposed Modifications would not result in the loss of forest land or conversion to non-forest use as the project activities do not consist of removal of trees or conversion of any forest land, and the Impact Areas are not located within forest land and are primarily located on agricultural access roads, public roads, and road right of ways. Consistent with the analysis in the 2020 Final IS/MND (p. 32) and the 2021 Addendum (p. 12), there would be no loss or conversion of forest land, thus no impact, and implementation of Mitigation Measure AES-1 (2020 MMRP, p. 2) and AGR-1 (2020 MMRP, p. 3) would further avoid, minimize and/or reduce the potential for impacts.

Would the project 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 Proposed Modifications would not result in loss or conversion of Farmland to non-agricultural use, or loss or conversion of forest land to non-forest uses, as the Proposed Modifications do not consist of land conversion or loss. Consistent with the analysis in the 2020 Final IS/MND (pp. 32-33) and the 2021 Addendum (p. 12), there would be no impact to farmland or forest land conversion, and implementation of Mitigation Measure AGR-1 (2020 MMRP p. 3) would further avoid, minimize and/or reduce the potential for impacts.

Conclusion

The conclusion regarding no impact on Agricultural and Forestry Resources from the 2020 Final IS/MND (pp. 29-33) and the 2021 Addendum (pp. 11-13) remains unchanged, as the Proposed Modifications do not result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Agricultural and Forestry Resources that could result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impact.

2.3 Air Quality

Would the project conflict with or obstruct implementation of the applicable air quality plan?

The Proposed Modifications do not involve land development, nor would they induce growth. Consistent with the No Impact analysis in the 2020 Final IS/MND (p. 40) and 2021 Addendum (p. 13), the Proposed Modifications do not conflict with or obstruct implementation of the air quality plans for the applicable Air Districts, therefore there would be no impact.

Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

As described with the activities outlined for the Approved Project in the 2020 IS/MND (p. 40) and 2021 Addendum (p. 13), the Proposed Modifications are activities that would be temporary in nature and would not include permanent facilities or structures that would generate air pollutant emissions.

While the total number of soil investigation sites has not increased with the Proposed Modifications, sites have been moved between and within counties, depths of some of the soil investigation sites have increased, and therefore the number of workdays.

Total emissions within the Bay Area Air Quality Management District (BAAQMD), which includes Contra Costa and Alameda Counties, would increase due to the net increase of seven sites, including the 700 ft. angled borehole. Total emissions within the Sacramento Metropolitan Air Quality Management District (SMAQMD) would increase due to the net increase of three sites. Total emissions within the San Joaquin Valley Air Pollution Control District (SJVAPCD) would increase, due to the net increase of 11 sites. Total emissions within the Yolo Solano Air Quality Management District (YSAQMD), which includes Solano and Yolo Counties, would decrease due to a net decrease of 21 sites (Table 2). Consequently, total emissions within the associated Air Quality Management Districts have changed (Table 3).

Table 2: Proposed Modifications Per Air Quality Management District.

AQ Management District	Proposed Removal	Proposed Replacement	Net Change per District
BAAQMD	**0**	**7**	**+7**
SMAQMD	**1**	**4**	**+3**
SJVAPCD	**8**	**19**	**+11**
YSAQMD	**21**	**0**	**-21**

Air quality calculations were updated using methods and assumptions recommended by the Air Districts (2020 Final IS/MND, p. 39) to address the changes to each Air District (Table 2) and it was determined that the Project with the Proposed Modifications would not exceed the established significance thresholds (Table 3) for pollutants including reactive organic gases, nitrogen oxides, PM_{10} and $PM_{2.5}$ for the Air Quality Management Districts in which there are additional investigation sites.

Table 3: Updated Total Exhaust Emissions (Pounds per Day) per Air District

Location	Pollutant	BAAQMD Exhaust Emissions	BAAQMD Significance Threshold	SMAQMD Exhaust Emissions	SMAQMD Significance Threshold	SJVAPCD Exhaust Emissions	SJVAPCD Significance Threshold	YSAQMD Exhaust Emissions	YSAQMD Significance Threshold
On-land	ROG	3.2	54	2.4		4.7 (0.002 ton)	10 tons/yr.	2.0 (0.001 ton)	10 tons/yr.
On-land	NOX	26.8	54	17.4	85	26.1 (0.013 ton)	10 tons/yr.	5.5 (0.003 ton)	10 tons/yr.
On-land	PM10	0.9	82	0.5	80	1.1 (0.0005 ton)	15 tons/yr.	0.2	80
On-land	PM2.5	0.9	54	0.5	82	1.0 (0.0005 ton)	15 tons/yr.	0.2	80
Overwater	ROG	1.8	54	5.6		6.4 (0.003 ton)	10 tons/yr.	0.5 (0.0003 ton)	10 tons/yr.
Overwater	NOX	18	54	56.5	85	64.2 (0.032 ton)	10 tons/yr.	5.1 (0.003 ton)	10 tons/yr.
Overwater	PM10	0.6	82	2	80	2.2 (0.001 ton)	15 tons/yr.	0.2	80
Overwater	PM2.5	0.6	54	1.9	82	2.2 (0.001 ton)	15 tons/yr.	0.2	80
Combined	ROG	5.0	54	8.0		11.1 (0.006 ton)	10 tons/yr.	2.5 (0.001 ton)	10 tons/yr.
Combined	NOX	44.8	54	73.8	85	90.3 (0.045 ton)	10 tons/yr.	10.6 (0.005 ton)	10 tons/yr.
Combined	PM10	1.5	82	2.5	80	3.3 (0.002 ton)	15 tons/yr.	0.4	80
Combined	PM2.5	1.5	54	2.4	82	3.2 (0.002 ton)	15 tons/yr.	0.4	80

* SMAQMD particulate matter (PM10 and PM2.5) thresholds are zero, unless best management practices (BMPs) are included as project conditions of approval or mitigation measures. Since BMPs have been included, the non-zero thresholds can be used.

Consistent with the Less Than Significant Impact determination in the 2020 Final IS/MND (p. 43) and 2021 Addendum (pp. 13-14), because the Proposed Modifications would be short-term in duration and equipment emissions are below the established significance thresholds for criteria pollutants, the Project with the Proposed Modifications would not result in a cumulatively considerable net increase of any criteria pollutant for which the Proposed Project region is non-attainment under an applicable federal or state ambient air quality standard. Therefore, the impact would remain less than significant.

Would the Project expose sensitive receptors to substantial pollutant concentrations?

The Impact Areas associated with the Proposed Modifications are not directly adjacent to sensitive receptors such as schools or housing developments. One proposed soil boring investigation site is approximately 1200 feet from Mountain House Elementary School. The BAAQMD recommends that a lead agency identify all Toxic Air Contaminants (TACs) and Particulate Matter 2.5 (fine particulate matter with an aerodynamic resistance diameter of 10 micrometers or less) sources located within a 1,000-foot radius of the proposed project site, taking into consideration additional large sources of risk or hazard emissions that may affect the sensitive receptor beyond the proposed project. (BAAQMD, Section 5.2.5, p. 5-8) The Elementary school is adjacent to Mountain House Road, as is the Proposed Soil Investigation location. This major roadway is a daily source of TACs. Additionally, the vehicular traffic on school grounds is a routine source of TACs during a typical school year. The Proposed Soil Investigation site is temporary in nature, is outside of the recommended 1000 ft. radius, would not exceed 20 working days, and would emit far less in TACs than routine sources of pollutants. Overall, soil investigation activities at each site are short-term in duration and have estimated emissions calculated to be below the threshold of significance established by the Air Districts (Table 3 (above)). Consistent with the Less than Significant determination in the 2020 Final IS/MND (p. 43) and the 2021 Addendum (p. 16), there would continue to be a less than significant impact on sensitive receptors by the Proposed Modifications. *Mitigation Measure* AIR-1 (2020 MMRP pp. 4-5) would further, avoid, minimize, and lessen potential for impacts.

Would the Project result in other emissions such as those leading to odors adversely affecting a substantial number of people?

The Proposed Modifications would not result in odor-causing emissions that would adversely affect a substantial number of people. The Impact Areas associated with the Proposed Modifications are small, discrete, and are located away from housing, and are a reasonable distance from other sensitive receptors, as per the BAAAQMD CEQA Guidelines (p. 5-8). While the Impact Area for the 700 ft boring is adjacent to the California Aqueduct Bikeway, a location that is used for recreation, the nature of the Bikeway is such that it is not used for public gathering, but rather as a pathway for activities such as walking, cycling, and fishing, which are generally mobile in nature and do not result in gatherings of members of the public. In addition, the equipment used does not generate strong odors, the project activities are short-term

in duration and emissions would cease upon completion. Consistent with the No Impact analysis in the 2020 Final IS/MND (p. 43) and 2021 Addendum (p. 16), the Proposed Modifications would not result in odor-causing emissions that would adversely affect a substantial number of people.

Conclusion

The conclusion regarding a less than significant impact on Air Quality from the 2020 Final IS/MND (2020 Final IS/MND, pp. 34-43) and 2021 Addendum (pp. 13-16) remains unchanged, as the Proposed Modifications do not result in any new potentially significant impacts (See updated calculations, Table 3) or a substantial increase in the severity of previously identified potentially significant impacts Additionally, no changes in circumstance or new information of substantial importance have been identified for Air Quality that could result in any new potentially significant impacts, or a substantial increase in the severity of previously identified potentially significant impacts

2.4 Biological Resources

Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife and the U.S. Fish and Wildlife Service?

The 700-ft. angled borehole is proposed to investigate the soils below a portion of DWR property that has a conservation easement related to mitigation for a previous project. This conservation easement provides habitat for San Joaquin kit fox, California red-legged frog, California tiger salamander, and burrowing owl – all previously evaluated under the 2020 IS/MND (Attachment A, pp. 98-100, 51-52, 49-50, 66-67, respectively, and Attachment F) and the 2021 Addendum (pp.16-19). The conservation easement generally restricts surface and subsurface activities that are inconsistent with the purposes of the conservation easement, thus limiting alterations of the surface and general topography that would possibly impair or interfere with the conservation values of the property. The species that are protected under the conservation easement generally use squirrel/mammal burrows for various life stages, along with surface elements, including ephemeral water features. Squirrel burrows are not known to extend greater than 6 feet in depth (UC IPM, 2018) and, in loose soils, kit fox dens may reach depths of up to 10 feet (CDFW, 1995). The drill hole is proposed to begin outside of the conservation easement and extend at a +/- 71-degree angle, reaching the subsurface boundary of the conservation easement at +/- 80 feet below ground surface, preventing any impacts to burrows and/or ephemeral water features since the impermeable layer will not be impacted (see below for more information on likely material to be found in the borehole). Therefore, a deeper angled borehole would avoid conflicts with the easement and avoid any possibility of significant impacts to the species habitat covered by the conservation easement. In addition, a borehole (DCBAP-DH-001), approved under the 2021 Addendum (Attachment D), was evaluated for impacts to the above species - the impact determination concluded a less than significant

impact with mitigation incorporated (Attachment D, pp. 16-19). This previously approved borehole, conducted in 2021, is adjacent to the proposed angled borehole and likely forecasts the material expected to be found in the angled borehole (i.e., shale and sandstone capped by a clay layer).

As discussed in Section 2.13 of this Addendum, and like the previously approved adjacent borehole, this Proposed Modification would have short-term localized noise and small vibrations, generally comparable to the noise produced by diesel trucks. Thus, the impact determination of less than significant, with the incorporation of mitigation measures (*AES-1 and -2, BIO-1 through 20, HAZ-1 through 4, and HYD - 1* (2020 MMRP, pp. 2-3, 5-44, and 50-63), remains unchanged for this Proposed Modification.

The Proposed Modifications, overall, remain within the same Biological Resources Study Area identified within the 2020 Final IS/MND. Utilizing the same methodology described in the Section 3.4.1.1 of the 2020 Final IS/MND (pp. 46-47) and 2021 Addendum (pp.16-17), a search of available data sources for biological resources was conducted.

On April 29, 2022, DWR conducted a review of the California Natural Diversity Database (CNDDB), Sacramento U.S. Fish and Wildlife Service website (USFWS), and the California Native Plant Society (CNPS) on-line Inventory of Rare and Endangered Plants for the following 42 USGS 7.5-minute Quadrangle maps (California Department of Fish and Wildlife 2022; California Native Plant Society 2022; US Fish and Wildlife Service 2022):

Gray's Bend,	Taylor Monument	Rio Linda
Davis	Sacramento West	Sacramento East
Saxon	Merritt	Clarksburg
Florin	Dixon	Elk Grove
Dozier	Liberty Island	Courtland
Bruceville	Galt	Lodi North
Thornton	Isleton	Rio Vista
Birds Landing	Antioch North	Jersey Island
Bouldin Island	Terminous	Lodi South
Stockton West	Holt	Woodward Island
Brentwood	Antioch South	Tassajara
Byron Hot Springs	Clifton Court Forebay	Union Island
Lathrop	Tracy	Midway
Livermore	Vernalis	Altamont

This search resulted in the addition of one wildlife species and 11 plant species to the lists originally provided as Appendix C of the 2020 Final IS/MND (Original table included as Attachment F) and 2021 Addendum. Table 4, below, includes an evaluation for these new species.

Table 4: Additional Wildlife and Plant Species Evaluated

Common Name	Scientific Name	Fed/ State/ CNPS	Habitat	Micro Habitat	Potential to Occur in the Study Area	Justification for Potential to Occur
Western ridged mussel	*Gonidea angulata*	-/-	Aquatic	Primarily creeks and rivers and less often lakes. Originally in most of state, now extirpated south of Russian River in California.	None	Outside of current known range.
Slender silver moss	*Anomobryum julaceum*	-/-/4.2	Broadleaf upland forest, Lower montane coniferous forest, North Coast coniferous forest	100-1,000m	none	No habitat present, out of range.
Mexican mosquito fern	*Azolla microphylla*	-/-/4.2	Marshes and swamps	30-100m	moderate	Potentially suitable habitat present.
Small spikerush	*Eleocharis parvula*	-/-/4.3	Marshes and swamps	1-3,020m	moderate	Potentially suitable habitat present.
Bay buckwheat	*Eriogonum umbellatum var. bahiiforme*	-/-/4.2	Cismontane woodland and lower montane coniferous forest	700-2,200m	none	Outside of known range, no habitat.
Jepson's woolly sunflower	*Eriophyllum jepsonii*	-/-/4.3	Cismontane woodland, chaparral, and coastal scrub	200-1,025m	none	Outside of known range, no habitat.
Alkali-sink goldfields	*Lasthenia chrysantha*	-/-/1B.1	Vernal pools	0-200m	moderate	Potentially suitable habitat

Common Name	Scientific Name	Fed/ State/ CNPS	Habitat	Micro Habitat	Potential to Occur in the Study Area	Justification for Potential to Occur
Bristly leptosiphon	*Leptosiphon acicularis*	-/-/4.2	Chaparral, cismontane woodland, coastal prairie, and valley and foothill grassland	55-1,500m	none	Out of range
Serpentine leptosiphon	*Leptosiphon ambiguous*	-/-/4.2	cismontane woodland, coastal scrub, and valley and foothill grassland.	120-1,130m; usually associated with serpentine	none	Out of range
Abrams' lupine	*Lupinus albifrons var. abramsii*	-/-/3.2	Broad-leafed upland forest, chaparral, coastal scrub, lower montane coniferous forest, and valley and foothill grassland	125-2,000m; sometimes associated with serpentine	none	Out of range
Cotula navarretia	*Navarretia cotulifolia*	-/-/4.2	Chaparral, cismontane woodland, and valley and foothill grassland	4-1,830m	moderate	Potentially suitable habitat present.
Hairless popcornflower	*Plagiobothrys glaber*	-/-/1A	Marshes and swamps (coastal salt), meadows and seeps (alkaline)	15-180m	none	Outside of range.

The Study Area provides potentially suitable habitat for 71 special-status wildlife species and 90 special-status plant species. Species that have been added to the evaluation are discussed in detail below.

Special Status Wildlife:

During the evaluation of new information for the preparation of this Addendum, one additional wildlife species that had not been evaluated previously was identified, however it was determined to not have the potential to occur in the Study Area (Table 4).

Special Status Plants:

During the evaluation of new information for the preparation of this Addendum, 11 additional plant species that had not been evaluated previously were identified (Table 4). Of this 11, seven were determined not to have the potential to occur in the Study Area due to range, elevation, or lack of suitable habitat, leaving four with the potential to occur in the Study Area. The following section includes species accounts for each of the additional plant species that have the potential to occur within the Study Area and provides effects determinations relative to the proposed project's anticipated impacts.

Mexican mosquito fern (*Azolla microphylla*)

Mexican mosquito fern has a California Rare Plant Rank (CRPR) of 4.2. This species is an annual or perennial herb, and it blooms in August (CNPS 2022). Its current range in California includes the Sacramento and San Joaquin Valleys (CNPS 2022; Jepson Flora Project 2022). It typically grows in marshes and swamps at elevations from 30 m (100 ft) to 100 m (330 ft) (CNPS 2022). This species has moderate potential to occur within the Study Area based on the presence of suitable aquatic habitat.

Pre-construction survey reconnaissance with qualified personnel will ensure that if Mexican mosquito fern is found within the Impact Area, the location will be shifted the minimum distance necessary to reduce the potential to impact this species. If a suitable location cannot be determined within adjacent areas, then the soil investigation at that location will not be conducted. Therefore, incorporation of MMs BIO-1, BIO-18a-d, and BIO-19, consistent with the 2020 MMRP (pp. 5-13, 39-43) will ensure that impacts to Mexican mosquito fern will be Less than Significant, with this mitigation incorporated.

Small spikerush (*Eleocharis parvula*)

Small spikerush has a CRPR of 4.3. This species is a perennial herb, and it typically blooms from June through August (CNPS 2022). Its current range in California includes the North Coast, South Coast, and San Francisco Bay Area (CNPS 2022; Jepson Flora Project 2022). It typically grows in marshes and swamps at elevations from 1 m (5 ft) to 3,020 m (9,910 ft) (CNPS 2022). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Pre-construction survey reconnaissance with qualified personnel will ensure that if Mexican mosquito fern is found within the Impact Area, the location will be shifted the minimum distance necessary to reduce the potential to impact this species. If a suitable location cannot be determined within adjacent areas, then the soil investigation at that location will not be conducted. Therefore, incorporation of MMs BIO-1, BIO-18a-d, and BIO-19, consistent with the 2020 MMRP (pp. 5-13, 39-43), will ensure that impacts to small spikerush will be Less than Significant, with this mitigation incorporated.

Alkali-sink goldfields (*Lasthenia chrysantha*)

Alkali-sink goldfields has a CRPR of 1B.1. This species is an annual herb, and it blooms from February through April (CNPS 2022). It is endemic to California, and its current range includes the southern portion of the Sacramento Valley and the San Joaquin Valley (CNPS 2022; Jepson Flora Project 2022). It typically grows in vernal pools at elevations from 0 m/ft to 200 m (655 ft) (CNPS 2022). Alkali-sink goldfields is threatened by habitat loss, agriculture, urbanization, and development (CNPS 2022). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Pre-construction survey reconnaissance with qualified personnel will ensure that if Mexican mosquito fern is found within the Impact Area, the location will be shifted the minimum distance necessary to reduce the potential to impact this species. If a suitable location cannot be determined within adjacent areas, then the soil investigation at that location will not be conducted. Therefore, incorporation of MMs BIO-1, BIO-12a-b, BIO-18a-d, and BIO-19, consistent with the 2020 MMRP (pp. 5-13, 30, 39-43) will ensure that impacts to alkali-sink goldfields will be Less than Significant, with this mitigation incorporated.

Cotula navarretia (*Navarretia cotulifolia*)

Cotula navarretia has a CRPR of 4.2. This species is an annual herb, and it blooms from May through June (CNPS 2022). It is endemic to California, and its current range includes the Sacramento Valley (Jepson Flora Project 2022). It typically grows in chaparral, cismontane woodland, and valley and foothill grassland at elevations from 4 m (15 ft) to 1,830 m (6,005 ft) (CNPS 2022). Cotula navarretia is threatened by non-native plants and habitat alteration (CNPS 2022). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Pre-construction survey reconnaissance with qualified personnel will ensure that if Mexican mosquito fern is found within the Impact Area, the location will be shifted the minimum distance necessary to reduce the potential to impact this species. If a suitable location cannot be determined within adjacent areas, then the soil investigation at that location will not be conducted. Therefore, incorporation of MMs BIO-1, BIO-12a-b, BIO-18a-d, and BIO-19, consistent with the 2020 MMRP (pp. 5-13, 30, 39-43) will ensure that impacts to cotula navarretia will be Less than Significant, with this mitigation incorporated.

The Proposed Modifications resulted in the evaluation of 12 species not previously analyzed. With the implementation of mitigation from the Approved Project (MMRP, Attachment C), Mexican mosquito fern, Small spikerush, Alkali-sink goldfields, and Cotula navarettia would not be substantially adversely affected by the previously Approved Project Investigations nor the currently Proposed Modifications. Additionally, the previously evaluated species (Attachment F) will not be substantially adversely affected by the Proposed Modifications due to the incorporation of Mitigation Measures. This Less Than Significant Impact, with Mitigation Incorporated determination remains consistent with the 2020 IS/MND. The Proposed Modifications are limited and temporary in nature. Additionally, vegetation management would be minimal, and incorporation of *Mitigation Measures BIO-1-20*, *AES-1 and -2*, *HAZ-1-4, and HYD-1* (2020 MMRP, pp. 2-3, 5-44 and 50-63) would reduce potential impacts to Biological Resources to less than significant, which is consistent with the analysis in the 2020 Final IS/MND (pp. 48-133) and 2021 Addendum (pp. 16-17).

Would the project 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 California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service?

The 2020 Final IS/MND identified fifteen sensitive natural communities (2020 IS/MND pp. 133-134), based on the review DWR conducted of the California Natural Diversity Database (CNDDB), Sacramento U.S. Fish and Wildlife Service website (USFWS), and the California Native Plant Society (CNPS) on-line Inventory of Rare and Endangered Plants on April 1, 2022, no new sensitive natural communities were identified within the Proposed Project Modifications study area, nor within the previously approved Project areas. Project Modifications would not result in any newly identified potential impacts on the previously identified fifteen sensitive natural communities. Additionally, the Modifications would not result in any newly identified potential impacts on the previously identified fifteen sensitive natural communities.

Consistent with the analysis in the 2020 Final IS/MND (pp. 133-134) and 2021 Addendum (p. 17), the Proposed Modifications would be limited and temporary in nature, and vegetation management would be minimal, implementation of *Mitigation Measures BIO-1b, -12, -13 and -19* (2020 MMRP, pp. 6, 30-31, 43) would ensure the Proposed Modifications would have a less than significant impact on the identified sensitive natural communities.

Would the project have a substantial adverse effect on federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

The Proposed Modifications would not have a substantial adverse effect on federally protected wetlands as the Proposed Modifications would not subject wetlands to removal, filling, hydrological interruption, or any other means of adverse effects. As stated in the 2020 Final IS/MND (pp. 6-7), evaluation of conditions at each on-land soil investigation Impact Area will be conducted by qualified wetland delineators, if necessary. If aquatic resources meeting the Corps definition of wetlands are

observed within on-land soil investigation sites, those sites would be relocated outside of the boundaries of these aquatic resources. Previously verified pre-jurisdictional determinations would be utilized during mapping and field visits to ensure that the Proposed Project would avoid any areas that, as determined by a wetland specialist, may require a Wetland Delineation to satisfy the Corps' definition of wetlands.

Consistent with the analysis in the 2020 Final IS/MND (pp. 134-135) and 2021 Addendum (p. 18), the Proposed Modifications would have no impact on federally protected wetlands and *Mitigation Measures BIO- 1b and 12* (2020 MMRP, pp. 6 and 30) would further avoid minimize and/or reduce the potential for impacts to biological resources (2020 Final IS/MND pp. 6-7).

Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

The Proposed Modifications would not increase the potential for impacts to any native resident or migratory fish or native wildlife species, corridors, or nursery sites. The 3 modified overwater boring locations in the Proposed Modifications are all within waterways that were previously evaluated for the Approved Project, and work would occur during the fish window (MMRP BIO-14, p. 32) to avoid impacts to sensitive fish species. Additionally, qualified biologists, per BIO Mitigation Measures (MMRP BIO 1-17, pp. 5-38) will conduct appropriate surveys and make the appropriate decision regarding the start of and/or stoppage of an investigation to protect special status species that could potentially be within the area prior to project activities and/or during project activities. Consistent with the analysis in the 2020 Final IS/MND (pp. 135-136), the Proposed Modifications are limited in scope and duration, and implementation of *Mitigation Measures AES-2, BIO-1 through 17, and HYD-1* (2020 MMRP, pp. 3, 5-38 and 61-63) would ensure the Proposed Modifications would continue to have a less than significant impact on any native resident or migratory fish or native wildlife species, corridors, or nursery sites.

Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The Proposed Modifications to the Approved Project are occurring in four of the six counties assessed in the 2020 Final IS/MND: Alameda, Yolo, Sacramento, and San Joaquin Counties. The policies and ordinances that were in place during the analysis conducted for the 2020 Final IS/MND (p. 136) for the Approved Project remain unchanged.

Consistent with the analysis in the 2020 Final IS/MND (p. 136) and 2021 Addendum (p. 18), the Proposed Modifications would have no impact regarding conflicts with local policies or ordinances protecting biological resources. Implementation of *Mitigation Measures AES-1 and -2, BIO-1 through 20, HAZ-1 through 4, and HYD -1* (2020 MMRP, pp. 2-3, 5-44, and 50-63) would further avoid minimize and/or reduce the potential for impacts to biological resources.

Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The Proposed Modifications do not include additional plans that would overlap with the project area outside of those analyzed in the 2020 Final IS/MND (pp. 136-138) and 2021 Addendum (p. 19). The Proposed Modifications would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan, as the Proposed Modifications would fully avoid any covered species or habitat and wetland resources. Ground disturbing effects would be limited and temporary in nature, and vegetation management would be minimal.

Consistent with the analysis in the 2020 Final IS/MND (pp. 136-138) and 2021 Addendum (p. 19), the Proposed Modifications would have a less than significant impact regarding conflicts with any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Implementation of *Mitigation Measures AES-1 and -2, BIO-1 through 20, HAZ-1 through 4, and HYD -1* (2020 MMRP, pp. 2-3, 5-44, and 50-63) would further avoid, minimize and/or reduce potential impacts.

Conclusion

The conclusion regarding a less than significant impact, with mitigation, on Biological Resources from the 2020 Final IS/MND (pp. 48-138) and 2021 Addendum (p. 19) remains unchanged, despite the additional evaluation of 12 special status wildlife and plant species since the Proposed Modifications do not result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Biological Resources that could result in any new potentially significant impacts, or a substantial increase in the severity of previously identified potentially significant impacts.

2.5 Cultural Resources

The Proposed Modifications were evaluated with the same methodology described in Section 3.5.1.2 of the 2020 Final IS/MND (pp. 141-144). For the purposes of the cultural resources review, each Impact Area was assessed with a 60-foot radius buffer (i.e., 120-foot diameter buffer) for equipment staging and accessibility. The Impact Area for any given soil investigation location is considered the soil investigation site itself. Previous studies and recorded cultural resources within a 0.25-mile radius of the Impact Area were examined to help evaluate the potential sensitivity for cultural resources at the locations of the Proposed Modifications (replacement soil investigation sites). See Attachment G, Figures 1-22, for cultural resources assessment areas.

DWR reviewed records search results from the California Historical Resources Information System (CHRIS)'s Northwest Information Center (NWIC), Central

California Information Center (CCAIC), and North Central Information Center (NCIC), aerial photographs and past topographic maps, and prior cultural resources studies found in both CHRIS search results and past DWR projects relevant to the investigation sites. Additional information received from environmental consultants was also reviewed.

Approximately 43% of the Impact Areas have previous field studies (including survey coverage, subsurface testing, and/or excavations). The Sacramento-San Joaquin Delta is sensitive for both prehistoric and historic-era cultural resources. As such, all proposed soil investigation sites would be surveyed by a qualified archaeologist prior to the start of any ground disturbing activities and only after DWR obtains access to these properties (MM CUL-1a, b; 2020 MMRP, p. 44).

Of the areas previously studied, one resource (P-01-010450) is located within the buffered Impact Area of two of the soil investigations sites that are considered in this 2022 Addendum and one resource (P-01-012293) is located within the Impact Area for one of the soil investigations sites that are considered for this 2022 Addendum. These resources are discussed in greater detail below.

Site P-01-010450 is a segment of Mountain House Road that was recorded by Baker and Bakic in 2001. Mountain House Road was constructed around 1874 and realigned in 1889 (Baker and Bakic 2001). It has been continuously maintained and improved by Alameda County. Baker argued that, due to loss of integrity, the road segment did not appear eligible as an historic property under CEQA. DWR concurs with this previous evaluation of ineligibility for P-01-010450.

Site P-01-012293 consists of Bethany Reservoir and its associated dams, toe drains, weir, and outlet gates. It was recorded by Ambacher in 2013 as part of the *Bethany Dam Reservoir Improvements Project and Bethany Sediment Removal Project* (AECOM 2014). The reservoir was created by the construction of five dams between 1958 and 1967. It allows operational flexibility for the Delta Pumping Plant, located two miles north, and serves as the forebay for the Delta Pumping Plant (Ambacher 2013). Site P-01-012293 and its various components was recommended as a contributor to the California Aqueduct, which has been determined eligible for the National Register of Historic Places (NRHP) at the state level of significance under criteria A and C. The reservoir, dams, toe drains, and weir, are part of the planned and engineered relationship of the canal's alignment and relationship to natural topography and are also considered ancillary infrastructure; both of which are character-defining features of the California Aqueduct (Ambacher 2013). Additional character-defining features of the dams and toe drains include their earthen construction, their slope, and the riprap on their water side. The reservoir and its associated components were not recommended as individually eligible for listing in the NRHP/California Register of Historical Resources (CRHR) (Ambacher 2013). DWR concurs with this previous evaluation of Bethany Reservoir.

There are 19 resources located within a 0.25-mile radius of the Impact Areas of one or more of the Proposed Modifications (Table 5). Table 5 provides a summary of these resources and their location in relation to the Impact Areas of the soil investigation sites of the Proposed Modifications, and their CRHR eligibility status. Most of these resources are historic, and consist of roads, transmission lines, water storage and conveyance structures, and farm complexes. There are also two prehistoric burial sites, one potential burial mound, and a baked clay scatter. Most of the resources are either unevaluated or have been recommended as not eligible for listing in the CRHR.

Table 5: Cultural Resources within Study Area

Resource Number	**Resource Type**	**Resource Description**	**Location in Relation to Impact Area**	**Eligibility for California Register of Historical Resources**
P-01-001783	Built environment	Southern Pacific Railroad	Within a 0.25-mile of one location	Not evaluated
P-01-010440	Built environment	Schropp Farm Complex	Within a 0.25-mile of one location	Recommended ineligible
P-01-010441	Built environment	Kuhn Ranch No. 20	Within a 0.25-mile of two locations	Recommended ineligible
P-01-010443	Built environment	Tracy Switching Station	Within a 0.25-mile of three locations	Recommended ineligible
P-01-010444	Built environment	Mountain House School	Within a 0.25-mile of one location	Recommended ineligible
P-01-010445	Built environment	Byron Bethany Irrigation Canal	Within a 0.25 mile of two locations	Recommended ineligible
P-01-010450	Built environment	Mountain House Road	Within buffered Impact Area of two locations, within a 0.25-mile of three locations	Recommended ineligible
P-01-010449	Built environment	Hurley-Tracy Transmission Line	Within a 0.25-mile of three locations	Recommended ineligible
P-01-010451/ P-39-004309	Built environment	Byron-Bethany Road	Within a 0.25-mile of one location	Recommended ineligible
P-01-010951	Other	Delta Mendota Canal Construction Spoil Piles	Within a 0.25-mile of one location	Recommended ineligible
P-01-011395	Built environment	Tracy-Telsa 230v Transmission Line	Within a 0.25-mile of one location	Not evaluated
P-01-011475	Built environment	Holck Ranch (No. 19)	Within a 0.25-mile of two locations	Recommended ineligible
P-34-000093	Archaeological site and burial	Prehistoric burial and habitation site	Within a 0.25-mile of one location	Not evaluated

P-34-000276	Other	Baked clay scatter	Within a 0.25-mile of one location	Not evaluated
P-39-000260	Burial	Prehistoric burial site with associated grave goods	Within a 0.25-mile of one location	Not evaluated
P-39-000261	Archaeological site	Unknown, no description on site record, possible mound or prehistoric burial site based on proximity (232 feet) to P-39-000260	Within a 0.25-mile of one location	Not evaluated
P-39-000324	Multicomponent site	Historic refuse deposit, foundation, corral area, shed, troughs	Within a 0.25-mile radius of one location	Not evaluated
P-39-004310	Built environment	PG&E Distribution Line #7/Sierra and S.F. Power Company Distribution Line	Within a 0.25-mile radius of one location	Recommended ineligible
P-39-004419	Archaeological site	Historic refuse deposit and structural debris	Within a 0.25-mile radius of one location	Not evaluated
P-01-012293	Built environment	Bethany Reservoir, dams, toe drains, and weir	Within Impact Area of one location	Recommended eligible as a contributing component to the California Aqueduct under A and C. Recommended individually ineligible.

Would this project cause a substantial adverse change in the significance of a historical resource pursuant to section 15064.5?

The Proposed Modifications would not cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines section 15064.5. The Proposed Modifications were assessed using the same criteria as the 2020 Final IS/MND (pp 141-144), which includes Impact Areas consisting of the soil investigation site and a 60-foot radius (120-foot diameter) buffer around the soil investigation site for the staging of equipment and staff.

Only one historical resource was identified within an Impact Area for a soil investigation site in the Proposed Modifications – P-01-012293, Bethany Reservoir. Work at this location involves drilling a 700-foot deep angled boring along the east end of the reservoir, landside. Project activities will not result in impacts to the character-defining features of the reservoir as the boring and subsequent cement-bentonite grout sealant will not impact the alignment of the reservoir, its slope, or the riprap placed on the water side.

Consistent with the analysis in the 2020 Final IS/MND (pp. 144-146) and 2021 Addendum (pp. 19-20), incorporation of *Mitigation Measures* MM CUL-1, CUL-2, CUL-3, and CUL-4 (2020 MMRP pp. 44-47) would reduce potential effects to previously unidentified historical resources to less than significant with mitigation.

Would this project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Consistent with the analysis in the 2020 Final IS/MND (p. 146) and 2021 Addendum (p. 20), the Proposed Modifications would not cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines section 15064.5; impact would be less than significant with mitigation incorporated. There are no known archaeological sites within the Impact Areas or Impact Area buffer for the soil investigation sites of the Proposed Modifications. Of the three archaeological sites located within a 0.25-mile radius of the Impact Area, the closest site is 200 feet from the Impact Area of one of the soil investigations sites in the Proposed Modifications. This resource is an historic refuse deposit and structural debris. Though it may be close to the Impact Area, impacts to the resource are not anticipated.

Additionally, incorporation of mitigation measure MM CUL-1, CUL-2, CUL-3, and CUL-4 (2020 MMRP, pp. 44-47) would reduce potential impacts to less than significant for any unique archeological resources not currently recorded, would provide training to those that would be present during the soil investigations activities at the locations that have been cleared, and would aid in identification and prevention of substantial impacts to any previously undiscovered unique archaeological resources that may appear during boring and CPT activities.

Would this project disturb any human remains, including those interred outside of formal cemeteries?

No known locations of human remains are located within the Impact Areas or Impact Area buffer associated with the Proposed Modifications. There are two prehistoric burials and one potential prehistoric burial located within a 0.25-mile radius of an Impact Area. The closest burial is roughly 370 feet from the Impact Area of one of the Proposed Modification soil investigation sites. The Impact Area is located overwater and upstream from this site The Proposed Modifications would not disturb any human remains with known locations, including those interred outside of formal cemeteries. Consistent with the analysis in the 2020 Final IS/MND (p. 147) and 2021 Addendum (pp. 20-21), incorporation of *Mitigation Measures* CUL-1 through CUL-4 (2020 MMRP, pp. 44-47) would ensure that any potential impacts to known and previously undiscovered human remains would be reduced to less than significant with mitigation.

Conclusion

The conclusion of a less than significant impact, with mitigation, on Cultural Resources from the 2020 Final IS/MND (pp. 144-147) and 2021 Addendum (p. 21) remains unchanged, as the Proposed Modifications do not result in any new or significant impacts or a substantial increase in the severity of previously identified potentially significant impacts. Additionally, no changes in circumstance or substantial new information have been identified for Cultural Resources that could result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts.

2.6 Energy

Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

The Proposed Modifications would employ the same project activities evaluated in the 2020 Final ISMND (p. 149) and 2021 Addendum (p. 21), but with added 300 ft (92 meters) deep boreholes (replacing previously evaluated 200 ft. in depth (61 meters) boreholes) and the addition of a 700 ft. angled borehole, not previously evaluated under the Approved Project. As addressed and evaluated in the 2020 Final IS/MND (p. 149) and 2021 Addendum (p. 21), the Proposed Modifications would consume energy in the form of gasoline and diesel fuel through the operation of drill rigs, heavy off-road equipment, trucks, and worker traffic.

There is no operational energy use associated with the Proposed Modifications, and all consumption of energy would be temporary, localized and would cease upon completion of the project activities. Additionally, all vehicles would comply with all federal and State efficiency standards. The Proposed Modifications, cumulatively, do not contribute to significant greenhouse gas emissions increases that would meet or exceed CO2 emissions thresholds as per the DWR Greenhouse Gas Emissions

Reduction Plan (update 2020), developed in response to the GHG emissions reductions targets established in the State Legislature (Senate Bill (SB) 32 (2016), SB 100 (2018), Executive Order B-18-12 (2012), Executive Order B-30-15 (2015), and Executive Order B-55-18 (2018)). The latest thresholds look to reduce GHG emissions to at least 60 percent below 1990 levels, by the year 2030. The Proposed Modifications, are, in fact, consistent with DWRs Greenhouse Gas Emissions Reduction Plan, and are far below the total project construction emissions for either an entire construction phase or a single year of construction. DWRs fossil fuel usage is commensurate with added work duration directly attributable to increased depths for the Proposed Modifications, and would, therefore, not be considered wasteful, inefficient, or unnecessary consumption of fossil fuels.

Though some of the Proposed Modifications would require longer duration, they would not require equipment outside of what was previously described for the Approved Project, nor would the Proposed Modifications conflict with State or local plans for renewable energy or energy efficiency.

Consistent with the analysis in the 2020 Final IS/MND (p. 149) and 2021 Addendum (p. 21), there would be a less than significant impact regarding wasteful, inefficient, or unnecessary consumption of energy resources, and implementation of Mitigation Measure MM GHG-1 (2020 MMRP, pp. 48-49) would further avoid, minimize and/or reduce the potential for impacts.

Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Consistent with the analysis in the 2020 Final IS/MND (p. 149) and 2021 Addendum (p. 21) the Proposed Modifications would not conflict with or obstruct a State or local plan for renewable energy or energy efficiency, as Project activities would employ efficient vehicles in compliance with CARB standards, are temporary in nature, and would not include generating or altering an existing energy source.

Conclusion

The conclusion regarding a less than significant impact on Energy from the 2020 Final IS/MND (p. 149) and 2021 Addendum (p. 22) remains unchanged, as the Proposed Modifications do not result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Energy that could result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts.

2.7 Geology and Soils

Utilizing the same methodology described in the 2020 Final IS/MND (p. 152) and the 2021 Addendum (p. 22), available data provided by the California Department of Conservation was used to determine the Proposed Modifications are also not located in liquefaction, landslide, or Alquist-Priolo Earthquake Fault Zones.

Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

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

The California Geologic Survey has mapped various active and inactive faults in the region. There are several active faults located within or surrounding the three counties (Alameda, Sacramento, and San Joaquin) within the Study Area for which new replacement soil investigation sites have been proposed: Antioch, Calaveras, Cleveland Hills, Concord, Greenville-Marsh Creek, Hayward, San Andreas, San Joaquin, and Sierra Nevada Faults (CDC 2010). The southern Impact Areas associated with the Proposed Modifications may be subject to strong ground motion resulting from earthquakes on nearby faults. However, the footprint of each Impact Area is small and temporary and, even with the increase in workdays for the proposed deeper locations, not anticipated to cause enough ground disturbance to result in strong seismic shaking. Additionally, the limited nature of the Proposed Modifications minimizes potential adverse impacts related to ruptures of known earthquake faults. Consistent with the analysis in the 2020 Final IS/MND (p. 152) and the 2021 Addendum (p. 22), impacts would remain less than significant impact, and implementation of *Mitigation Measures* MM AES-1 and MM AGR-1 (2020 MMRP, pp. 2- 3) would further avoid, minimize and/or reduce the potential for impacts.

Strong seismic ground shaking?

The Proposed Modifications are in the same general seismic region that was analyzed in the 2020 Final IS/MND (p. 153), and the 2021 Addendum (pp. 22-23). The Impact Areas of the Proposed Modifications are small, work would be temporary, and, even with the increase in workdays for the proposed deeper locations (15-20 workdays for the 300-foot borings and up to 35 workdays for the 700-foot boring), is not anticipated to cause enough ground disturbance to result in strong seismic shaking. Consistent with the analysis in the 2020 Final IS/MND (p. 152) and the 2021 Addendum (pp. 22-23), the Proposed Modifications would result in a less than significant impact, consistent with the determination for the Approved Project. Implementation of *Mitigation Measures* MM AES-1 and AGR-1 (2020 MMRP, pp. 2-3) would further avoid, minimize and/or reduce the potential for impacts.

Seismic-related ground failure, including liquefaction?

Consistent with the analysis of the Approved Project (2020 Final IS/MND, p. 153) and 2021 Addendum (p. 23), there is a low to moderate liquefaction potential for the Impact Areas identified in the Proposed Modifications. Due to the lack of liquefication resulting from the 1980 earthquakes on the Greenville-Marsh Creek Fault, and no liquefaction events reported within the vicinity of the Impact Areas associated with the Proposed Modifications, as well as the limited footprint of each soil investigation, ground failure, including liquefaction and levee failure, is not expected to occur.

Consistent with the analysis in the 2020 Final IS/MND (p. 153) and the 2021 Addendum (p. 23), there would be no impact associated with seismic-related ground failure for the Proposed Modifications. Implementation of *Mitigation Measures* MM AES-1 and AGR-1 (2020 MMRP, pp. 2-3) would further avoid, minimize and/or reduce the potential for impacts.

Landslides?

The Impact Areas of the Proposed Modifications are in relatively flat areas, which do not have a potential for a landslide and are not located in areas susceptible to landslide risk or in the vicinity of mapped areas of landslide deposits.

Consistent with the analysis in the 2020 Final IS/MND (pp. 153-154) and the 2021 Addendum (p. 23), the Proposed Modifications would have no impact associated with landslides.

Would the project result in substantial soil erosion or the loss of topsoil?

The footprint of each Impact Area associated with the Proposed Modifications is small, temporary, and would not involve significant alterations to topsoil (only the soil borehole/CPT hole itself would affect topsoil). Consistent with the analysis in the 2020 Final IS/MND (p.154) and the 2021 Addendum (p. 23), there would be a less than significant impact on soil erosion or the loss of topsoil because of the Proposed Modifications. Implementation of *Mitigation Measures* MM AES-1 and AGR-1 (2020 MMRP, pp. 2-3) would further avoid, minimize and/or reduce the potential for impacts.

Would the project 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?

As described in the 2020 Final IS/MND (p. 154) and the 2021 Addendum (p. 23), the suitability of the geologic units for soil investigation was used in the siting of the Proposed Modifications, and if the soil is deemed unstable by a geologist during the required reconnaissance site visits (2020 Final IS/MND, p. 154), or at any time thereafter, the soil investigation site would be moved to decrease the potential of an on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. Consistent with the analysis in the 2020 Final IS/MND (p. 154) and the 2021 Addendum (p. 23), the Proposed Modifications require avoidance of these types of risks/impacts, and as such the Proposed Modifications have no impact due to unstable soils or that would result in unstable soils.

Would the project 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?

The Proposed Modifications do not include the construction of any structures, which may result in a direct or indirect risk to life or property when built on expansive soils. Consistent with the analysis in the 2020 Final IS/MND (p. 154) and the 2021 Addendum (p. 24), there would be no impact due to expansive soils because of the Proposed Modifications. Implementation of *Mitigation Measures* MM AES-1 and

AGR-1 (2020 MMRP pp. 2-3) would further avoid, minimize and/or reduce the potential for impacts

Would the project 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 Proposed Modifications do not include the use of septic tanks or alternative waste-water disposal systems, in-lieu of a sewer system. Consistent with the analysis in the 2020 Final IS/MND (p. 155), and the 2021 Addendum, there would be no impact to soils that are incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems.

Would the project directly or indirectly destroy a unique paleontological resource or site or unique geological feature?

The Proposed Modifications have been cited in transportation right of ways and agricultural fields-areas that have been highly graded and highly disturbed. In geologically diverse California, vertebrate, invertebrate, and plant fossils are usually found in sedimentary and metasedimentary deposits, or other unique landforms (Caltrans, 2022). The Proposed soil investigation sites are, therefore, not located in unique geologic features that would be commensurate with paleontological resources that could then directly or indirectly be destroyed during work or from the completion of work. While there are no current maps that can be referenced to confirm the presence or absence of unique paleontological resources, sites, or unique geologic features, based upon the small footprint of the drill rigs, and the fact that drill rigs are typically deployed on existing anthropological features, as mentioned, (roads, levees, barges, agricultural fields, etc.), no impact is anticipated (Pers Comm. Margaret Janes 2022). Therefore, consistent with the analysis in the 2020 Final IS/MND (p. 154) no impact is anticipated because of the Proposed Modifications. Implementation of *Mitigation Measures* MM CUL-1, MM CUL-2 (2020 MMRP, pp. 44-46) would further avoid, minimize and/or reduce the potential for impacts.

Conclusion

The conclusion regarding a less than significant impact on Geology and Soils from the 2020 Final IS/MND (pp.152-155) and the 2021 Addendum (p. 24), remains unchanged, as the Proposed Modifications do not result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Geology and Soils that could result in any new potentially significant impacts.

2.8 Greenhouse Gas Emissions

Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

The GHG emission for the project with the Proposed Modifications were calculated using the same methodology as the 2020 Final IS/MND and described in the 2012 DWR Climate Action Plan-Phase I: Greenhouse Gas Emissions Reduction Plan (GGERP). Differences in assumed depths of individual borings between those that are proposed to be removed and those that are proposed to be replaced resulted in an increase of 1200 working days[1] as compared to the 2021 Addendum. The increase in workdays resulted in an increased amount of GHG emissions than originally calculated for the Approved Project (2020 Final IS/MND, p. 144). GHG emissions for the Proposed Modifications and Approved Project have been calculated to be 9404.2 mtCO2e (Attachment H), which is 3354.7 mtCO2e more than the calculated emissions expected for the Approved Project. Despite this increase in emissions, the Project with the Proposed Modifications remains consistent with the GGERP (Attachment I). As the lead agency, DWR has determined that the Proposed Modifications' incremental contribution to the cumulative impact of increasing atmospheric levels of GHGs is less than cumulatively considerable. Consistent with the analysis in the 2020 Final IS/MND (p. 157) and the 2021 Addendum (p. 24), the Project with the Proposed Modifications would have a less than significant impact on greenhouse gas emissions.

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

The Proposed Modifications would not conflict with an applicable plan, policy or regulation regarding GHG emission. The Proposed Modifications have been evaluated for GHG emissions and are determined to be consistent with DWR's GGERP to reduce emissions.

Consistent with the analysis in the 2020 Final IS/MND (pp. 158-159) and the 2021 Addendum (pp. 24-25), implementation of Mitigation Measure MM *GHG-1* would reduce potential impacts of the Proposed Modifications to less than significant (2020 MMRP, pp. 48-49).

Conclusion

The conclusion regarding a less than significant impact, with mitigation, on Greenhouse Gas Emissions from the 2020 Final IS/MND (pp. 157-159) and the 2021 Addendum (p. 25), remains unchanged, as the Proposed Modifications do not result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Greenhouse Gas Emissions that could result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts.

[1] The 2021 Addendum reported a value of 11,873 working days. An update to the calculation's spreadsheet includes a revised working days total of 12,709. The 2022 value for working days is 13,909, or an increase of 1200 working days, as compared to the updated 2021 Addendum working day values.

2.9 Hazards & Hazardous Materials

Would the Project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

The Proposed Modifications, including increased depth and number of workdays at some of the proposed soil investigations sites, would not require extensive or ongoing use of acutely hazardous materials or substances, and as described in the 2020 Final ISMND (p. 162) and the 2021 Addendum (p. 25), would require limited transport, storage, use, and disposal of hazardous materials. In addition, a Hazardous Materials Plan and Spill Prevention and Response Plan has been developed and none of the Proposed Modifications would generate new sources of hazardous materials.

Consistent with the analysis in the 2020 Final IS/MND (pp. 162-165) and the 2021 Addendum (p. 25), the potential for impacts due to hazards and hazardous materials for the Modifications Proposed Modifications would remain less than significant with the incorporation of *Mitigation Measures* BIO-1a, MM-HAZ 1 and HAZ 2 (2020 MMRP, pp. 5, 50-59).

Would the Project create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?

The Proposed Modifications, including increased depth and number of workdays at the some of the proposed soil investigation sites, would not create a significant hazard to the public or the environment as the associated activities would have the same requirements for responding to accidental releases as described in the 2020 Final IS/MND (p. 165). Consistent with the analysis in the 2020 Final IS/MND (p. 165) and the 2021 Addendum (p. 25), impacts from the Proposed Modifications would remain less than significant, with the incorporation of *Mitigation Measures HAZ-1 through -3* (2020 MMRP, pp. 50-59).

Would the Project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Mountain House Elementary School located in Mountain House, California, is within 0.25 miles of one of the proposed borings, however, as discussed in the 2020 Final IS/MND (pp. 3-5), the Project activities are temporary and consist of the investigation site itself and the area required for parking for various field personnel. Significant quantities of hazardous materials or hazardous waste would not be used during the Proposed Modifications, and the air quality and GHG emissions from the Project with the Proposed Modifications are below the threshold for the Bay Area Air Quality Management District. Consistent with the analysis in the 2020 Final IS/MND (pp. 165-166), and the 2021 Addendum (pp. 25-26), no impacts to existing or proposed schools are anticipated to occur because of the Proposed Modifications. While there would be no impact, implementation of *Mitigation Measures MM AIR-1, MM GHG-1, HAZ-1 and -2, PUB-1,* (2020 MMRP, pp. 4, 48-49, 50-59, 63-64), would further avoid, minimize and/or reduce potential impacts.

Would the Project be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or the environment?

The presence of hazardous materials and sites were evaluated, and it was determined that the Impact Areas associated with the Proposed Modifications are not included on any lists of hazardous materials sites maintained by the State Water Resources Control Board or the Department of Toxic Substances Control that are compiled pursuant to Government Code Section 65962.5 (Department of Toxic Substances Control, 2022). Consistent with the analysis in the 2020 Final IS/MND (p. 166) and the 2021 Addendum (p. 26), the Proposed Modifications would not create a significant hazard to the public or the environment and therefore no impacts would occur.

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?

Some of the Impact Areas associated with the Proposed Modifications are within 2 miles of Franklin Field, a general aviation airport, located in Sacramento County, California. Thus, the Franklin Field Comprehensive Land Use Plan ("The Plan"), updated in December (Airport Land Use Commission 1992), was reviewed for any changes that could alter the determinations within the 2020 Final IS/MND (p. 167) and the 2021 Addendum (p. 26) regarding safety hazards or excessive noise for project activities planned near Franklin Field Airport. The Plan lists the concerns of airport land use planning into three categories: Height Restrictions, Noise Compatibility, and Safety of Persons on the Ground. In addition, The Plan states that the findings, policies, and guidelines contained in the plan have three major functions: 1) To protect the airport from encroachment by incompatible use. 2) To safeguard the general welfare of the inhabitants within the vicinity of the airport and the public in general by protecting them from adverse effects of aircraft noise and reducing the number of people exposed to airport-related hazards. 3) To ensure that no structures affect navigable airspace.

The drill rigs used for the proposed Project activities range from 20 to 30 feet in height and do not interfere with height restrictions of the Franklin Field Airport. The Proposed Project activities are expected to create a minor noise of brief duration from the operation of vehicles and drill rigs associated with the activities of the Proposed Modifications. However, existing activities in the area (such as traffic along West Side Freeway or existing air traffic activities at the Franklin Field Airport) currently generate the same or more noise than would be expected from the activities of the Proposed Project. One of the borings from the Proposed Modifications does fall within the Overflight Zone of the Franklin Airport however, the activities of the Proposed Modifications are categorized as a compatible land use within this Overflight Zone.

Consistent with the analysis in the 2020 Final IS/MND (p. 166) and the 2021 Addendum (p.26), impacts of the Proposed Modifications on safety hazards associated with airport land use would remain less than significant. Implementation

of *Mitigation Measures AES-2, NOI-1, and PUB-1* (2020 MMRP, pp. 3, and 63-64) would further avoid, minimize and/or reduce the potential for impacts.

Would the Project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Emergency response routes and plans would not be impacted by the Proposed Modifications. Project activities for the Proposed Modifications would be of limited size and duration. Additionally, the proposed deeper boring locations and increase in duration at some of the proposed soil investigation sites would not require any public road closures. Consistent with the analysis in the 2020 Final IS/MND (p. 167) and the 2021 Addendum (pp. 26-27), impacts of the Proposed Modifications on the implementation of or physically interfering with an adopted emergency response plan or evacuation plan, would remain less than significant. Implementation of Mitigation Measure *PUB-1* (2020 MMRP, pp. 63- 64) would further avoid, minimize and/or reduce the potential for impacts.

Would the Project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?

The Proposed Modifications would not expose people or structures to a significant risk of loss, injury, or death involving wildland fires. As stated in the 2020 Final IS/MND (p. 167) and the 2021 Addendum, CalFire has designated the Study Area, which includes the Impact Areas associated with the Proposed Modifications, as being near a moderate or high threat of fire. However, the Proposed Modifications are not likely to cause any risk of fire due to the nature of the activity. Consistent with the analysis in the 2020 Final IS/MND (p. 167) and the 2021 Addendum (p.27), the Proposed Modifications would result in less than significant impacts. Implementation of *Mitigation Measures BIO-1 and HAZ-4* (2020 MMRP, pp. 5-13 and 60) would further avoid, minimize and/or reduce the potential for impacts.

Conclusion

The conclusion regarding a less than significant impact, with mitigation, on Hazards and Hazardous Materials from the 2020 Final IS/MND (pp.162-167) and the 2021 Addendum (p.26), remains unchanged, as the Proposed Modifications do not result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Hazards and Hazardous Materials that could result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts

2.10 Hydrology and Water Quality

Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

The Proposed Modifications would follow the same project activities outlined in the 2020 Final IS/MND (pp.169-170), and the 2021 Addendum (pp. 27-28) and would not introduce any potential new impacts pertaining to hydrology and water quality.

There are no net increases in the total number of overwater borings, or on-land soil investigation sites. The Impact Areas are all within the Study Area evaluated in section 3.10, Hydrology and Water Quality, of the 2020 Final IS/MND (pp. 168-172), and, therefore, no new waterways or watersheds need to be evaluated because of the Proposed Modifications.

Consistent with the analysis in the 2020 Final IS/MND (pp. 169-170), and the 2021 Addendum (pp.27-28), there would be no impact regarding violation of water quality standards or waste discharge requirements or degrading surface or ground water quality due to the Proposed Modifications being temporary and minimal in footprint, and DWR obtaining and complying with a Clean Water Act § 401 Water Quality Certification from the State Water Resources Control Board. Implementation of *Mitigation Measures AES-1, AGR-1, BIO-2, HAZ-1 and 2*, and MM *HYD-1* (2020 MMRP pp. 2-3, 13-16, 50-59) would further avoid, minimize and/or reduce the potential for impacts.

Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Proposed Project may impede sustainable groundwater management of the basin?

The Proposed Modifications would not introduce any potential new impacts pertaining to groundwater. The Proposed Modifications would not decrease groundwater supplies or interfere substantially with groundwater recharge because no water would be pumped from any on- or off-site groundwater sources for the Proposed Modifications, and no changes would be made to the permeability of surfaces because of the work. Consistent with the analysis in the 2020 Final IS/MND (p. 171), and the 2021 Addendum (p. 28), the Proposed Modifications would have no impact on groundwater supplies, recharge, or sustainable management of groundwater.

Would the project 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:

Result in substantial erosion or siltation on- or off-site?

The Proposed Modifications would not introduce any potential new impacts pertaining to erosion or siltation -on or -off site. Ground disturbance due to the Proposed Modifications is localized and temporary. Above ground disturbance is limited to the vehicles/equipment utilized to travel to and perform the subsurface investigations. Sub-surface disturbance is limited to the footprint created while drilling the borehole or pushing a CPT. Over-water borings would be separated from the water, fully contained within the casing. Therefore, it would not result in substantial on- or off-site erosion or siltation.

Consistent with the analysis in the 2020 Final IS/MND (p. 171), and the 2021 Addendum (p. 28), the Proposed Modifications would have no impact associated with substantial erosion or siltation. Implementation of Mitigation Measure *AES-1 and MM AGR-1* would further avoid, minimize and/or reduce the potential for impacts (2020 MMRP, pp. 2 -3).

Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?

The Proposed Modifications would not introduce any potential new impacts pertaining to increasing the rate of surface runoff. Soil investigation activities are minimal in ground disturbance area and are temporary in nature. Soil investigation activities would not require the addition of significant areas of impervious surface therefore no impacts to rates or amount of runoff would occur. Consistent with the analysis in the 2020 Final IS/MND (p. 171), and the 2021 Addendum (p. 28), the Proposed Modifications would have no impact on the rate or amount of surface runoff in a manner which would result in on- or off-site flooding.

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?

The Proposed Modifications would not introduce any potential new impacts pertaining to contributions of runoff water. The Proposed Modifications would not create or contribute to runoff water or provide additional sources of polluted runoff because no additional sources of runoff would be generated by the Proposed Modifications. Bentonite drilling fluids would be used in compliance with California regulations for Water Well Standards and are considered to have very little toxicity, additionally the drilling fluids for overwater borings would be fully contained within the casing.

Consistent with the analysis in the 2020 Final IS/MND (pp.171-172), and the2021 Addendum (pp.28-29), the Proposed Modifications would have no impact on runoff water or drainage capacity. Implementation of Mitigation Measure *HAZ-1 through 2 and HYD-1,* would further avoid, minimize, and/or reduce potential for impacts (2020 MMRP, pp. 50-52 and 61-63).

In flood hazard, tsunami, or seiche zones, would the Project risk release of pollutants due to Proposed Project inundation?

The Proposed Modifications reside in the same study areas outlined in the 2020 Final IS/MND. Consistent with the analysis in the 2020 Final IS/MND (p. 172), and the 2021 Addendum (p.29), the Proposed Modifications would have no impact as they are not located within a tsunami or seiche zone and would not affect the existing risk of flood hazard, seiche, tsunami or release of pollutants and would not increase pollutants located within an area subject to these risks.

Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

The Proposed Modifications would not introduce any potential new conflicts pertaining to implementation of a water quality control plan or sustainable groundwater management plan. The Proposed Modifications would not conflict with or obstruct implementation of a water quality control plan, including the Bay-Delta Water Quality Control Plan or a sustainable groundwater management plan because Proposed Project activities are limited in scope and duration. Additionally, DWR would obtain and comply with a § 401 Water Quality Certification from the State

Water Resources Control Board to ensure compliance with all applicable water quality standards, limitations, and restrictions.

Consistent with the analysis in the 2020 Final IS/MND (p. 172), and the 2021 Addendum (p. 29), the Proposed Modifications would have a less than significant impact related to implementation of a water quality control plan or sustainable groundwater management plan. Implementation of *Mitigation Measures HAZ-1, and 2, and MM HYD-1,* would further avoid, minimize and/or reduce the potential for impacts (2020 MMRP, pp. 50-59 and 61-63).

Conclusion

The conclusion regarding a less than significant impact on Hydrology and Water Quality from the 2020 Final IS/MND (pp. 169-172), and the 2021 Addendum (p. 29), remains unchanged, as the Proposed Modifications do not result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Hydrology and Water Quality that could result in any new potentially significant impacts.

2.11 Land Use and Planning

Would the Project physically divide an established community?

The Proposed Modifications would be temporary in nature and limited to soil investigations which would not alter or change the existing land use and would not divide an established community. Consistent with the analysis in the 2020 Final IS/MND (p. 173) and the 2021 Addendum (p. 30), the Proposed Modifications would have no impact regarding dividing established communities.

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

The Proposed Modifications would be temporary and limited to information collection, which would not alter or change existing land uses or conflict with any land use plans, policies, or regulations, such as the Land Use and Resource Management Plan for the Primary Zone of the Delta. Consistent with the analysis in the 2020 Final IS/MND (p. 173) and the 2021 Addendum (p. 30), the Proposed Modifications would have no impact regarding conflicts with any land use plan, policy, or regulation.

Conclusion

The conclusion regarding No Impact on Land Use and Planning from the 2020 Final IS/MND and the 2021 Addendum (p. 30), remains unchanged, as the Proposed Modifications do not result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Land Use that could result in any new potentially

significant impacts or a substantial increase in the severity of previously identified potentially significant impacts.

2.12 Mineral Resources

Would the Project 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?

Some of the Proposed Modifications have the potential to overlap within known or mapped mineral resource areas, and as discussed in the 2020 Final IS/MND (p. 175) and the 2021 Addendum (p. 30), project activities are temporary and would be returned to, as close to, pre-activity conditions as possible and would not interrupt existing or potential future mining operations or result in loss of available known significant mineral resources. Consistent with the analysis in the 2020 Final IS/MND (p. 175) and the 2021 Addendum, the Modifications Proposed Modifications would have a less than significant impact on known mineral resources.

Would the Project 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?

There are known natural gas regions in Sacramento and San Joaquin County that have the potential to overlap with the Impact Areas for the Proposed Modifications. Any overlapping oil or gas wells would be located below the depth of the drilling. For instance, the Rio Vista Gas Field, which is the largest field in California is located between 3,700 and 5,300 feet below the surface, which is far deeper than the maximum 700 ft. angled borehole proposed under this Project Modification. (Burroughs et al 1968) (See IS/MND Response to Comment p. 97). The activities of the Proposed Modifications consist of soil investigations that would result in a minimal disturbance area for each soil investigation site and each site would be returned to as close to pre-activity conditions as possible. Consistent with the analysis in the 2020 Final IS/MND (p. 175) and the 2021 Addendum (p. 31), the Proposed Modifications would have a less than significant impact on the availability of mineral resources delineated in a local general plan, specific plan, or other land-use plan.

Conclusion

The conclusion regarding less than significant impact on Mineral Resources from the 2020 Final IS/MND (p. 175) and the 2021 Addendum (p. 31), remains unchanged, as the Proposed Modifications do not result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Mineral Resources that could result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts.

2.13 Noise

Would the Project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?

As addressed and evaluated in the 2020 Final IS/MND (pp. 179-180) and the 2021 Addendum (p. 31), the Proposed Modifications would have short-term localized noise, small vibrations and would not expose people residing or working in the vicinity to excessive noise levels. Noise from the soil investigation drilling equipment is generally comparable to the noise produced by diesel trucks. While equipment is working, ambient noise levels would increase slightly, but the Proposed Modifications would still result in less than significant impacts, as Project activity noises are consistent with ambient noise of surrounding existing activities, project activities would not occur within 100 ft of potential sensitive receptors, and work would be limited to daytime hours. Despite the extended duration of investigation activities, where depths have increased, the soil investigation activities continue to remain temporary in nature, are short-lived, and in consideration of ambient noise sources, would not contribute significantly to temporary increases in ambient noise levels in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards. Consistent with the analysis in the 2020 Final IS/MND (p. 179-180) and the 2021 Addendum (p. 31), the Proposed Modifications would continue to have a less than significant impact on ambient noise levels in excess of applicable local, State, or federal standards. Implementation of *Mitigation Measures AES-1b and NOI-1* (2020 MMRP, pp. 2 and 63) would further avoid, minimize and/or reduce the potential for impacts.

Would the Project result in generation of excessive ground borne vibration or ground borne noise levels?

The Proposed Modifications would employ the same equipment evaluated in the 2020 Final IS/MND (p. 180) and the 2021 Addendum (p. 31-32), The vibrations from on-land truck mounted drill rigs and CPT rigs are minimal and vibrations are typically not detectable by people outside of the immediate area. Vibrations from over-water soil boring investigations are minimal. Consistent with the analysis in the 2020 Final IS/MND (p. 180) and the 2021 Addendum (p. 31-32), the Proposed Modifications would have a less than significant impact on the generation of ground borne vibration or noise levels.

For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

The Proposed Modifications include Impact Areas within the Franklin Field Comprehensive Land Use Plan. The Franklin Field Airport is a visual flight rated airport used primarily for training and touch-and-go activity as well as seasonal crop dusting. The field has 6 based aircraft and approximately 50,000 aircraft operations annually, but includes no permanent fueling, service or repair facilities on-site (Airport Land Use Commission 1992). The Proposed Modifications do not include any use of aircraft or helicopters and, consistent with the evaluation in the 2020 Final IS/MND (p. 180) and the2021 Addendum (p. 32), would not generate noise in excess of existing activities in the area. Consistent with the analysis in the 2020 Final IS/MND (p. 180) and the 2021 Addendum (p. 32), the Proposed Modifications would have a less than significant impact regarding excessive noise levels within the vicinity of airports or airport land use plans.

Conclusion

The conclusion regarding a less than significant impact on Noise from the 2020 Final IS/MND (pp.179-180) and 2021 Addendum (p. 32) remains unchanged, as the Proposed Modifications do not result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Noise that could result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts.

2.14 Population and Housing

Would the project 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 Modifications do not include proposing new homes or businesses, nor would it require adding roads or other infrastructure in association with the activities. Furthermore, the Project activities would be short in duration. Consistent with the analysis in the 2020 Final IS/MND (p. 183) and the 2021 Addendum (p. 32-33), the Proposed Modifications would have no impact on population growth in the area, either directly or indirectly.

Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

The Proposed Modifications, consistent with the activities evaluated in the 2020 Final IS/MND (p. 183) and the 2021 Addendum (p. 33), would be temporary, discreet work that has a small footprint at each Impact Area and would not require infrastructure, and is mostly located on or adjacent to roads and road shoulders in disturbed areas. Consistent with the analysis in the 2020 Final IS/MND (p. 183) and 2021 Addendum (p. 33), the Proposed Modifications would have no impact on displacement of existing people or housing.

Conclusion

The conclusion regarding no impact on Population and Housing from the 2020 Final IS/MND (p.183) and the 2021 Addendum (p. 33), remains unchanged, as the Modifications Proposed Modifications do not result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Population and Housing that could result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts.

2.15 Public Services

Would the project 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 including:

Fire protection?

The Proposed Modifications would not introduce any new impacts pertaining to fire protection, as activities are minor (requiring limited amounts of additional people and vehicles on site) and are short in duration (at most 20 days for the deeper investigation locations, and 35 days for the 700 ft. angled borehole. The 700 ft. borehole, is however, sited near Bethany Reservoir and would not interfere with a major thoroughfare. Proposed Modifications would not increase the demand on fire protection services, as per the analyses in the Approved Project. Of note, several of the Proposed Modifications are sited along roads. As per the Discussion in the 2020 IS/MND (p. 187) flaggers or temporary lane closures may be necessary, but road closures would not be required. As such, the Proposed Modifications would not significantly impair or interfere with emergency access, including any emergency response or evacuation routes. The Proposed Modifications would not significantly impair or interfere with emergency access, including any emergency response or evacuation routes. Service ratios, response times, and other performance objectives would not be significantly impacted during soil investigation activities as it relates to fire protection.

Consistent with the analysis in the 2020 Final IS/MND (p. 187) and the 2021 Addendum (pp. 33-34), the Proposed Modifications would have a less than significant impact to fire protection. Implementation of *Mitigation Measures PUB-1 and TRANS-1* would further avoid, minimize and/or reduce the potential for impacts (2020 MMRP, pp. 63-66).

Police Protection?

The Proposed Modifications would not introduce any new impacts pertaining to police protection, as activities are minor (requiring limited amounts of additional people and vehicles on site) and short in duration. Proposed Modifications would not increase the demand on police services. Emergency response routes and plans

would not be impacted by soil investigation activities at each site. Proposed Modifications would not increase the demand on police protection services, as per the analyses in the Approved Project. Of note, several of the Proposed Modifications are sited along roads. As per the Discussion in the 2020 IS/MND (p. 187) flaggers or temporary lane closures may be necessary, but road closures would not be required. As such, the Proposed Modifications would not significantly impair or interfere with police protection services, including any emergency response or evacuation routes. The Proposed Modifications would not significantly impair or interfere with emergency access, including any emergency response or evacuation routes. Service ratios, response times, and other performance objectives would not be significantly impacted during soil investigation activities as it relates to police protection.

Consistent with the analysis in the 2020 Final IS/MND (pp. 187-188) and the 2021 Addendum (p. 33-34), the Proposed Modifications would have no impact on police protection. Implementation of *Mitigation Measures PUB-1 and TRANS-1* would further avoid, minimize and/or reduce the potential for impacts (2020 MMRP, pp. 63-66).

Schools?

The Proposed Modifications would not introduce any new impacts pertaining to schools as activities are minor and short in duration and would not impact service ratios or any other performance objective for schools within the Proposed Project area. While one of the new boring locations is within 0.25 miles of Mountain House Elementary School, it will be located adjacent to the roadway, and would only require limited amounts of people and vehicles. Soil investigation activities are minor and short in duration; therefore, disturbances to these areas would be minimal. Additionally, as discussed above in the Population and Housing Section, soil investigation activities would not induce any population growth that would necessitate building new schools. Consistent with the analysis in the 2020 Final IS/MND (p. 188) and the 2021 Addendum (p. 34), the Proposed Modifications would have no impact on the need for new schools or renovating existing schools.

Parks?

The Proposed Modifications would not introduce any new impacts pertaining to parks. The proposed 700 ft. angled borehole is within the Bethany Reservoir State Recreation Area, originally analyzed under the 2021 Addendum. Drilling locations for the Proposed Modifications are mostly located on or adjacent to roads and road shoulders in disturbed areas and would only require limited amounts of people and vehicles at each site. Soil investigation activities are minor and short in duration, therefore disturbances to these areas would be minimal. Consistent with the analysis in the 2020 Final IS/MND (p. 188) and the 2021 Addendum (p. 34), the Proposed Modifications would have no impact on the need for new parks or renovating existing parks, nor would it impact service ratios, response times or other performance objectives of the State Recreation System, or Parks in the surrounding area.

Other public facilities?

The Proposed Modifications would not introduce any new impacts pertaining to public facilities, as activities are minor and occurring over a short duration of time. Service ratios and other performance objectives would not be impacted during soil investigation activities as it relates to other public facilities, including those such as hospitals and libraries. Proposed Modifications would not increase the demand on public facilities, either due to an increased worker population or due to Proposed Project-related hazards. Consistent with the analysis in the 2020 Final IS/MND (p. 188) and the 2021 Addendum (p. 34), the Proposed Modifications would have no impact on the need for new public facilities or renovating existing public facilities.

Conclusion

The conclusion regarding a less than significant impact on Public Services from the 2020 Final IS/MND (pp. 187-188) and 2021 Addendum (33-35) remains unchanged, as the Proposed Modifications do not result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Public Services that could result in any new potentially significant impacts.

2.16 Recreation

Would the Project 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?

The Proposed Modifications are sited near roadways, or within/near agricultural fields, they are not sited near parks or other recreational facilities, other than the 700 ft. angled borehole that is near the Bethany Reservoir State Recreation Area. No substantial physical deterioration of the State Recreation Area would occur or be accelerated by the soil investigations near the Reservoir. Recreation opportunities in the vicinity of Impact Areas associated with the Proposed Modifications are like those described in the 2020 Final IS/MND (pp. 189-190) and the 2021 Addendum (p. 35). The Proposed Modifications are short in duration and small in size and would not result in the increase in use of existing neighborhood and regional parks or other recreational facilities. Consistent with the analysis in the 2020 Final IS/MND (p. 189-190) and 2021 Addendum (pp. 35-36), the Proposed Modifications would have no impact on the increased use of parks or recreational facilities.

Would the Project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

The Proposed Modifications do not include construction or expansion of recreational facilities. Consistent with the analysis in the 2020 Final IS/MND (p. 190) and the2021 Addendum (p. 35), the Proposed Modifications would have no impact on the construction or expansion of recreational facilities.

Conclusion

The conclusion regarding no impact on Recreational resources from the 2020 Final IS/MND (pp. 189-190) and the 2021 Addendum (p. 35), remains unchanged, as the Proposed Modifications do not result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Recreational resources that could result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts.

2.17 Transportation

Would the project conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?

Despite the extended duration of investigation activities, where depths have increased, the Proposed Modifications would follow the same project activities outlined in the 2020 Final IS/MND (pp. 192-193) and 2021 Addendum (pp. 36-37), which are temporary in nature and would not permanently alter the circulation system, including transit, and pedestrian facilities. During operation of the drilling equipment there may be temporary lane closures due to equipment and other vehicles on site, partially occupying a lane, which may cause temporary traffic congestion. However, temporary congestion and/or lane closures would not conflict with any applicable plans, programs, ordinances, or policies and remains consistent with the analysis in the 2020 Final IS/MND (pp. 192-193) and the 2021 Addendum (pp. 35-36). The Proposed Modifications would continue to have a less than significant impact with regard to conflicts with programs, plans, ordinances, or policies addressing the circulation system. Implementation of *BIO-1, GHG-1, and TRANS-1* would further ensure Proposed Modifications avoid, minimize and/or reduce the potential for impacts (2020 MMRP, pp. 5-13, 48- 49, 65-66).

Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3 subdivision (b)?

The Proposed Modifications would follow the same project activities outlined in the 2020 Final IS/MND (pp. 193-194) and 2021 Addendum (p. 36). Activities are temporary in nature and are not considered a “land use project’ or a “transportation project”, and therefore would not alter the land use and subsequently generate additional sustained amounts of VMT. Section 15064.3, subdivision (a), states, “For the purposes of this section, ‘vehicle miles traveled’ refers to the amount and distance of automobile travel attributable to a project.”

DWR and counties, except for Sacramento County, in which the soil investigations are located have not yet elected to be governed by the VMT provision of Section 15064.3, so there is currently only a VMT standard to compare VMTs of the Approved Project or Proposed Modifications for locations in Sacramento County.

While Sacramento County Significance Thresholds for CEQA Transportation Analysis for Development Projects have been established, projects that meet certain criteria are expected to have less-than-significant VMT impacts based upon project description, characteristics, and/or location. These criteria include projects that would result in fewer than 237 average daily traffic (ADT) (in the case of small projects and for context – 20 single-family homes would generate 237 daily trips, using the fitted curve methodology) (County of Sacramento, 2020).

The criteria to comply with CEQA Section 15064.3 involves analyzing transportation impacts for land use projects and transportation projects. The Proposed Modifications are not related to land use or transportation and thus, VMT calculations need not be evaluated for this project. Because of the small number of trips, the Project type, and the temporary nature of the activity, the Proposed Modifications would not result in a significant increase in VMT.

Consistent with the analysis in the 2020 Final IS/MND (pp. 193-194) and the 2021 Addendum (p. 36), the Proposed Modifications would have no impact with regard to CEQA Guidelines section 15064.3 subdivision (b).

Would the project substantially increase hazards due to geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The Proposed Modifications, as with the described activities in the 2020 Final IS/MND (p. 194) and 2021 Addendum (p. 37), would not include any changes to the existing roadways. No sharp curves, dangerous intersection, or incompatible uses would result from the Proposed Modifications. Consistent with the analysis in the 2020 Final IS/MND (p. 194) and the 2021 Addendum (p.37), the Proposed Modifications would have no impact on hazards due to geometric design features or incompatible uses.

Would the project result in inadequate emergency access?

The Proposed Modifications would follow the same project activities outlined in the 2020 Final IS/MND (pp. 191-192) and 2021 Addendum (p. 37), as traffic delays may occur due to lane closures for soil investigation activities. The Proposed Modifications would not close access to any access roads and would not result in the redesign or alteration of any public roadways, nor would emergency access be blocked. Consistent with the analysis in the 2020 Final IS/MND (pp. 192-194) and the2021 Addendum (pp. 36-37), the Proposed Modifications would have a less than significant impact to emergency access. Implementation of *Mitigation Measures GHG-1, HAZ-3, and TRANS-1* would further avoid, minimize and/or reduce the potential for impacts (2020 MMRP, pp. 48-49, 59, and 65-66).

Conclusion

The conclusion regarding a less than significant impact on Transportation from the 2020 Final IS/MND (pp. 192-194) and 2021 Addendum (pp. 36-37) remains

unchanged, as the Proposed Modifications do not result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Transportation that could result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts.

2.18 Tribal Cultural Resources

Would the Proposed Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code 5020.1 (k), or

b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

As discussed in Section 3.18.1.2 of the 2020 Final IS/MND (pp. 198-201) and the 2021 Addendum (pp. 37-38), Tribal consultation was conducted to support the identification of Tribal Cultural Resources in the Study Area. AB 52 Consultation started in the Summer of 2019 and closed late Spring 2020 (prior to the July 9, 2020, approval of the project). Tribal coordination has continued through implementation of adopted *Mitigation Measures*.

Tribal coordination occurred with all AB-52 Tribes and other Tribes consulting under DWR's Tribal Engagement Policy. Through this established process, participating Tribes have been informed of the Proposed Modifications and provided with an opportunity to comment on them. Consistent with the analysis in the 2020 Final IS/MND (pp. 201-202) and 2021 Addendum (pp. 37-38), with implementation of *Mitigation Measures CUL-1- 4* (2020 MMRP, pp. 44-47) potential impacts of the Modifications would be reduced to less than significant.

Conclusion

The conclusion from the 2020 Final IS/MND (pp. 201-202) and 2021 Addendum (pp. 37-38) regarding a less than significant impact, with mitigation, on Tribal Cultural Resources remains unchanged. The Proposed Modifications do not result in any new or significant impacts or a substantial increase in the severity of previously identified potentially significant impacts. Additionally, no changes in circumstance or

new information of substantial importance have been identified for Tribal Cultural Resources during this review for the Proposed Modifications.

2.19 Utilities and Service Systems

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

The Proposed Modifications do not involve building infrastructure, is minor and temporary in nature, and thus would have no impact on utilities and service systems, wastewater systems, power, gas, or telecommunications. Consistent with the analysis in the 2020 Final IS/MND (p. 206) and the2021 Addendum (p. 38), the Proposed Modifications would have no impact on utilities and service systems. Implementation of Mitigation Measure *UTI-1* (2020 MMRP, p. 66) would further avoid, minimize and/or reduce the potential for impacts on utilities and service systems.

Would the Project have sufficient water supplies available to serve the Project and reasonably foreseeable future development during normal, dry, and multiple dry years?

Due to the minor and temporary nature of the soil investigation activities, the Proposed Modifications would not change the availability of existing water supplies. Consistent with the analysis in the 2020 Final IS/MND (p. 206) and the 2021 Addendum (p. 38), the Proposed Modifications would have no impact on existing water supplies available to serve the project.

Would the Project 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?

The Proposed Modifications are minor and temporary and would not impact the service of wastewater treatment providers in the Study Area. Consistent with the analysis in the 2020 Final IS/MND (pp. 206-207) and the 2021 Addendum (p. 38), the Proposed Modifications will not result in a determination of inadequate capacity by the wastewater treatment providers, nor would it prevent the provider's from meeting their existing commitments.

Would the Project 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?

The Proposed Modifications would generate more solid waste, due to the greater depths, but solid waste generated under the Proposed Modifications, as with the Approved Project, would be disposed of in accordance with all federal, State, and local statutes and regulations related to solid waste, and would not exceed the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. Although the additional deeper explorations would generate more

waste than the shallower explorations being removed, the increase in the amount of waste would not cause the project to exceed the standards or capacity of the local infrastructure. Consistent with the analysis in the 2020 Final IS/MND (p. 207) and the 2021 Addendum (p. 39), the Proposed Modifications would have no impact.

Would the Project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

The Proposed Modifications would stay in compliance with all federal, State, and local management and reduction statutes regulating solid waste. Consistent with the analysis in the 2020 Final IS/MND (p. 207) and the 2021 Addendum (p. 39), the Proposed Modifications, therefore, would have no impact.

Conclusion

The conclusion regarding no impact on Utilities and Service Systems from the 2020 Final IS/MND (pp. 206-207) and the 2021 Addendum (p. 39), remains unchanged, as the Proposed Modifications do not result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Utilities and Service Systems that could result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts.

2.20 Wildfire

Would the Project substantially impair an adopted emergency response plan or emergency evacuation plan?

The Impact Areas associated with the Proposed Modifications, are within the Study Area evaluated in the 2020 Final IS/MND (p. 209) and the 2021 Addendum (p. 39). A few of the sites in the Proposed Modifications, in Sacramento County, are within a wildland urban interface (ArcGIS, 2019). To ensure a minimum level of wildfire protection – the County has developed a Community Wildfire Protection Plan, which includes measures to reduce the risk of wildfire and includes emergency operations and evacuation planning. Though the Proposed Modifications may require flaggers and occasional lane closures, the soil investigation activities will not cause road closures to take place, and the soil investigation activities will not result in emergency vehicles or law enforcement delays. Therefore, the Proposed Modifications will not hinder Sacramento Counties' ability to implement its Community Wildfire Protection Plan. Additionally, safety and emergency response services would be covered in the Proposed Project's daily Job Hazard Assessment (JHA) to ensure safe mobility while on site and evacuation if necessary. Consistent with the analysis in the 2020 Final IS/MND (pp. 209-210) and the 2021 Addendum (p. 39) the Proposed Modifications would have a less than significant impact on an adopted emergency response plan or emergency evacuation plan. Implementation of *Mitigation Measures MM*- HAZ-2, PUB-1, and TRANS-1a (2020 MMRP, pp. 53-59 and 63- 65) would further avoid, minimize and/or reduce the potential for impacts.

Would the project, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Proposed Project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Consistent with the 2020 Final IS/MND (p. 210), and the 2021 Addendum (p. 40), some impact areas associated with the Proposed Modifications may be in tall, dry grasses where the machinery and vehicles actively working have the potential to exacerbate wildfires. However, the number of locations in these potential areas is not increased with the Proposed Modifications. Consistent with the analysis in the 2020 Final IS/MND (p. 210), implementation of Mitigation Measure *PUB-1* (2020 MMRP, pp. 63-64), which would include county specific emergency response considerations, would reduce the potential impacts of the Proposed Modifications to less than significant.

Would the Project 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?

Consistent with the analysis in the 2020 Final IS/MND (p. 210), and the 2021 Addendum (p. 40), the Proposed Modifications would not require installation or maintenance of associated infrastructure (roads, fuel breaks, emergency water sources, powerlines, or other utilities), thus having no impact on fire risk or ongoing impacts to the environment, as a result.

Would the Project 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?

Consistent with the analysis in the 2020 Final IS/MND (p. 210) and the 2021 Addendum (p. 40), the Proposed Modifications would not alter the current runoff regime and drainage of the Impact Areas, nor would it impact people or structures in a way that could pose significant risks through downslope or downstream flooding or landslides because of runoff, post-fire slope instability, or drainage changes. Therefore, no impact would occur because of the Proposed Modifications.

Conclusion

The conclusion regarding a less than significant impact, with mitigation, on Wildfire from the 2020 Final IS/MND (pp. 209-210) and the2021 Addendum (p. 40), remains unchanged, as the Proposed Modifications do not result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Wildfire that could result in any potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impacts.

2.21 Mandatory Findings of Significance

The Mandatory Findings of Significance conclusion of a less-than-significant impact, with mitigation, from the 2020 Final IS/MND (p. 211) and 2021 Addendum (p. 41) remains unchanged, as the Proposed Modifications do not result in any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impact, discussed in more detail in Section 2. Additionally, no changes in circumstance or new information of substantial importance have been identified for the Mandatory Findings of Significance that could result in any potentially significant impacts.

3.0 Environmental Determination

In support of the consideration of the Proposed Modifications to the Approved Project, this Addendum was prepared to evaluate the criteria set forth in Public Resources Code section 21166 and CEQA Guidelines sections 15162 and 15164, as interpreted in *Friends I*, *supra*, (2016) 1 Cal.5th 937 and *Friends II*, *supra*, (2017) 11 Cal.App.5th 596. An addendum is an appropriate subsequent document to a previously adopted MND when some changes to a project are necessary, but those changes do not create new potentially significant environmental impacts that warrant major revisions to the previous document (CEQA Guidelines §§ 15162(a)(1), 15164(a); *Friends II*, 11 Cal.App.5th at pp. 607-608). An addendum is also appropriate when circumstances surrounding a project have not substantially changed and when no new information of substantial importance has been uncovered that indicates the project could create new potentially significant impacts.

Substantial evidence presented in this Addendum demonstrates that the Proposed Modifications, described and analyzed above, do not create any new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impact. DWR finds no substantial evidence to the contrary. Nor are there any new circumstances or new information that could create potentially significant impacts or require more robust analysis (CEQA Guidelines § 15162(a)(2)-(3); *Friends I*, *supra*, at p. 953). Thus, an addendum is appropriate here, and neither a subsequent MND nor an EIR is warranted (CEQA Guidelines, § 15164(e); *Friends II*, 11 Cal.App.5th at pp. 607-608).

These criteria are individually examined below to demonstrate that no conditions triggering a subsequent MND or EIR are present.

1. **No substantial changes are proposed that will require major revisions to the MND because of new potentially significant environmental effects** or a substantial increase in the severity of previously identified potentially significant impact **(CEQA Guidelines §§ 15162(a)(1), 15164(b); *Friends II*).**

The environmental checklist (Initial Study) for the 2020 Final IS/MND was utilized in the environmental analysis of Section 5 (above) to identify any new potentially significant environmental effects due to the Proposed Modifications. Based upon the analysis above, it has been determined that the previous analysis of effects remains valid and the Proposed Modifications would not result in any new potentially significant

environmental impacts that were not previously examined in the 2020 Final IS/MND and 2021 Addendum; would not impact the feasibility of mitigation measures adopted in the 2020 MMRP or their ability to reduce the significance of effects; and would not result in the need to adopt additional mitigation measures. DWR has not identified any substantial evidence supporting a contrary conclusion with respect to the possibility of new potentially significant impacts or a substantial increase in the severity of previously identified potentially significant impact due to the Proposed Modifications.

The Approved Project is currently being implemented as described in the previously Approved Project's 2020 Final IS/MND and 2021 Addendum. Implementation of the Approved Project components, in conjunction with the adopted mitigation measures, have been effective in reducing potential impacts to less than significant. DWR presumes that implementation of the Proposed Modifications would have the same effectiveness, with no known evidence to the contrary.

2. **No new substantial changes in circumstances under which the Project will be undertaken which will require major revisions of the MND due to involvement of new potentially significant environmental effects** or a substantial increase in the severity of previously identified potentially significant impact **(CEQA Guidelines §§ 15162(a)(2), 15164(b); *Friends II*).**

The 2020 Final IS/MND and 2021 Addendum were approved in 2020 and 2021, respectively, and the Approved Project has been consistently implemented since that time. The circumstances under which the Approved Project was approved and implemented have remain largely unchanged. There is no reason to believe that implementation of the Proposed Modifications will encounter or otherwise involve a substantial change in circumstances. As stated above, the Approved Project has been implemented effectively, and DWR presumes that implementation of the Project Modifications would have the same effective results, with no known evidence to the contrary.

3. **No new information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the MND was adopted, shows: (A) the Project may have one or more new potentially significant effects not discussed in the MND; (B) mitigation measures previously found not to be feasible would in fact be feasible and would substantially reduce one or more potentially significant effects of the Project; (C) mitigation measures which are considerably different from those analyzed in the MND would substantially reduce one or more potentially significant effects on the environment. (CEQA Guidelines §§ 15162(a)(3), 15164(b); *Friends II*).**

DWR is not aware of any new information of substantial importance that would alter the above determination that the Proposed Modifications would not result in any new potentially significant environmental effects that were not previously examined in the 2020 Final IS/MND and 2021 Addendum; would not impact the feasibility of mitigation measures adopted in the 2020 MMRP or their ability to reduce the significance of effects; and would not result in the need to adopt additional mitigation measures considerably different from those previously adopted.

* * *

This Addendum was prepared to evaluate the Proposed Modifications, as required by CEQA Guidelines sections 15162 and 15164, Public Resources Code section 21166, and *Friends II*. Based on this analysis, DWR has determined that the Proposed Modifications would not have any new potentially significant environmental effects not already addressed in the 2020 Final IS/MND and 2021 Addendum. Mitigation measures that were previously adopted and made a part of the Approved Project would continue to be implemented to avoid, minimize, and mitigate potential impacts to environmentally sensitive resources because of the Approved Project and the Proposed Modifications. These Mitigation Measures are currently being implemented on previously approved activities and have been effective in avoiding, minimizing, and mitigating potential impacts to less than significant.

The analysis in this Addendum and attachments support the determination that neither a subsequent MND nor an EIR is required because none of the conditions described in CEQA Guidelines sections 15162 that would trigger a subsequent MND or an EIR would occur with the Proposed Modifications.

This Addendum, along with the previous 2021 Addendum and 2020 Final IS/MND, have been considered and based on this supporting information, DWR has approved the Proposed Modifications as analyzed in this Addendum.

June 30, 2022

Carolyn Buckman
California Department of Water Resources
Delta Conveyance, Environmental Program Manager

Date

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5.0 Attachments

5.1 Attachment A: Soil Investigation Final ISMND

Soil Investigations for Data Collection in the Delta

Final Initial Study

Mitigated Negative Declaration

SCH# 2019119073

July 2020

California Department of Water Resources

1416 Ninth Street

Sacramento, CA 95814

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FINAL INITIAL STUDY

SOIL INVESTIGATIONS FOR DATA COLLECTION IN THE DELTA

1. Proposed Project Title	Soil Investigations for Data Collection in the Delta
2. Lead Agency Name and Address	California Department of Water Resources 1416 Ninth Street Sacramento, California 95814
3. Contact Person and Phone Number	Katherine Marquez (916) 651-7011
4. Proposed Project Location	Specific locations within the Sacramento-San Joaquin Delta
5. Proposed Project Sponsor's Name	California Department of Water Resources
6. General Plan Designation	General Plan designations in the Study Area of the Proposed Project allow a variety of uses including agriculture, outdoor recreation, wildlife habitat, public facilities, and limited areas for commercial, industrial, and rural residential development.
7. Zoning	Land use zoning codes in the Study Area of the Proposed Project allow a variety of uses including agriculture, outdoor recreation, wildlife habitat, public facilities, and limited areas for commercial, industrial, and rural residential development.
8. Description of Proposed Project	Activities to determine the composition, location, and geotechnical properties of soil materials commonly found in the Delta which would inform the design, environmental analysis, and development of alternatives for a potential Delta conveyance project and contribute to DWR's overall understanding of Delta geology.
9. Surrounding Land Uses and Setting	Surrounding land uses in the Study Area of the Proposed Project include a

	variety of uses including agriculture, outdoor recreation, wildlife habitat, public facilities, and limited areas for commercial, industrial, and rural residential development.
10. Other Public Agencies Whose Approval is Required	California Department of Fish and Wildlife (CDFW), US Army Corps of Engineers (USACE), State Office of Historic Preservation, National Historic Preservation Act, US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS), State Water Resources Control Board (SWB), and State Lands Commission (SLC).
11. Have California Native American tribes traditionally and culturally affiliated with the Proposed Project area requested consultation pursuant to Public Resources Code section 21080.3.1? If so, is there a plan for consultation that includes, for example, the determination of significance of impacts to tribal cultural resources, procedures regarding confidentiality, etc.?	Yes, consultation pursuant to Public Resources Code Section 21080.3.1 was requested by multiple tribes, that consultation process and the formal closure of that process is described in more detail in the Tribal Cultural Resources section of the Initial Study.

MITIGATED NEGATIVE DECLARATION

PROPOSED PROJECT: Soil Investigations for Data Collection in the Delta

LEAD AGENCY: California Department of Water Resources

PROPOSED PROJECT LOCATION: The Proposed Project Study Area is located within the legal Delta in Alameda, Contra Costa, Sacramento, Solano, San Joaquin, and Yolo Counties.

PROPOSED PROJECT DESCRIPTION:

The Department of Water Resources (DWR) plans to conduct soil investigations for the purposes of measuring physical properties of the soils, location of the groundwater table, and other typical geologic and geotechnical parameters that will be used to inform and evaluate alternatives, consistent with Executive Order N-10-19, for a proposed single tunnel Delta conveyance (requiring a separate CEQA process) consistent with Governor Newsom's new approach to modernize Delta water conveyance.

The primary objective of the proposed soil investigation is to determine the composition, location, and geotechnical properties of soil materials, which are anticipated to be sand, silt, clay and peat soils that are commonly found in the Delta. The planned work includes overwater and land-based soil borings, cone penetration tests (CPTs), and geophysical surveys. This testing is necessary because there is a lack of geotechnical data at relevant depths, available to the Department of Water Resources in the Study Area.

The Study Area includes a portion of the Sacramento-San Joaquin River Delta, encompassing the area from south of the City of West Sacramento to just north of Bethany Reservoir, and stretches from east of Interstate 5 to west of State Route 160 (River Road). The landscape within the Study Area includes a variety of land-uses including agriculture, parks and open space, urban and rural residential neighborhoods, commercial development, and scenic roadways and waterways.

ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED:

The environmental factors checked below would be potentially affected by this Proposed Project, involving at least one impact that is a "Potentially Significant Impact" as indicated by the checklist on the following pages:

ENVIRONMENTAL CHECKLIST

☐ Aesthetics	☐ Agricultural and Forestry	☐ Air Quality
☒ Biological Resources	☒ Cultural Resources	☐ Energy
☐ Geology Soils	☒ Greenhouse Gas Emissions	☒ Hazards & Hazardous Materials
☐ Hydrology/ Water Quality	☐ Land Use/ Planning	☐ Mineral Resources

☐ Noise	☐ Population/ Housing	☐ Public Services
☐ Recreation	☐ Transportation	☒ Tribal Cultural Resources
☐ Utilities/ Service Systems	☒ Wildfire	☒ Mandatory Findings of Significance

FINDINGS: Based on the Initial Study, it has been determined that the Proposed Project would not have any significant effects on the environment because environmental commitments and mitigation measures would be implemented to clearly reduce impacts to a less than significant level. This conclusion is supported by the following findings:

1. The Proposed Project would not impact agriculture and forest resources, land use and planning, population and housing, recreation, or utilities and service systems.
2. The Proposed Project would have a less than significant impact to aesthetics, air quality, energy, geology and soils, hydrology and water quality, mineral resources, noise, public services, or transportation and traffic.
3. Mitigation has been adopted by DWR to clearly reduce potentially significant impacts related to biological resources, cultural resources, greenhouse gas emissions, hazards and hazardous materials, tribal cultural resources, or wildfire to less than significant.

MITIGATION MEASURES: The following mitigation measures will be implemented as part of the Proposed Project to avoid, minimize, rectify, reduce or eliminate, or compensate for potentially significant environmental impacts. Implementation of these mitigation measures would reduce the potentially significant environmental impacts of the Proposed Project to less-than-significant levels:

MM AES-1:

a. Each Impact Area will be returned to as close to pre-activity conditions as possible. This will be documented by still photos taken pre- and post-activity.

b. No building structures will be removed or disturbed. Soil investigation activities will occur at a distance greater than 100 feet (30.5 meters) from residences and small business operations. If fencing needs to be removed for access, it would be replaced in kind after the work is completed.

c. No trees or vines will be removed during exploration activities; and only minor disturbances to vegetation would occur during mobilization of equipment. This minor disturbance may consist of mowing, removal of a few tree limbs, or trimming of bushes for site access. However, if access requires removal of any vegetation, the landowner would be consulted first to minimize the impact to both vegetation and the landowner.

MM AES-2:

a. Navigational lighting will be used as needed for overwater work, but will meet the standards required for waterway safety, and will not increase the existing ambient lighting of the area in a substantial way. Any lighting used on barges or drill ships will not exceed the standards of brightness for standard navigational safety requirements.

b. All work will occur between sunrise and sunset.

MM AGR-1:

Any proposed soil investigation activities that occur on agricultural lands will be grouted with materials that conform to ANSI and ASTM standards from the full depth to five feet (1.5 meters) below the surface. The final five feet (1.5 m) of topsoil will be replaced to return the Impact Area to as close to pre-activity conditions as possible. The backfill procedure will be in accordance with State of California Bulletin 74-81/74-90 and local county standards.

MM AIR-1:

a. 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.

b. Cover or maintain at least six feet (1.83 meters) 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 will be covered.

c. All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. Use wet power vacuum street sweepers to remove any visible track out mud or dirt onto adjacent public roads as needed. Use of dry power sweeping and blower devices is prohibited.

d. Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).

MM BIO-1:

a. All litter, debris, unused materials, rubbish, supplies, or other material will be appropriately stored in closed containers until it can be removed from project sites and deposited at an appropriate disposal or storage site. All trash that is brought to a project site during soil investigation activities (e.g., plastic water bottles, plastic lunch bags, cigarettes) shall be removed from the site daily.

b. As stated in the project description, all on-land soil investigation Impact Areas will be located outside of wetlands as defined in the Corps of Engineers Wetlands Delineation Manual (USACE 1987). Evaluation of conditions at each site will be conducted by qualified wetland delineators. If after review of applicable data sources, nearby aquatic resources are identified for on-land soil investigation sites, including those that meet the Corps definition of wetlands or non-wetland waters,

wetland delineators will participate in the site surveys for those sites and relocate them outside of the boundaries of observed aquatic resources.

c. Over-water sites will be located within portions of navigable channels or sloughs that generally do not provide appropriate habitat for terrestrial plant or wildlife species, and will be authorized under the Clean Water Act sections 401 and 404, and Fish and Game Code section 1602 et seq.

d. A qualified team of biologists will conduct a habitat assessment and reconnaissance level surveys approximately two weeks prior to the onset of ground disturbing soil investigation activities for any special status plants and wildlife that have the potential to occur within the project area. If the biologists identify the potential for special status wildlife impacts within the Impact Area and associated standard species buffers based on the site reconnaissance, the location will be shifted the minimum distance necessary to reduce the potential for biological impacts to a less than significant level without increasing impacts to other resources to above a level of significance. If a suitable location cannot be determined within adjacent areas, then the soil investigation at that location will not be conducted.

e. The qualified biologist(s) must, at a minimum, have experience conducting surveys to identify the specific species and associated habitat that could occur on site.

f. A qualified biologist will be on-site for all project activities and will conduct an environmental awareness training session for all new field personnel prior to the start of work each day. Throughout the project, any new staff will be provided training before they begin working on the project. A running list of trained personnel will be kept on site in the project permit binder and includes name, date of training, work site and their signature. At a minimum, the training shall:

    i. include a description of each species with the potential to occur, including physical description, habitat needs, and life history as well as a discussion of the importance of avoiding impacts to special status wildlife.

    ii. explain the general measures that are being implemented to conserve these species as they relate to the project and project area, and procedures to follow should they encounter wildlife during work.

    iii. explain the stop work authority of biologists and/or cultural resource specialists.

g. Any observations of federally or state-listed species or California Species of Special Concern will be reported to CDFW within three (3) working days of the observation, and the observation(s) will be submitted to the California Natural Diversity Database (CNDDB). Any observations of federally listed species will also be reported to the U.S. Fish and Wildlife Service.

h. All federally or state-listed species observed will be allowed to leave the Impact Area on their own. If the biologist determines that continuing activities could potentially cause unpermitted take under federal or State law to a federally or state-listed species, activities must cease. Work may not resume until the on-site biologist has determined there is no longer the possibility of causing unpermitted take under federal and State law.

i. The area below any vehicle or piece of equipment that has been stationary for 24 hours or greater will be examined prior to operation to ensure that no wildlife species is present.

j. No pets or firearms will be permitted on site.

k. Any open holes or trenches that will be left exposed overnight will either be securely covered or have an escape ramp installed to prevent entrapment of any wildlife.

l. Any piping or casing left exposed overnight will be capped to prevent wildlife from entering.

MM BIO-2:

a. No project activities will be conducted during or within 24 hours following a rain event in locations that have a potential for special status amphibians to occur or are near wetlands or other water features.

b. In areas with the potential for special-status reptiles and amphibians to occur, prior to the onset of project activities at any Impact Area, a qualified biologist will conduct pre-activity surveys to determine whether any such species are present. A qualified biologist must, at a minimum, have experience conducting surveys to identify the California tiger salamander, California red-legged frog, western spadefoot, western pond turtle, and/or giant garter snake and their associated habitat.

c. Any active rodent burrows or suitable cracks identified by a qualified biologist during the pre-activity survey will be flagged so that they can be avoided.

d. Any burrows, cracks or fissures suitable for rodents that cannot be avoided and will be temporarily impacted by the movement and placement of equipment or other project activities will be covered with plywood to avoid burrow collapse.

e. Leaf litter will be surveyed by the biologist for presence of wildlife prior to the onset of work, and if any special-status species are identified as using the leaf litter for refuge it will be avoided and a buffer will be established by a qualified biologist and flagged.

f. If any special-status reptiles or amphibians are observed within the Impact Area, the on-site biologist will determine if the work can continue without harm to the individual(s). If the biologist determines that it is not safe to continue work, all work

will cease until the animal has left the Impact Area. Once the individual(s) is determined by the on-site biologist to have left the Impact Area and is out of harm's way, work may resume.

g. Piles of rock, rip-rap, or other materials that could provide refuge to reptiles or amphibians will be avoided. If movement of such materials cannot be avoided, a qualified biologist will survey the area prior to disturbance and monitor the material movement and restoration of the area following completion of Proposed Project activities.

MM BIO-3: Western pond turtle

a. In areas with the potential for western pond turtle to occur, pre-activity presence/absence surveys for western pond turtle shall occur within 48 hours prior to the onset of project activities at any Impact Area.

b. If Western pond turtles are observed on land during the pre-activity surveys, the area within 328 feet (100 meters) of the boundary of the aquatic habitat will be flagged and avoided if feasible.

c. If western pond turtles are observed within the Impact Area during a pre-activity survey or during project activities, they will be relocated outside of the Impact Area to appropriate aquatic habitat by a qualified biologist.

MM BIO-4: Giant garter snake

a. Upland habitat within 200 feet (61 meters) of suitable aquatic habitat, that is suitable for giant garter snake (containing cracks or rodent burrows) will be flagged and avoided.

b. On-land soil investigations within suitable upland habitat for giant garter snake will be conducted during the snakes' active season of May 1 through October 1.

MM BIO-5: Rookery Birds

To minimize and avoid the potential impacts to special-status rookery birds that may occur within the Study Area the following general measures will be implemented:

a. A pre-activity survey for active rookeries will be conducted (during nesting season between February 1 – August 31) a maximum of 72 hours prior to the onset of soil investigation field activities. The qualified biologist(s) must, at a minimum, have experience conducting surveys to identify the specific rookery bird species and associated habitat that could occur on site.

b. If any active rookeries are identified within or adjacent to an Impact Area, a buffer will be put in place to ensure that the birds are not disturbed during work activities.

This buffer will be up to 50 feet (15 meters), but can be smaller, dependent on-site conditions and at the discretion of the qualified biologist.

MM BIO-6: Raptors (excluding Swainson's Hawk and Burrowing Owl)

To minimize and avoid the potential impacts to special-status raptors that may occur within the Study Area the following general measures will be implemented:

a. For soil investigation field activities that will occur between February 1 – August 31, a pre-activity survey for actively nesting raptors will be conducted by a qualified biologist a maximum of 72 hours prior to the onset of project activities. The qualified biologist(s) must, at a minimum, have experience conducting surveys to identify the specific species and associated habitat that could occur on site.

b. If any active raptor nests are identified within or adjacent to an Impact Area by the pre-action survey, a buffer will be put in place to avoid disturbance to birds during and as a result of work activities. This buffer will be up to 250 feet (76 meters), but can be smaller, dependent on-site conditions and at the discretion of the qualified biologist.

c. Any identified actively nesting raptors will be monitored by a qualified biologist during activity activities for signs of distress or disturbance as a result of field activities. Should the birds show signs of distress, work will cease at that location until the birds have resumed normal behavior and it is determined by the on-site biologist that work can be resumed.

MM BIO-7: Tricolored Blackbird

To minimize and avoid the potential impacts to Tricolored Blackbird that may occur within the Study Area the following general measures will be implemented:

a. For soil investigation field activities that will occur March 15- July 31 in areas with potential breeding habitat for Tricolored Blackbird, a pre-activity survey for breeding colonies will be conducted by a qualified biologist within 1,300 feet (396 meters) of Impact Areas a maximum of 72 hours prior to the onset of soil investigation activities. The qualified biologist(s) must, at a minimum, have experience conducting surveys to identify Tricolored Blackbird and associated habitat that could occur on site.

b. For soil investigation field activities that will occur August 1 – March 14 in areas with potential roosting habitat for Tricolored Blackbird, a pre-activity survey for roosting Tricolored Blackbirds will be conducted during the nonbreeding season within 300 feet (91 meters) of Impact Areas a maximum of 72 hours prior to the onset of soil investigation activities by a qualified biologist.

c. If active Tricolored Blackbird breeding colonies or roost sites are identified within or adjacent to an Impact Area, a buffer will be put in place to ensure that the birds are

not disturbed during work activities. This buffer will be up to 1,300 feet (396 meters) but may be reduced to a minimum of 300 feet (91 meters) dependent on-site conditions and at the discretion of the qualified biologist.

MM BIO-8: Nesting Birds

To minimize and avoid the potential impacts to nesting birds (non-raptor) protected by the MBTA and Fish and Game Code that may occur within the Study Area the following general measures will be implemented:

a. For soil investigation field activities that will occur February 1 – August 31, a pre-activity survey for actively nesting birds will be conducted a maximum of 72 hours prior to the onset of soil investigation activities by a qualified biologist. The qualified biologist(s) must, at a minimum, have experience conducting surveys to identify the specific species and associated habitat that could occur on site.

b. If any active nests are identified within or adjacent to an Impact Area, a buffer will be put in place to ensure that no take (as defined by MBTA), and no take, possession, or needless destruction (as prohibited under the Fish and Game Code) occurs. This buffer will be up to 50 feet (15 meters), but can be smaller, dependent on-site conditions and at the discretion of the qualified biologist

MM BIO-9: Sandhill Crane

To minimize and avoid the potential indirect impacts to Lesser and Greater Sandhill Crane that may occur within the Study Area, the following general measures will be implemented:

a. For soil investigation field activities that will occur September 15 through March 15, during roosting season, pre-activity surveys and an assessment of known roost sites will be conducted within 0.75 mile (1,207 meters) of Impact Areas by a qualified biologist.

b. If roost sites are identified within 0.25 mile (402 meters) of Impact Areas by the qualified biologist, start of large equipment use for soil investigation activities will be delayed to an hour after sunrise and stop an hour before sunset to minimize potential for noise disturbance at the roost site.

MM BIO-10: Burrowing Owl

To minimize and avoid the potential impacts to Burrowing Owl that may occur within the Study Area, the following general measures will be implemented:

a. In areas with the potential for Burrowing Owl to occur, prior to soil investigation field activities, a qualified biologist will conduct a pre-activity survey. The surveys will establish the presence or absence of Burrowing Owl and/or suitable habitat features and evaluate use by owls in accordance with CDFW survey guidelines (CDFW 1993). For each Impact Area, the biologist will survey the proposed disturbance footprint and a 500-foot (152 meter) radius from the perimeter of the proposed footprint to identify any suitable burrows and owls. Adjacent parcels under different land ownership will not be surveyed. Surveys should take place near sunrise or sunset in accordance with CDFW guidelines. Suitable burrows or Burrowing Owls will be identified and mapped. Surveys will take place no more than 30 days prior to soil investigation field activities. During the breeding season (February 1– August 31), surveys will document whether Burrowing Owls are nesting in or directly adjacent to any Impact Area. During the nonbreeding season (September 1–January 31), surveys will document whether Burrowing Owls are using habitat in or directly adjacent to any disturbance area. Survey results will be valid only for the season (breeding or nonbreeding) during which the survey is conducted.

b. If Burrowing Owls are found during the breeding season (February 1 – August 31), all nest sites that could be disturbed by project activities will be avoided during the remainder of the breeding season or while the nest is occupied by adults or young. Avoidance will include establishment of a non-disturbance buffer zone (described below in parts c and d).

c. Soil investigation activities may occur during the breeding season only if a qualified biologist monitors the nest and determines that the birds have not begun egg-laying and incubation or that the juveniles from the occupied burrows have fledged. During the nonbreeding season (September 1 – January 31) the owls and the burrows they are using will be avoided. Avoidance will include the establishment of a buffer zone (described below).

d. During the breeding season, buffer zones of at least 250 feet (76 meters) in which no soil investigation activities can occur will be established around each occupied burrow (nest site). Buffer zones of 160 feet (49 meters) will be established around each burrow being used during the nonbreeding season. The buffers will be delineated by highly visible, temporary fencing or flagging.

MM BIO-11: Swainson’s Hawk

To minimize and avoid the potential impacts to Swainson’s Hawk that may occur within the project area, the following general measures will be implemented:

a. If soil investigations field activities will occur during the nesting season (March 15–September 15), a pre-activity survey will be conducted by a qualified biologist within 0.25 mile (402 meters) of Impact Areas following the Recommended Timing and Methodology for Swainson’s Hawk Nesting Surveys in California’s Central Valley (SWHA Technical Advisory Committee 2000) between 5 days and 72 hours prior to the start of soil investigation activities to identify Swainson’s Hawk nests.

b. If active nests are observed within 0.25 mile (402 meters) of an Impact Area, project activities will be limited to outside of the breeding season (March 15 – September 15) or until the nest is determined to be inactive or fledged by a qualified biologist.

c. When soil investigation activities must occur within 0.25 mile (402 meters) of a known or potential nest during nesting season (March 15 – September 15), soil investigation field activities will be initiated prior to egg-laying, if possible. If soil investigation activities must begin after egg-laying, a 650-foot (198 meter) no-activity buffer will be established between an active nest and any soil investigation activities until eggs have hatched. If site-specific conditions or the nature of the project activity (e.g., steep topography, dense vegetation, limited activities) indicate that a smaller buffer could be used, the qualified biologist will determine the appropriate buffer size.

d. If young fledge prior to September 15, soil investigation activities can proceed normally, subject to confirmation by a qualified biologist that the young have fledged from active nest sites. If the active nest site is shielded from view and noise from the project site by other development, topography, or other features, the qualified biologist may determine that project activities can proceed.

e. A qualified biologist with stop-work authority will be present during soil investigation field activities and may halt project activities if the biologist determines that Swainson's Hawks in the vicinity of soil investigation activities are disturbed to the point where nest abandonment is likely. Additional protective measures, as determined by the qualified biologist, will be implemented prior to resuming soil investigation activities.

MM BIO-12: Vernal Pool Species

a. All ground disturbing activities (boring, CPT, or vegetation removal) shall be located at least 100 feet (30 meter) from a vernal pool to avoid impacts to sensitive vernal pool invertebrates.

b. No project activities shall take place within an area identified as vernal pool complex, as determined by a qualified biologist, when wet soil conditions would increase the likelihood of vehicle traffic or other activities altering the site topography.

MM BIO-13: Valley Elderberry Longhorn Beetle

To minimize and avoid the potential impacts to Valley Elderberry Longhorn Beetle (VELB) that may occur within the project area, the following measures will be implemented:

a. When feasible, project activities shall be sited at least 164 feet (50 meters) from elderberry shrubs with stem diameter greater than 1-inch (2.5 centimeter).

b. If activities must be conducted within 164 feet (50 meters) of an elderberry shrub, the following measures will apply:

   i. activities will be conducted outside of VELB flight season (March 1-July 31);

   ii. a biological monitor will be present to monitor all project activities at the site;

   iii. all ground disturbing activities (boring, CPT, or vegetation removal) will be located at least 20 feet (6 meters) from the dripline of the elderberry shrub; and high visibility fencing or flagging will be installed to delineate the 6-meter avoidance buffer.

MM BIO-14: General Fish

Over-water activities will be limited to only being conducted during the fish work window (August 1 – October 31) to avoid impacts to sensitive fish species that have the potential to occur in the Study Area.

MM BIO-15: Special-Status Bats

To minimize and avoid the potential impacts to special-status bats that may occur within the project area, the following general measures will be implemented:

a. Pre-activity roosting special-status bat surveys and an evaluation of roosting habitat suitability for bats will be conducted by a qualified biologist familiar with the species that could potentially occur within the Impact Area. The qualified biologist should, at a minimum have experience conducting roosting bat surveys and be able to identify the presence of guano and urine stains.

b. Any identified roosts of special-status bats will be avoided, and a buffer of up to 100 feet (30 meters) will be established based on-site conditions and at the discretion of the biologist, to ensure that the roosting bats are not disturbed. If a nursery colony is identified, additional measures may be required including a larger buffer, to ensure no disturbance. Such additional measures will be determined and monitored by a qualified biologist.

MM BIO-16: American Badger

To minimize and avoid the potential impacts to American Badger that may occur within the Study Area, the following measures will be implemented:

a. A qualified biologist shall conduct pre-activity surveys for American badger and dens in suitable habitat within 48 hours prior to the start of soil investigation activities. If there is a lapse in soil investigation activities of two weeks or greater the area shall be resurveyed within 24 hours prior to recommencement of work. Potential American badger dens identified in the project area shall be monitored by the qualified biologist to determine current use.

b. American badger dens determined by the qualified biologist to be occupied during the breeding season (February 15 through June 30) shall be flagged, and ground disturbing activities avoided, within 100 feet (30 meters) of the den to protect adults and nursing young. Buffers may be modified by the qualified biologist, depending on the applicable site conditions and characteristics of the den, and shall not be removed until the qualified biologist has determined that the den is no longer in use.

MM BIO-17: San Joaquin Kit Fox

To minimize and avoid the potential impacts to San Joaquin kit fox that may occur within the Study Area, the following general measures will be implemented:

a. Prior to any ground disturbance within an Impact Area, a qualified biologist will conduct a pre-activity survey in areas identified in the pre-activity surveys as supporting suitable breeding or denning habitat for San Joaquin kit fox. The surveys will establish the presence or absence of San Joaquin kit foxes and/or suitable dens and evaluate use by kit foxes in accordance with USFWS survey guidelines (U.S. Fish and Wildlife Service 1999).

b. Pre-activity surveys will be conducted within 30 days prior to ground disturbance. The biologist will survey the proposed Impact Area and a 250-foot (76 meter) buffer from the perimeter of the proposed Impact Area to identify San Joaquin kit foxes and/or suitable dens. Adjacent parcels under different land ownership, for which DWR not have access, will not be surveyed. The status of all dens will be determined and mapped. Written results of pre-activity surveys will be submitted to USFWS within 5 working days after survey completion and before the start of ground disturbance.

c. If San Joaquin kit foxes and/or suitable dens are identified within those areas included in the pre-activity survey area, the measures described below will be implemented.

    i. If a San Joaquin kit fox den is discovered in the Impact Area, the Impact Area will be moved at a minimum to meet the appropriate buffer distances as described below in subsection (c)(ii).

    ii. If dens are identified in the survey area but outside the Impact Area, exclusion zones around each den entrance or cluster of entrances will be demarcated. The configuration of exclusion zones should be circular, with a radius measured outward from the den entrance(s). No covered activities will occur within the exclusion zones. Exclusion zone radii for potential or atypical dens will be at least 50 feet (15 meters) and will be demarcated with four to five flagged stakes. Exclusion zone radii for known dens will be at least 100 feet (30 meters) and will be demarcated with staking and flagging that encircles each den or cluster of dens but does not prevent access to the den by kit fox.

    iii. If a natal or pupping den is found within the Impact Area or within 200- feet (61 meters) of the Impact Area boundary, USFWS and CDFW will be notified

immediately. The den will not be disturbed or destroyed, depending on the applicable site conditions and characteristics of the den, the soil investigation site may be moved.

MM BIO-18: Botanical Resources

a. All botanical evaluations will be conducted by a qualified botanist, who at a minimum shall have experience conducting floristic field surveys; knowledge of plant taxonomy and plant community ecology and classification; familiarity with the plants of the area, including special-status and locally significant plants; familiarity with the appropriate state and federal statutes related to plants and plant collecting; and experience with analyzing impacts of a project on native plants and communities.

b. A qualified botanist will conduct a habitat assessment to determine whether the habitat is appropriate for special-status plants. If suitable habitat is present, the qualified botanist will conduct a habitat quality assessment to determine the potential for presence of sensitive plant species. The habitat quality assessment will consider factors such as soil type, degree and frequency of previous soil disturbance, abundance of invasive species, and distance from known sensitive plant occurrences. If a qualified botanist determines that special-status plants are likely to occur at a proposed Impact Area, a botanical survey will be conducted within the Impact Area at each soil investigation site. When feasible based on scheduling and property access, the surveys will be conducted at proper times of year when special-status and locally significant plants are both evident and identifiable; will be floristic in nature, ensuring that all plants observed are identified to a level sufficient for determining rarity, and will be conducted using systematic field techniques in all habitats of the site to ensure thorough coverage of potential Impact Areas.

c. Any special-status plant species present within 33 feet (10 meters) of an Impact Area will be flagged, or mapped using a GPS, for avoidance. A qualified botanist will establish an appropriate buffer. During field activities avoidance of the buffered area will be enforced by an environmental monitor to ensure that special-status plants are avoided to the maximum extent practicable.

d. If special-status plant species (excluding listed species) are present within the Impact Area and impacts cannot practicably be avoided, a qualified botanist will evaluate the following criteria to ensure these impacts are less than significant:

   i. the total range and distribution of the species,
   ii. local population abundance,
   iii. approximate number of individuals potentially impacted,
   iv. area of habitat potentially impacted,
   v. life history of the species (annual versus perennial and seedbank dynamics),
   vi. species sensitivity and response to disturbance,

vii. species fecundity, and

viii. the probability of population recovery from impacts.

If loss of individuals due to project activities would exceed 2% of the local population or if the particular life history of the plant species indicates that a loss of that scale would threaten the persistence of the local population, or if there are fewer than 10 statewide extant occurrences, the soil investigation will not be allowed to proceed at that location.

MM BIO-19: Botanical Considerations for Vegetation Removal

If access requires minor disturbances to or removal of vegetation, a qualified botanist will be consulted to ensure that no special-status vegetation is significantly impacted.

MM BIO-20: Botanical Avoidance Zones

Soil investigation activities will not be conducted within the intertidal zone of rivers or sloughs, including in-channel islands, or shoals to the extent feasible. If work in these areas is necessary, the Impact Area will be surveyed by a qualified botanist during tidal conditions that expose the intertidal area where Delta mudwort or Mason's lilaeopsis would occur. If Delta mudwort or Mason's lilaeopsis are identified, they will be flagged or mapped with a GPS for avoidance.

MM CUL-1:

a. All Impact Area would be reviewed by a qualified archaeologist to evaluate the potential for impacts, if any, to cultural resources.

b. Locations that have no previous survey coverage must be surveyed by, or under the direct supervision of a qualified archaeologist prior to the start of any ground disturbing activities.

c. If the archaeologist observes cultural or potential tribal cultural resources within the Impact Area or associated resource buffer as identified by a qualified archaeologist, the location will be shifted the minimum distance necessary to reduce the potential for significant cultural resource impacts without significantly increasing potential impacts to other resources.

d. A tribal representative from the consulting tribes will be invited to participate in the pre-activity field visits and archaeological surveys in Impact Areas specified as an area of interest/concern during consultation by that consulting tribe/tribes.

e. Consulting tribes will be informed of any potential tribal cultural resources located within the study area specified as an area of interest/concern by a consulting tribe/tribes.

f. If a suitable location cannot be determined within adjacent areas, then the soil investigation at that location would not be conducted.

MM CUL-2:

a. Should any unexpected cultural resources be exposed during project activities, all work would immediately stop in the immediate vicinity (e.g. 100 feet [30 meters]) of the find until it can be evaluated by a qualified archaeologist and an appropriate plan of action can be determined in consultation with the State Office of Historic Preservation, as necessary.

b. If the resource is associated with Native American contexts or is a potential Tribal Cultural Resource and is within a region specified as an area of interest/concern by a consulting tribe/tribes, the appropriate consulting tribal entity/entities will be contacted and consulted with to produce an appropriate plan of action.

MM CUL-3:

Should human remains be discovered during the course of project activities, all work would stop immediately in the vicinity (e.g. 100 feet [30 meters]) of the finds until they can be verified. The coroner would be contacted in accordance with Health and Safety Code section 7050.5(b). Protocol and requirements outlined in Health and Safety Code sections 7050.5(b) and 7050.5(c) as well as Public Resources Code section 5097.98 would be followed.

MM CUL-4:

Cultural sensitivity training will be provided for the environmental monitors and individuals conducting the field activities and geological analysis to ensure awareness about cultural resources, including identification of and proper protocol for handling any unexpected finds.

MM GHG-1

a. Evaluate project characteristics, including location, project work flow, site conditions, and equipment performance requirements, to determine whether specifications of the use of equipment with repowered engines, electric drive trains, or other high efficiency technologies are appropriate and feasible for the project or specific elements of the project.

b. Minimize idling time by requiring that equipment be shut down after five minutes when not in use (as required by the State airborne toxics control measure [Title 13, section 2485 of the California Code of Regulations]). This requirement will be enforced by the environmental monitor.

c. Maintain all soil investigation equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer’s recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition.

d. Implement tire inflation program on jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every two weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site weekly for correct tire inflation.

e. Encourage carpools or shuttle vans for worker commutes as feasible.

MM HAZ-1

a. A Plan(s) (often a contractor's safety plan) with a section on Hazardous Materials shall be written and kept on site that describes the hazardous materials used during project activities, and how the materials will be properly stored, used, transported, and disposed of. The Plan will be shared with local fire and emergency personnel and their mutual aid districts. All hazardous materials shall be properly labeled and be recycled properly or disposed of at a properly licensed disposal facility.

b. The contractor shall contact the local fire agency and the local CUPA for any site-specific requirements regarding hazardous materials or hazardous waste containment or handling.

c. If hazardous materials, such as oil, batteries or paint cans, are encountered in the Impact Area, the contractor(s) shall carefully remove and dispose of them according to the Safety Plan and Spill Prevention and Response Plan. All hazardous materials will be disposed of at a properly licensed disposal facility.

d. Contact of chemicals with precipitation shall be minimized by storing chemicals in watertight containers or in a storage shed (completely enclosed), with appropriate secondary containment to prevent any spillage or leakage.

e. Quantities of toxic materials, such as equipment fuels and lubricants, shall be stored with secondary containment that is capable of containing 110% of the primary container(s).

f. Petroleum products, chemicals, fuels, lubricants, and non-storm drainage water or water contaminated with the aforementioned materials shall not contact soil and not be allowed to enter surface waters or the storm drainage system. All lubricants used downhole shall be non-petroleum based pursuant to common industry practice.

g. All toxic materials, including waste disposal containers, shall be covered when they are not in use, and located as far away as possible from a direct connection to the storm drainage system or surface water.

h. Sanitation facilities (e.g., portable toilets) shall be sited in a manner that avoids any direct connection to the storm drainage system or receiving water.

i. Sanitation facilities shall be regularly cleaned and/or replaced and inspected daily for leaks and spills.

MM HAZ-2

A Plan(s) (often a contractor's safety plan) with a section on Spill Prevention and Response Plan shall be developed by the Contractor and submitted to DWR before any ground-disturbing activities in order to prevent the accidental release of chemicals, fuels, lubricants, and non-storm drainage water (including untreated wastewater) into channels. The Plan will be shared with local fire and emergency personnel and their mutual aid districts. The following measures shall be included in the Plan:

a. All field personnel shall be appropriately trained in spill prevention, hazardous material control, and cleanup of accidental spills.

b. Equipment and materials for cleanup of spills will be available on site and spills and leaks shall be cleaned up immediately and disposed of according to guidelines stated in the Spill Prevention and Response Plan.

c. Field personnel shall ensure that hazardous materials are properly handled, and natural resources are protected by all reasonable means, including compliance with Code of Federal Regulations (CFR) containment measures for tanks containing hazardous materials (see 40 CFR Section 264.175).

d. Spill prevention kits shall always be in close proximity when using hazardous materials (e.g., at crew trucks and other logical locations). All field personnel shall be advised of these locations.

e. Field personnel shall routinely inspect the work site to verify that spill prevention and response measures are properly implemented and maintained.

f. Field personnel will routinely inspect the work site to verify that the Spill Prevention and Response Plan is properly implemented and maintained. Staff will notify contractors immediately if there is a noncompliance issue and will require immediate correction of any noncompliant behavior.

g. Absorbent materials will be used on small spills located on impervious surface rather than hosing down the spill; wash waters shall not discharge to the storm drainage system or surface waters. For small spills on pervious surfaces such as soils, wet materials will be excavated and properly disposed rather than burying it. The absorbent materials will be collected and disposed of properly and promptly.

   As defined in 40 CFR 110, a federal reportable spill of petroleum products is the spilled quantity that:

a) Violates applicable water quality standards;

b) Causes a film or sheen on, or discoloration of, the water surface or adjoining shoreline; or

c) Causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.

h. If a spill is reportable, the contractor will notify the DWR staff, and the DWR staff will take action to contact the appropriate safety and cleanup crews to ensure that the Spill Prevention and Response Plan is followed. A written description of reportable releases must be submitted to the Regional Board and the California Department of Toxic Substances Control (DTSC). This submittal must contain a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. The releases will be documented on a spill report form.

i. If a significant spill has occurred, and results determine that project activities have adversely affected surface water or groundwater quality, a detailed analysis will be performed to the specifications of DTSC to identify the likely cause of contamination. This analysis will include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this analysis, the DWR or contractors will select and implement measures to control contamination, with a performance standard that surface, and groundwater quality must be returned to baseline conditions. These measures will be subject to approval by the DWR, DTSC, and the Regional Board.

MM HAZ-3:

a. Stockpiling materials, portable equipment, vehicles, and supplies, including chemicals, will be restricted to areas adjacent to the drill or CPT rig, and not adjacent or within riparian and wetlands areas or other sensitive habitats

b. Stockpiling materials, portable equipment, vehicles, and supplies, including chemicals, will be restricted to docks or within the drill barge or ship.

MM HAZ-4:

a. The contractor would develop a fire protection and prevention plan which incorporates fire safety measures on all equipment with the potential to create a fire hazard.

b. The plan would ensure that fire suppression equipment is onsite and that all employees have received appropriate fire safety training.

c. The Plan will be shared with local fire and emergency personnel and their mutual aid districts.

MM HYD-1:

a. All fueling and maintenance of vehicles or other equipment for on-land soil investigation activities shall occur on established private access roads, or in designated staging areas at least 50 feet (15 meters) away from any on-site water feature. Fueling and maintenance activities will be conducted sufficiently away from public roadways to ensure safety of workers and the public. Secondary containment for fuel and gas tanks will be used to prevent spills from entering any water features.

b. Absorbent materials will be available on-site. Any accidental leaks or spills will be immediately cleaned up per the procedures identified in the contractors Spill Prevention and Response Plan, and the equipment will not be able to return to the project area until it has been repaired sufficiently to prevent further leaks or spills.

c. For overwater soil investigations positive barriers consisting of hay waddles and/or other suitable type of spill-stoppage materials will be placed around the work area on the barge and ship decks.

d. Discarded soil samples, cuttings, and excess drilling fluids will be kept in a closed system, to prevent spillage of the drilling fluid and will be disposed of off-site at an appropriate landfill.

e. All over-water work will include the use of conductor casings to confine the drill fluid and cuttings to the drill hole and the operating deck of the barge or drill ship and prevent any inadvertent spillage into the water. Soil samples will be collected from within the conductor casing. The casing will remain in place until the bore hole is complete and has been filled in, to minimize sediment disturbance of the slough or river bottom.

f. During overwater soil investigations a qualified environmental monitor will watch for colored plumes (an indication that drilling fluid or other material is entering the water and may affect water quality). If found, activities will cease until appropriate corrective measures have been completed or it has been determined that the environment will not be harmed.

MM NOI-1:

All equipment will be properly tuned and shall utilize appropriate mufflers.

MM PUB-1:

a. A Plan(s) (often Contractor's safety plan) with a section on Fire Protection and Prevention will be submitted to DWR for review and approval which incorporates fire safety measures on all equipment with the potential to create a fire hazard.

b. The contractor will prepare a Safety Plan in accordance with the DWR protocols.

MM TRANS-1:

a. Appropriate traffic controls will be implemented, based on the conditions at each soil investigation site, according to standards set by Caltrans and counties. Flaggers may be used during ingress and egress of boring equipment and work crews to allow flow of traffic while maintaining safety measures for the crew, especially if these activities occur in areas of heavy traffic or reduced visibility. Lane closures will be implemented when soil investigation sites are within or immediately adjacent to public roadways and will employ safety measures such as advance warning areas and flaggers, as prescribed by Caltrans and county regulations. Public notifications will be made in coordination with Caltrans, counties, CHP, and other entities. Traffic controls and lane closures will consider access for emergency services and be coordinated through the encroachment permit processes implemented by Caltrans and counties, with CHP coordination as required.

b. Parking on public roads and thoroughfares by crew vehicles will be avoided to the maximum extent practicable to allow for the flow of traffic to continue.

c. No public roads, waterways or land access will be closed.

d. For overwater sites, the project area shall be a no-wake zone, with boats not exceeding 5 mph within 500 feet (152 meters) of the work area.

MM UTI-1:

A field reconnaissance, marking or staking the exploration site, and calling Underground Service Alert (USA) for utility clearance will be conducted by qualified personnel for each planned soil exploration location. Based upon the information gathered, sites will be adjusted to ensure no utilities are impacted.

Statement of No Significant Effect:

DWR prepared an Initial Study in support of this Mitigated Negative Declaration. Copies of the Initial Study/Mitigated Negative Declaration (IS/MND) were provided to the State Clearinghouse on November 20, 2019, initiating the 30-day public review period, which was voluntarily extended by DWR and ended on January 15, 2020.

Pursuant to Section 21082 of the California Environmental Quality Act, DWR has independently reviewed and analyzed the IS/MND for the proposed Project and all comments

received and finds that the IS/MND reflects the independent judgment of DWR. As the lead agency for the project, DWR further finds that the project mitigation measures identified in the IS/MND will be implemented as stated (and included in the Mitigation Monitoring and Reporting Plan. With implementation of these mitigation measures, the proposed Project as modified clearly would have no significant effect on the environment.

I hereby approve this project and adopt the Mitigation Monitoring and Reporting Plan attached in Appendix E:

July 9, 2020

Carolyn Buckman
California Department of Water Resources
Delta Conveyance, Environmental Program Manager

Date

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1.0 BACKGROUND

The picturesque Sacramento-San Joaquin Delta (Delta) is the hub of California's water supply, supplying fresh water to two-thirds of the state's population and millions of acres of farmland. There is clear evidence of the vulnerabilities in the Delta posed by climate change and earthquake risk. As sea levels continue to rise, the Delta will be faced with increasing water levels and salinity, which will dramatically alter and harm water quality and supply both, locally, and for 27 million Californians across the state. Immediate action is needed to upgrade Delta infrastructure, ensuring the state's largest supply of clean water is climate resilient and able to respond to these risks.

On February 12, 2019, Governor Newsom introduced a new approach to modernize Delta water conveyance, one which included the consideration of a new, single-tunnel project alternative (Executive Order N-10-19).

Following Governor Newsom's Executive Order N-10-19, the Department of Water Resources (DWR) is pursuing a new environmental review and planning process for a single tunnel solution to modernize water infrastructure in the Delta. To inform this future process, DWR is proposing soil investigations to gather data on the physical properties of the soils and other typical geologic and geotechnical parameters that will be used to inform and evaluate future alternatives for a proposed single-tunnel Delta conveyance (requiring a separate California Environmental Quality Act (CEQA) process).

1.1 Purpose

The primary objective of the Proposed Project is to determine the composition, location, and geotechnical properties of soil materials commonly found in the Delta which would inform the design, environmental analysis, and development of alternatives for a potential Delta conveyance project and contribute to DWR's overall understanding of Delta geology. This work will further inform DWR on how to construct a project while avoiding, minimizing, or mitigating impacts to the surrounding residents and environment. Ultimately, this work will help to determine project features, potential alignment options and environmental impacts for analysis of a future single tunnel project consistent with Governor Newsom's new approach to modernize Delta water conveyance.

1.2 Regulatory requirements, permits, and approvals

DWR has the responsibility to ensure that all requirements of CEQA and other applicable regulations are met. Other permitting requirements for this Proposed Project are listed below:

- California Department of Fish and Wildlife (CDFW), Fish and Game Code section 1603 Streambed Alteration Agreement

- US Army Corps of Engineers (USACE), Clean Water Act, Section 404 – Nationwide Permit 6

  As a condition of working under the Nationwide Permit the following Federal regulations must be met by the USACE:

  - State Office of Historic Preservation, National Historic Preservation Act, Section 106, Letter of Concurrence

  - US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS) Endangered Species Act, section 7, Biological Opinions or letters of concurrence

- USACE, Rivers and Harbors Act, Section 408 permission

- State Water Resources Control Board (SWB), Clean Water Act, Section 401, General Water Quality Certification and Order for the 2017 Nationwide Permits

- State Lands Commission (SLC) 1979 Memorandum of Understanding between DWR and SLC providing for the utilization by DWR of State-owned sovereign lands under the jurisdiction of the CSLC for the Central Valley Project and the State Water Resources development system

Various ministerial encroachment permits, as needed, from agencies that may include, but are not limited to:

- California Department of Transportation (CalTrans)
- Various Counties
- East Bay Municipal Utility District (EBMUD)

1.3 Proposed Project Location

The Proposed Project area (Study Area) spans a portion of the Sacramento – San Joaquin River Delta including portions of Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties. The Study Area is bordered to the north by the City of West Sacramento, the south by Kelso Road, to the west by west bank of the Toe Drain and communities including Rio Vista, Oakley, and Brentwood, and to the east by Interstate 5 (Figure 1). Mapped locations are approximate, as described in the Section 2.0 Project Description, several days to several weeks prior to investigations, DWR and Delta Conveyance Design and Construction Authority (DCA) engineers, geologists, environmental scientists, and the cultural resource team will perform a reconnaissance

level site visit. The Impact Area for any given soil location is considered the soil investigation site itself and the area required for parking for various field personnel. If the team observes utility, biological, cultural, or other resource concerns within the Impact Area or associated resource buffer, the location will be shifted the minimum distance necessary to reduce the potential for utilities, biological or cultural resource impacts to a less than significant level without increasing impacts to other resources. If a suitable location cannot be determined within adjacent areas, then the soil investigation at that location will not be conducted.

Figure 1: Proposed Project Location

2.0 PROPOSED PROJECT DESCRIPTION

The Proposed Project consists of both on-land and overwater soil investigations as well as several on-land geophysical surveys located within the Study Area (Figure 2a-c).

The on-land soil investigations will consist of the following:

- 167 soil borings from 50 feet to 200 feet (15 to 61 meters) below ground surface;
- 103 cone penetration tests (CPTs) from approximately 50 feet and 200 feet (15 to 61 meters) below ground surface; and
- Up to 5 noninvasive geophysical survey investigation arrays on up to five Impact Areas within a location on Bouldin Island (see Figure 2b).

The distribution of the various types of on-land soil investigations was determined to provide appropriate coverage to gain a preliminary understanding of the geological and geotechnical conditions in the Study Area. An effort was made to distribute soil borings at varying depths evenly throughout the Study Area; the location of CPTs was determined to provide supplementary subsurface information to complement the soil borings. A search using WellSTAR, the Geologic Energy Management Division's Well Statewide Tracking and Reporting System for the California Department of Conservation (DOC 2019), was utilized in identification of soil investigation sites for avoidance of existing facilities. Geophysical surveys can collect data to provide a more robust preliminary interpretation of regional subsurface conditions and identify anomalous features such as abandoned oil and gas wells or unmarked utilities. The planned geophysical surveys will be used as a test program to determine if these noninvasive surveys are appropriate for future use in other regions of the Delta, thereby reducing the potential need for soil borings or CPTs in certain areas.

Overwater soil investigations will consist of 56 soil borings up to 200 feet (61 meters) below the slough or river bottom (measured at the mudline). This total number of overwater soil investigations is reduced from the originally proposed number of 57 following the removal of the location near an intake at the request of the City of Stockton.

All proposed activities and associated staging areas could result in minor temporary ground disturbance up to approximately 50 acres. However, each overwater soil drilling, on-land soil drilling, and CPT investigation will take no more than 15 days, will not result in permanent impacts or creation/improvements of surfaces such as roadways or graveled areas, will be accessed via existing roadways, and ground disturbance of the actual soil investigations will be limited to approximately 0.05 to 0.22 acres per site. All vehicles and equipment related to the project will remain on existing public and private roads until entering disturbed project sites, pristine native habitats will not be traversed by equipment, and riparian, emergent marsh, and vernal pool habitats and other on-land resources considered waters of the United States or waters of the State

will be avoided, based on preconstruction surveys and on-site monitoring. Geophysical work is proposed to take no more than 21 days per site, but no ground disturbance is anticipated to occur due to the nature of the work. Table 1 includes the Proposed Project's approximate duration for each type of on-land soil investigation and overwater soil investigation that requires large equipment Additional details regarding Impact Area-specific durations and equipment needed for each type of soil investigation are provided in the descriptions below.

Table 1: On-Land Soil Investigation Primary Equipment and Duration

Activity	**Equipment**	**Anticipated Duration**
Soil Borings	Up to 8 Drill Rigs	6 -12 months
CPTs	Up to 3 Truck-Mounted CPT Rigs	6 months
Geophysical Surveys	Geophysical equipment (depending on method)	2.5 months
Overwater Borings	Up to 6 Drill Rigs (located on Boats or Barges)	3 months

During the acquisition of site access, DWR will coordinate with property owners, including local land management agencies, on site specific considerations. As stated in Section 1.3, several days or weeks prior to conducting a proposed activity at a proposed investigation location site, a team of DWR and DCA specialists will perform a reconnaissance level site visit. Reconnaissance level site visits are initial physical visits to a proposed project location to determine the overall existing conditions on the ground and determine the final Impact Area. The reconnaissance team will consist of qualified engineers, geologists, biologists, cultural resources specialists, and if necessary, a qualified wetland delineator, as well as a representative from the Real Estate office to ensure that any stipulations set forth for the visit regarding access are followed—averaging 5 to 6 individuals per survey location. Team members will have expertise in the following disciplines: wildlife biologist familiar with the local fauna, botanist/ wetland specialist familiar with the local flora and wetlands, cultural resources specialist familiar with the region and its cultural resources (Native American, archeological and historical), and geologist/geological engineer with an understanding of the data goals of the project.

This reconnaissance level site visit will determine the Impact Area for any given soil location site by identifying any biological (including wetlands as defined in the 1987 Corps of Engineer's Wetlands Delineation Manual), cultural, utility, or other resource

concerns and establishing the location site, at least, a minimum distance away from any resources to either fully avoid the resource or reduce the potential for any impacts to a less-than-significant level. The surveys will be non-invasive, consisting only of observations and staking the final soil investigation location. If there is no area within a proposed investigation site where avoidance or impact reduction is possible, then the proposed soil investigation at that location will not be conducted. The Impact Area considered during these reconnaissance surveys is inclusive of the area required for parking for various field personnel. This type of avoidance is made possible by the flexible nature of the Project and the relatively small size of the proposed Impact Areas. DWR has intended since the Project's inception to utilize avoidance as an integral part of the Project to prevent interaction with, and disturbance to, environmental resources.

Figure 2: Study Area

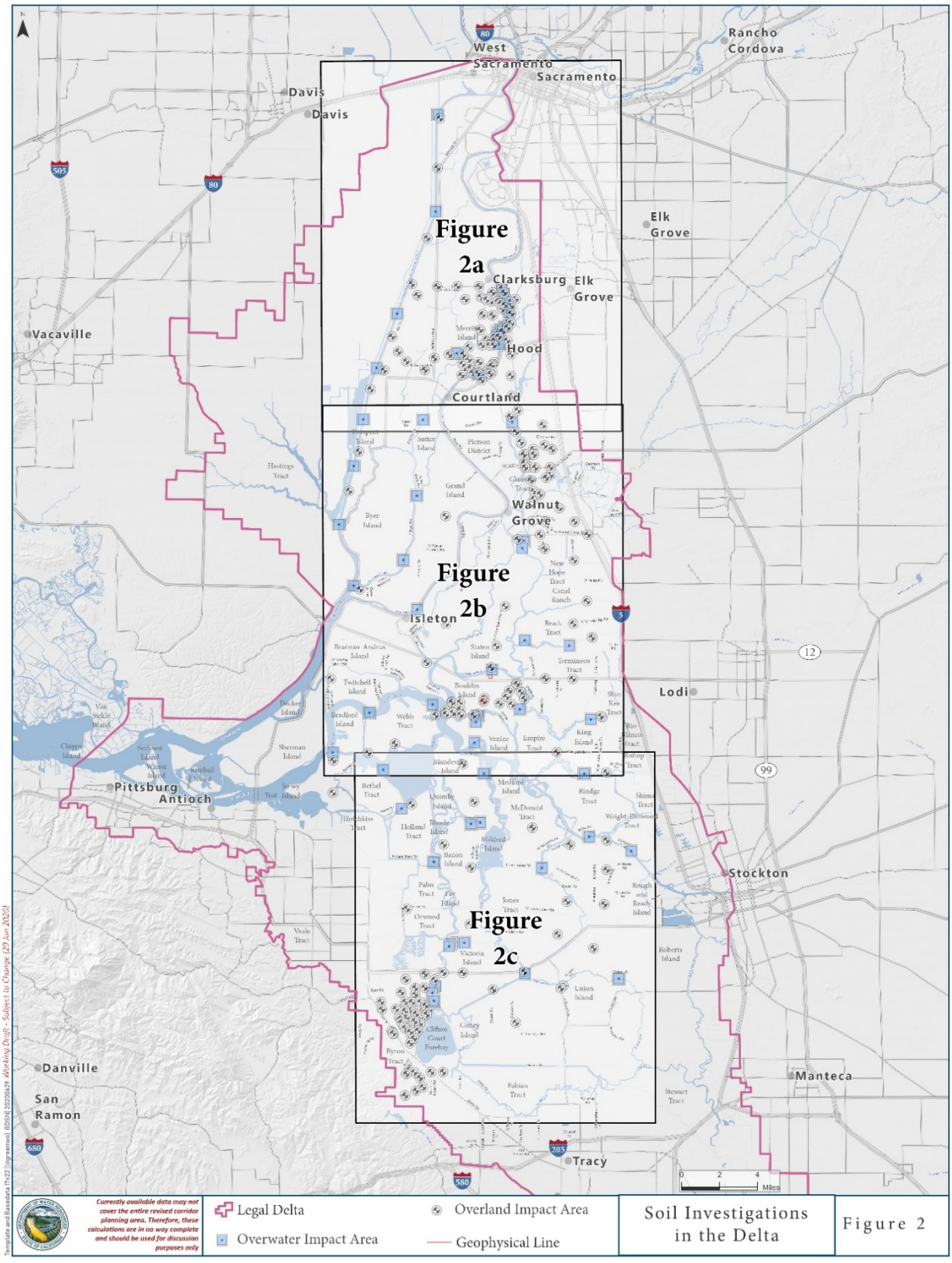
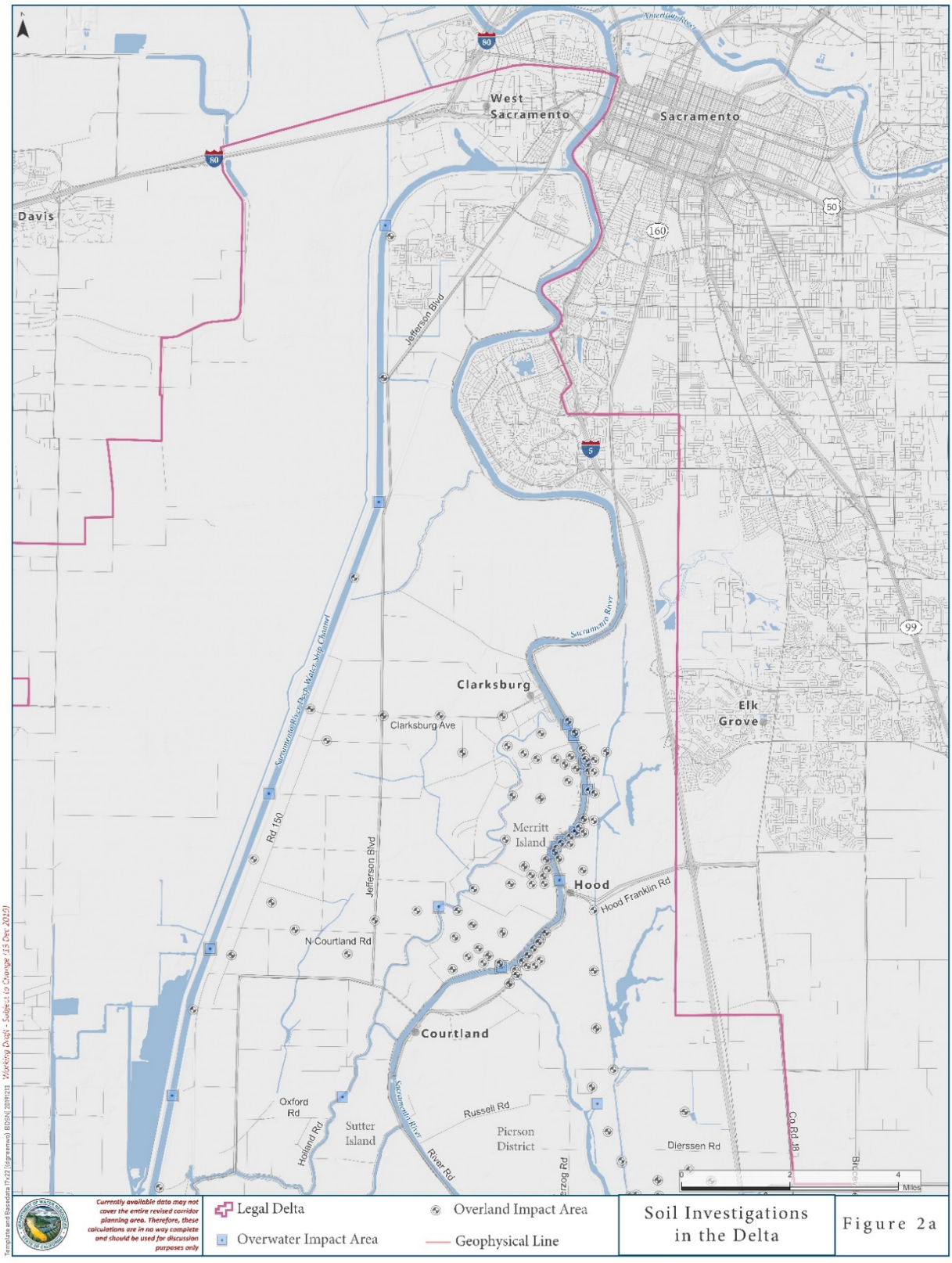


Figure 2a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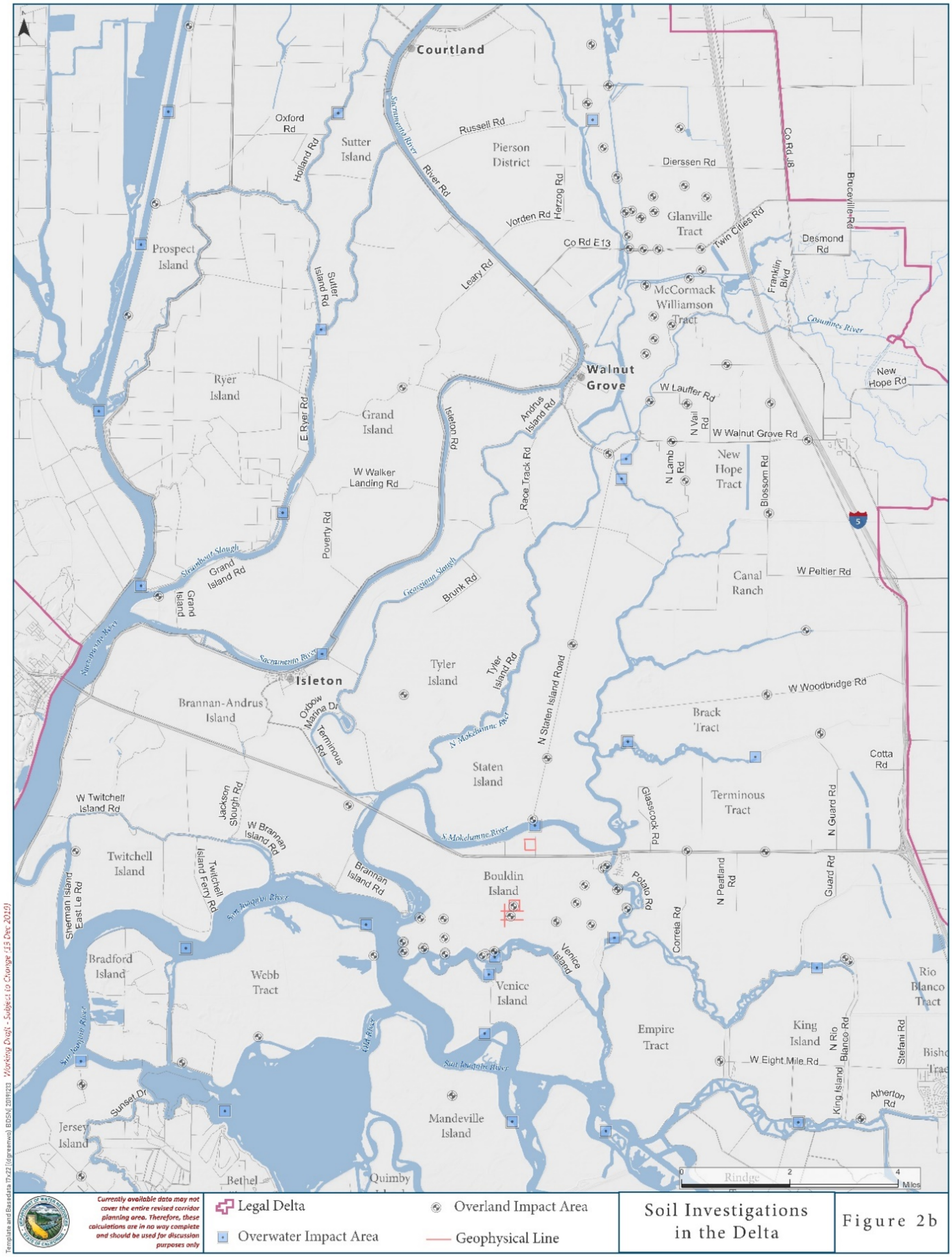
Jefferson Blvd
Clarksburg
Clarksburg Ave
Elk Grove
Merritt Island
Hood
Hood Franklin Rd
N Courtland Rd
Courtland
Oxford Rd
Holland Rd
Sutter Island
Russell Rd
Pierson District
Dierssen Rd
River Rd
Co Rd 18
Rd 150
Sacramento River
Legal Delta
Overwater Impact Area
Overland Impact Area
Geophysical Line
Soil Investigations in the Delta
Figure 2a
Miles

Figure 2b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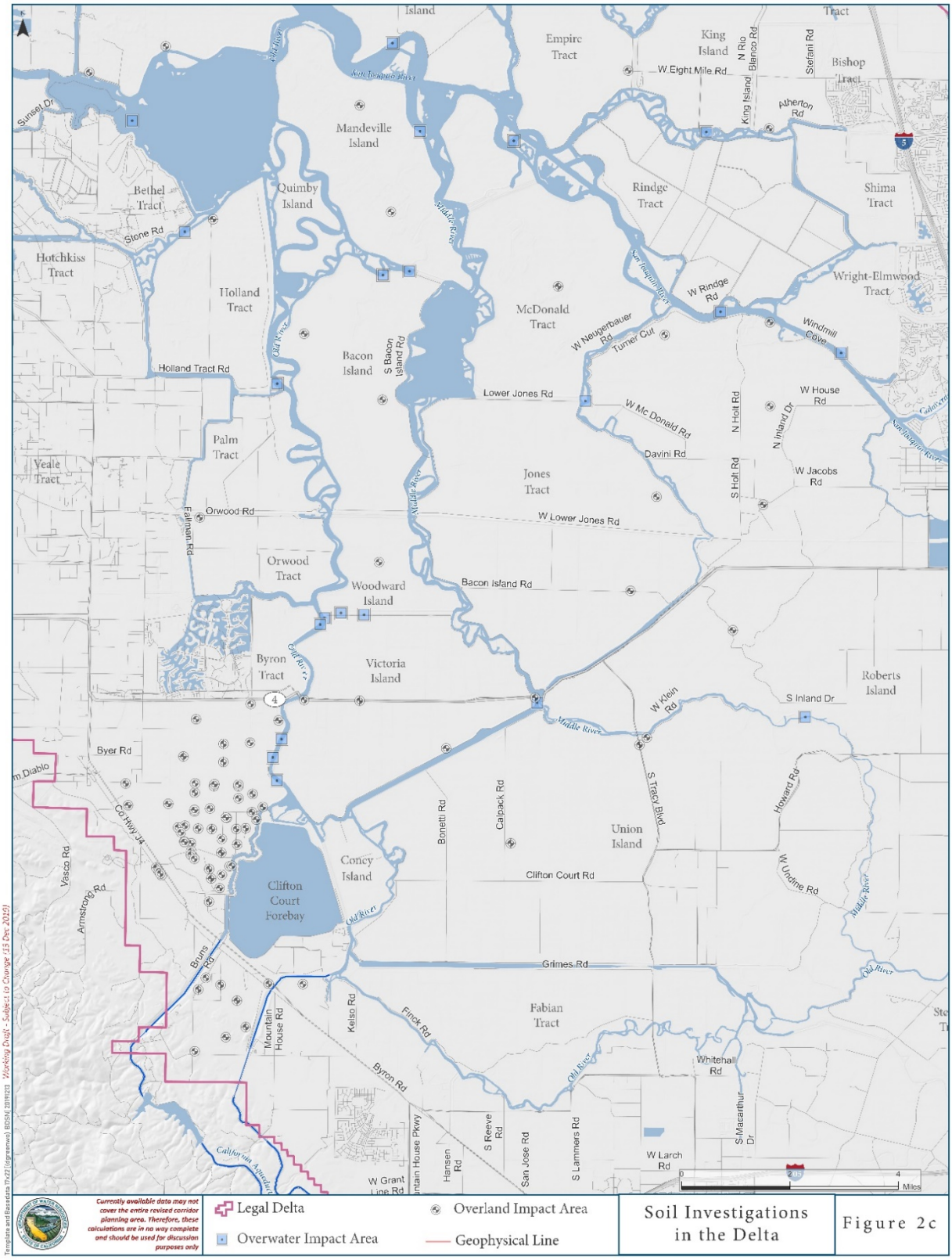
Holland Rd
Sutter Island
Russell Rd
Pierson District
River Rd
Dierssen Rd
Co Rd J8
Bruceville Rd
Herzog Rd
Vorden Rd
Glanville Tract
Twin Cities Rd
Co Rd E13
Desmond Rd
Prospect Island
Sutter Island Rd
Leary Rd
McCormack Williamson Tract
Franklin Blvd
Cosumnes River
Walnut Grove
New Hope Rd
Ryer Island
E Ryer Rd
Grand Island
Isleton Rd
Andrus Island Rd
W Lauffer Rd
N Vail Rd
W Walnut Grove Rd
W Walker Landing Rd
Race Track Rd
N Lamb Rd
New Hope Tract
Blossom Rd
Poverty Rd
Steamboat Slough
Grand Island Rd
Georgiana Slough
Brunk Rd
Canal Ranch
W Peltier Rd
Sacramento River
Isleton
Tyler Island
Tyler Island Rd
N Staten Island Road
W Woodbridge Rd
Brannan-Andrus Island
Oxbow Marina Dr
Terminous Rd
N Mokelumne River
Brack Tract
Cotta Rd
Staten Island
W Twitchell Island Rd
Jackson Slough Rd
W Brannan Island Rd
Glasscock Rd
Terminous Tract
N Guard Rd
S Mokelumne River
Twitchell Island
Twitchell Island Ferry Rd
Brannan Island Rd
Bouldin Island
Potato Rd
N Peatland Rd
Guard Rd
Sherman Island East Le Rd
San Joaquin River
Correia Rd
Bradford Island
Webb Tract
Venice Island
Rio Blanco Tract
Empire Tract
King Island
N Rio Blanco Rd
Stefani Rd
W Eight Mile Rd
Sunset Dr
Old River
Mandeville Island
King Island
Atherton Rd
Jersey Island
Bethel
Quimby
Rindge
0
2
4
Miles
Currently available data may not cover the entire revised corridor planning area. Therefore, these calculations are in no way complete and should be used for discussion purposes only
Legal Delta
Overwater Impact Area
Overland Impact Area
Geophysical Line
Soil Investigations in the Delta
Figure 2b
Template and Basedata 17x22 (degreenwo) BDSN 2019121 'Working Draft - Subject to Change (13 Dec 2019)'

Figure 2c


Island
Tract
Empire Tract
King Island
N Rio Blanco Rd
Stefani Rd
Bishop Tract
W Eight Mile Rd
Atherton Rd
Sunset Dr
Mandeville Island
Bethel Tract
Quimby Island
Rindge Tract
Shima Tract
Stone Rd
Hotchkiss Tract
Holland Tract
McDonald Tract
Wright-Elmwood Tract
W Rindge Rd
W Neugerbauer Rd
Turner Cut
Windmill Cove
Holland Tract Rd
Bacon Island
S Bacon Island Rd
Lower Jones Rd
W House Rd
W Mc Donald Rd
N Holt Rd
N Inland Dr
Palm Tract
Davini Rd
Veale Tract
Jones Tract
S Holt Rd
W Jacobs Rd
Orwood Rd
Fallman Rd
W Lower Jones Rd
Orwood Tract
Woodward Island
Bacon Island Rd
Byron Tract
Victoria Island
Roberts Island
S Inland Dr
W Klein Rd
Byer Rd
Vasco Rd
Co Hwy J4
Bonetti Rd
Calpack Rd
S Tracy Blvd
Howard Rd
Union Island
Concy Island
Clifton Court Forebay
Clifton Court Rd
W Undine Rd
Armstrong Rd
Brums Rd
Grimes Rd
Kelso Rd
Mountain House Rd
Finck Rd
Fabian Tract
Byron Rd
Whitehall Rd
S Reeve Rd
San Jose Rd
S Lammers Rd
S Macarthur Dr
W Larch Rd
W Grant Line Rd
Hansen Rd
Mountain House Pkwy
Old River
Middle River
San Joaquin River
Miles
Currently available data may not cover the entire revised corridor planning area. Therefore, these calculations are in no way complete and should be used for discussion purposes only
Legal Delta
Overwater Impact Area
Overland Impact Area
Geophysical Line
Soil Investigations in the Delta
Figure 2c

2.1 On-Land Soil Boring Equipment

Vehicles at each Impact Area during the investigation may include a drill rig, support vehicles for drillers, a water truck, a liftgate truck, a tractor-trailer lowboy truck, traffic control trucks, and passenger vehicles (assume 1 drill rig and up to 15 other vehicles occasionally). The specific drill rig mobilized to the Impact Area will be dependent on access conditions and the purpose and depth of the soil boring. Drill rigs that will be used include truck-mounted rigs and track-mounted rigs (see Figures 3 and 4). The drill rigs are powered by a 120 to 550 horsepower diesel engine. Track-mounted rigs will be used if needed to minimize access impacts over soft ground; these rigs will be hauled to the site by a lowboy tractor-trailer rig.

*Source: Central Mine Equipment Company 2019

Figure 3. Truck-mounted Drill Rig

*Source: Central Mine Equipment Company 2019

Figure 4. Track-mounted Drill Rig

The Impact Area for any given soil location is considered the soil investigation site itself and the area required for parking various field personnel. While this complete list of vehicles may be used, not all of them would necessarily be required. For example, many of the Impact Areas will likely not require a tractor-trailer lowboy truck or traffic control trucks to safely direct traffic around any temporary partial road closures.

2.1.1 On-Land Soil Boring Investigation Methods

Drilling activities will be conducted using a drill rig with auger, casing, and mud-rotary capabilities. Auger techniques may be used on the upper part of the boring. Mud-rotary techniques may be used to continue the boring started with the auger, or mud-rotary could be used for the entire boring starting at the ground surface. Casing may be used

to maintain the hole stability. Per standard industry methods, if artesian flow is encountered near the surface during drilling, casing shall be advanced to a suitable sealing depth and/or completed above the ground surface. If artesian conditions are encountered at greater depths, other methods, such as increasing drilling fluid viscosity/weight, will be employed. Auger techniques will generate an approximately 6.5 to 8-inch (165 to 203 millimeter) diameter boring. Mud-rotary drilling and sampling will generate 4 to 6-inch (102 to 152 millimeter) diameter borings, unless casing is required, which will increase the boring diameter to 6 to 8 inches (152 to 203 millimeter). Soil samples will be collected from borings using one or more of the following methods; a standard penetration test (SPT) barrel (split spoon sampler), Modified California sampler, Pitcher Barrel sampler, 101 mm Geobarrel, 134 mm Geobarrel, Shelby tubes, and grab samples of the cuttings.

Downhole testing will be performed in some of the borings using geophysical and mechanical methods. This will involve sending a small probe down the hole and taking readings periodically with depth.

The duration of investigation activities for the 167 borings will be up to:

- 5 work days for each of 22 borings up to 50 feet deep (15 meters), and
- 13 work days for each of 145 borings 50 to 200 feet deep (15 to 61 meters).

With multiple drill rigs, the approximate duration for over-land soil explorations would be 6-12 months.

Continuous Standard Penetration Test sampling is not planned for the investigation. Instead, periods of 30 to 60 minutes between driven samples are anticipated as borings proceed below the half-way point. For a 200-foot-deep boring, it is assumed that 20 SPT samples will be driven, one driven every 10 feet on average, and each sample will require approximately 30 blows on average. Thus, there will be approximately 600 blows over four days for each boring with breaks in between sampling.

All cuttings and excess drilling fluid will be contained in drums, large containers, or vacuum trucks, and disposed of offsite at an appropriate landfill. Recirculation tanks (55-gallon storage drums) will be used to settle drill cuttings from drilling fluid (drilling polymers and/or bentonite clay). Discarded soil samples will also be placed in the storage drums. Drums would be stored on site at designated staging areas outside of environmentally sensitive areas at any given soil investigation site for up to 4 weeks for environmental testing prior to landfill disposal.

Following completion of soil investigation, holes will be sealed using cement-bentonite grout in accordance with California regulations and industry standards (Water Well Standards, DWR 74-81 and 74-90).

2.1.2 On-Land CPT Equipment

Vehicles at each Impact Area during the investigation may include a truck- or track-mounted, 20 to 30-ton push-capacity CPT truck (see Figures 5 and 6) that is typically powered by a 400 to 550 horsepower diesel engine, a tractor-trailer lowboy truck (if a track-mounted rig is required), traffic control trucks, and a grout trailer. Additionally, up to 15 support passenger vehicles may be present. While this complete list of vehicles may be used, not all of them are necessary for every site. For example, many of the Impact Areas will likely not require a tractor-trailer lowboy truck or traffic control trucks.

*Source: On-shore CPT Equipment 2019

Figure 5. Cone Penetrometer Testing Rig

*Source: Geoprobe 2019

Figure 6. Track-Mounted Cone Penetrometer Testing Rig

2.1.3 On-Land CPT Investigation Methods

To conduct a CPT, a cone-tipped rod with a diameter of 1 to 2 inches (25 to 51 millimeters) is pushed through the ground to measure various parameters including tip resistance, side friction, pore pressure, inclination, and shear wave velocity of the soil layers. While advancing the cone, bentonite may be used to reduce friction. The method to perform the deeper CPTs uses an automatic bentonite injection system to keep the friction low on the drilling string, allowing for CPTs of approximately 200 feet (61 meters) deep. The bentonite drilling fluids will be contained and removed from the Impact Area after completion. At various depths, the cone may be stopped, and testing will be performed, including pore pressure dissipation and shear wave velocity testing. During shear wave velocity testing, a source signal is induced in the ground using a small hammer and tapping on a beam pressed against the ground.

The duration of CPT investigation activities for the 103 CPTs will be up to 4 days for each Impact Area, with up to 3 truck-mounted CPT rigs running simultaneously.

2.1.4 On-Land Geophysical Survey Equipment

Geophysical surveys can be used to provide information on subsurface conditions and anomalies, such as buried casings or abandoned wells. A number of geophysical techniques will be employed, and each utilize different equipment:

- Time Domain Electromagnetic method - equipment consists of 10-gauge wire loop transmitters to induce a low current in the ground, while a small readout unit provides the measurements.

- Cesium Vaper Total Field Magnetometer method - a magnetometer and GPS positioning unit are hand-carried by a technician to measure the ambient magnetic field.

- Electrical Resistivity Tomography - a linear array of removable small steel electrodes (approximately 0.5 inches in diameter by 8 inches long) driven into the ground approximately every 10 feet over several hundred feet to induce a low current in the ground, while a small readout unit provides the measurements.

- Seismic Refraction/Reflection - seismic sensors (approximately 0.5 inches in diameter and 5 inches long) are driven into the ground 3 to 5 inches deep at a spacing of approximately 6.5 feet. A rubber-tired truck powered by a 113-horsepower diesel engine is used to induce source vibrations (referred to as the EnviroVibe Minibuggy), while a small readout unit provides the measurements.

Additional vehicles at each Impact Area during the surveys will include support passenger vehicles (assume up to 14 vehicles) and a tractor-trailer lowboy truck (only for the EnviroVibe Minibuggy). While this complete list of vehicles may be used, not all of them are necessary for every site.

2.1.5 On-Land Geophysical Surveys Methods

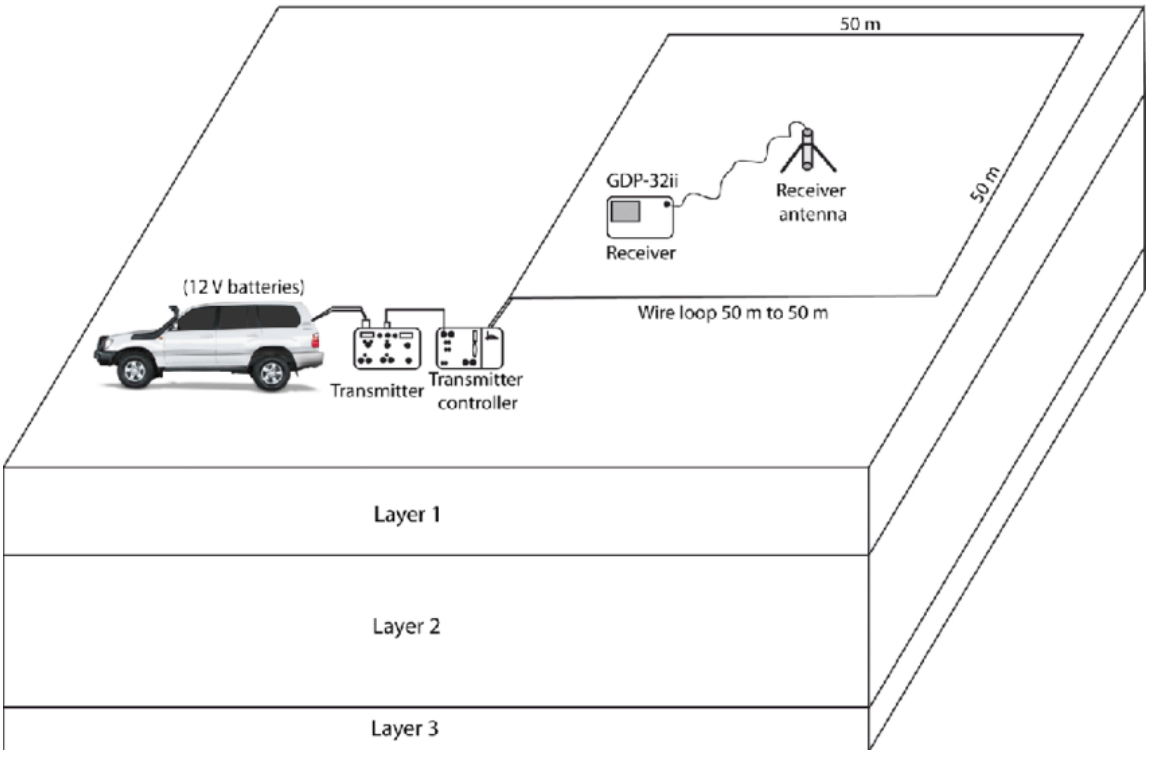
Geophysical surveys consist of noninvasive (i.e. does not require a soil boring) techniques that can be used to provide information on subsurface conditions and anomalies, such as buried casings or abandoned wells. Geophysical surveys will be conducted on up to five Impact Areas within a location on Bouldin Island (see Figure 2b). The five Impact Areas are comprised of three arrays approximately 2,300 feet(701 meters) long and 100 feet (30 meters) wide and two area grids (each approximately 1,000 feet by 1,000 feet(305 meters by 305 meters); although surveys will only be conducted within a portion of the full grid measuring 500 feet by 500 feet(152 meters by 152 meters). The geophysical surveys will be used as a test program to determine if these noninvasive surveys are appropriate for future use in other regions of the Delta, thereby reducing the potential need for soil borings or CPTs in certain areas.

Two geophysical surveys will be conducted at each geophysical survey Impact Area for a total of ten geophysical surveys. Electrical Resistivity Tomography (ERT) and Seismic Refraction/Reflection (Seismic) techniques will be used at each of the three linear survey sites. Time Domain Electromagnetic (TDEM) and Cesium Vaper Total Field Magnetometer (CVTFM) techniques will be used at each of the two gridded survey sites.

It will take approximately 2.5 weeks to complete each geophysical survey technique. This time includes conducting the survey at each of three linear survey sites or two gridded survey sites. Separate geophysical survey techniques may be employed simultaneously, but not at the same site. As such, the total duration to complete all geophysical survey techniques at all geophysical survey Impact Areas would be 10 weeks, or 2.5 months, as stated in Table 1. A detailed map with the geophysical survey locations is can be found in Appendix C.

2.1.5.1 Time Domain Electromagnetic (TDEM)

For the TDEM method, 10-gauge wire loop transmitters will be laid on the ground in a 100-foot by 100-foot (30 meter by 30 meter) grid transmitter wire to induce a low current in the ground, readings will be taken, and then the loop will be moved along a survey line up to 2,300-feet-long (701 meters) (Figure 7).



*Source: Chkirbene et al. 2014

Figure 7. Time Domain Electromagnetic (TDEM) System Schematic

Cesium Vaper Total Field Magnetometer (CVTFM)

For the CVTFM method, a magnetometer and GPS positioning unit are hand-carried by a technician to measure the ambient magnetic field (Figure 8). The technician walks a line collecting readings. This process is repeated for the next line spaced approximately 10 feet (3 meters) to 15 feet (4.6 meters) away from the first. The total survey area at a given location is approximately 500 feet by 500 feet (152 meters by 12 meters).

*Source: Rogers et al. 2005

Figure 8. Cesium Vaper Total Field Magnetometer (CVTFM)

Electrical Resistivity Tomography (ERT)

For the ERT method, a linear array of removable small steel spike electrodes (approximately 0.5 inches (1.27 centimeters) in diameter by 8 inches (20 centimeters) long) will be driven 6 to 8 inches (15 to 20 centimeters) into the ground approximately every 10 feet (2 meters) over several hundred feet. Low amperage current is injected into the ground between varying pairs of electrodes and readings are taken (Figure 9). At each test setup, which consists of an 84-electrod array, low amperage currents are sent over two electrodes for up to a few seconds while readings in other electrodes are taken. This procedure is repeated over a period of a few hours and is repeated along the survey line which is planned to be up to 2,300 feet (701 meters) long.

*Source: Plattner Geophysics Group 2019

Figure 9. Electrical Resistivity Tomography (ERT)

Seismic Refraction/Reflection (Seismic)

For the seismic surveys, seismic sensors (approximately 0.5 inches (1.27 centimeters) in diameter and 5 inches (13 centimeters) long) are driven into the ground 3 to 5 inches

deep at a spacing of approximately 6.5 feet (2 meters). The EnviroVibe Minibuggy is a vehicle that is positioned every 10 to 20 feet (3 to 6 meters) and a pad is lowered onto the ground to inject a seismic signal into the ground using swept frequency vibratory motion (Figure 10). The frequency sweeps are performed while sensor readings are taken. The sweeps take less than 30 seconds to complete. The source is then moved along the line and another sweep is performed. This process is repeated along the entire length of the survey line which is up to 2,300 feet (701 meters) long. The EnviroVibe Minibuggy is a small rubber-tire truck-mounted source (approximately 8 feet (2 meters) wide, 20 feet (6 meters) long, and 8 feet (2 meters) high) that creates minimal ground disturbance, much like typical rubber-tired farming equipment. Vibrations induced are relatively small, while mild vibrations can typically be felt by people within approximately 50 feet (15 meters) of the EnviroVibe Minibuggy; at 100 feet (30 meters), vibrations are typically not detectible by people. The levels of vibration are much smaller than vibrations required to induce damage in buildings and infrastructure.

*Source: Industrial Vehicles International 2019

Figure 10. EnviroVibe Minibuggy

2.2 Over-Water Boring Equipment

Primary equipment for over-water boring includes a rotary drill rig mounted on a shallow-draft barge or ship (see Figure 11). Vehicle use for over-water explorations will include up to 8 passenger vehicles for workers and monitors to the marinas, power boat for transport of workers and monitors to the drill barge or ship, and transport of the drill barge (with a tugboat) or ship from the marina to the on-water exploration site.

*Source: Liebherr 2019

Figure 11. Barge-mounted Rotary Drill Rig

2.2.1 Over-Water Soil Boring Investigations Methods

Several days to several weeks prior to investigations, vehicles at or near each Impact Area will include support vehicles or a boat for DWR and DCA engineers, geologists, environmental scientists, and the cultural resource team for a reconnaissance level site visit. In addition, an underwater hazard survey will be performed by a small boat towing bathymetric and geophysical instruments to confirm mudline depths and confirm that there are no obstructions or utilities that could endanger or be impacted by the drilling operations (e.g. old piles, cables, pipelines, etc.).

The driller will use a rotary drill rig mounted on a shallow-draft barge or ship. Multiple barges and/or ships may be operated concurrently. The barge or ship will be anchored into the bottom of the channel with two to four spuds or anchor lines to prevent the vessel from drifting while the work is being performed. The spuds are steel pipes mechanically lowered into the channel bottom. The anchor lines would be located near the 4 corners of the barge and set some distance away to anchor the vessel.

The Proposed Project consists of 56 soil borings from up to 200 feet (61 meters) below the slough or river bottom (measured at the mudline).

The drill apparatus is similar to the land-based apparatus described above and consists of a 6- to 8-inch-diameter (15 to 20 centimeters) conductor casing that extends from the barge or drill ship deck, through the water column, and into the soft sediments of the slough or river bottom. The casing is smaller than most piers and should not impede water flow or migration patterns of fish. All drilling rods, samplers, and other down-hole equipment will be fully enclosed within the casing, effectively separating all drilling equipment from the water.

The borings will be advanced using mud rotary method and will be drilled and sampled to a maximum depth of approximately 200 feet (61 meters) below the bottom of the slough or river. In this case, the term “mud” refers to the use of drilling polymers and/or bentonite clay added to the boring to allow removal of drill cuttings and to stabilize the boring walls. Initially, the boring will be advanced by pushing an approximate 6- to 8-inch-diameter (15 to 20 centimeters) conductor casing, which will extend from the top of the barge or drill ship deck, to an approximate depth of 10 to 15 feet (3 to 5 meters) or more below the mud line of the slough or river channel. The conductor casing will be used to confine the drill fluid (“mud”) and cuttings within the drill hole and operating deck of the barge or drill ship and prevent any inadvertent spillage into the water. Soil samples will be collected from within the casing. The drill hole below the conductor casing will be approximately 3.5 to 7.0 inches (9 to 18 centimeters) in diameter.

Only water will be circulated through the pumps and conductor casing when drilling and sampling within 15 to 20 feet (5 to 6 meters) of the slough or river mud line. For deeper drilling, the drilling fluid, consisting of a mixture of circulating water and drilling polymers and/or bentonite clay, will be introduced into the conductor casing via the drill string to

create a more viscous drilling fluid (also called drilling mud). The drilling fluid will pass down the center of the drill rod to the cutting face in the formation being drilled and will return up the drilled hole with the suspended cuttings. The drilling fluids and cuttings will be confined by the borehole walls and the conductor casing. Return drill fluids will pass through the conductor casing to the barge or ship deck and then through a tee connection at the head of the conductor casing into the drilling fluid recirculation tank.

The drilling fluids will be kept in the closed system formed by the conductor casing, a tank on the barge or drill ship deck, and a heavy plastic sleeve over the conductor casing which drapes into an external mud tank. This system will provide a reliable seal and prevent significant spillage of the drilling fluid into the water. The drill rod and sample rod connections will be disconnected either directly over the conductor casing or the recirculation tank. Furthermore, positive barriers consisting of hay waddles and/or other suitable type of spill-stoppage materials will be placed around the work area on the barge and ship decks.

Drill cuttings that settle out in the recirculation tank will be collected into 55-gallon storage drums or larger bins. Good work practices and mitigation measure implementation will be observed and maintained in containing the drilling fluid, including taking care when transferring drill cuttings from the recirculation tank to the drums. The drums will be placed adjacent to the recirculation tank. If drilling fluid or drill cuttings material accidently spill onto the barge or drill ship deck outside of the containment area, they will be immediately picked up with a flat blade shovel and placed either into the recirculation tank or a storage drum, and the affected area will then be cleaned and mopped. Discarded soil samples will also be placed in the storage drums.

Soil samples will be collected from borings using a standard penetration test (SPT) barrel (split spoon sampler), Modified California sampler, Pitcher Barrel sampler, 101 mm Geobarrel, 134 mm Geobarrel, Shelby tubes, and grab samples of the cuttings.

The barge or ship will be mobilized from an established marina and will be anchored either at the Impact Areas or at Coast Guard established anchorage points. Personnel will access the barge and/or ship via a support boat from an established marina. Disturbance to the riverbank or levee banks will be limited to the minimum necessary to complete the work.

The duration of investigation activities will be up to 15 days at each site.

Following completion of a soil investigation, the boring will be grouted from the bottom of the borehole to within approximately 10 to 15 feet (3 to 5 meters) of the top with 5 percent (by weight) bentonite and 95 percent (by weight) cement grout. Water will first be introduced inside the drilled hole and circulated within the conductor casing to clear out any remaining drilling mud prior to grouting. Grouting of the drilled hole will be accomplished by lowering a pipe into the bottom of the borehole to pump grout into the bottom of the hole (tremie method). Grout will be placed from the bottom of the hole

upward to a depth of approximately 10 feet (3 meters) below the bottom of the slough or river based on a calculated grout take volume to prevent grout migration into the slough or river water. At the completion of the grouting, the conductor casing will then be pulled out of the channel bottom to complete the overwater boring operation.

3.0 RESOURCE ANALYSIS

3.1 Aesthetics

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) Would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings?	☐	☐	☒	☐
d) Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☒

3.1.1 Environmental Setting

The Study Area overlaps several scenic resources, including 45.8 miles of California Route 160-River Road (SR 160) which was designated by the California Department of Transportation in 1969 (Caltrans 2019) as a County Scenic Highway from the Contra Costa County Line to the Sacramento City Limit at Freeport, and scenic waterways such as Snodgrass Slough, the Sacramento River, Frank's Tract State Recreation Area (CDPR 2019) and the waterways weaving through the islands of the Delta. Historic structures, such as those found in the historic town of Locke (Visit CA Delta 2019, Locke 2019), the Bing Kong Tong Museum in Isleton, El Dorado Elementary School and

Nippon Hospital (NoeHill 2019 a, b, c) in the vicinity of Mokelumne City, are near the Study Area as well. Many of the roadways within the Study Area are characterized by adjacent waterways, riparian corridors, vineyards, rural row-crop agriculture, orchards, irrigated pasture, and Delta islands.

3.1.2 Discussion

a) Would the project have a substantial adverse effect on a scenic vista?

Less than Significant Impact. The Proposed Project is not expected to have a substantial adverse effect to any scenic vistas within the region due to the temporary nature of the work, and lack of any permanent structures associated with the Proposed Project. While there would be a less than significant impact to scenic vistas, implementation of the following Mitigation Measure would further avoid, minimize and/or reduce potential impacts:

MM AES-1:

a. Each Impact Area will be returned to as close to pre-activity conditions as possible. This will be documented by still photos taken pre- and post-activity.

b. No building structures will be removed or disturbed. Soil investigation activities will occur at a distance greater than 100 feet (30.5 meters) from residences and small business operations. If fencing needs to be removed for access, it would be replaced in kind after the work is completed.

c. No trees or vines will be removed during exploration activities; and only minor disturbances to vegetation would occur during mobilization of equipment. This minor disturbance may consist of mowing, removal of a few tree limbs, or trimming of bushes for site access. However, if access requires removal of any vegetation, the landowner would be consulted first to minimize the impact to both vegetation and the landowner.

b) Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Less than Significant Impact. The Proposed Project is not expected to cause substantial damage to scenic resources such as trees, rock outcroppings and historic buildings within a state scenic highway. Within the Study Area, the only scenic highway is SR 160, which is characterized by a discontinuous riparian corridor interspersed with views of the river and small historic towns. The highway crosses the river multiple times on historic bridges as it winds from Sacramento to the Antioch Bridge. All the land-based borings along SR 160 are planned to be conducted between Clarksburg and Courtland and are not in areas where they would be near enough to historical structures to have any impact. Proposed Project work near Isleton, which does have historic structures, is only planned for overwater

work and would therefore have no impact on the land based historical resources. Additionally, no rock outcroppings are known from this area and no structures or buildings are disturbed. While there would be a less than significant impact to scenic resources, implementation of Mitigation Measure MM AES-1 would further avoid, minimize and/or reduce the potential for impacts.

c) Would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings?

Less than Significant Impact. The Proposed Project is not expected to substantially degrade the existing visual character or quality of public views of the Study Area or surroundings due to the small footprint, temporary nature of the work, and lack of any permanent structures associated with the Proposed Project. While there would be a less than significant impact to existing visual character and quality of public views, implementation of Mitigation Measure MM AES-1 would further avoid, minimize and/or reduce potential impacts.

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

No Impact. The Proposed Project is not expected to create a new source of substantial light or glare which would adversely affect day or nighttime views in the area. Lighting may be used on barges or drill ships; however, it is not expected to adversely affect day or nighttime views. No permanent structures would be installed, and the Proposed Project does not include the use of equipment that would have reflective properties such that a substantial daytime glare would be created during soil investigation activities. While there would be no impact to permanent day or nighttime views in the area, implementation of Mitigation Measure MM AES-2 would further avoid, minimize and/or reduce the potential for any glare-related impacts.

MM AES-2:

a. Navigational lighting will be used as needed for overwater work, but will meet the standards required for waterway safety, and will not increase the existing ambient lighting of the area in a substantial way. Any lighting used on barges or drill ships will not exceed the standards of brightness for standard navigational safety requirements.

b. All work will occur between sunrise and sunset.

3.2 Agriculture & Forestry Resources

ENVIRONMENTAL ISSUES*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Would the project conflict with existing zoning for agricultural use or a Williamson Act contract?	☐	☐	☐	☒
c) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code (PRC) section 12220(g)), timberland (as defined by PRC section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Would the project 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?	☐	☐	☐	☒

*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; available at https://www.conservation.ca.gov/dlrp/Pages/qh_lesa.aspx) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection (CalFire) 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 (CARB)

3.2.1 Environmental Setting

The Study Area spans the Sacramento – San Joaquin River Delta including portions of Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties, and includes agricultural and forest landscapes. Agricultural lands are defined as important farmland by the Farmland Mapping and Monitoring Program of the California Department of Conservation (DOC), as well as the California Land Conservation Act of 1965 (Williamson Act) contract lands. Forestry resources are lands defined as forest land, including timberland in the Z'berg-Warren-Keene-Collier Forest Taxation Reform Act 1976 (Tax Reform Act).

3.2.1.1 Farmland

Important farmland is categorized by DOC as prime farmland, farmland of statewide importance, unique farmland, and farmland of local importance. These categories consider physical and chemical features including soil quality, growing season, and moisture supply to rate the type of land that is currently, or was during the previous four years, used for agricultural purposes (DOC 2019a). Within each of the above counties, agriculture is the predominant use of land, with almost 1.5 million acres of important farmland designated in all of the counties in the Study Area combined. Of the proposed on-land soil investigation sites within the Study Area, approximately 80% of these sites are located on mapped important farmland (DOC 2016a).

3.2.1.2 Williamson Act Lands

California has some of the most productive land in the world. It has been managed by Native Americans, early settlers, and now by federal, State, and local agencies. Rapid conversion of California farmland and forest land to other uses led the state to create programs under the Williamson Act (1965) and the Tax Reform Act (1976) to protect these lands from conversion through tax incentives (CalFire 2018).

Under the Williamson Act (1965), local governments can enter into contracts with private property owners to protect land (within agricultural preserves) for agricultural and open space purposes. The program took off when it was added to the state's Constitution allowing for preferential assessments. Some counties are phasing out the

Williamson Act Lands as they no longer receive financial assistance from the state in the form of Open Space Subvention payments. Counties may not report updated Williamson Act enrollment figures because they lack planning staff to administer the Williamson Act program. Therefore, this analysis reflects the most recent available Williamson Act enrollment data reported by the counties.

Approximately 16 million acres has been consistently enrolled under the Williamson Act statewide since the early 1980s (DOC 2016b). This represents almost half of California's farmland and nearly one-third of its privately-owned land. Approximately 33% of the proposed on-land soil investigation sites are located on mapped Williamson Act Land (DOC 2019b).

3.2.1.3 Forest Land

Forest land is defined as native tree cover greater than 10% that allows for management of timber, aesthetics, fish and wildlife, recreation, and other public benefits (California Public Resources Code (PRC) Section 12220(g)). Natural forest and woodland vegetation types in the Study Area typically have greater than 10% cover generally characterized as Valley Foothill riparian with the regional dominant tree types being willow or riparian mixed hardwood. Approximately 1% of the proposed on-land Impact Areas are mapped as forest land on the Fire Return Interval Departure map and are made up of deciduous orchard and Valley oak woodland (Safford et al 2013).

Timberland, a subset of forest land, is defined by State law as land that is available for, and capable of, growing a crop of trees of any commercial species used to produce lumber and other forest products (PRC Section 4526), and can produce an average annual volume of wood fiber of at least 20 cubic feet per acre per year at its maximum production (PRC Section 51104(g)).The Study Area does not contain areas zoned for timber production.

3.2.2 Discussion

a) Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No Impact. While some of the Study Area overlaps areas mapped as farmland, the Proposed Project activities would not convert prime farmland, unique farmland, or farmland of Statewide importance. On-land Impact Areas are primarily located on roads and road right of ways, and Impact Areas within agricultural fields would be temporary and would not require a conversion of land use. The Proposed Project would not convert prime or unique farmland or farmland of Statewide importance. While there would be no impact to Prime Farmland, Unique Farmland, or Farmland of Statewide Importance convergence, implementation of Mitigation Measure MM AGR-1 would further avoid, minimize and/or reduce the potential for impacts.

MM AGR-1: Any proposed soil investigation activities that occur on agricultural lands will be grouted with materials that conform to ANSI and ASTM standards from the full depth to in accordance with ASTM standards to five feet (1.5 meters) below the surface. The final five feet (1.5 m of) of topsoil will be replaced to return the Impact Area to as close to pre-activity conditions as possible. The backfill procedure will be in accordance with State of California Bulletin 74-81/74-90 and local county standards.

b) Would the project conflict with existing zoning for agricultural use or a Williamson Act contract?

No Impact. While some of the Study Area is zoned for Williamson Act contracts, the Proposed Project would not affect existing zoning (DOC 2019b) for agricultural use or a Williamson Act contract. While there would be no impact to existing zoning for agricultural use or a Williamson Act, implementation of Mitigation Measure MM AGR-1 would further avoid, minimize and/or reduce the potential for impacts.

c) Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

No Impact. The land within the Study Area has a few sites that are mapped as forest land; however, it would not conflict with Public Resources Code section 12220 (g). The Study Area does not include land that is zoned for timberland as defined by PRC section 4526 or timberland zoned Timberland Production as defined by Government Code section 51104 (g). No rezoning would take place as part of Proposed Project activities. While there would be no impact to existing zoning for forest land, implementation of Mitigation Measure MM AGR-1 would further avoid, minimize and/or reduce the potential for impacts.

d) Would the project result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. Impacts to forest land, including loss or conversion of forest land to non-forest uses, would not occur because no trees would be cut down on forest land and forest land will not be converted. While there would be no impact to loss of forest land, implementation of Mitigation Measure MM AGR-1 would further avoid, minimize and/or reduce the potential for impacts.

e) Would the project 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?

No Impact. Impacts to Farmland, including loss or conversion to non-agricultural use, or loss or conversion of forest land to non-forest uses, would not occur because

farmland and forest land is not being converted. While there would be no impact to farmland or forest land conversion, implementation of Mitigation Measure MM AGR-1 would further avoid, minimize and/or reduce the potential for impacts.

3.3 Air Quality

ENVIRONMENTAL ISSUES*	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☐	☒	☐
c) Would the project expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
d) Would the project result in other emissions such as those leading to odors adversely affecting a substantial number of people?	☐	☐	☐	☒

*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.

3.3.1 Environmental Setting

The Study Area spans portions of Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties. These counties fall within three air basins and four air districts (collectively referred to as “Air Districts”):

- Bay Area Air Quality Management District (BAAQMD),
- San Francisco Bay Area Air Basin (SFBAAB),
- Sacramento Valley Air Basin (SVAB),
- Sacramento Metropolitan Air Quality Management District (SMAQMD),
- San Joaquin Valley Air Pollution Control District (SJVAPCD),
- San Joaquin Valley Air Basin (SJVAB), and

- Yolo-Solano Air Quality Management District (YSAQMD).

National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS) have been established for the following criteria pollutants: carbon monoxide (CO), ozone (O_3), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), particulate matter less than 10 microns (PM_{10}), particulate matter less than 2.5 microns ($PM_{2.5}$), and lead (Pb). These standards have been established with a margin of safety to protect the public's health. Both the U.S. Environmental Protection Agency (EPA) and the California Air Resources Board (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 "attainment" designation for an area signifies that pollutant concentrations did not violate the NAAQS or CAAQS for that pollutant in that area. A "nonattainment" designation indicates that a pollutant concentration violated the standard at least once, excluding those occasions when a violation was caused by an exceptional event, as identified in the criteria. A "maintenance" designation indicates that the area was previously non-attainment and is currently attainment for the applicable pollutant; the area must demonstrate continued attainment for a specified number of years prior to re-designation as an "attainment" area. An "unclassified" designation signifies that data do not support either an attainment or nonattainment status. The attainment status for the jurisdictional Air Quality Management Districts is shown in Table 2.

Table 2: Attainment status for jurisdictional regional air districts[1]

Air Quality Parameters	SMAQMD State	SMAQMD Federal	YSAQMD State	YSAQMD Federal	BAAQMD State	BAAQMD Federal	SJVAPCD State	SJVAPCD Federal
O_3 1-hr	N	A	N	N	N	N/A	N	N (N/A)
O_3 8-hr	N	N	N	N	N	N	N	N
PM_{10} 24-hr	N	A	N	U	N	U	N	A
PM_{10} Annual	N	N/A	N	N/A	N	N/A	N	N/A
$PM_{2.5}$ 24-hr	N/A	N	N/A	N	N/A	N	N/A	N
$PM_{2.5}$ Annual	A	A	U	A	N	U/A	N	N

Notes:
A: attainment means the concentration of the pollutant does not exceed national or state Ambient Air Quality Standards.
N: non-attainment means the concentration of the pollutant exceeds national or state Ambient Air Quality Standards.
N/A: means not applicable, state or federal standard does not exist for the combination of pollutant and averaging time.
U: means unclassified areas are those for which air monitoring has not been conducted but which are assumed to be in attainment.

[1] Based on information collected from: BAAQMD 2019, SMAQMD 2019a, YSAQMD 2019, and SJVAPD 2019.

3.3.1.1 Air Basins

San Francisco Bay Area Air Basin. The SFBAAB consists of Alameda, Contra Costa, Marin, Napa, Santa Clara, San Francisco, and San Mateo Counties, the southern portion of Sonoma County, and the western portion of Solano County. While the topography of the SFBAAB is characterized by complex terrain, consisting of coastal mountain ranges and inland valleys and bays, the Study Area within this air basin is located in the Sacramento-San Joaquin Delta, with flat terrain and lower elevations. The area is characterized by moderately wet winters and dry summers; winter rains account for about 75 percent of the average annual rainfall. Annual precipitation can vary greatly from one part of the air basin to another even within short distances, from 40 inches in the mountains to less than 16 inches in sheltered valleys. Temperatures can also vary greatly across the air basin; in the Study Area, high temperatures in summers often exceed 100 ºF, and the average high temperature is in the low 90s. The average low temperature in winter is in the high 30s.

The SFBAAB is classified as non-attainment for the State and Federal Ozone standards, the State PM_{10} and $PM_{2.5}$ standards and the Federal $PM_{2.5}$ standards.

Sacramento Valley Air Basin. The SVAB covers all of Butte, Colusa, Glenn, Sacramento, Shasta, Sutter, Tehama, Yolo, and Yuba Counties, the westernmost portion of Placer County and the northeastern half of Solano County. The SVAB is bound by the North Coast Ranges to the west and the Northern Sierra Nevada Mountains to the east. The intervening terrain is relatively flat. It has a Mediterranean climate characterized by hot dry summers and mild rainy winters. During the year the temperature may range from 20 to 115 ºF, with summer highs usually in the 90s and winter lows occasionally below freezing. Average annual rainfall is approximately 20 inches, with about 75 percent of the rain occurring during the rainy season generally from November through March. Ozone is the primary criteria pollutant of concern in the SVAB.

Sacramento County was designated “nonattainment” for one-hour state ozone, eight-hour federal and state ozone, 24-hour state and federal PM_{10} and 24 hour and annual state $PM_{2.5}$ standards based on both NAAQS and CAAQS (SMAQMD 2020). As a result of not meeting the air quality standard for ozone, Sacramento County is part of the Sacramento Federal Ozone Nonattainment Area (SFNA). Portions of Study Area are within in the SFNA. Yolo County was also designated as a nonattainment area for the state PM_{10} standard.

San Joaquin Valley Air Basin. The SJVAB consists of Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus, and Tulare counties, and the western portion of Kern County. The SJVAB is bound by the Coast Ranges to the west, the Sierra Nevada Mountains to the east and the Tehachapi Mountains to the south. The intervening terrain is relatively flat with a slight downward gradient to the northwest. The SJVAB has an “inland Mediterranean” climate averaging over 260 sunny days per year. Summers are dry and warm, high temperatures often exceed 100ºF, and the average high temperature in the

north valley is in the low 90ºs. Winters are mild and humid, temperatures below freezing are unusual and the average daily low temperature is 45ºF. Average annual rainfall is approximately 20 inches in the north part of the air basin, and the majority of the precipitation is produced by winter storms.

The topographic features in the area restrict air movement through and out of the basin, leading to air pollution becoming trapped for long periods of time and producing harmful levels of pollutants. Local climatological effects, including wind speed and direction, temperature, inversion layers, and precipitation and fog, can exacerbate the air quality problem in the SJVAB.

The SJVAB is classified “severe nonattainment” for the state and the federal ozone standard and “serious nonattainment” for the federal PM_{10} standard.

3.3.1.2 Air Quality Management District Standards

Bay Area Air Quality Management District. The BAAQMD does not require quantification of construction emissions, although a Lead Agency may elect to do so. If all of the control measures indicated in Table 2 of the “Bay Area Air Quality Management District California Environmental Quality Act Guidelines” (as appropriate, depending on the size of the project area) will be implemented, then PM_{10} emissions from construction activities would be considered a less than significant impact (BAAQMD 2017).

Sacramento Metro Air Quality Management District. Because the Sacramento region exceeds state and federal ozone ambient air quality standards, ozone precursors such as nitrogen oxide are of greatest concern in the district. A project is considered significant if anticipated emissions of certain pollutants exceed, or contribute substantially to, an existing or projected violation of an ambient air quality standard, or expose sensitive receptors (e.g., children, athletes, elderly, sick populations) to substantial pollutant concentrations (SMAQCD 2020).

San Joaquin Valley Air Pollution Control District. The SJVAPCD’s approach to California Environmental Quality Act analyses of construction PM_{10} impacts is to require implementation of effective and comprehensive control measures rather than to require detailed quantification of emissions. The SJFAPCD has determined that compliance with Regulation VIII for all sites and implementation of all other control measures indicated in Tables 6-2 and 6-3 of the “San Joaquin Valley Air Pollution Control District Guide” will constitute sufficient mitigation to reduce PM_{10} impacts to a level considered less than significant with mitigation (SJVAPCD 2015).

Yolo Solano Air Quality Management District. The YSAQMD sets project-level thresholds for pollutants of concern, toxics, odors, and cumulative impacts. Even projects not exceeding the district PM_{10} thresholds should comply with applicable district rules and implement best management practices to reduce dust emissions and avoid localized health impacts (YSAQMD 2007).

Thresholds of significance for criteria pollutants in the four air quality management districts are displayed in Table 3. The Air Districts have established screening levels to

assist project proponents in determining if emissions will exceed the District's construction thresholds for pollutants of concern. Construction of a project that does not exceed the screening levels, meets all of the screening parameters, and implements the Districts' air quality Best Management Practices will be considered to have a less than significant impact on air quality. The Districts' applicable air quality Best Management Practices have been incorporated into MM AIR-1.

Table 3: Thresholds of Significance for Criteria Pollutants

Pollutant	Significance Threshold BAAQMD	Significance Threshold SMAQMD	Significance Threshold SJVAPCD	Significance Threshold YSAQMD
reactive organic gases	54 lbs/day	--	10 tons/year	10 tons/year
nitrogen oxides	54 lbs/day	85 lbs/day	10 tons/year	10 tons/year
PM_{10}	82 lbs/day	0 lbs/day (80 lbs/day*)	15 tons/year	80 lbs/day
$PM_{2.5}$	54 lbs/day	0 ibls/day (82 lbs/day*)	15 tons/year	80 lbs/day

* SMAQMD particulate matter (PM10 and PM2.5) thresholds are zero, unless best management practices (BMPs) are included as project conditions of approval or mitigation measures. Since BMPs have been included, the non-zero thresholds can be used.

3.3.1.3 Impact Assessment Approach

The Proposed Project's impacts to air quality were assessed using methods and assumptions recommended by the Air Districts. The Proposed Project is a soil investigation and it does not involve building any permanent structures or facilities that would generate air pollutants. When the Proposed Project is complete, all activities will cease, and no further emissions will be generated. Because potential impacts to air quality would only occur during the period when soil investigations are being performed, this impact analysis will focus on air pollutant emissions from Proposed Project activities only.

3.3.2 Discussion

a) Would the project conflict with or obstruct implementation of the applicable air quality plan?

No Impact. The Proposed Project does not involve land development, nor would the Proposed Project induce growth. The Proposed Project does not conflict with or obstruct implementation of the air quality plans for the applicable Air Districts, therefore there would be no impact.

b) Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

Less than Significant Impact. The Proposed Project is a soil investigation and all activities would cease upon completion of the study. No permanent facilities or structures that would generate air pollutant emissions would be built for the Proposed Project, therefore, the following discussion is focused on short-term soil investigation activity emissions. Table 4 shows the estimated emissions generated from the Proposed Project within each Air District's jurisdiction. Because the Proposed Project schedule will adhere to work windows to avoid impacts to sensitive species, on-land and overwater soil investigations may occur at different times, thus the emissions are quantified separately. The Proposed Project would implement all applicable Best Management Practices required by the Air Districts. The Proposed Project emissions would not exceed the Air District criteria pollutant significance thresholds (Table 5).

Table 4: Total Estimated Exhaust Emissions of Criteria Pollutants (in pounds per day based on Impact Areas per air district) for the Proposed Project in each Air District

Location	Pollutant	BAAQMD Exhaust Emissions	SMAQMD Exhaust Emissions	SJVAPCD Exhaust Emissions	YSAQMD Exhaust Emissions
On Land	**reactive organic gases**	2.3	1.7	2.8	1.3
On Land	**nitrogen oxides**	18.7	12.0	24.5	9.1
On Land	**PM_{10}**	0.7	0.4	1.0	0.3
On Land	**$PM_{2.5}$**	0.6	0.3	0.9	0.2
Over Water	**reactive organic gases**	2.5	1.8	5.8	4.3
Over Water	**nitrogen oxides**	25.2	17.7	58.0	42.9
Over Water	**PM_{10}**	0.9	0.6	2.0	1.5
Over Water	**$PM_{2.5}$**	0.9	0.6	2.0	1.5

Table 5: Estimated Exhaust Emissions of Criteria Pollutants (in pounds per day) for the Proposed Project compared to the Thresholds of Significance for the Air District

Location	Pollutant	BAAQMD Exhaust Emissions	BAAQMD Significance Threshold	SMAQMD Exhaust Emissions	Significance Threshold SMAQMD	SJVAPCD* Exhaust Emissions	Significance Threshold SJVAPCD	YSAQMD Exhaust Emissions	Significance Threshold YSAQMD
On Land	**reactive organic gases**	2.3	54	1.7	--	2.8 (0.36 tons)	10 tons/yr	1.3 (0.17 tons)	10 tons/yr
On Land	**nitrogen oxides**	18.7	54	12.0	85	24.5 (3.12 tons)	10 tons/yr	9.1 (1.16 tons)	10 tons/yr
On Land	**PM_{10}**	0.7	82	0.4	80	1.0 (0.13 tons)	15 tons/yr	0.3	80
On Land	**$PM_{2.5}$**	0.6	54	0.3	82	0.9 (0.11 tons)	15 tons/yr	0.2	80
Over Water	**reactive organic gases**	2.5	54	1.8	--	5.8 (0.26 tons)	10 tons/yr	4.3 (0.19 tons)	10 tons/yr
Over Water	**nitrogen oxides**	25.2	54	17.7	85	58.0 (2.61 tons)	10 tons/yr	42.9 (1.93 tons)	10 tons/yr
Over Water	**PM_{10}**	0.9	82	0.6	80	2.0 (0.09 tons)	15 tons/yr	1.5	80
Over Water	**$PM_{2.5}$**	0.9	54	0.6	82	2.0 (0.09 tons)	15 tons/yr	1.5	80
Combined	**reactive organic gases**	4.8	54	3.5	--	8.6 (0.62 tons)	10 tons/yr	5.6 (0.36 tons)	10 tons/yr
Combined	**nitrogen oxides**	43.9	54	29.7	85	82.5 (5.73 tons)	10 tons/yr	52 (3.09 tons)	10 tons/yr
Combined	**PM_{10}**	1.6	82	1.0	80	3 (0.22 tons)	15 tons/yr	1.8	80

Combined	**$PM_{2.5}$**	3.4	54	0.9	82	3 (0.20 tons)	15 tons/yr	1.7	80

*Pounds per day converted to tons per expected duration of activity for comparison in SJVAPCD and YSAQMD.

Because the Proposed Project is short-term in duration and equipment emissions are below the established significance thresholds for criteria pollutants, the Proposed Project would not result in a cumulatively considerable net increase of any criteria pollutant for which the Proposed Project region is non-attainment under an applicable federal or state ambient air quality standard. Therefore, the impact would be less than significant.

c) Expose sensitive receptors to substantial pollutant concentrations?

Less than Significant Impact. The Impact Areas are not adjacent to sensitive receptors such as schools or housing developments. Furthermore, Proposed Project impacts would be short-term in duration, involve minimal ground disturbance, and emissions are below the significance thresholds established by the Air Districts. While there would be a less than significant impact on sensitive receptors, implementation of Mitigation Measure MM AIR-1 would further avoid, minimize and/or reduce the potential for impacts.

MM AIR-1:

a. 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.

b. Cover or maintain at least six feet (1.83 meters) 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 will be covered.

c. All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. Use wet power vacuum street sweepers to remove any visible track out mud or dirt onto adjacent public roads as needed. Use of dry power sweeping and blower devices is prohibited.

d. Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).

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

No Impact. The Proposed Project will not result in odor-causing emissions that will adversely affect a substantial number of people. The Impact Areas are small, discrete, and are located away from housing and public gathering areas. Additionally, the equipment used for the soil investigations do not generate strong odors, no odor-causing chemicals will be used, the Proposed Project would be short-term in duration, and emissions would cease upon completion of the soil investigation. Therefore, there would be no impact.

3.4 Biological Resources

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game and the U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Would the project 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 California Department of Fish and Game or the U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c) Would the project have a substantial adverse effect on federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☐	☒

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Would the project 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?	☐	☒	☐	☐
e) Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☒	☐

3.4.1 Environmental Setting

The Study Area spans a portion of the Sacramento – San Joaquin River Delta including portions of Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties. It includes a variety of natural and built environments, including riverine, riparian, grassland, agriculture, and urban development. The Study Area is bordered to the north by the city of West Sacramento, the south by Kelso Road, to the west by west bank of the Toe Drain and communities including Rio Vista, Oakley, and Brentwood, and to the east by Interstate 5.

3.4.1.1 Methodology

DWR environmental scientists compiled a list of sensitive species and plant communities that may be in the Study Area (Appendix A). The list was developed from a review of the California Natural Diversity Database (CNDDB), Sacramento U.S. Fish and Wildlife Service website (USFWS), and the California Native Plant Society (CNPS) on-line Inventory of Rare and Endangered Plants for the following 42 USGS 7.5 minute Quadrangle maps: Gray's Bend, Taylor Mountain, Rio Linda, Davis, Sacramento West, Sacramento East, Saxon, Merritt, Clarksburg, Florin, Dixon, Elk Grove, Dozier, Liberty Island, Courtland, Bruceville, Galt, Lodi North, Thornton, Isleton, Rio Vista, Birds Landing, Antioch North, Jersey Island, Bouldin Island, Terminous, Lodi South, Stockton West, Holt, Woodward Island, Brentwood, Antioch South, Tassajara, Byron Hot Springs, Clifton Court Forebay, Union Island, Lathrop, Tracy, Midway, Livermore, Vernalis, and Altamont USGS 7.5' quadrangles. The complete list includes information on species status, habitat description, whether potential habitat occurs in the Study Area, and whether the species have the potential to occur within the Study Area.

The Study Area for evaluating the Proposed Project's potential impacts on sensitive wildlife species was established with 2 and 5-mile (3.2 to 8 kilometer) buffers around each soil investigation site to account for the life histories and potential migration of any given species. Expected wildlife species' potential to occur within the Study Area were determined through a review of available data sources including CNDDB Geographic Information System (GIS) records (CDFW 2019), iNaturalist (2019) research grade occurrences[2], and analysis of aerial imagery. This evaluation does not include specific information that could only be attained via site visits, which have not been conducted for the project footprint.

The Study Area for evaluating the Proposed Project's potential impacts on sensitive plants was established as a 328-foot (100-meter) buffer around each soil investigation site. This buffer was established to account for potential site relocation and vegetation map resolution. Habitat types within the Study Area were characterized by the 2007 Vegetation and Land Use Classification and Map of the Sacramento-San Joaquin River Delta (Hickson & Keeler-Wolf 2007). These types were cross-walked to their respective Holland natural community types (Holland 1986, Sawyer et al 2009), which are used by the CNDDB and CNPS for habitat characterization of special-status plants (CNPS 2019).

Each species' potential to occur within the Study Area was determined by:

1) comparing natural community types within the Study Area to suitable habitat for each species, and

[2] A research grade is applied to an occurrence submitted to iNaturalist when the following has been verified: date is specified and accurate, location is specified and accurate, includes photos or audio, has ID confirmed by two or more people, the organism is wild and there is adequate evidence of the organism, and it is identified to species.

2) range and distribution relative to the Study Area.

Ranks were assigned based on the following criteria:

- None: The Study Area does not support suitable habitat for the species and/or the Study Area is outside of the known and presumed range of the species;

- Low: The Study Area includes limited or poor-quality habitat for the species and/or there are no documented occurrences within the vicinity of the Study Area;

- Moderate: The Study Area includes suitable habitat for the species and there are documented occurrences in the vicinity of the Study Area;

- High: The Study Area includes suitable habitat for the species and there are documented occurrences within the Study Area.

3.4.1.2 Habitat Types

The Holland natural community types within the Study Area include chenopod scrub, cismontane woodland, marshes and swamps, meadows and seeps, riparian scrub, riparian forest, riparian woodland, valley and foothill grassland, and vernal pools (Hickson & Keeler-Wolf 2007, Holland 1986, Sawyer et al 2009). A large portion of the Study Area has been developed or converted to cropland. These land cover types are not expected to support special-status plant species.

Historically, the Delta consisted of marshes, waterways, and tules, with occasional uplands containing vernal pools and alkali sinks. Extensive development for agriculture and navigation significantly decreased habitat for native plant species (Thompson 2006). Today, while native vegetation survives in preserves and on watersides, the unfarmed uplands are dominated by non-native species. Areas with minimal disturbance are usually dominated by European annual grassland species, and areas that are frequently disturbed are dominated by agricultural weeds (Hickson and Keeler-Wolf 2007).

3.4.1.3 Special-Status Species

For the purposes of this analysis, special-status has been defined to include those species that meet the definitions of rare or endangered wildlife or plants under CEQA including species that are:

- Listed as endangered or threatened under the FESA (or formally proposed for, or candidates for, listing);

- Listed as endangered or threatened under CESA (or proposed for listing);
- Designated as endangered or rare, pursuant to California Fish and Game Code Section 1901;
- Designated as fully protected, pursuant to California Fish and Game Code Sections 3511, 4700, or 5050;
- Designated as a species of special concern to the CDFW; or
- Included in California Native Plant Society's Inventory of Rare Plants (Rare Plant Rank 1 through 4).

A total of 100 special-status wildlife species and 97 special-status plant species were identified in the quadrangle search based on the sources identified in the methodology section. Of those identified, 70 special-status wildlife species and 79 special-status plant species have at least some potential to occur within the respective sensitive wildlife or sensitive plant Study Areas.

3.4.2 Discussion

a) Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife, the U.S. Fish and Wildlife Service, or the National Marine Fisheries Service?

Less than Significant with Mitigation Incorporated. As discussed above and noted in Appendix A, the Study Area provides potentially suitable habitat for 70 special-status wildlife species and 79 special-status plant species.

Ground-disturbing effects would be limited and temporary in nature, and vegetation management would be minimal. The implementation of Mitigation Measures MM AES-1 and AES-2, MM BIO-1 through 20, MM HYD-1, and MM HAZ-1 through 4 will reduce potential impacts to special-status species or modification of potential habitat to *Less than Significant with Mitigation Incorporated*. Species specific determinations are discussed in more detail below.

3.4.2.1 SPECIAL-STATUS WILDLIFE

The following section includes species accounts for each of the special-status wildlife species that has potential to occur (Appendix A) within the Study Area and provides effects determinations relative to the Proposed Project's anticipated

impacts. For all 70 wildlife species with some potential to occur in the Study Area, it was determined that potential impacts relative to the Proposed Project would be Less Than Significant with Mitigation Incorporated.

California tiger salamander (*Ambystoma californiense*)

California tiger salamander Central California distinct population segment (DPS) is listed as Threatened under the FESA and as Threatened under the CESA (USFWS 2019a, CDFW 2019a). Critical habitat was finalized for the Central California DPS in 2005. California tiger salamander is a terrestrial mole salamander ranging from three to five inches, snout to vent (SVL), with a broad, rounded snout, stocky body, and is black with large yellow oval or bar-shaped spots (Stebbins 2003). The species historically occurred throughout the Central Valley and surrounding foothills, from Yolo County south to Tulare County, and in the south coast ranges from north of Monterey Bay to San Luis Obispo County, although many of the populations in the Central Valley are now extirpated. There are also isolated populations in Sonoma and Santa Barbara counties (Nafis 2019) which are listed as Endangered under FESA. California tiger salamander inhabits annual grasslands, open mixed woodlands and oak savanna, spending most of its life underground in small mammal burrows. Central California tiger salamander has been shown to migrate from 1 to 1.3 miles (1,609 to 2,092 meters) between breeding ponds and upland habitat, depending upon the availability of suitable upland refugia (Jennings and Hayes 1994, Orloff 2007).

Breeding occurs in vernal pools, seasonal ponds, and constructed stock ponds that are generally free of fish and hold water during winter, often drying out by summer. Adults move from subterranean refuge sites to breeding pools during relatively warm late winter and spring rains (Jennings and Hayes 1994), usually from November through April. Breeding occurs following rains from December to March (Stebbins 2003). Eggs are laid individually or in clumps on submerged vegetation and debris in shallow water and generally hatch in 10 to 28 days (USFWS 2015a). Larvae are aquatic, taking from three to six months to metamorphose. Post-metamorphic juveniles disperse from breeding sites at night during the late spring or early summer to upland burrows or soil crevices.

California tiger salamander has a high potential to occur within the Study Area based upon presence of suitable aquatic and upland habitat and proximity to reported occurrences. There are several reported occurrences of California tiger salamander ranging from 300 feet (91 meters) to less than 0.5 mile (804 meters) from multiple Impact Areas in the southern portion of the Study Area, west of Byron Highway within Contra Costa and Alameda Counties.

Implementation of the following mitigation measures to avoid impacts to all suitable aquatic habitat, upland refugia habitat, and individuals that could be moving through the Study Area: MM AES-1, MM AES-2, MM BIO-1, and MM

BIO-2, would reduce potential project impacts to California tiger salamander to: *Less than Significant with Mitigation Incorporated.*

MM BIO-1: General Wildlife

a. All litter, debris, unused materials, rubbish, supplies, or other material will be appropriately stored in closed containers until it can be removed from project sites and deposited at an appropriate disposal or storage site. All trash that is brought to a project site during soil investigation activities (e.g., plastic water bottles, plastic lunch bags, cigarettes) shall be removed from the site daily.

b. As stated in the project description, all on-land soil investigation Impact Areas will be located outside of wetlands as defined in the Corps of Engineers Wetlands Delineation Manual (USACE 1987). Evaluation of conditions at each site will be conducted by qualified wetland delineators. If after review of applicable data sources, nearby aquatic resources are identified for on-land soil investigation sites, including those that meet the Corps definition of wetlands or non-wetland waters, wetland delineators will participate in the site surveys for those sites and relocate them outside of the boundaries of observed aquatic resources.

c. Over-water sites will be located within portions of navigable channels or sloughs that generally do not provide appropriate habitat for terrestrial plant or wildlife species, and will be authorized under the Clean Water Act sections 401 and 404, and Fish and Game Code section 1602 et seq.

d. A qualified team of biologists will conduct a habitat assessment and reconnaissance level surveys approximately two weeks prior to the onset of ground disturbing soil investigation activities for any special status plants and wildlife that have the potential to occur within the project area. If the biologists identify the potential for special status wildlife impacts within the Impact Area and associated standard species buffers based on the site reconnaissance, the location will be shifted the minimum distance necessary to reduce the potential for biological impacts to a less than significant level without increasing impacts to other resources to above a level of significance. If a suitable location cannot be determined within adjacent areas, then the soil investigation at that location will not be conducted.

e. The qualified biologist(s) must, at a minimum, have experience conducting surveys to identify the specific species and associated habitat that could occur on site.

f. A qualified biologist will be on-site for all project activities and will conduct an environmental awareness training session for all new field personnel prior to the start of work. Throughout the project, any new staff will be provided training before they begin working on the project. A running list of trained

personnel is kept on site in the project permit binder and includes name, date of training, work site and their signature. At a minimum, the training shall:

i. include a description of each species with the potential to occur, including physical description, habitat needs, and life history as well as a discussion of the importance of avoiding impacts to special status wildlife.

ii. explain the general measures that are being implemented to conserve these species as they relate to the project and project area, and procedures to follow should they encounter wildlife during work.

iii. explain the stop work authority of biologists and/or cultural resource specialists.

g. Any observations of federally or state-listed species or California Species of Special Concern will be reported to CDFW within three (3) working days of the observation, and the observation(s) will be submitted to the California Natural Diversity Database (CNDDB). Any observations of federally listed species will also be reported to the U.S. Fish and Wildlife Service.

h. All federally or state-listed species observed will be allowed to leave the Impact Area on their own. If the biologist determines that continuing activities could potentially cause unpermitted take under federal or State law to a federally or state-listed species, activities must cease. Work may not resume until the on-site biologist has determined there is no longer the possibility of causing unpermitted take under federal and State law.

i. The area below any vehicle or piece of equipment that has been stationary for 24 hours or greater will be examined prior to operation to ensure that no wildlife species is present.

j. No pets or firearms will be permitted on site.

k. Any open holes or trenches that will be left exposed overnight will either be securely covered or have an escape ramp installed to prevent entrapment of any wildlife.

l. Any piping or casing left exposed overnight will be capped to prevent wildlife from entering.

MM BIO-2: Special-Status Reptiles and Amphibians

a. No project activities will be conducted during or within 24 hours following a rain event in locations that have a potential for special status amphibians to occur or are near wetlands or other water features.

b. In areas with the potential for special-status reptiles and amphibians to occur, prior to the onset of project activities at any Impact Area, a qualified biologist will conduct pre-activity surveys to determine whether any such species are present. A qualified biologist must, at a minimum, have experience conducting surveys to identify the California tiger salamander, California red-legged frog, western spadefoot, western pond turtle, and/or giant garter snake and their associated habitat.

c. Any active rodent burrows or suitable cracks identified by a qualified biologist during the pre-activity survey will be flagged so that they can be avoided.

d. Any burrows, cracks or fissures suitable for rodents that cannot be avoided and will be temporarily impacted by the movement and placement of equipment or other project activities will be covered with plywood to avoid burrow collapse.

e. Leaf litter will be surveyed by the biologist for presence of wildlife prior to the onset of work, and if any special-status species are identified as using the leaf litter for refuge it will be avoided and a buffer will be established by a qualified biologist and flagged.

f. If any special-status reptiles or amphibians are observed within the Impact Area, the on-site biologist will determine if the work can continue without harm to the individual(s). If the biologist determines that it is not safe to continue work, all work will cease until the animal has left the Impact Area. Once the individual(s) is determined by the on-site biologist to have left the Impact Area and is out of harm's way, work may resume.

g. Piles of rock, rip-rap, or other materials that could provide refuge to reptiles or amphibians will be avoided. If movement of such materials cannot be avoided, a qualified biologist will survey the area prior to disturbance and monitor the material movement and restoration of the area following completion of Proposed Project activities.

California red-legged frog (*Rana draytonii*)

California red-legged frog is listed as Threatened under FESA (USFWS 2019b) and is identified as a California Department of Fish and Wildlife (CDFW) Priority One Species of Special Concern (CDFW 2019b, Thompson et al 2016). It is the largest California native frog, measuring 1.75 to 5.25 inches (4.4 to 13.3 centimeters) SVL, with smooth skin and prominent dorsolateral folds. Its coloration can vary from reddish-brown to gray or olive, often with a red lower belly and hindlegs (Nafis 2019). California red-legged frog is endemic to central California, with a range historically extending from southern Mendocino County southward along the interior Coast Ranges to northern Baja California, Mexico,

and inland from the vicinity of Redding, Shasta County, California, along Sierra Nevada foothills south to Fresno County at elevations from sea level to approximately 5,000 feet (1,524 meters) (Nafis 2019, Thompson et al 2016). It is found in a variety of aquatic habitats including permanent and ephemeral ponds, perennial and intermittent streams, seasonal wetlands, springs, seeps, marshes, dune ponds, lagoons, coastal dune drainages, and human-made aquatic features (Thompson et al 2016, Halstead and Kleeman 2017), and has been known to migrate as much as a 1.7 miles (2,736 meters) into the upland. Upland habitat used includes woodlands, grasslands, and coastal scrub.

Breeding occurs from late November through late April, with earlier breeding generally occurring in southern localities. Females lay eggs in clusters up to 10 inches (25 centimeters) across, attached to vegetation two to six inches (5 to 15 centimeters) below the surface. Eggs hatch in 6-14 days, depending on water temperature (Thompson et al 2016), with tadpoles undergoing metamorphosis in four to seven months, although in some locations they have been known to overwinter (Nafis 2019) completing metamorphosis the following spring.

Red-legged frog has a high potential to occur within the Study Area based upon presence of suitable aquatic habitat and upland refugia and proximity to reported occurrences. There are several reported occurrences of California red-legged frog less than 0.5 mile (804 meters) from multiple Impact Areas in the southern portion of the Study Area, east and southeast of the Clifton Court Forebay, within Contra Costa and Alameda Counties.

Implementation of the following mitigation measures to avoid impacts to all suitable aquatic habitat, upland refugia habitat, and individuals that could be moving through the Study Area: MM-AES-1, MM-AES-2, MM BIO-1, and MM BIO-2, would reduce potential project impacts to California red-legged frog to: *Less than Significant with Mitigation Incorporated.*

Western spadefoot (*Spea hammondii*)

Western spadefoot is identified as a CDFW Priority One Species of Special Concern (CDFW 2019b, Thompson et al 2016). It is an olive toad, ranging from 1.5 to 2.5 inches (3.8 to 6.4 centimeters) SVL, with orange tipped skin tubercles, vertical pupils, and a single black spade on each hind foot (Stebbins and McGinnis 2012, Thompson et al 2016). Western spadefoot is found throughout the Central Valley and coastal lowlands from the Shasta County in Northern California to Baja California in Mexico, at elevations ranging from sea level to 4,500 feet (1,372 meters) (Jennings and Hayes 1994, Stebbins and McGinnis 2012). This species occurs in grasslands, mixed woodland, open chaparral, and pine oak woodlands, with shallow temporary pools or washes.

Breeding coincides with the rainy season and usually occurs from January to May, peaking in February and March, in temporary pools and drainages, although breeding can also occur in man-made water sources such as cattle ponds (Thompson et al 2016). Adults remain in underground burrows for most of the year and will travel up to several meters on rainy nights (CDFW 2000a). Eggs are laid in cylindrical clusters and usually hatch in three to four days, with tadpoles metamorphing in four to 11 weeks (Nafis 2019). Juveniles will leave the pool a few days after metamorphosis. On land movement is generally thought to be nocturnal, with juveniles and adults able to dig burrows up to eight inches deep (Thompson et al 2016). They will also make use of existing mammal burrows.

Western spadefoot has a moderate potential to occur within the Study Area based upon presence of suitable habitat and proximity to reported occurrences. Although there are no reported occurrences within 8 miles (12.9 kilometers) of the Study Area displayed in the CNDDB GIS layer, there are several recent research grade occurrences reported on iNaturalist (2019) that are within established with 2 or 5 miles (3,218 or 8,047 meters) of the southernmost portion of the Study Area, south of Clifton Court Forebay, in Alameda County.

Implementation of mitigation measures to avoid impacts to all suitable aquatic habitat (MM BIO-1 and MM BIO-2), upland refugia habitat (MM AES-1 and MM BIO-2), and individuals that could be moving through the Study Area (MM AES-2, MM BIO-1 and MM BIO-2), would reduce potential project impacts to western spadefoot to: *Less than Significant with Mitigation Incorporated.*

California legless lizard (*Anniella pulchra*)

California legless lizard is identified as a CDFW Priority Two Species of Special Concern (CDFW 2019b, Thompson et al 2016). It is the only species of legless lizard found in California and ranges from Contra Costa County south to Baja California, at elevations from sea level to 5,900 feet (1,798 meters) (Thompson et al 2016, Stebbins 2003). California legless lizard is a medium sized lizard, ranging from four to seven inches SVL. It is metallic light silver, beige, olive brown or black with a yellow ventral surface, a shovel shaped snout, blunt tail and no external ear openings. It is found in oak woodland, chaparral, riparian woodland, oak-pine forest and desert scrub with loose soil or leaf litter for burrowing, and adequate moisture and surface cover. California legless lizard is primarily diurnal and crepuscular and is rarely active on the surface. It spends most of its time just beneath the surface but can be found in depths of up to 2 feet (0.6 meters).

Breeding occurs between early spring and mid-summer, with an average gestation of four months (Thompson et al 2016). They bear one to four live young from September to November (Stebbins and McGinnis 2012). Sexual maturity is

reached in males at two and females at three years of age (Thompson et al 2016).

California legless lizard has a low potential to occur within the Study Area based upon the presence of potentially suitable habitat, the southern portion of the Study Area being within the northern edge of the species range, and proximity to reported occurrences. The closest occurrences of California legless lizard are over 5 miles (8 kilometers) west of the Study Area in the vicinity of Brentwood and the Antioch Dunes.

Implementation of mitigation measures to avoid impacts to potential habitat (MM AES-1 and MM BIO-1), and individuals that could be moving through the Study Area (MM BIO-1 and MM BIO-2), would reduce impacts to California legless lizard to: *Less than Significant with Mitigation Incorporated*.

California glossy snake (*Arizona elegans occidentalis*)

California glossy snake is identified as a CDFW Priority One Species of Special Concern (CDFW 2019b, Thompson et al 2016). California glossy snake is a medium sized, from 25 to 39 inches (64 to 99 centimeters) SVL, tan or brown colubrid with dark brown blotches down the back. It has unkeeled scales giving it a glossy appearance, and a single pair of prefrontals. The species occurs from Contra Costa County south to San Quintin, Baja California, including the central San Joaquin Valley and along the base of the Southern Coastal Range, at elevations ranging from sea level to 5,900 feet (1,798 meters) (Thompson et al 2016). It does not occur along the coast of California north of Ventura County. California glossy snake is found in grasslands, coastal sage scrub and chaparral in areas where soil is loose.

California glossy snake is primarily nocturnal, active between late February and November with activity peaking in May. Little is known about reproduction in the wild, but young of year are generally found in September. During the day, it will use existing mammal burrows and burrows under rocks or will dig their own burrows.

California glossy snake has a moderate potential to occur within the Study Area based upon presence of suitable habitat, species range and proximity to reported occurrences. Although there are no reported occurrences within 6 miles (9.65 kilometers) of the Study Area the reported occurrences occur both to the northwest south of the southernmost portion of the Study Area, ranging from the Antioch Dunes in Contra Costa County to south of Clifton Court Forebay, in Alameda County.

Implementation of mitigation measures to avoid impacts to potential habitat (MM BIO-1), and individuals that could be moving through the Study Area (MM AES-2,

MM BIO-1 and MM BIO-2), would reduce impacts to California glossy snake to: *Less than Significant with Mitigation Incorporated*.

Western Pond Turtle (*Emys (= Actinemys) marmorata*)

Western pond turtle is under review for listing under the FESA and is a CDFW Priority One Species of Special Concern (USFWS 2015b, Thompson et al 2016). Western pond turtle is a small to medium-sized aquatic turtle, measuring 6.5 to seven inches straight carapace length. They are brown, tan, olive with a low, unkeeled carapace with a non-serrated rim (Nafis 2019, Stebbins 2003). Western pond turtle is found from the Pacific Coast inland to the Sierra Nevada foothills to elevations as high as 6,700feet (2,042 meters) above sea level.

Western pond turtle is a highly aquatic species and can be found in a variety of habitat types including streams, rivers, sloughs, lakes, ponds, reservoirs, marshes, seasonal ponds, and other wetland habitats (Thompson et al 2016). It requires basking sites such as partially submerged logs, rocks, mats of floating vegetation, or open mud banks for thermoregulation, and access to suitable upland habitat with loose soils for nesting, dispersal and overwintering (Thompson et al 2016). It is active year-round in warmer locations but will spend winter months in colder climates in a state of dormancy often burrowing into loose soil or leaf litter on land, or using undercut banks, snags, rocks or bottom mud in ponds (Thompson et al 2016). Western pond turtle diet consists of aquatic invertebrates, algae and other vegetation, small vertebrates and carrion.

Breeding occurs from spring through fall, with nesting taking place from spring to early summer. Nest sites are usually within 328 feet (100 meters) of water, although nests have been reported as far away as 1,640 feet (500 meters). Females lay from one to 13 eggs, which will hatch in the fall, although the young will remain in the nest until the following spring.

Western pond turtle has a high potential to occur within the Study Area due to the availability of suitable aquatic and upland habitat, the known range of the species and many occurrences throughout the Study Area.

Implementation of mitigation measures to avoid impacts to all suitable aquatic habitat (MM BIO-1 and MM BIO-2), upland refugia habitat (MM BIO-2), and individuals that could be moving through the Study Area (MM BIO-1, MM BIO-2, and MM BIO-3), would reduce potential project impacts to western pond turtle to: *Less than Significant with Mitigation Incorporated.*

MM BIO-3: Western pond turtle

a. In areas with the potential for western pond turtle to occur, pre-activity presence/absence surveys for western pond turtle shall occur within 48 hours prior to the onset of project activities at any Impact Area.

b. If Western pond turtles are observed on land during the pre-activity surveys, the area within 328 feet (100 meters) of the boundary of the aquatic habitat will be flagged and avoided if feasible.

c. If western pond turtles are observed within the Impact Area during a pre-activity survey or during project activities, they will be relocated outside of the Impact Area to appropriate aquatic habitat by a qualified biologist.

San Joaquin coachwhip (*Masticophis flagellum ruddocki*)

San Joaquin (whipsnake) coachwhip is identified as a CDFW Priority 2 Species of Special Concern (CDFW 2019b, Thompson et al 2016). San Joaquin coachwhip is a large colubrid, measuring at 35 to 102 inches (89 to 259 centimeters) SVL. It is a tan, olive or yellow-brown colubrid with a yellow ventral surface and pink or orange cast to the tail. It is distinguished from other subspecies of coachwhip by its lack of the dark head and neck bands found in the other sub-species (Thompson et al 2016). It is endemic to California and is usually found from Arbuckle in the Sacramento Valley southward to the Grapevine section of I-5 in Kern County, and westward to the inner South Coast Ranges (Stebbins and McGinnis 2012). This diurnal snake generally occurs in open, dry, treeless areas, including grassland and saltbush scrub. It often will climb into vegetation to scan for prey or for shade and refuge and overwinters in mammal burrows.

San Joaquin coachwhip is active from March through October, with breeding occurring in May, and oviposition occurring in June or July (CDFW 2000b).

San Joaquin Coachwhip has a moderate potential to occur within the southern portion of the Study Area where the species range overlaps in Contra Costa and Alameda Counties, based upon the presence of suitable habitat and several occurrences within six miles (9.6 kilometers) to the west and south.

Implementation of mitigation measures to avoid impacts to potential habitat (MM BIO-1), and individuals that could be moving through the Study Area (MM BIO-1 and MM BIO-2), would reduce impacts to San Joaquin coachwhip to: *Less than Significant with Mitigation Incorporated*.

Coast horned lizard (*Phyrnosoma blainvillii*)

Coast horned lizard is identified as a CDFW Priority Two Species of Special Concern (CDFW 2019b, Thompson et al 2016). Coast horned lizard is a compressed oval bodied lizard, reaching a maximum length of 4.5 inches (11.4 centimeters) SVL, with a row of large horns behind its head, two of which are longer and separated at the base, and two rows of fringed scales running down each side of its body. It can be tan, yellow, red, brown, or grey with dark

splotches down the back, with a lightly spotted yellow, cream or beige ventral surface. The species is found from Shasta County in the North to Baja California in the South and along the California coast inland to the Sierra Nevada and west of the Mojave Desert (Sherbrooke 2003, Thompson et al 2016). Coast horned lizard is found in a wide variety of habitat types including sage scrub, dunes, annual grassland, chaparral, oak woodland, riparian woodland, coniferous forest, Joshua tree woodland, and saltbush scrub, however it requires loose fine soils for burrowing, open areas for thermoregulation and an adequate prey base of native ants and other insects.

Coast horned lizard is active from February through November, peaking in April and July. Breeding occurs from March to June, with average clutch sizes of 11 eggs laid likely beginning in May, with an incubation period of approximately 60 days. Hatchlings are active from late July through November.

Coast horned lizard has a moderate potential to occur within the Study Area based upon the species range, the presence of suitable habitat and several occurrences within 2.5 and five miles (four to eight kilometers) to the west and south, respectively.

Implementation of mitigation measures to avoid impacts to potential habitat (MM BIO-1) and individuals that could be moving through the Study Area (MM BIO-1 and MM BIO-2), would reduce impacts to Coast horned lizard to: *Less than Significant with Mitigation Incorporated*.

Giant garter snake (*Thamnophis gigas*)

Giant garter snake is listed as Threatened under FESA and as Threatened under CESA (USFWS 2019c, CDFW 2019a). It is a large snake, reaching from 36 to 65 inches (91 to 165 centimeters) SVL. It ranges in coloration from olive drab to black with a dorsal and a side stripe that can range from bright to muted orange or yellow or in some cases be absent, a light-colored ventral surface, and keeled scales (Nafis 2019). Giant garter snakes historically occurred throughout the Central Valley of California, although its current range has been reduced to fragmented populations from Glenn County to the edge of the Delta, and south from Merced to Fresno Counties. Giant garter snakes are a highly aquatic, diurnal snake, relying on the presence of water throughout the summer months, and are found in marshes, sloughs, rice fields, and other water bodies with emergent vegetation, a suitable prey base and associated upland with burrows, crevices or rip-rap for use as refugia. While they are generally underground in refugia during the winter, they are not fully dormant during that time.

Breeding occurs shortly after emergence in March or April, depending upon the weather, with females giving birth to offspring between late July and early September.

Giant garter snake has a high potential to occur within the Study Area based upon presence of suitable aquatic habitat and upland refugia and proximity to reported occurrences. There are several reported occurrences of Giant garter snake from less than 0.5 mile to 2 miles (0.8 to 3.2 kilometers) from multiple Impact Areas along the length of the Study Area.

Implementation of mitigation measures to avoid impacts to all suitable aquatic habitat (MM BIO-1 and MM BIO-14), upland refugia habitat (MM BIO-2), and individuals that could be moving through the Study Area (MM BIO-1, MM BIO-2, and MM BIO-4) would reduce potential project impacts giant garter snake to*: Less than Significant with Mitigation Incorporated.*

MM BIO-4: Giant garter snake

a. Upland habitat within 200 feet (61 meters) of suitable aquatic habitat, that is suitable for giant garter snake (containing cracks or rodent burrows) will be flagged and avoided.

b. On-land soil investigations within suitable upland habitat for giant garter snake will be conducted during the snakes' active season of May 1 through October 1.

Cormorants, Herons, and Egrets: Great Egret (*Ardea alba*), Great Blue Heron (*Ardea herodias*), Snowy Egret (*Egretta thula*), Black-crowned Night Heron (*Nycticorax nycticorax*), Double-crested Cormorant (*Phalacrocorax auritus*)

Tree-nesting waterbirds, specifically, Double-crested Cormorant, Great Blue Heron, Great Egret, Snowy Egret, and Black-crowned Night Heron, typically use rookeries (colonial nest sites) that often include interspecies nesting and roosting with other species in this group. These species are widely distributed across North America. Nesting habitat includes mature riparian trees and snags adjacent to water, and the species forage by stalking in aquatic habitats for fish, small birds, mammals, reptiles, and amphibians. Tree-nesting waterbirds tend to exhibit high fidelity to rookery sites. While most species need mature, riparian trees, rookeries for Black-crowned Night Heron have also been located in riparian scrub (CDWR 2011). Breeding occurs between February and August at these rookeries (CDFW 2018). All of these species have a high potential to occur within the Study area based upon the known ranges, availability of suitable habitat and the presence of known roosts in the vicinity of the Study Area.

Implementation of Mitigation Measures MM AES-1, MM BIO-1 and MM BIO-5 would reduce potential project impacts to these five species by avoiding and reducing impacts to the roosting habitat in the Study Area to*: Less than Significant with Mitigation Incorporated.*

MM BIO-5: Rookery Birds

To minimize the potential impacts to special-status rookery birds that may occur within the Study Area the following general measures will be implemented:

a. A pre-activity survey for active rookeries will be conducted (during nesting season between February 1 – August 31) a maximum of 72 hours prior to the onset of soil investigation field activities. The qualified biologist(s) must, at a minimum, have experience conducting surveys to identify the specific rookery bird species and associated habitat that could occur on site.

b. If any active rookeries are identified within or adjacent to an Impact Area, a buffer will be put in place to ensure that the birds are not disturbed during work activities. This buffer will be up to 50 feet (15 meters), but can be smaller, dependent on-site conditions and at the discretion of the qualified biologist.

Cooper's Hawk (*Accipiter cooperii*)

Cooper's Hawk is included on the CDFW Watch List. Cooper's Hawk is a crow-sized woodland raptor with orange-red eyes, blue-gray mantle feathers, barred underparts, and a dark crown. The species is found across North America from Southern Canada to Northern Mexico (Rosenfield et al 2019) and occurs throughout most of California where appropriate habitat exists. Habitat includes riparian and oak woodland, and trees in rural and suburban areas adjacent to foraging habitat. Cooper's Hawk forages and nests in live oak, riparian deciduous, or other forests where it hunts primarily for small birds and mammals (CDFW 1990a). Nests are built in mature trees, usually near streams. Breeding occurs from March through August, with peak activity from May through July (CDFW 1990a).

Suitable habitat for Cooper's Hawk is found throughout the Study Area, and the Study Area is within the range, and therefore it has a moderate potential to occur. Implementation of Mitigation Measures MM AES-1, MM BIO-1 and MM BIO-6 would reduce potential impacts to Cooper's Hawk to*: Less than Significant with Mitigation Incorporated.*

MM BIO-6: Raptors (excluding Swainson's Hawk and Burrowing Owl)

To minimize and avoid the potential impacts to special-status raptors that may occur within the Study Area the following general measures will be implemented:

a. For soil investigation field activities that will occur between February 1 – August 31, a pre-activity survey for actively nesting raptors will be

conducted by a qualified biologist a maximum of 72 hours prior to the onset of project activities. The qualified biologist(s) must, at a minimum, have experience conducting surveys to identify the specific species and associated habitat that could occur on site.

b. If any active raptor nests are identified within or adjacent to an Impact Area by the pre-action survey, a buffer will be put in place to avoid disturbance to birds during and as a result of work activities. This buffer will be up to 250 feet (76 meters), but can be smaller, dependent on-site conditions and at the discretion of the qualified biologist.

c. Any identified actively nesting raptors will be monitored by a qualified biologist during soil investigation activities for signs of distress or disturbance as a result of field activities. Should the birds show signs of distress, work will cease at that location until the birds have resumed normal behavior and it is determined by the on-site biologist that work can be resumed.

Tricolored Blackbird (*Agelaius tricolor*)

Tricolored Blackbird is listed as a Threatened under CESA and is currently under review for listing under FESA. Tricolored Blackbird is a medium-sized blackbird; males are larger than females with striking black plumage with red and white markings on the wings and females are dark brown with a whitish chin and throat (Beedy et al. 2017). The species is largely endemic to California, common locally throughout the Central Valley and along the coast. Preferred foraging habitats include crops such as rice, alfalfa, irrigated pastures, and ripening or cut grain fields, as well as annual grasslands and cattle feedlots. Tricolored Blackbirds also forage in remnant native habitats, including wet and dry vernal pools and other seasonal wetlands, riparian scrub habitats, and open marsh borders. Wintering Tricolored Blackbirds often congregate in large, mixed-species blackbird flocks that forage in grasslands and agricultural fields with low-growing vegetation. Breeding habitats include wetland and silage fields with tall, dense cover near open water. Nesting colonies range in size from 50 nests to over 20,000 in an area of 10 acres or less (CDFW 2008a). Breeding usually occurs from mid-April into late July (CDFW 2008a).

Suitable habitat for Tricolored Blackbird is found within the project footprint, and several recorded occurrences are located near Impact Areas, therefore this species has a moderate potential to occur. Although wintering birds and a few individuals have been observed during breeding season, no nesting colonies have been identified within 0.25 mile of the Study Area. Implementation of Mitigation Measures MM AES-1, MM BIO-1 and MM BIO-7 would reduce potential impacts to Tricolored Blackbird to*: Less than Significant with Mitigation Incorporated.*

MM BIO-7: Tricolored Blackbird

To minimize and avoid the potential impacts to Tricolored Blackbird that may occur within the Study Area the following general measures will be implemented:

a. For soil investigation field activities that will occur March 15- July 31 in areas with potential breeding habitat for Tricolored Blackbird, a pre-activity survey for breeding colonies will be conducted by a qualified biologist within 1,300 feet (402 meters) of Impact Areas a maximum of 72 hours prior to the onset of soil investigation activities. The qualified biologist(s) must, at a minimum, have experience conducting surveys to identify Tricolored Blackbird and associated habitat that could occur on site.

b. For soil investigation field activities that will occur August 1 – March 14 in areas with potential roosting habitat for Tricolored Blackbird, a pre-activity survey for roosting Tricolored Blackbirds will be conducted during the nonbreeding season within 300 feet (91 meters) of Impact Areas a maximum of 72 hours prior to the onset of soil investigation activities by a qualified biologist.

c. If active Tricolored Blackbird breeding colonies or roost sites are identified within or adjacent to an Impact Area, a buffer will be put in place to ensure that the birds are not disturbed during work activities. This buffer will be up to 1,300 feet (396 meters) but may be reduced to a minimum of 300 feet (91 meters), dependent on-site conditions and at the discretion of the qualified biologist.

Grasshopper Sparrow (*Ammodramus savannarum*)

Grasshopper Sparrow is a California Species of Special Concern. The Grasshopper Sparrow is a small sparrow lacking distinct markings (Vickery 1996). The species breeding range in California is fragmented throughout the state west of the Cascade-Sierra Nevada Crest (Dobkin and Granholm 2008, Vickery 1996). Grasshopper Sparrow occurs in dry, dense grasslands with a variety of grasses and tall forbs and scattered shrubs for singing perches. The species may form semi-colonial breeding groups but does not form flocks in winter. Nests are built in shorter, moderately grazed open grasslands but have also been recorded in grassland-like cultivated lands such as alfalfa (Unitt 2008, Grinnell and Miller 1944). Breeding occurs from early April to mid-July, with a peak activity in May and June (CDFW 2008b).

Grasshopper Sparrows have been observed rarely in the winter in the vicinity of the Study Area, however minimal suitable nesting habitat is present, and there are no occurrences within 5 miles (8 kilometers). Therefore, Grasshopper

Sparrow has a low potential to occur within the Study Area and potential impacts would *be less than significant*. Implementation of Mitigation Measures MM AES-1, MM BIO-1 and MM BIO-8 would further avoid, minimize and/or reduce the potential for impacts to Grasshopper Sparrows.

MM BIO-8: Nesting Birds

To minimize and avoid the potential impacts to nesting birds (non-raptor) protected by the MBTA and Fish and Game Code that may occur within the Study Area the following general measures will be implemented:

a. For soil investigation field activities that will occur February 1 – August 31, a pre-activity survey for actively nesting birds will be conducted a maximum of 72 hours prior to the onset of soil investigation activities by a qualified biologist. The qualified biologist(s) must, at a minimum, have experience conducting surveys to identify the specific species and associated habitat that could occur on site.

b. If any active nests are identified within or adjacent to an Impact Area, a buffer will be put in place to ensure that no take (as defined by MBTA), and no take, possession, or needless destruction (as prohibited under the Fish and Game Code) occurs. This buffer will be up to 50 feet (15 meters), but can be smaller, dependent on-site conditions and at the discretion of the qualified biologist

Lesser Sandhill Crane (*Antigone canadensis canadensis*)

Lesser Sandhill Crane is a California species of special concern. Lesser Sandhill Crane is a large gray, heavy-bodied bird with a long neck, long legs, and red plumage on top of the head. The subspecies range includes much of North America; the population that occurs in the Study Area breeds in Alaska and migrates to the Central Valley of California to overwinter (Littlefield 2008). Foraging habitat is consistent with Greater Sandhill Crane (although the foraging values of crop types differ between the two subspecies) and consists mainly of harvested corn fields, winter wheat, irrigated pastures, alfalfa fields, and fallow fields. Mid-day loafing typically occurs in wetlands and flooded fields along agricultural field borders, levees, rice checks, and ditches, and in alfalfa fields or pastures. Night roosting is in shallowly flooded open fields and open wetlands interspersed with uplands. Sandhill Cranes are omnivores and primarily forage in row crops (primarily grains, such as corn) for grain, seeds, and will opportunistically consume small rodents, birds, and invertebrates, and tend to congregate in small to large flocks. Greater and Lesser Sandhill Cranes use similar roost sites and are both sensitive to human disturbance. Lesser Sandhill Cranes are less traditional than Greater Sandhill Cranes and are more likely to move between different roost site complexes and different wintering regions. Lesser Sandhill Cranes are winter residents and migrants in the study area,

arriving during early September and reaching maximum densities during December and January and departing during early March (Ivey et al. 2016, Littlefield 2008).

Lesser Sandhill Crane has been observed regularly in the winter in the vicinity of the Study Area, and there are known roost sites within the Study Area. Therefore, Lesser Sandhill Crane has a high potential to occur within the Study Area. Implementation of Mitigation Measures MM BIO-1 and MM BIO-9 would reduce potential impacts to Lesser Sandhill Crane to*: Less than Significant with Mitigation Incorporated.*

MM BIO-9: Sandhill Crane

To minimize and avoid the potential indirect impacts to Lesser and Greater Sandhill Crane that may occur within the Study Area, the following general measures will be implemented:

a. For soil investigation field activities that will occur September 15 through March 15, during roosting season, pre-activity surveys and an assessment of known roost sites will be conducted within 0.75 mile (1,207 meters) of Impact Areas by a qualified biologist.

b. If roost sites are identified within 0.25 mile (402 meters) of Impact Areas by the qualified biologist, start of large equipment use for soil investigation activities will be delayed to an hour after sunrise and stop an hour before sunset to minimize potential for noise disturbance at the roost site.

Greater Sandhill Crane (*Antigone canadensis tabida*)

Greater sandhill crane is listed as threatened under CESA and Fully Protected under California Fish and Game Code and. Greater sandhill crane is the largest sandhill crane subspecies, with gray plumage, heavy body, long neck and legs, and red plumage on top of the head. The subspecies range includes much of North America; the population that occurs in the Study area breeds in western Canada, Washington, and Oregon, with a small number breeding in northeastern California, and migrates to the Central Valley of California to overwinter (CDFW 1994). Night roosting occurs in shallowly flooded open fields and open wetlands interspersed with uplands. Foraging habitat consists mainly of harvested corn fields, followed by winter wheat, irrigated pastures, alfalfa fields, and fallow fields close to roost sites (Ivey et al. 2016). Mid-day loafing typically occurs in wetlands and flooded fields along agricultural field borders, levees, rice checks, and ditches, and in alfalfa fields or pastures. Portions of the study area are used regularly and by large numbers of greater sandhill cranes (Ivey et al. 2016). Sandhill cranes are omnivores and primarily forage in harvested row crops (grains such as corn) for grains, seeds, and roots, and will opportunistically consume small rodents, birds, and invertebrates (CDFW 1994). The species

tends to congregate in small to large flocks, exhibits strong site fidelity to traditional roost sites, and is sensitive to human disturbance Greater sandhill cranes are winter residents in the study area, arriving during early September, reaching maximum densities during December and January and departing during early March.

Greater Sandhill Crane has been observed regularly in the winter in the vicinity of the Study Area, and there are known roost sites within the Study Area. Therefore, Greater Sandhill Crane has a high potential to occur within the Study Area. No take of Greater Sandhill Crane per California Fish and Game Code Section 3511 would occur due to the Proposed Project; however, CEQA considers potential effects beyond direct take of Fully Protected species. Implementation of Mitigation Measures MM BIO-1 and MM BIO-9 would reduce potential impacts to Greater Sandhill Crane to*: Less than Significant with Mitigation Incorporated*

Golden Eagle (*Aquila chrysaetos*)

Golden Eagle is designated as Fully Protected under California Fish and Game Code and protected by the federal Bald and Golden Eagle Protection Act. Golden Eagle is a large eagle that is uniformly dark with golden neck (Kochert et al. 2002). The species is found throughout North America but are more common in western North America. The bird is an uncommon permanent resident and migrant throughout California that lives in open and semi-open country featuring native vegetation where they forage in grasslands, rolling foothills, mountain areas, and desert. Golden Eagle forages for ground squirrels, rabbits, other mammals, and some carrion in open terrain. Nests are built on cliffs adjacent to open habitats, such as grasslands, oak savannas, and open shrublands (Grinnell and Miller 1944) although trees are also used for nesting. Breeding occurs from late January through August (CDFW 1990b).

Golden Eagle is regularly observed foraging and suitable foraging habitat and nest trees exist in the Study Area, however no nesting has been recorded within 1 mile (1,609 meters) of the Study Area. Therefore, Golden Eagle has a moderate potential to occur within the Study Area. No take of Golden Eagle per California Fish and Game Code Section 3511 would occur due to the Proposed Project; however, CEQA considers potential effects beyond direct take of Fully Protected species. Implementation of Mitigation Measures MM AES-1, MM BIO-1 and MM BIO-6 would reduce impacts to Golden Eagle to: *Less than Significant with Mitigation Incorporated*.

Short-eared Owl (*Asio flammeus*)

Short-eared Owl is a California Species of Special Concern. Short-eared Owl is a medium-sized owl with brown and cream streaked plumage and yellow eyes (Wiggins et al. 2006). The species range includes much of North America; in California, it is patchily distributed throughout the state, including portions of the

Sacramento and San Joaquin Valleys, northeastern California, and a few scattered coastal sites (Roberson 2008). Breeding and foraging habitat for Short-eared Owl includes emergent wetland, grasslands, and grassland-like cultivated lands such as pastures and alfalfa fields. Short-eared Owl hunts around dawn and dusk, primarily for small mammals (Fisler 1960, Wiggins et al. 2006). Nests are constructed on dry ground in a depression concealed by vegetation. Breeding occurs from early March through July (CDFW 2005a).

Short-eared Owl has been observed at several locations in the vicinity of the Study Area, and some suitable nesting habitat may be present in wetlands within the Study Area, therefore Short-eared Owl is considered to have a moderate potential to occur. Implementation of Mitigation Measures MM BIO-1 and MM BIO-6 would reduce potential impacts to Short-eared Owl to*: Less than Significant with Mitigation Incorporated.*

Western Burrowing Owl (*Athene cunicularia*)

Western Burrowing Owl is a California Species of Special Concern. Burrowing Owl is a small, ground-dwelling owl with brown and cream plumage and yellow eyes. The species' range extends from Canada to Mexico and is found throughout California except for high elevations (Poulin et al. 2011). It primarily inhabits grasslands with abundant ground squirrel populations, but also occurs in desert and open shrub habitats. Burrowing Owl uses burrows in areas with relatively short vegetation with sparse shrubs or taller vegetation for roosting and nesting and can persist in human-altered landscapes. Individuals in agricultural environments nest along roadsides and water conveyance structures. Breeding occurs from February through September (CDFW 1999a).

Western Burrowing Owl has a high potential to occur within the Study Area, as suitable habitat occurs in many locations and there are several reported occurrences. Implementation of Mitigation Measures MM BIO-1 and MM BIO-10 would reduce potential impacts to Western Burrowing Owl to*: Less than Significant with Mitigation Incorporated.*

MM BIO-10: Burrowing Owl

To minimize and avoid the potential impacts to Burrowing Owl that may occur within the Study Area, the following general measures will be implemented:

a. In areas with the potential for Burrowing Owl to occur, prior to soil investigation field activities, a qualified biologist will conduct a pre-activity survey. The surveys will establish the presence or absence of Burrowing Owl and/or suitable habitat features and evaluate use by owls in accordance with CDFW survey guidelines (CDFW 1993). For each Impact Area, the biologist will survey the proposed disturbance footprint and a 500-foot (152 meter) radius from the perimeter of the proposed footprint to identify any suitable burrows and owls. Adjacent parcels under different

land ownership will not be surveyed. Surveys should take place near sunrise or sunset in accordance with CDFW guidelines. Suitable burrows or Burrowing Owls will be identified and mapped. Surveys will take place no more than 30 days prior to soil investigation field activities. During the breeding season (February 1– August 31), surveys will document whether Burrowing Owls are nesting in or directly adjacent to any Impact Area. During the nonbreeding season (September 1–January 31), surveys will document whether Burrowing Owls are using habitat in or directly adjacent to any disturbance area. Survey results will be valid only for the season (breeding or nonbreeding) during which the survey is conducted.

b. If Burrowing Owls are found during the breeding season (February 1 – August 31), all nest sites that could be disturbed by project activities will be avoided during the remainder of the breeding season or while the nest is occupied by adults or young. Avoidance will include establishment of a non-disturbance buffer zone (described below in parts c and d).

c. Soil investigation activities may occur during the breeding season only if a qualified biologist monitors the nest and determines that the birds have not begun egg-laying and incubation or that the juveniles from the occupied burrows have fledged. During the nonbreeding season (September 1 – January 31) the owls and the burrows they are using will be avoided. Avoidance will include the establishment of a buffer zone (described below).

d. During the breeding season, buffer zones of at least 250 feet (76 meters) in which no soil investigation activities can occur will be established around each occupied burrow (nest site). Buffer zones of 160 feet (49 meters) will be established around each burrow being used during the nonbreeding season. The buffers will be delineated by highly visible, temporary fencing or flagging.

Ferruginous Hawk (*Buteo regalis*)

Ferruginous Hawk is a USFWS Bird of Conservation Concern. The species is a large, broad-winged hawk with a large head and pale underparts with rusty legs that form a V when soaring. Ferruginous Hawks range from breeding grounds in southern Canada to wintering grounds in Mexico. They overwinter in California in grasslands and agricultural areas, including sagebrush flats, desert scrub, low foothills surrounding valleys, and fringes of pinyon-juniper habitats. Ferruginous Hawk forages in open, dry grassland habitats (Polite and Pratt 1999, Ng et al. 2017), also in open cultivated lands such as grain and hay crops, recently plowed fields, and pastures. Nesting has not been recorded in California (CDFW 1999b).

Ferruginous Hawk is regularly observed in the winter, suitable foraging habitat is present in the Study Area, and several occurrences have been documented

within 0.5 to 3 miles (804 to 4,828 meters) of Impact Areas, however no nesting occurs in California. Therefore, Ferruginous Hawk has a moderate potential to occur within the Study Area. Implementation of Mitigation Measures MM BIO-1 and MM BIO-6 would reduce potential impacts to Ferruginous Hawk to: *Less than Significant with Mitigation Incorporated*.

Swainson's Hawk (*Buteo swainsoni*)

Swainson's Hawk is listed as Threatened under CESA. Swainson's Hawk is a medium-sized hawk with tapered wings that have contrasting light wing lining and dark flight feathers (Bechard et al. 2010). It migrates from Central and South America to breed in western North America, primarily in California and the Great Basin. The Central Valley breeding population largely winters from Mexico to central South America (Hull et al. 2008). Foraging habitat includes hay and alfalfa fields, grassland, pastures, grain crops, and row crops; nesting occurs in mature riparian woodland, roadside or isolated trees near foraging habitat; trees in urban or rural neighborhoods are also used (Estep 1984, Schlorff and Bloom 1984, England et al. 1997). Swainson's Hawk forages in large open habitats, such as hay and alfalfa fields, pastures, grain crops, and row crops primarily for small mammals such as voles, but will opportunistically take invertebrates, small birds, and reptiles. The species is monogamous and exhibits strong site fidelity to nesting territories, occupying the same sites over many years (Hull et al. 2008). Breeding occurs from late March to late August, with peak activity from late May through July (CDFW 2006).

Swainson's Hawk has a high potential to occur within the Study Area, as suitable foraging and nesting habitat occurs in many locations within the Study Area and there are many reported occurrences. Implementation of Mitigation Measures MM AES-1, MM BIO-1 and MM BIO-11 would reduce potential impacts to Swainson's Hawk to*: Less than Significant with Mitigation Incorporated.*

MM BIO-11: Swainson's Hawk

To minimize and avoid the potential impacts to Swainson's Hawk that may occur within the project area, the following general measures will be implemented:

a. If soil investigations field activities will occur during the nesting season (March 15–September 15), a pre-activity survey will be conducted by a qualified biologist within 0.25 mile (402 meters) of Impact Areas following the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (SWHA Technical Advisory Committee 2000) between 5 days and 72 hours prior to the start of soil investigation activities to identify Swainson's Hawk nests.

b. If active nests are observed within 0.25 mile (402 meters) of an Impact

Area, project activities will be limited to outside of the breeding season (March 15 – September 15) or until the nest is determined to be inactive or fledged by a qualified biologist.

c. When soil investigation activities must occur within 0.25 mile (402 meters) of a known or potential nest during nesting season (March 15 – September 15), soil investigation field activities will be initiated prior to egg-laying, if possible. If soil investigation activities must begin after egg-laying, a 650-foot (198 meter) no-activity buffer will be established between an active nest and any soil investigation activities until eggs have hatched. If site-specific conditions or the nature of the project activity (e.g., steep topography, dense vegetation, limited activities) indicate that a smaller buffer could be used, the qualified biologist will determine the appropriate buffer size.

d. If young fledge prior to September 15, soil investigation activities can proceed normally, subject to confirmation by a qualified biologist that the young have fledged from active nest sites. If the active nest site is shielded from view and noise from the project site by other development, topography, or other features, the qualified biologist may determine that project activities can proceed.

e. A qualified biologist with stop-work authority will be present during soil investigation field activities and may halt project activities if the biologist determines that Swainson's Hawks in the vicinity of soil investigation activities are disturbed to the point where nest abandonment is likely. Additional protective measures, as determined by the qualified biologist, will be implemented prior to resuming soil investigation activities.

Mountain Plover (*Charadrius montanus*)

Mountain Plover is a California Species of Special Concern. Mountain Plover is a medium-sized shorebird with brown and cream plumage (Knopf and Wunder 2006). Mountain Plover winters in California from September to March in the Central Valley, San Joaquin Valley foothills, and southern California (Hickey et al. 2003). Suitable habitat for Mountain Plover includes heavily grazed grassland, short hay crops such as alfalfa, freshly tilled fields, and alkali flats (Knopf and Rupert 1995; Hunting and Edson 2008). Nesting has not been recorded in California, but the species is present in the state from September through mid-March (Hunting and Edson 2008).

Mountain Plover is considered to have a low potential to occur within the Study Area due to minimal suitable habitat, no recorded occurrences within four miles (6.4 kilometers) of the Study Area, and its lack of breeding in California. Therefore, potential impacts to Mountain Plover would be *less than significant*.

Implementation of Mitigation Measure MM BIO-1 would further avoid, minimize and/or reduce the potential for impacts.

Northern Harrier (*Circus hudsonius*)

Northern Harrier is a California species of special concern. Northern Harrier is a medium-sized, slender low-flying raptor with a white rump; males have gray and females have brown plumage (Smith et al. 2011). The species occurs throughout North America and is a year-round resident in California and its breeding range covers northern California, the Central Valley, the central coast, and portions of southern deserts (Davis and Niemela 2008). It uses meadows, grasslands, open rangelands, desert sinks, and fresh and saltwater emergent wetlands for foraging and nesting. Northern Harriers forage for small mammals, reptiles by flying low to the ground. Nests are built on the ground in dense vegetation. Breeding occurs from April to September (CDFW 1990c).

Suitable foraging habitat and nesting habitat for Northern Harrier is present within the Study Area, and there are known occurrences within the Study Area. Therefore, Northern Harrier has a high potential to occur within the Study Area. Implementation of Mitigation Measures MM BIO-1 and MM BIO-6 would reduce potential impacts to Norther Harrier to: *Less than Significant with Mitigation Incorporated*.

Western Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*)

Western Yellow-billed Cuckoo is listed as Threatened under FESA and Endangered under CESA. Western Yellow-billed Cuckoo is a slender bird with brown plumage on its back and white below, long tail with black and white spots, and a curved yellow bill. The species' historical breeding distribution extended throughout western North America, including the Central Valley, where it was considered common (Belding 1890). Currently, the only known populations of breeding Western Yellow-billed Cuckoo are in several disjunct locations in California, Arizona, and western New Mexico (Halterman 1991; Johnson et al. 2007; Dettling et al. 2015; Stanek 2014; Parametrix Inc. and Southern Sierra Research Station 2015). Western Yellow-billed Cuckoos winter in South America from Venezuela to Argentina (Hughes 2015; Sechrist et al. 2012). The Western Yellow-billed Cuckoo is a riparian obligate species, primarily willow-cottonwood riparian forest, but use other tree species such as white alder (*Alnus rhombifolia*) and box elder (Acer negundo) in some areas, including formerly occupied sites along the Sacramento River (Laymon 1998). Western Yellow-billed Cuckoo is a highly secretive species that forages for insects and requires large insects to feed their nestlings. Nests are primarily in willow (Salix spp.) trees; however, other tree species are occasionally used, including Fremont cottonwood (*Populus fremontii*) and alder. They arrive at California breeding grounds between May and July, but primarily in June (Gaines and Laymon 1984; Hughes 2015; USFWS 2014); breeding occurs in mid-June to August (CDFW 1999c).

Western Yellow-billed Cuckoo is considered to have a low potential to occur within the Study Area due to minimal suitable migratory and nesting habitat. There are known occurrences within the Study Area, but no recorded breeding in the vicinity. Implementation of Mitigation Measures MM BIO-1 and MM BIO-8 would reduce potential impacts to Western Yellow-billed Cuckoo to: *Less than Significant with Mitigation Incorporated*.

White-tailed Kite (*Elanus leucurus*)

White-tailed Kite is designated as Fully Protected under California Fish and Game Code. This medium sized raptor has long wings and tail and gray and white plumage with black wing patches (Dunk 1995). The species is widely distributed in North America; the majority occur in California. Most White-tailed Kites in the Sacramento Valley are found in oak and cottonwood riparian forests, valley oak woodlands, or other groups of trees and are usually associated with compatible foraging habitat consisting large patches of low-growing, herbaceous vegetation (Erichsen et al. 1996). The species forages primarily for small mammals in pasture and hay crops, compatible row and grain crops, and natural vegetation such as seasonal wetlands and annual grasslands (Erichsen 1995). Breeding occurs from February to October in trees with dense canopies (CDFW 2005b).

Suitable foraging habitat and nesting habitat for White-tailed Kite is present within the Study Area, and there are several reported occurrences near Impact Areas. Therefore, White-tailed Kite has a moderate potential to occur within the Study Area. No take of White-tailed Kite per California Fish and Game Code Section 3511 would occur due to the Proposed Project; however, CEQA considers potential effects beyond direct take of Fully Protected species. Implementation of Mitigation Measures MM AES-1, MM BIO-1 and MM BIO-6 would reduce potential impacts to White-tailed Kite to: *Less than Significant with Mitigation Incorporated.*

California Horned Lark (*Eremophila alpestris actia*)

California Horned Lark is a CDFW Watch List species. This songbird has a pale, yellow face and throat, a black bib, pale breast and belly, a broad black stripe under the eye, a black tail with white outer feathers, and black tufts on top of its head resembling horns (Beason 1995). The year-round range of the California Horned Lark encompasses the majority of the state west of the Cascade-Sierra Nevada Crest (CDFW 1990d) The species inhabits open grassland and cultivated lands such as alfalfa, fallow fields, and pastures dominated by sparse, low herbaceous vegetation or widely scattered low shrubs. California Horned Lark forages on seeds and insects and nest in hollows on the ground. Breeding occurs from March through July, with peak activity in May (CDFW 1990d).

California Horned Lark is considered to have a moderate potential to occur within the Study Area due to the presence of suitable habitat and known occurrences within one to two miles (1.6 to 3.2 kilometers) of several Impact Areas within Contra Costa County. Implementation of Mitigation Measures MM BIO-1, MM BIO-7 and MM BIO-8 will reduce potential impacts to California Horned Lark to: *Less than Significant with Mitigation Incorporated*.

Yellow-Breasted Chat (*Icteria virens*)

Yellow-breasted Chat is a California Species of Special Concern and a USFWS Bird of Conservation Concern. Yellow-breasted Chat is a medium-sized warbler with a long tail, large head, yellow breast plumage, gray back, and white stripes above and below the eye. The species winters in Mexico and Central America and is patchily distributed across North America south of Canada during breeding season; within the Central Valley, chats are found in the Sacramento-San Joaquin Delta. Habitat includes riparian thickets near water with a dense understory layer, including willow, blackberry, and wild grape (USFWS 2019d). Yellow-breasted Chat forages primarily on spiders and insects but will also take fruits and berries. Nests are built low in dense vegetation and breeding occurs from late April through early August (Comrack 2008).

Yellow-breasted Chat has been observed in riparian thickets and in-channel islands throughout the Sacramento-San Joaquin Delta, thus the species has a high potential to occur within the Study Area. Implementation of Mitigation Measures MM AES-1, MM BIO-1 and MM BIO-8 would reduce impacts to Yellow-breasted Chat to: *Less than Significant with Mitigation Incorporated*.

Merlin (*Falco columbarius*)

Merlin is a California Department of Fish and Wildlife Watch List species (CDFW 1999d). Merlin is a small, dark-colored falcon with sharply pointed wings, broad chest and medium-length tail. This species has a broad geographical range throughout the northern hemisphere and can be observed in California during the non-breeding season. During migration Merlin use grasslands, open forests, and coastal areas. They winter in similar habitats across the western United States. Breeding occurs in the northern portions of North America (Warkentin et al. 2005).

Suitable foraging habitat for Merlin is present within the Study Area, and there are several reported occurrences near Impact Areas. Therefore, Merlin has a low potential to occur within the Study Area. Implementation of Mitigation Measures MM AES-1, MM BIO-1 and MM BIO-6 would reduce impacts to Merlin to: *Less than Significant with Mitigation Incorporated*.

Prairie Falcon (*Falco mexicanus*)

Prairie Falcon is a California Department of Fish and Wildlife Watch List species (CDFW 2019b). This large pale falcon is brownish above and whitish below with long dark narrow mustache marks (Steenhof 2013). Uncommon throughout western North American, ranging north into southern Canada and south in to Mexico, Prairie Falcons are solitary birds found primarily in open dry habitats including desert, prairies, and grasslands. They nest on cliff ledges and hunt for small mammals, birds and large insects. Nesting occurs from mid-February through mid- September with a peak in April to early August (CDFW 2005c).

Suitable foraging habitat for Prairie Falcon is present within the Study Area, and the species has been observed foraging, however no suitable nesting habitat exists. Therefore, Prairie Falcon has a low potential to occur within the Study Area. Implementation of Mitigation Measures MM BIO-1 and MM BIO-6 would reduce potential impacts to Prairie Falcon to: *Less than Significant with Mitigation Incorporated*.

American Peregrine Falcon (*Falco peregrinus anatum*)

American Peregrine Falcon is delisted from CESA and FESA and is Fully Protected under California Fish and Game Code. Peregrine Falcon is a medium-sized dark gray falcon with dark helmet, pale whitish underparts, and a small, strongly hooked bill. The species has a worldwide range and is found throughout North America; in California it is resident on the coast and far northern and southern reaches of the state and is found in the Central Valley in the winter (White et al. 2002). Peregrine Falcon occurs in a wide variety of habitats, including woodlands and open landscape, near water and nest sites. The species hunts by diving and catching prey in mid-air; it primarily consumes birds, but also will hunt for bats and steal prey from other raptors (White et al. 2002). Nests consist of a scrape or depression on cliffs or human-made structures such as tall buildings. Breeding occurs from March through August (White et al. 2002).

Suitable foraging habitat for American Peregrine Falcon is present within the Study Area, and the species has been observed foraging, however no suitable nesting habitat exists. Therefore, American Peregrine Falcon has a low potential to occur within the Study Area. No take of American Peregrine Falcon per California Fish and Game Code Section 3511 would occur due to the Proposed Project; however, CEQA considers potential effects beyond direct take of Fully Protected species. Implementation of Mitigation Measures MM BIO-1 and MM BIO-6 would reduce potential impacts to American Peregrine Falcon to: *Less than Significant with Mitigation Incorporated*.

Loggerhead Shrike (*Lanius ludovicianus*)

The Loggerhead Shrike is a California Species of Special Concern and a USFWS Bird of Conservation Concern. Loggerhead Shrike is a medium-sized

passerine with gray plumage and a black mask around the eyes and forehead (Yosef 1996). This species is found throughout North America and is a common resident and winter visitor in lowlands and foothills in California. Loggerhead Shrikes use a variety of open grasslands across their range, including grasslands, desert scrub, shrub-steppe, open savannah, irrigated pasture, grain and hay crops, and alkali seasonal wetland (Yosef 1996, Pandolfino and Smith 2011). Loggerhead Shrikes nest in shrubs and trees surrounded by open habitat. Breeding occurs from March through July (CDFW 1990e).

Loggerhead Shrike has a high potential to occur within the Study Area due to the presence of suitable habitat and several recorded occurrences near Impact Areas. implementation of Mitigation Measures MM AES-1, MM BIO-1 and MM BIO-8 would reduce potential impacts to Loggerhead Shrike to*: Less than Significant with Mitigation Incorporated.*

California Black Rail (*Laterallus jamaicensis coturniculus*)

California Black Rail is listed as Threatened under CESA, Fully Protected under California Fish and Game Code, and is a USFWS bird of conservation concern. California Black Rail is a small-sized rail with mostly dark gray feathers, a small black bill, red eyes, white-speckled back, belly, and flanks, and chestnut colored nape and upper back. Approximately 80% of the California Black Rail subspecies resides in the San Francisco Bay estuary (Evens et al. 1991), with other populations in the Sacramento-San Joaquin Delta, coastal southern California at Morro Bay, and a few inland locations (Eddleman et al. 1994). The species most commonly occurs in tidal brackish or freshwater emergent wetlands dominated by pickleweed and bulrush and occurs in non-tidal freshwater marsh habitat as well as in immediate vicinity of tidal sloughs. Black rail inhabits shallow and high elevation areas of densely-vegetated wetlands where it consumes a variety of small terrestrial invertebrates. Nests are completely concealed by vegetation in high portions of tidal marshes, shallow freshwater marshes, wet meadows, and flooded grassy vegetation (Eddleman et al. 1994). Breeding occurs from mid-March through June (CDFW 1999e).

California Black Rail is considered to have a moderate potential to occur within the Study Area due to the presence of suitable habitat and several recorded occurrences near Impact Areas. No take of California Black Rail per California Fish and Game Code Section 3511 would occur due to the Proposed Project; however, CEQA considers potential effects beyond direct take of Fully Protected species. Implementation of Mitigation Measures MM BIO-1 and MM BIO-8, would reduce impacts to California Black Rail to: *Less than Significant with Mitigation Incorporated*.

Song Sparrow “Modesto” Population (*Melospiza melodia*)

Song Sparrow “Modesto” population (hereafter referred to as Modesto Song Sparrow), is a California Species of Special Concern. While Song Sparrow

ranges widely throughout North America; the Modesto population is endemic to the north-central portion of the Central Valley and is ubiquitous in the Delta (Gardali 2008). Modesto Song Sparrow uses emergent marsh and riparian scrub habitats (Grinnell and Miller 1944), In addition, the species has been observed to nest in valley oak riparian forests with a dense blackberry understory, vegetated irrigation canals and levees, and recently planted Valley Oak restoration sites (Gardali 2008). Breeding occurs from April to August (CDFW 1990f).

Modesto Song Sparrow is considered to have a high potential to occur within the Study Area due to the presence of suitable habitat and many recorded occurrences throughout the Study Area. Implementation of Mitigation Measures MM AES-1, MM BIO-1 and MM BIO-8 would reduce potential impacts to Modesto Song Sparrow to*: Less than Significant with Mitigation Incorporated.*

Osprey (*Pandion haliaetus*)

Osprey is a species on the CDFW Watch List. Osprey is a large raptor with brown back and wings, white underparts, brown line through the eye, and hooked beak. The species' range includes all of North America; in California, it breeds primarily from the Cascade Range to Lake Tahoe and south to Marin County. Their year-round range includes the northern and western portions of the Central Valley (CDFW 1990g). Habitat includes riparian, lakes, coastal Osprey nest in large open forest trees and snags, and on man-made structures in close proximity to open water. Osprey hunt for fish by diving into open water and clasping prey in their talons (Bierregaard et al 2016). Nests are built in large open forest trees and snags, and on man-made structures in close proximity to open water (Bierregaard et al 2016). Breeding takes place from March through September (CDFW 1990g).

Suitable habitat for Osprey is present and the species has been observed foraging within the Study Area. Therefore, Osprey has a high potential to occur within the Study Area. Implementation of Mitigation Measures MM AES-1, MM BIO-1 and MM BIO-6 would reduce potential impacts to Osprey to: *Less than Significant with Mitigation Incorporated.*

White-faced Ibis (*Plegadis chihi*)

The White-faced Ibis is on the CDFW watch list. White-faced Ibis is a dark wading bird with long decurved bill; breeding adults have metallic bronze plumage with dark green wings. The species' range includes western and central United States and winters in southeastern California, Gulf Coast, and Mexico (Ryder and Manry 1994); in California breeds uncommonly in southern California, and in isolated areas of the Central Valley (CDFW 2005d). White-faced ibis breeds in freshwater emergent and managed wetland habitats (CDFW 2005d) with cattail and bulrush, and also forages in flooded meadows, agricultural fields, and brackish wetlands (Ryder and Manry 1994). The species probes in mud for

earthworms and invertebrates and will also forage in shallow water for amphibians and small fish (CDFW 2005d). White-faced Ibis nests colonially in dense emergent vegetation. Breeding occurs May-July (CDFW 2005d).

White-faced Ibis is considered to have a moderate potential to occur within the Study Area due to the presence of suitable habitat and many recorded occurrences throughout the Study Area. Breeding white-faced ibis have been recorded in the Yolo Bypass Wildlife Area but are not expected to breed in the remainder of the Study Area. Implementation of Mitigation Measures MM BIO-1 and MM BIO-8 would reduce potential impacts to White-faced ibis to*: Less than Significant with Mitigation Incorporated.*

Purple Martin (*Progne subis*)

Purple Martin is a California Species of Special Concern. Purple Martin is a large swallow with purple plumage and dark wings; females are duller with some gray plumage. The species breeds primarily in the eastern United States and winters in Mexico to central South America, but it also breeds in coastal Northern California, Sierra Nevada, and isolated locations in the Central Valley (Brown and Tarof 2013). Purple Martin inhabits woodlands, urban parks, and wetlands, often near cities (Airola and Williams 2008). An aerial insectivore, Purple Martin diet consists of a variety of flying insects caught while flying over open areas, including parks, open water, and wetlands. Nests are built in cavities and manmade structures such as bird houses. Breeding occurs between May and mid-August (Airola and Williams 2008).

Purple Martin is considered to have a low potential to occur within the Study Area due to minimal suitable nesting habitat and rare occurrences in the vicinity of the Study Area. Implementation of Mitigation Measures MM BIO-1 and MM BIO-8 would reduce potential impacts to Purple Martin to: *Less than Significant with Mitigation Incorporated*.

Bank Swallow (*Riparia riparia*)

The Bank Swallow is listed as Threatened under CESA. It is a small brown and white songbird with a small bill, long wings, and a dark breastband contrasting with a white chin and belly (Garrison 1999). This species is a neotropical migrant that breeds across North America, Europe, and Asia and winter in Central and South America and Africa (Garrison 1999). Approximately 70 - 90 % of the breeding population in California is dependent on habitats which occur along the Sacramento and Feather Rivers (Humphrey and Garrison 1986, Garrison et al. 1987, CDFW 1992). Breeding habitat includes riparian, lacustrine, and coastal areas with vertical banks, bluffs, cliffs, and occasionally sand quarries, with fine-textured or sandy soils (Garrison et al. 1987, Bank Swallow Technical Advisory Committee 2013). The species is dependent on bank erosion from high winter river flows to create suitable burrow substrate (Garrison 1999, Garrison 2004,

Moffat et al. 2005). Bank Swallow forages predominantly over open riparian areas but also over brushland, grassland, wetlands, water, and cropland. Bank Swallow nests in colonies ranging in size from 3 to over 3,000 nest burrows, with nests placed in burrows dug into vertical banks (Bank Swallow Technical Advisory Committee 2013). Breeding occurs from April through June (CDFW 1999f).

Bank Swallow has a low potential to occur within the Study Area due to no suitable nesting habitat present in the Study Area, although the species has been observed foraging in the vicinity. Implementation of Mitigation Measure MM BIO-1 would reduce potential impacts to Bank Swallow to: *Less than Significant with Mitigation Incorporated*.

Yellow Warbler (*Setophaga petechia*)

Yellow Warbler is a California Species of Special Concern and a USFWS Bird of Conservation Concern. Yellow Warbler is a small, bright yellow bird with yellow-green back, round head and beady black eyes; males have chestnut streaks on the breast. The species is a Neotropical migrant that breeds throughout the northern portions of North America, extending into southern mountain ranges; the species historically occurred throughout California, but is now largely restricted to the coast and Sierra Nevada (Heath 2008). Yellow Warbler is a riparian obligate species that uses willow shrubs and thickets, and other riparian plants including cottonwoods, sycamores, ash, and alders. The species was once a common breeder in the Central Valley, but is largely extirpated in the Sacramento Valley, the Delta and San Joaquin Valley because of widespread habitat loss (Riparian Habitat Joint Venture 2004, Grinnell and Miller 1944). Recent breeding south of the Study Area on the San Joaquin River National Wildlife Refuge is largely attributed to riparian habitat restoration (Dettling et al. 2012). Yellow Warblers consume insect prey by gleaning along slender branches and leaves of shrubs and small trees. The species is territorial; males sing from perches at the top of vegetation and will defend their territories from many species. Nesting occurs during June and July (Lowther et al. 1999).

Yellow Warbler has a moderate potential to occur within the Study Area. Breeding is limited in the Central Valley in recent history, but the species has been observed in the Study Area during migration (Trochet et al. 2017). Implementation of Mitigation Measures MM AES-1 and MM BIO-1 and MM BIO-8 would reduce potential impacts to Yellow Warbler to: *Less than Significant with Mitigation Incorporated.*

California Least Tern (*Sternula antillarum browni*)

California Least Tern is listed as Endangered under CESA and FESA and is designated as Fully Protected under California Fish and Game Code. Least Tern is a small tern with narrow pointed wings, black crown, and white forehead. The historical breeding range of the California Least Tern extends along the Pacific

Coast from approximately Moss Landing to the southern tip of Baja California (Grinnell and Miller 1944). However, since about 1970, colonies have been reported north to San Francisco Bay (USFWS 2006a). California Least Terns nest in loose colonies on barren or sparsely vegetated sandy or gravelly substrates above the high tide line along the coastline and in lagoons and bays of the California coast. Colonies occur near water that provides opportunities to forage for fish in shallow estuaries or lagoons (Thompson et al. 1997, CDFW 2005e, USFWS 2006a). Breeding occurs from mid-May through August (Massey and Atwood 1981, CDFW 2005e).

California Least Tern has a low potential to occur within the Study Area. No suitable nesting habitat and no known nesting colonies are located within the Study Area, and foraging birds are rarely observed in the vicinity. No take of California Least Tern per California Fish and Game Code Section 3511 would occur due to the Proposed Project; however, CEQA considers potential effects beyond direct take of Fully Protected species. Implementation of Mitigation Measure MM BIO-1 would reduce potential impacts to California Least Tern to: *Less than Significant with Mitigation Incorporated*.

Least Bell's Vireo (*Vireo bellii pusillus*)

Least Bell's Vireo is listed as Endangered under FESA and CESA. Least Bell's vireo is a small, drab songbird with brownish-gray plumage and two pale wingbars. The species' historical distribution extended from coastal southern California through the San Joaquin and Sacramento Valleys as far north as Tehama County near Red Bluff (Kus 2002). The current breeding range is restricted to southern California, primarily San Diego County; however, recent nesting events at the San Joaquin River National Wildlife Refuge, along Putah Creek in Yolo Bypass, and Bradford Island in the central Delta indicate the species is attempting to recolonize the Central Valley. Least Bell's Vireo typically breeds in willow riparian forest supporting a dense, shrubby understory of mulefat (*Baccharis salicifolius*) and other mesic species (Goldwasser 1981; Gray and Greaves 1981; Franzreb 1989). Oak woodland with a willow riparian understory is also used in some areas (Gray and Greaves, 1981), and individuals sometimes enter adjacent chaparral, coastal sage scrub, or desert scrub habitats to forage (Kus et al 2010). Foraging occurs most frequently in willows (Salata 1983; USFWS 1998a) but occurs on a wide range of riparian species and even some nonriparian plants that may host relatively large proportions of large prey (USFWS 1998a). Least Bell's Vireos are insectivorous and prey on a wide variety of insects, including bugs, beetles, grasshoppers, moths, and especially caterpillars (Chapin 1925; Bent 1950). Breeding occurs between April and August, with peak egg laying in May to early June (CDFW 1990h).

Least Bell's Vireo has a moderate potential to occur within the Study Area due to the presence of suitable nesting habitat in the Study Area, and recent observations of the species in the Yolo Bypass Wildlife Area and Bradford Island during breeding season. Implementation of Mitigation Measures MM AES-1, MM

BIO-1 and MM BIO-8 would reduce potential impacts to Least Bell's Vireo to*: Less than Significant with Mitigation Incorporated.*

Yellow-Headed Blackbird (*Xanthocephalus xanthocephalus*)

Yellow-Headed Blackbird is a California species of special concern. Yellow-Headed Blackbird is a large blackbird with large head and long conical bill; males have a bright yellow head and breast and glossy black body and females are brown with dull yellow head and breast. The species' range includes western and central North America; in California it is found in northeastern California, Central Valley, Imperial Valley, and Colorado River Valley (Jaramillo 2008). Yellow-Headed Blackbird breeding habitat includes freshwater emergent wetlands, while associated foraging habitat includes irrigated pastures and alfalfa fields (Twedt and Crawford 1995, Jamarillo 2008). The species forages primarily for seeds and some insects; during breeding season insects are the primary prey (Jaramillo 2008). Nests are constructed in tall emergent vegetation in open areas over relatively deep water (Orians and Willson 1964). Breeding occurs from mid-April through late July (Twedt and Crawford 1995).

Yellow-Headed Blackbird has a moderate potential to occur within the Study Area due to the presence of suitable foraging habitat and minimal suitable nesting habitat in the Study Area. Implementation of Mitigation Measures MM BIO-1 and MM BIO-8 would reduce potential impacts to Yellow-Headed Blackbird to*: Less than Significant with Mitigation Incorporated.*

Antioch Dunes anthicid beetle (*Anthicus antiochensis*)

Antioch Dunes anthicid beetle has a NatureServe ranking of G1S1 and is included on CDFW's Special Animals List but is not listed under FESA or CESA. This species is a 4.7-5.4 mm long terrestrial beetle that resembles an ant in appearance. It is endemic to California, and it has been detected at Antioch Dunes in Contra Costa County as well as several sites along the Sacramento River in Glenn, Tehama, Shasta, and Solano counties, and one site at Nicolas on the Feather River in Sutter County. It typically occurs on interior sand dunes and sand bars (CDFW 2019c). Antioch Dunes anthicid beetles are thought to be microscavengers, feeding on dead insects and soil fungi at night and remaining inactive in burrows during the day. Adults overwinter and emerge in the spring to lay eggs. A second generation of adults emerge in early summer (CDFW 2019c).

Antioch Dunes anthicid beetle has the potential to occur in the Study Area; however, this potential is low because suitable habitat is highly localized and there are few known occurrences. Implementation of Mitigation Measure MM BIO-1, which would avoid and minimize adverse impacts to suitable habitat, would reduce potential impacts to Antioch Dunes anthicid beetle and suitable habitat to: L*ess than Significant with Mitigation Incorporated.*

Sacramento anthicid beetle (*Anthicus sacramento*)

Sacramento anthicid beetle has a NatureServe ranking of G1S1 and is included on CDFW's Special Animals List but is not listed under FESA or CESA. This species is a 3.18-3.63 mm long terrestrial beetle that resembles an ant in appearance. It is endemic to California, and it has been detected in several locations along the Sacramento and San Joaquin Rivers from Shasta to San Joaquin counties, and one site at Nicolas on the Feather River in Sutter County. It typically occurs in interior sand dunes and sand bars, as well as in dredge spoil heaps (CDFW 2019c). Like other species in its genus, Sacramento anthicid beetles are thought to be microscavengers, feeding on dead insects and soil fungi. Adults are most commonly collected in June, July, and August, likely with two generations produced each year (CDFW 2019c).

Sacramento anthicid beetle has the potential to occur in the Study Area; however, this potential is low because suitable habitat is highly localized and there are few known occurrences. Implementation of Mitigation Measure MM BIO-1, which would avoid and minimize adverse impacts to suitable habitat, would reduce potential impacts to Sacramento anthicid beetle to: L*ess than Significant with Mitigation Incorporated.*

Crotch bumble bee (*Bombus crotchii*)

Crotch bumble bee has a NatureServe ranking of G2G3S3 and is included on CDFW's Special Animals List but is not listed under FESA or CESA. This species is a generalist, colonial nesting bee. The current range of this species in California is from coastal California to the Sierra-Cascade Crest. Habitat for this species is not specific because the food plant genera used by obscure bumble bee (*Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia, and Eriogonum*) are widely distributed in different habitats. Like most other species of bumble bees, Crotch bumble bees typically nest in underground cavities such as animal burrows, though nests have also been reported from above-ground structures that provide suitable cavities. Colonies are established by mated queens who produce female workers to forage for pollen and nectar, defend the colony, and feed developing larvae, with individual colonies remaining active for only one season (Koch et al. 2012).

Crotch bumble bee has moderate potential to occur within the Study Area based on the presence of suitable habitat. Implementation of Mitigation Measure MM BIO-1, which would avoid and minimize adverse impacts to suitable habitat, would reduce potential impacts to Crotch bumble bee to: L*ess than Significant with Mitigation Incorporated.*

Western bumble bee (*Bombus occidentalis*)

Western bumblebee has a NatureServe ranking of G4S1 and is included on CDFW's Special Animals List but is not listed under FESA or CESA. This species is a generalist, colonial nesting bee. The known range of this species

extends throughout California, though populations from Central California to the northern border have declined sharply since the late 1990's, particularly from lower elevation sites. The habitat for this species varies widely and includes open grassy areas, urban parks and gardens, chaparral and scrub lands, and mountain meadows. Like most other species of bumblebees, western bumblebees typically nest in underground cavities such as animal burrows, though nests have also been reported from above-ground structures that provide suitable cavities. Colonies are established by mated queens who produce female workers to forage for pollen and nectar, defend the colony, and feed developing larvae. Within California, the flight period for western bumblebee is from early February to late November, with individual colonies remaining active for only one season (Hatfield et al. 2015).

Western bumble bee has high potential to occur within the Study Area based on the presence of suitable habitat. Implementation of Mitigation Measure MM BIO-1 would avoid and minimize adverse impacts to suitable habitat and would reduce potential impacts to western bumble bee to: L*ess than Significant with Mitigation Incorporated.*

Conservancy fairy shrimp (*Branchinecta conservatio*)

Conservancy fairy shrimp is listed as Endangered under FESA but not listed under CESA, and has a NatureServe ranking of G2S2. This species is a 1.3 to 2.5 cm short-lived aquatic crustacean found in ephemeral freshwater habitats. It is endemic to California, and its known range is limited to the Central Valley, with the exception of one occurrence in Ventura County. Conservancy fairy shrimp are found in vernal pools; generally large, turbid playa pools that may be inundated well into the summer (USFWS 2007a). Conservancy fairy shrimp hatch from cysts that remain in the soil until the first winter rains and complete their lifecycle by early summer when warm water temperatures and drying conditions render the habitat unsuitable. Cysts are shed by mated females and remain in the soil until the following winter (USFWS 2017a). Conservancy fairy shrimp require an average of 49 days to reach maturity and are known to survive in temperatures ranging from 41 to 75 degrees Fahrenheit (Eriksen and Belk, 1999).

Conservancy fairy shrimp has moderate potential to occur within the Study Area based on the presence of suitable habitat. Implementation of Mitigation Measures MM BIO-1 and MM BIO-12 would avoid and minimize adverse impacts to suitable habitat and would reduce potential impacts to Conservancy fairy shrimp to: L*ess than Significant with Mitigation Incorporated.*

MM BIO-12: Vernal Pool Species

a. All ground disturbing activities (boring, CPT, or vegetation removal) shall be located at least 100 feet (30 meters) from a vernal pool to avoid impacts to sensitive vernal pool invertebrates.

b. No project activities shall take place within an area identified as vernal pool complex, as determined by a qualified biologist, when wet soil conditions would increase the likelihood of vehicle traffic or other activities altering the site topography.

Longhorn fairy shrimp (*Branchinecta longiantenna*)

Longhorn fairy shrimp is listed as Endangered under FESA but is not listed under CESA. It has a NatureServe ranking of G2S2 and is included on CDFW's Special Animals List. This species is a 0.5 to 0.8 inches (1.3 to 2 centimeters) short-lived aquatic crustacean found in ephemeral freshwater habitats. It is endemic to California, and its known range is limited to four areas within and adjacent to the following locations: Carrizo Plain National Monument in San Luis Obispo County, San Luis National Wildlife Refuge Complex in Merced County, Brushy Peak Preserve in Alameda County, and Vasco Caves Preserve in Contra Costa County (USFWS 2007b). Longhorn fairy shrimp are found in vernal pools which may be clear or turbid. They have been found in clearwater depressions in sandstone outcroppings, grass-bottomed pools, and claypan pools. Like other fairy shrimp, longhorn fairy shrimp hatch from desiccated cysts that remain in the soil until the first winter rains and complete their lifecycle by early summer. Cysts are shed by mated females and remain in the soil until the following winter (USFWS 2017b). Longhorn fairy shrimp mature in approximately 43 days and are known to survive in temperatures ranging from 50 to 82 degrees Fahrenheit (Erickson and Belk 1999).

Longhorn fairy shrimp has moderate potential to occur within the Study Area based on the presence of suitable habitat. Implementation of Mitigation Measures MM BIO-1 and MM BIO-12 would avoid and minimize adverse impacts to suitable habitat and would reduce potential impacts to longhorn fairy shrimp to: L*ess than Significant with Mitigation Incorporated.*

Vernal pool fairy shrimp (*Branchinecta lynchi*)

Vernal pool fairy shrimp is listed as Threatened under FESA but is not listed under CESA. It has a NatureServe ranking of G3S3 and is included on CDFW's Special Animals List. This species is a 0.12 to 1.5-inch (0.3 to 3.8 centimeters) short-lived aquatic crustacean found in ephemeral freshwater habitats. The current range in California includes the Central Valley, Coast Ranges, and disjunct locations in Riverside County. Vernal pool fairy shrimp are found in a variety of vernal pool habitat types, ranging from small, clear sandstone pools to large turbid, alkaline pools. It is most frequently found in pools measuring less than 0.05 acres but has been found in pools exceeding 25 acres. Like other fairy shrimp, vernal pool fairy shrimp hatch from desiccated cysts that remain in the soil until the first winter rains and complete their lifecycle by early summer. Cysts are shed by mated females and remain in the soil until the following winter. Individuals hatch in water temperatures of 50 degrees Fahrenheit or lower and

reach maturity approximately 40 days later depending on temperature (USFWS 2007c). The upper temperature tolerance for this species is approximately 75 degrees Fahrenheit (Erickson and Belk 1999). Threats to this species include habitat loss and fragmentation due to urbanization, agricultural conversion, and mining.

Vernal pool fairy shrimp has moderate potential to occur within the Study Area based on the presence of suitable habitat. Implementation of Mitigation Measures MM BIO-1 and MM BIO-12 would avoid and minimize adverse impacts to suitable habitat and would reduce potential impacts to vernal pool fairy shrimp to: L*ess than Significant with Mitigation Incorporated.*

Midvalley fairy shrimp (*Branchinecta mesovallensis*)

Midvalley fairy shrimp has a NatureServe ranking of G2S2S3 and is included on CDFW's Special Animals List but is not listed under FESA or CESA. This species is a 0.28 to 0.8 inches (0.7 to 2 centimeters) short-lived aquatic crustacean found in ephemeral freshwater habitats. It is endemic to California, and its known range is limited to the Central Valley. Midvalley fairy shrimp are found in vernal pools; primarily small, short-lived pools and grass-bottomed swales that are less than 10 cm in depth. This species has been found in relatively alkaline pools, but its tolerance range for variations in water chemistry are not well known. Like other fairy shrimp, this species hatch from cysts that remain in the soil until the first winter rains; however, they mature comparatively quickly, in as little as 8 days (CDFW 2019c). This species is unusually tolerant of warm water temperatures of at least 90 degrees Fahrenheit and potentially higher, which helps them survive when the water in their typically small, shallow pools heats up (Erickson and Belk 1999).

Midvalley fairy shrimp has moderate potential to occur within the Study Area based on the presence of suitable habitat. Implementation of Mitigation Measures MM BIO-1 and MM BIO-12 would avoid and minimize adverse impacts to suitable habitat and would reduce potential impacts to midvalley fairy shrimp to: L*ess than Significant with Mitigation Incorporated.*

Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)

Valley elderberry longhorn beetle is listed as Threatened under FESA but is not listed under CESA. It has a NatureServe ranking of G3T2S2 and is included on CDFW's Special Animals List. This species is a terrestrial, wood-boring beetle whose larvae feed exclusively on elderberry (*Sambucus* sp.). It is endemic to California, and its known range extends through the Central Valley. It typically occurs in riparian or other habitat that supports its elderberry host plants, typically below 500 feet (152 meters) in elevation. Adult beetles emerge in spring and summer and lay eggs on the elderberry leaves. Upon hatching, larvae bore into the stems and create feeding galleries in the pith, where they will reside for several months. Prior to pupation, the larva creates an exit hole, then returns to

the gallery where it pupates. The adult beetle will then emerge approximately one month later. Threats to the species include agricultural conversion, urban development, stream channelization, and channel hardening, which eliminate habitat for the host plant (USFWS 2017).

Valley elderberry longhorn beetle has high potential to occur within the Study Area based on the presence of suitable habitat. Implementation of Mitigation Measure MM BIO-13 would reduce potential impacts to valley elderberry longhorn beetle to: *Less than Significant with Mitigation*.

MM BIO-13: Valley Elderberry Longhorn Beetle

To minimize and avoid the potential impacts to Valley Elderberry Longhorn Beetle (VELB) that may occur within the project area, the following measures will be implemented:

a. When feasible, project activities shall be sited at least 164 feet (50 meters) from elderberry shrubs with stem diameter greater than 1-inch (2.5 centimeter).

b. If activities must be conducted within 164 feet (50 meters) of an elderberry shrub, the following measures will apply:

    i. activities will be conducted outside of VELB flight season (March 1-July 31);

    ii. a biological monitor will be present to monitor all project activities at the site;

    iii. all ground disturbing activities (boring, CPT, or vegetation removal) will be located at least 20 feet (6 meters) from the dripline of the elderberry shrub; and high visibility fencing or flagging will be installed to delineate the 20-foot (6-meter) avoidance buffer.

Ricksecker's water scavenger beetle (*Hydrochara rickseckeri*)

Ricksecker's water scavenger beetle has a NatureServe ranking of G2S2 and is included on CDFW's Special Animals List but is not listed under FESA or CESA. This species is an aquatic beetle typically known from shallow water habitats. It is endemic to California, and it has been detected in Lake, Marin, Placer, Sacramento, San Joaquin, San Mateo, Solano, and Sonoma counties. Specific habitat requirements for this species are not known but may include a variety of aquatic habitats including artificial ponds. Both adults and larvae of this species are aquatic (NatureServe 2019a).

Ricksecker's water scavenger beetle has moderate potential to occur within the Study Area based on the presence of suitable habitat. Implementation of

Mitigation Measures MM BIO-1 and MM BIO-12 would avoid and minimize adverse impacts to suitable habitat and would reduce potential impacts to Ricksecker's water scavenger to: L*ess than Significant with Mitigation Incorporated.*

Curved-foot hygrotus diving beetle (*Hygrotus curvipes*)

Curved-foot hygrotus diving beetle has a NatureServe ranking of G1S1 and is included on CDFW's Special Animals List but is not listed under FESA or CESA. This species is a predaceous diving beetle known only from Alameda and Contra Costa counties (NatureServe 2019b). Specific habitat requirements and life history for this species are not known, although like other beetles in the family, both larvae and adults are predators of other aquatic organisms.

Curved-foot hygrotus diving beetle has moderate potential to occur within the Study Area based on the presence of suitable habitat. Implementation of Mitigation Measures MM BIO-1 and MM BIO-12 would avoid and minimize adverse impacts to suitable habitat and would reduce potential impacts to curved-foot hygrotus diving beetle to: *Less than Significant with Mitigation Incorporated.*

Vernal pool tadpole shrimp (*Lepidurus packardi*)

Vernal pool tadpole shrimp is listed as Endangered under FESA but is not listed under CESA. It has a NatureServe ranking of G4S3S4 and is included on CDFW's Special Animals List. This species is a 0.6 to 3.3-inch (1.5 to 8.4 centimeter) aquatic crustacean with a shield-like carapace, found in ephemeral freshwater habitats. It is endemic to California, and is patchily distributed throughout the Central Valley, from Shasta County to Tulare County, with isolated occurrences in Alameda and Contra Costa counties. It typically occurs in vernal pools containing clear to highly turbid water. They feed on both living organisms, such as fairy shrimp, as well as detritus. The vernal pool tadpole shrimp produces cysts that lie buried in the soil until winter rains trigger hatching. Individuals reach maturity in 3 to 4 weeks, at approximately 0.4 inches or more in carapace length. Multiple hatchings within a single wet season allow the vernal pool tadpole shrimp to persist within pools as long as the habitat remains inundated, though hatching rates become significantly lower once water temperatures reach 68 degrees Fahrenheit (USFWS 2007d).

Vernal pool tadpole shrimp has moderate potential to occur within the Study Area based on the presence of suitable habitat. Implementation of Mitigation Measures MM BIO-1 and MM BIO-12 would avoid and minimize adverse impacts to suitable habitat and would reduce potential impacts to vernal pool tadpole shrimp to: L*ess than Significant with Mitigation Incorporated.*

California linderiella (*Linderiella occidentalis*)

California linderiella has a NatureServe ranking of G2G3S2S3 and is included on CDFW's Special Animals List but is not listed under FESA or CESA. This species is a 0.35 to 0.39 inch (0.9 to 1 centimeter) long, short-lived aquatic crustacean found in ephemeral freshwater habitats. It is endemic to California, and its known range is limited to the Central Valley. It occurs in vernal pools that vary widely in size but are generally found in deeper pools with clear to turbid water. California fairy shrimp are the longest-lived fairy shrimp species in the Central Valley, having been observed to live up to 168 days, and requiring a minimum of 31 days to reach maturity. They are also highly tolerant of high water temperatures and have been found in pools ranging from 41 to 85 degrees Fahrenheit. This species frequently co-occurs with vernal pool fairy shrimp and is usually numerically dominant (CDFW 2019c).

California linderiella has moderate potential to occur within the Study Area based on the presence of suitable habitat. Implementation of Mitigation Measures MM BIO-1 and MM BIO-12 would avoid and minimize adverse impacts to suitable habitat and would reduce potential impacts to California linderiella to: L*ess than Significant with Mitigation Incorporated.*

Molestan blister beetle (*Lytta molesta*)

Molestan blister beetle has a NatureServe ranking of G2S2 and is included on CDFW's Special Animals list but is not listed under FESA or CESA. This species is a ground nesting beetle that feeds on flowers. It is endemic to California, and its current known range includes the Central Valley. The species occurs in grasslands and vernal pools. Very little is known about the life history or behavior of this species. Other species in the genus Lytta oviposit in the underground nests of solitary bees, where their larvae consume pollen stores, and sometimes bee larvae. It has been collected from early April through early July (CDFW 2019c).

Molestan blister beetle has the potential to occur in the Study Area; however, this potential is low because the closest known occurrence of this species is approximately 5 miles from any of the Impact Sites. Implementation of Mitigation Measures MM BIO-1 and MM BIO-12 would avoid and minimize adverse impacts to suitable habitat and would reduce potential impacts to molestan blister beetle to: L*ess than Significant with Mitigation Incorporated.*

Green Sturgeon (*Acipenser medirostris*)

There are two DPSs of North American green sturgeon: the Northern DPS, which includes fish spawned in the Eel River and northward; and the Southern DPS, which includes all fish spawned south of the Eel River. The Northern DPS currently spawns in the Klamath River in California and the Rogue River in Oregon and is listed as a Species of Concern (NMFS 2004). Only the Southern

DPS, which is listed as a threatened species under FESA, is found in the Delta and the Sacramento River and its tributaries.

In its final rule to list the Southern DPS as threatened (NMFS 2006a), NMFS cited threats as concentration of the only known spawning population into a single river (Sacramento River), loss of historical spawning habitat, mounting threats with regard to maintenance of habitat quality and quantity in the Delta and Sacramento River, and an indication of declining abundance based upon salvage data at the State and Federal salvage facilities. Included in the listing are green sturgeon originating from the Sacramento River basin, including the spawning population in the Sacramento River and green sturgeon living in the Sacramento River, the Delta, and the San Francisco Estuary.

Adult North American green sturgeon are believed to spawn every 3 to 5 years but can spawn as frequently as every 2 years (NMFS 2005a) and reach sexual maturity at an age of 15 to 20 years, with males maturing earlier than females. Adult Green Sturgeon enter San Francisco Bay in late winter through early spring and migrate to spawning areas in the Sacramento River primarily from late February through April. Spawning primarily occurs April through late July although late summer and early fall spawning may also occur based on the presence of larvae in the fall (Heublein et al. 2017). Historical and recent information confirms that both green and white sturgeons occasionally range into the Feather, Yuba, and Bear rivers but numbers are low (Beamesderfer et al. 2004). It is unknown whether green sturgeon historically spawned in the Feather River either downstream or upstream of Oroville Dam or the Thermalito Afterbay outlet. Spawning is suspected to have occurred in the past due to the continued presence of adult green sturgeon in the river below Fish Barrier Dam. This continued presence of adults below the dam suggests that fish are trying to migrate to upstream spawning areas now blocked by the dam, which was constructed in 1968. Green Sturgeon spawning was documented in the Feather River during 2011 and 2017-2019 (Seesholtz et al. 2014; DWR, unpublished data) and the Yuba River during 2018 and 2019 (Beccio 2018, 2019).

Little is known about rearing, migratory behavior, and general emigration patterns of juvenile Southern DPS Green Sturgeon. Based on captures of juveniles in the Sacramento River near Red Bluff, it is likely that juveniles rear near spawning habitat for a few months or more before migrating to the Delta (Heublein et al. 2017). Juvenile green sturgeon continue to exhibit nocturnal behavior beyond the metamorphosis from larval to juvenile stages. After approximately 10 days, larvae begin feeding and growing rapidly, and young green sturgeon appear to rear for the first 1 to 2 months in the upper Sacramento River between Keswick Dam and Hamilton City (CDFW 2002).

Length measurements estimate larvae to be 2 weeks old (0.95 to 1.34-inch (24 to 34 millimeters) fork length) when they are captured at the Red Bluff Diversion Dam (CDFW 2002; USFWS 2002), and three weeks old when captured further downstream at the Glenn-Colusa facility (Van Eenennaam et al. 2001). Growth is rapid as juveniles reach up to 11.8 inches (30 centimeters) the first year and over

24 inches (60 centimeters) in the first 2 to 3 years (Nakamoto et al. 1995). Juveniles spend 1 to 4 years in freshwater and estuarine habitats before they enter the ocean (Nakamoto et al. 1995). According to Heublein et al. (2009), in 2006 all tagged adult green sturgeon emigrated from the Sacramento River prior to September. Lindley et al. (2008) found frequent large-scale migrations of green sturgeon along the Pacific Coast. Kelly et al. (2007) reported that green sturgeon enter the San Francisco Estuary during the spring and remain until fall. Juvenile and adult green sturgeon enter coastal marine waters after making significant long-distance migrations with distinct directionality thought to be related to resource availability.

Overall, designated in-water work windows would reduce exposure of sensitive fish species and life stages to in-water work activities. The activities of the Proposed Project would be minor in scope and would not result in degradation of aquatic habitat or water quality conditions and any potential effects related to potential increase in suspended sediment concentrations and contaminants due to disturbance of the river bed would be negligible. Green sturgeon are known to spawn in the Yuba and Feather Rivers and in the upper reaches of the Sacramento River upstream of Hamilton City so the sensitive egg and larval life stages will be avoided. Juvenile green sturgeon would be present within the Study Area when in-water work will take place. Proposed project activities are not likely to result in impingement because juvenile sturgeon can move away from boring equipment. The project will not reduce prey availability for juvenile sturgeon rearing in the Sacramento River. Finally, green sturgeon would not be adversely affected in the event an accidental sediment plume because the species is adapted to turbid conditions. Implementation of Mitigation Measures MM BIO-14, along with MM HYD-1 and MM HAZ-1 through 4 would reduce potential impacts to green sturgeon to: *Less than Significant with Mitigation Incorporated*.

MM BIO-14: General Fish

> Over-water activities will be limited to only being conducted during the fish window (August 1 – October 31) to avoid impacts to sensitive fish species that have the potential to occur in the Study Area.

Delta Smelt (*Hypomesus transpacificus*)

Delta Smelt is listed as a threatened species under the FESA and was listed as a threatened species under the CESA in 1993. In 2009, Delta Smelt was reclassified as an endangered species under the CESA. The 2010 5-year status review recommended up-listing Delta Smelt from threatened to endangered status under the FESA (USFWS 2010a). However, as of the time of this writing, Delta Smelt remain listed as threatened under the FESA.

Delta Smelt are endemic to the San Francisco Estuary, found nowhere else in the world (Bennett 2005). The Delta functions as a migratory corridor, as rearing

habitat, and as spawning habitat for Delta Smelt. Overall, the Delta Smelt life cycle is completed in the brackish and tidal freshwater reaches of the upper San Francisco Estuary. In addition, a freshwater resident life history type was found by Bush (2017), which primarily occurs in the Cache Slough region year-round (Sommer et al. 2011). Salinity requirements vary by life stage. Apart from spawning and egg-embryo development, the distribution and movements of all life stages are influenced by transport processes associated with water flows in the estuary, which also affect the quality and location of suitable open water habitat (Dege and Brown 2004; Feyrer et al. 2007; Nobriga et al. 2008). Delta Smelt are weakly anadromous and undergo a spawning migration from the low salinity zone (LSZ; 1–6 parts per thousand [ppt]) to freshwater in most years (Grimaldo et al. 2009; Sommer et al. 2011). Most of the later life-stage Delta smelt captured during the FMWT were collected in the 1 to 5 ppt salinity zone (Kimmerer et al. 2013). Spawning migrations occur between late December and late February, typically during “first flush” periods when inflow and turbidity increase on the Sacramento and San Joaquin Rivers (Grimaldo et al. 2009, Sommer et al. 2011). Adult smelt do not spawn immediately after migration to freshwater but appear to stage in upstream habitats (Sommer et al. 2011). Spawning primarily occurs during April through mid-May (Moyle 2002). There are a wide range of perspectives in the scientific literature regarding the extent to which the spatial distribution of Delta Smelt co-varies with X2 with more recent data and analyses suggesting factors other than X2 explain the distribution of the species (Murphy and Hamilton 2013; Manly et al. 2015; Latour 2016; Polanksy et al. 2018, Murphy and Weiland 2019). Dege and Brown (2004) found that larvae less than 0.8 inches (20 mm) rear 3–12 miles (5–20 kilometers) upstream of X2 (Dege and Brown 2004; Sommer and Mejia 2013). As larvae grow and water temperatures increase in the Delta (~73°F [23 °C]), their distribution shifts towards the low salinity zone (Dege and Brown 2004; Nobriga et al. 2008). By fall, the centroid of Delta Smelt distribution is tightly coupled with X2 (Sommer et al. 2011; Sommer and Mejia 2013). While salinity is generally seen as a key driver of Delta smelt distribution, more recent research suggests other factors, such as water velocity (Bever et al. 2016), may be an important predictor of Delta smelt presence. Similarly, Murphy and Weiland (2019) demonstrate salinity alone may not be the best predictor of Delta smelt abundance and distribution.

Overall, designated in-water work windows would reduce exposure of sensitive fish species, including Delta smelt, and life stages to in-water work activities. The activities of the Proposed Project would be minor in scope and would not result in degradation of aquatic habitat or water quality conditions and any potential effects related to potential increase in suspended sediment concentrations and contaminants due to disturbance of the river bed would be negligible.

Implementation of Mitigation Measures MM BIO-14, along with MM HYD-1 and MM HAZ-1 through 4 would reduce potential impacts to Delta Smelt to: *Less than Significant with Mitigation Incorporated*.

Steelhead – Central Valley DPS (*Oncorhynchus mykiss irideus pop. 11*)

The CCV steelhead evolutionarily significant unit (ESU) was listed as a threatened species under FESA on March 19, 1998 (USFWS 1998b). In addition, the species is also listed as threatened under the CESA. On November 4, 2005, the National Marine Fisheries Service (NMFS) proposed that all west coast steelhead be reclassified from ESUs to Distinct Population Segments (DPSs) and proposed to retain CCV steelhead as threatened (NMFS 2005b). On January 5, 2006, after reviewing the best available scientific and commercial information in a status review (Good et al. 2005), National Marine Fisheries Service (NMFS) issued its final rule to retain the status of CCV steelhead as threatened and applied its hatchery listing policy to include the Coleman National Fish Hatchery and Feather River Hatchery steelhead programs as part of the DPS (NMFS 2006b).

In its latest 5-year status review, NMFS determined that the CCV steelhead DPS should remain classified as threatened. While various habitat restoration efforts, such as those in Clear Creek, appear to be benefitting CCV steelhead, the concerns raised in the previous status reviews remain. These concerns include low adult abundances, loss of spawning and rearing habitat, and a higher proportion of hatchery produced fish. As such, CCV steelhead remain listed as threatened and are likely to become endangered within the foreseeable future throughout all or a significant portion of its range. In addition, based on new genetic evidence by Pearse and Garza (2015), NMFS recommended that steelhead originating from the Mokelumne River Hatchery be added to the CCV steelhead DPS, as Feather River Hatchery fish are considered to be a native Central Valley stock and are listed as part of the DPS (NMFS 2016a).

Steelhead have two life history types: stream-maturing and ocean-maturing. Stream-maturing steelhead enter fresh water in a sexually immature condition and require several months to mature before spawning, whereas ocean-maturing steelhead enter fresh water with mature gonads and spawn shortly after river entry. A variation of the two forms occurs in the Central Valley and primarily migrates into the system in the fall, then holds in suitable habitat until spawning during the winter and early spring (McEwan and Jackson 1996). Peak immigration seems to have occurred historically in the fall from late September to late October (Hallock 1989), with peak spawning typically occurring January through March (Hallock et al. 1961; McEwan and Jackson 1996). Unlike Pacific salmon, steelhead are capable of spawning more than once before death (Busby et al. 1996). Most juvenile steelhead spend two years rearing, although some spending less and a very few spending more (Hallock et al. 1961). Central Valley steelhead typically spend two years in the ocean before returning to their natal stream to spawn. About 70% of CCV steelhead spend 2 years within their natal streams before migrating out of the Sacramento-San Joaquin system as smolts, with small percentages (29%) and (1%) spending 1 or 3 years, respectively (Hallock et al. 1961). Juvenile steelhead smolts emigrate primarily from natal streams in response to the first heavy runoff in the late winter through spring

(Hallock et al. 1961). Emigrating CCV steelhead use the lower reaches of the Sacramento and San Joaquin Rivers and the Delta as a migration corridor to the ocean. Nobriga and Cadrett (2001) verified these temporal findings (spring migration) based on analysis of captures in USFWS salmon monitoring conducted near Chipps Island.

Overall, designated in-water work windows would reduce exposure of sensitive fish species and life stages to in-water work activities. The activities of the Proposed Project would be minor in scope and would not result in degradation of aquatic habitat or water quality conditions and any potential effects related to potential increase in suspended sediment concentrations and contaminants due to disturbance of the river bed would be negligible. Implementation of Mitigation Measures MM BIO-14, along with MM HYD-1 and MM HAZ-1 through 4 would reduce potential impacts to steelhead to: *Less than Significant with Mitigation Incorporated*.

Chinook Salmon – Central Valley Spring-run ESU (*Oncorhynchus tshawytscha*)

The Central Valley (CV) spring-run Chinook salmon ESU is listed as a threatened species under FESA. CV spring-run Chinook salmon are also listed as threatened under CESA. The ESU includes all naturally spawned populations of spring-run Chinook salmon in the Sacramento River and its tributaries in California, and the Feather River Hatchery spring-run Chinook program. As described in the latest NMFS 5-Year Review for Central Valley spring-run Chinook salmon, the status of the ESU has probably improved since the previous status review. Both the Mill and Deer Creek independent populations have improved from high extinction risks to moderate extinction risks, while the Butte Creek population remains at low risk. Nevertheless, the ESU remains classified as threatened (NMFS 2016b).

Chinook salmon exhibit two generalized freshwater life history types (Healey 1991). Stream-type adults enter fresh water months before spawning and juveniles reside in fresh water for a year or more following emergence, whereas ocean-type adults spawn soon after entering fresh water and juveniles migrate to the ocean as fry or parr in their first year. Adequate instream flows and cool water temperatures are more critical for the survival of Chinook salmon exhibiting a stream-type life history due to over-summering by adults and/or juveniles. Spring-run Chinook salmon are somewhat anomalous in that they have characteristics of both stream- and ocean-type races (Healey 1991). Adults enter fresh water in early-late spring, and delay spawning until late summer or early fall (stream-type). However, most juvenile spring-run Chinook salmon migrate out of their natal stream after only a few months of river life (ocean-type), or they may remain for up to 15 months within their natal stream. This life-history pattern differentiates the spring-run Chinook from other Sacramento River Chinook runs and from all other populations within the range of Chinook salmon (Hallock and Fisher 1985).

Spring-run Chinook salmon emigration timing is highly variable, as they may migrate downstream as young-of-the-year or as juveniles or yearlings. The modal size of fry migrants at approximately 1.6 inches (40 millimeters) between December and April in Mill, Butte, and Deer Creeks reflects a prolonged emergence of fry from the gravel (Lindley et al. 2004). Studies in Butte Creek found that the majority of CV spring-run Chinook salmon migrants are fry occurring primarily during December, January, and February, and that fry movements appeared to be influenced by flow (Ward et al. 2002, 2003; McReynolds et al. 2005). Small numbers of CV spring-run Chinook salmon remained in Butte Creek to rear and migrated as yearlings later in the spring. Juvenile emigration patterns in Mill and Deer Creeks are very similar to patterns observed in Butte Creek, with the exception that juveniles from Mill and Deer creeks typically exhibit a later young-of-the-year migration and an earlier yearling migration (Lindley et al. 2006). Peak movement of yearling CV spring-run Chinook salmon in the Sacramento River at Knights Landing occurs in December, and is high in January, tapering off through the middle of February; however, juveniles were also observed between November and the end of February (Snider and Titus 2000).

Overall, designated in-water work windows would reduce exposure of sensitive fish species, including Chinook salmon, and life stages to in-water work activities. The activities of the Proposed Project would be minor in scope and would not result in degradation of aquatic habitat or water quality conditions and any potential effects related to potential increase in suspended sediment concentrations and contaminants due to disturbance of the river bed would be negligible. Implementation of Mitigation Measures MM BIO-14, along with MM HYD-1 and MM HAZ-1 through 4 would reduce potential impacts to CV spring-run Chinook salmon to: *Less than Significant with Mitigation Incorporated*.

Sacramento River winter-run ESU of Chinook Salmon (*Oncorhynchus tshawytscha*)

The Sacramento River winter-run Chinook salmon ESU was initially listed as a threatened species in August 1989, under emergency provisions of the federal Endangered Species Act (FESA) (NMFS 1989) and was listed as threatened in a final rule in November 1990 (NMFS 1990). The ESU consists of only one population confined to the mainstem of the upper Sacramento River in California's Central Valley below Keswick Dam. The ESU was reclassified as endangered under the FESA on January 4, 1994 (NMFS 1994), because of increased variability of run sizes, expected weak returns as a result of two small year classes in 1991 and 1993, and a 99% decline between 1966 and 1991. The National Marine Fisheries Service (NMFS) reaffirmed the listing of the Sacramento River winter-run Chinook salmon ESU as endangered on June 28, 2005 (NMFS 2005c) and included winter-run Chinook salmon in the Livingston Stone National Fish Hatchery artificial propagation program in the ESU. In addition to the federal listing, Sacramento River winter-run Chinook salmon are listed as endangered under the CESA.

Sacramento River winter-run Chinook salmon adults enter the Sacramento River basin between December and July; the peak occurs in March (Yoshiyama et al. 1998, Moyle 2002). Because winter-run Chinook salmon use only the Sacramento River system for spawning, adults are likely to migrate upstream primarily along the western edge of the Delta through the Sacramento River corridor. Their migration past RBDD at river mile 242 begins in mid-December and continues into early August. The majority of the run passes RBDD between January and May, with the peak in mid-March (Hallock and Fisher 1985). The timing of migration may vary somewhat due to changes in river flows, dam operations, and water year type (Yoshiyama et al. 1998, Moyle 2002). Sacramento River winter-run Chinook salmon migrate into freshwater while still being immature and delay spawning for weeks or months upon reaching their spawning grounds (Healey 1991).

Emigrating juvenile winter-run Chinook salmon pass the Red Bluff Diversion Dam beginning as early as mid-July, typically peaking in September, and can continue through March in dry years (Vogel and Marine 1991; NMFS 1997). Many juveniles apparently rear in the Sacramento River below Red Bluff Diversion Dam for several months before they reach the Delta (Williams 2006). From 1995 to 1999, all winter-run Chinook salmon outmigrating as fry passed the Red Bluff Diversion Dam by October, and all outmigrating presmolts and smolts passed the Red Bluff Diversion Dam by March (Martin et al. 2001). Juvenile winter-run Chinook salmon are present in the Delta primarily from November through early May based on data collected from trawls in the Sacramento River at West Sacramento (river mile 55) (USFWS 2006b), although the overall timing may extend from September to early May (NMFS 2012). The timing of migration varies somewhat because of changes in river flows, dam operations, seasonal water temperatures, and hydrologic conditions (water year type).

Overall, designated in-water work windows would reduce exposure of sensitive fish species, including Sacramento River winter-run Chinook Salmon ESU and life stages to in-water work activities. The activities of the Proposed Project would be minor in scope and would not result in degradation of aquatic habitat or water quality conditions and any potential effects related to potential increase in suspended sediment concentrations and contaminants due to disturbance of the river bed would be negligible. Implementation of Mitigation Measures MM BIO-14, along with MM HYD-1 and MM HAZ-1 through 4 would reduce potential impacts to Sacramento River winter-run Chinook salmon to: *Less than Significant with Mitigation Incorporated*.

Sacramento Splittail (*Pogonicthys macrolepidotus*)

The Sacramento splittail was listed as threatened under the federal Endangered Species Act (FESA) on February 8, 1999 (NMFS 1999). This ruling was challenged by two lawsuits (*San Luis & Delta-Mendota Water Authority v. Anne Badgley et al.* and *State Water Contractors et al. v. Michael Spear et al.*). On June 23, 2000, the Federal Eastern District Court of California found the ruling to

be unlawful and on September 22 of the same year remanded the determination back to the U.S Fish and Wildlife Service (USFWS) for re-evaluation of their original listing decision. Upon further evaluation, splittail was removed from the FESA on September 22, 2003 (USFWS 2003). On August 13, 2009, the Center for Biological Diversity (2009) challenged the 2003 decision to remove splittail from the FESA. However, on October 7, 2010, the USFWS found that listing of splittail was not warranted (USFWS 2010b). The splittail is designated as a species of special concern by the California Department of Fish and Wildlife (CDFW).

Mature splittail begin a gradual upstream migration towards spawning areas sometime between late November and late January, with larger splittail migrating earlier (Caywood 1974; Moyle et al. 2004). The relationship between migrations and river flows is poorly understood, but it is likely that splittail have a positive behavioral response to increases in flows and turbidity. Feeding in flooded riparian areas in the weeks just prior to spawning may be important for later spawning success and for postspawning survival. Not all splittail make significant movements prior to spawning, as indicated by evidence of spawning in Suisun Marsh (Meng and Matern 2001) and the Petaluma River.

The upstream movement of splittail is closely linked with flow events from February to April that inundate floodplains and riparian areas (Garman and Baxter 1999; Harrell and Sommer 2003). Seasonal inundation of shallow floodplains provides both spawning and foraging habitat for splittail (Caywood 1974; Daniels and Moyle 1983; Baxter et al. 1996; Sommer et al. 1997). Evidence of splittail spawning on floodplains has been found on both the San Joaquin and Sacramento Rivers. In the San Joaquin River drainage, spawning has apparently taken place in wet years in the region where the San Joaquin River is joined by the Tuolumne and Merced Rivers (Moyle et al. 2004). In the Plan Area, splittail spawn on inundated floodplains in the Yolo and Sutter Bypasses, which are extensively flooded in wet years, and along the Cosumnes River area from February to July (Sommer et al. 1997, 2001, 2002; Crain et al. 2004; Moyle et al. 2004). When floodplain inundation does not occur in the Yolo or Sutter Bypasses, adult splittail migrate farther upstream to suitable habitat along channel margins or flood terraces; spawning in such locations occurs in all water year types (Feyrer et al. 2005). Although spawning is typically greatest in wet years, CDFW surveys demonstrate spawning takes place every year along the river edges and backwaters created by small increases in flow. In the eastern Delta, the floodplain along the lower Cosumnes River appears to be important as spawning habitat. Ripe splittail have been observed in areas flooded by levee breaches, turbid water, and flooded terrestrial vegetation.

Overall, designated in-water work windows would reduce exposure of sensitive fish species, including Sacramento splittail, and life stages to in-water work activities. The activities of the Proposed Project would be minor in scope and would not result in degradation of aquatic habitat or water quality conditions and any potential effects related to potential increase in suspended sediment

concentrations and contaminants due to disturbance of the river bed would be negligible. Implementation of Mitigation Measures MM BIO-14, along with MM HYD-1 and MM HAZ-1 through 4 would reduce potential impacts to Sacramento Splittail to: *Less than Significant with Mitigation Incorporated*.

Longfin Smelt (*Spirinchus thaleichthys*)

The Bay-Delta population of Longfin Smelt is designated as a candidate for listing under the FESA (USFWS 2012) and, since June 26, 2009, the Longfin Smelt is listed as threatened under the CESA.

Longfin Smelt are anadromous and semelparous, moving from saline to brackish or freshwater for spawning from November to May (Moyle 2002; Rosenfield and Baxter 2007) Longfin Smelt usually live for 2 years, spawn, and then die (Rosenfield 2010). Peak spawning takes place in January and February of most years and appears to be centered in brackish water (1–8 ppt); their habitat typically extends from San Pablo Bay to the confluence of the Sacramento River and San Joaquin River. Newly hatched Longfin Smelt larvae are planktonic and probably do not control their position in the water column before they develop an air bladder. Once their air bladder is developed (~ 0.47 inches (~12 mm) standard length) they are capable of controlling their position in the water column by undergoing reverse diel vertical migrations, which allows them to maintain position on the axis of the estuary (Bennett et al. 2002).

The geographic distribution of larval and early juvenile life stages of Longfin Smelt may be influenced by freshwater inflows to the Delta during late winter and spring, although the mechanisms are complicated and not fully understood (Hieb and Baxter 1993; Baxter 1999; Dege and Brown 2004). Juvenile Longfin smelt move seaward, mostly west of Carquinez Bridge, by late summer and fall. Rosenfield and Baxter (2007) suggest that juvenile Longfin Smelt seek cooler and deeper water in the summer months.

Overall, designated in-water work windows would reduce exposure of sensitive fish species, including Longfin smelt and life stages to in-water work activities. The activities of the Proposed Project would be minor in scope and would not result in degradation of aquatic habitat or water quality conditions and any potential effects related to potential increase in suspended sediment concentrations and contaminants due to disturbance of the river bed would be negligible. Implementation of Mitigation Measures MM BIO-14, along with MM HYD-1 and MM HAZ-1 through 4 would reduce potential impacts to Longfin Smelt to: *Less than Significant with Mitigation Incorporated*.

Western Red Bat (*Lasiurus blossevillii*)

Western red bat is identified as a CDFW Species of Special Concern. It is a medium bat with mottled reddish grayish pelage but can range from bright orange to yellow-brown, and short rounded ears. This species is locally common in some areas of California, occurring from Shasta County to the Mexico border,

west of the Sierra Nevada/Cascade crest and deserts. Their winter range includes western lowlands and coastal regions south of San Francisco Bay. Short migrations occur between summer and winter ranges, and migrants may be found outside the normal range. Roosting habitat includes forests and woodlands from sea level up through mixed conifer forests. Western red bat roost primarily in trees (less often in shrubs), typically in edge habitats adjacent to streams, fields, or urban areas. The species prefers roost sites that are protected from above, open below, and located above dark ground-cover. They form nursery colonies, and family groups are known to roost together. Foraging habitat includes grasslands, shrublands, open woodlands and forests, and croplands. Mating occurs in August and September, with delayed fertilization until the following spring, and young born from late May through early July (CDFW 1990i).

Western red bat has a moderate potential to occur within the Study Area due to the presence of suitable habitat and reported occurrences within two and five miles (3.2 and eight kilometers) of the Study Area. Implementation of Mitigation Measures MM AES-1, MM AES-2, MM BIO-1 and MM BIO-15 would reduce potential impacts to western red bat to: *Less than Significant with Mitigation Incorporated*.

MM BIO-15: Special-Status Bats

To minimize and avoid the potential impacts to special-status bats that may occur within the project area, the following general measures will be implemented:

a. Pre-activity roosting special-status bat surveys and an evaluation of roosting habitat suitability for bats will be conducted by a qualified biologist familiar with the species that could potentially occur within the Impact Area. The qualified biologist should, at a minimum have experience conducting roosting bat surveys and be able to identify the presence of guano and urine stains.

b. Any identified roosts of special-status bats will be avoided, and a buffer of up to 100 feet (30 meters) will be established based on-site conditions and at the discretion of the biologist, to ensure that the roosting bats are not disturbed. If a nursery colony is identified, additional measures may be required including a larger buffer, to ensure no disturbance. Such additional measures will be determined and monitored by a qualified biologist.

Hoary Bat (*Lasiurus cinereus*)

Hoary bat is identified by the Western Bat Working Group (WBWG) as Moderate priority. It is a large bat that has a coat of dense, dark brown pelage with a frosted appearance. This species is the most widespread North American bat

and may be found nearly everywhere in California from sea level to 13,200 feet (4,023 meters), although its distribution is patchy in southeastern deserts. It is a common, solitary species that winters along the coast and in southern California, breeds inland and north of the winter range. Hoary bat generally roosts in dense foliage of medium to large trees that are hidden from above, with few branches below, and have ground cover of low reflectivity. This species prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for foraging. Breeding habitat includes all woodlands and forests with medium to large-size trees and dense foliage. Hoary bat mate in the fall in their winter range, with delayed fertilization until the following spring. Young are born from mid-May through early July (CDFW 1990j).

Hoary bat has a moderate potential to occur within the Study Area due to the presence of suitable habitat and reported occurrences within two and five miles (3.2 and eight kilometers) of the Study Area. Implementation of Mitigation Measures MM AES-1, MM AES-2, MM BIO-1 and MM BIO-15 would reduce potential impacts to hoary bat to: *Less than Significant with Mitigation Incorporated*.

San Joaquin Pocket Mouse (*Perognathus inornatus*)

San Joaquin pocket mouse has a NatureServe global and state rarity and imperilment ranking of G2G3 and S2S3. San Joaquin pocket mouse is a small rodent with silky pelage containing no bristles or spines and a tail that is slightly longer than 50% of their total length. The San Joaquin pocket mouse occurs between 1,100 and 2,000foot (35 to 609 meter) elevation, spanning through the San Joaquin Valley, Delta, Sacramento Valley through Colusa County, and portions of the southern Coast Ranges. Habitat includes shrubby ridge tops and hillsides in dry, open grasslands or scrub areas with friable soils. Young are born and raised in burrows in the spring and early summer.

San Joaquin pocket mouse has a moderate potential to occur within the Study Area due to the presence of suitable habitat and reported occurrences within two and five miles (3.2 and eight kilometers) of the Study Area. Implementation of Mitigation Measure MM BIO-1 would reduce potential impacts to San Joaquin pocket mouse to: *Less than Significant with Mitigation Incorporated*.

American Badger (*Taxidea taxus*)

American badger is identified as a CDFW Species of Special Concern. It has a stocky, low-slung body with short, powerful legs, identifiable by its large foreclaws and distinct black and white head markings. American badger is an uncommon solitary species that is widely distributed throughout the state except in the northern North Coast area, from below sea level to over 12,000 ft (3,657 meters). This species inhabits a variety of open, arid habitats but is most abundant in drier open stages of most shrub, forest, and herbaceous habitats with friable soils for burrowing. Home range typically varies in size between 5 and

1,800 acres but can become much larger during breeding season as males locate receptive females. Natal dens are constructed in dry, sandy soil with sparse overstory. Breeding occurs between July and August, with young born in March and April and disperse after three to four months.

American Badger has a moderate potential to occur within the Study Area due to the presence of suitable habitat and reported occurrences within two and five miles (3.2 and eight kilometers) of the Study Area. Implementation of Mitigation Measures MM BIO-1 and MM BIO-16 would reduce potential impacts to American Badger to: *Less than Significant with Mitigation Incorporated*.

MM BIO-16: American Badger

To minimize and avoid the potential impacts to American Badger that may occur within the Study Area, the following measures will be implemented:

a. A qualified biologist shall conduct pre-activity surveys for American badger and dens in suitable habitat within 48 hours prior to the start of soil investigation activities. If there is a lapse in soil investigation activities of two weeks or greater the area shall be resurveyed within 24 hours prior to recommencement of work. Potential American badger dens identified in the project area shall be monitored by the qualified biologist to determine current use.

b. American badger dens determined by the qualified biologist to be occupied during the breeding season (February 15 through June 30) shall be flagged, and ground disturbing activities avoided, within 100 feet (30 meters) of the den to protect adults and nursing young. Buffers may be modified by the qualified biologist, depending on the applicable site conditions and characteristics of the den, and shall not be removed until the qualified biologist has determined that the den is no longer in use.

San Joaquin Kit Fox (*Vulpes macrotis mutica*)

San Joaquin kit fox is listed as Endangered under FESA and Threatened under CESA. It is the smallest canid species in North America, about 32 inches (81 centimeters) in length and 12 inches (30 centimeters) high. Its ears are disproportionately large and has a black-tipped tail. San Joaquin kit fox is endemic to the Central Valley and currently inhabit suitable habitat in the San Joaquin Valley and in surrounding foothills of the Coast Ranges, Sierra Nevada, and Tehachapi Mountains, from southern Kern County north to Contra Costa County. Habitat for San Joaquin kit fox include alkali sink, alkali flat, and grasslands (USFWS 2010c). In the northern part of its range (including San Joaquin, Alameda, and Contra Costa Counties) where most habitat on the valley floor has been eliminated, it now occurs primarily in foothill grassland, valley oak

savanna, and alkali grasslands. The home ranges of San Joaquin kit foxes are extensive and vary by location and is thought to be related to prey abundance. Dens are used for temperature regulation, shelter and protection from adverse weather and predators. Many dens may be used throughout the year, and individuals may change dens often. During September and October, females begin to clean and enlarge natal dens. Mating occurs between December and March, and pups are born in February or March and generally disperse after four or five months.

San Joaquin kit fox has a moderate potential to occur within the Study Area due to the presence of suitable habitat and reported historic occurrences within two and five miles (3.2 and eight kilometers) of the Study Area. Implementation of Mitigation Measures MM AES-2, MM BIO-1 and MM BIO-17 would reduce potential impacts to San Joaquin kit to*: Less than Significant with Mitigation Incorporated.*

MM BIO-17: San Joaquin Kit Fox

To minimize and avoid the potential impacts to San Joaquin kit fox that may occur within the Study Area, the following general measures will be implemented:

a. Prior to any ground disturbance within an Impact Area, a qualified biologist will conduct a pre-activity survey in areas identified in the pre-activity surveys as supporting suitable breeding or denning habitat for San Joaquin kit fox. The surveys will establish the presence or absence of San Joaquin kit foxes and/or suitable dens and evaluate use by kit foxes in accordance with USFWS survey guidelines (U.S. Fish and Wildlife Service 1999).

b. Pre-activity surveys will be conducted within 30 days prior to ground disturbance. The biologist will survey the proposed Impact Area and a 250-foot (76 meter) buffer from the perimeter of the proposed Impact Area to identify San Joaquin kit foxes and/or suitable dens. Adjacent parcels under different land ownership, for which DWR not have access, will not be surveyed. The status of all dens will be determined and mapped. Written results of pre-activity surveys will be submitted to USFWS within 5 working days after survey completion and before the start of ground disturbance.

c. If San Joaquin kit foxes and/or suitable dens are identified within those areas included in the pre-activity survey area, the measures described below will be implemented.

i. If a San Joaquin kit fox den is discovered in the Impact Area, the Impact Area will be moved at a minimum to meet the appropriate buffer distances as described below in subsection (c)(ii).

ii. If dens are identified in the survey area but outside the Impact Area, exclusion zones around each den entrance or cluster of entrances will be demarcated. The configuration of exclusion zones should be circular, with a radius measured outward from the den entrance(s). No covered activities will occur within the exclusion zones. Exclusion zone radii for potential or atypical dens will be at least 50 feet (15 meters) and will be demarcated with four to five flagged stakes. Exclusion zone radii for known dens will be at least 100 feet (30 meters) and will be demarcated with staking and flagging that encircles each den or cluster of dens but does not prevent access to the den by kit fox.

iii. If a natal or pupping den is found within the Impact Area or within 200-feet (61 meters) of the Impact Area boundary, USFWS and CDFW will be notified immediately. The den will not be disturbed or destroyed, depending on the applicable site conditions and characteristics of the den, the soil investigation site may be moved.

SPECIAL-STATUS PLANTS

The following section includes species accounts for each of the special-status plant species that has potential to occur within the Study Area and provides effects determinations relative to the Proposed Project's anticipated impacts. These accounts can be found in Attachment A. For all 79 plant species that have some potential to occur within the Study Area, it was determined that potential impacts relative to the Proposed Project would be "Less Than Significant with Mitigation Incorporated".

Large-flowered fiddleneck (*Amsinckia grandiflora*)

Large-flowered fiddleneck has a CRPR of 1B.1 and is listed as Endangered under FESA and CESA. This species is an annual herb in the forget-me-not family, and it blooms from April through May, and sometimes in March (CNPS 2019). It is endemic to California, and its current range includes the northwestern San Joaquin Valley (CNPS 2019; Jepson Flora Project 2019). It typically grows in cismontane woodland and valley and foothill grassland (CNPS 2019). Large-flowered fiddleneck is threatened by agriculture, development, grazing, non-native plants, trampling and altered fire frequency (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-18 and MM BIO-19 would reduce potential impacts to large-flowered fiddleneck to: *Less than Significant with Mitigation Incorporated*.

MM BIO-18: Botanical Resources

a. All botanical evaluations will be conducted by a qualified botanist, who at a minimum shall have experience conducting floristic field surveys; knowledge of plant taxonomy and plant community ecology and classification; familiarity with the plants of the area, including special-status and locally significant plants; familiarity with the appropriate state and federal statutes related to plants and plant collecting; and experience with analyzing impacts of a project on native plants and communities.

b. A qualified botanist will conduct a habitat assessment to determine whether the habitat is appropriate for special-status plants. If suitable habitat is present, the qualified botanist will conduct a habitat quality assessment to determine the potential for presence of sensitive plant species. The habitat quality assessment will consider factors such as soil type, degree and frequency of previous soil disturbance, abundance of invasive species, and distance from known sensitive plant occurrences. If a qualified botanist determines that special-status plants are likely to occur at a proposed Impact Area, a botanical survey will be conducted within the Impact Area at each soil investigation site. When feasible based on scheduling and property access, the surveys will be conducted at proper times of year when special-status and locally significant plants are both evident and identifiable; will be floristic in nature, ensuring that all plants observed are identified to a level sufficient for determining rarity, and will be conducted using systematic field techniques in all habitats of the site to ensure thorough coverage of potential Impact Areas.

c. Any special-status plant species present within 33 feet (10 meters) of an Impact Area will be flagged, or mapped using a GPS, for avoidance. A qualified botanist will establish an appropriate buffer. During field activities avoidance of the buffered area will be enforced by an environmental monitor to ensure that special-status plants are avoided to the maximum extent practicable.

d. If special-status plant species (excluding listed species) are present within the Impact Area and impacts cannot practicably be avoided, a qualified botanist will evaluate the following criteria to ensure these impacts are less than significant:

    i. the total range and distribution of the species,

    ii. local population abundance,

    iii. approximate number of individuals potentially impacted,

    iv. area of habitat potentially impacted,

v. life history of the species (annual versus perennial and seedbank dynamics),
vi. species sensitivity and response to disturbance,
vii. species fecundity, and
viii. the probability of population recovery from impacts.

If loss of individuals due to project activities would exceed 2% of the local population or if the particular life history of the plant species indicates that a loss of that scale would threaten the persistence of the local population, or if there are fewer than 10 statewide extant occurrences, the soil investigation will not be allowed to proceed at that location.

MM BIO-19: Botanical Considerations for Vegetation Removal

If access requires minor disturbances to or removal of vegetation, a qualified botanist will be consulted to ensure that no special-status vegetation is significantly impacted.

Bent-flowered fiddleneck (*Amsinckia lunaris*)

Bent-flowered fiddleneck has a CRPR of 1B.2, but it is not listed under FESA or CESA. This species is an annual herb in the forget-me-not family, and it blooms from March to June (CNPS 2019). It is endemic to California, and its current range includes the North Coast Ranges, southwest Sacramento Valley, Central Coast, and San Francisco Bay Area (CNPS 2019, Jepson Flora Project 2019). It typically grows in coastal bluff scrub, cismontane woodland, and valley and foothill grassland (CNPS 2019). The microhabitat for bent-flowered fiddleneck includes gravelly slopes, grassland, and openings in woodland, often on serpentine soils (Jepson Flora Project 2019). Bent-flowered fiddleneck is threatened by development, competition from non-native plants, and mining (CNPS 2019). Potentially suitable habitat for bent-flowered fiddleneck is present within the Study Area. However, this species has low potential to occur within the Study Area because the Study Area is located outside of its known range so potential impacts would be *less than significant*.

Implementation of Mitigation Measures MM BIO-18 and MM BIO-19 would further avoid, minimize and/or reduce the potential for impacts to Bent-flowered fiddleneck.

California androsace (*Androsace elongata* ssp. *acuta*)

California androsace has a CRPR of 4.2, but it is not listed under FESA or CESA. This species is an annual herb in the primrose family, and it blooms from March to June (CNPS 2019). The current range of this species in California includes

the Inner North Coast Ranges, Cascade Ranges, southern Sierra Nevada Foothills, Central Valley, San Francisco Bay Area, Inner South Coast Ranges, South Coast, Western Transverse Ranges, San Bernardino Mountains, and Peninsular Ranges (CNPS 2019, Jepson Flora Project 2019). It typically grows in chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, and valley and foothill grassland (CNPS 2019). The microhabitat for California androsace includes dry, grassy slopes (Jepson Flora Project 2019). Threats to this species include grazing, trampling, non-native plants, alteration of fire regimes, recreational activities, and wind energy development (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-18 and MM BIO-19 would reduce potential impacts to California androsace to: *Less than Significant with Mitigation Incorporated*.

Depauperate milk-vetch (*Astragalus pauperculus*)

Depauperate milk-vetch has a CRPR of 4.3, but it is not listed under FESA or CESA. This species is an annual herb in the pea family, and it blooms from March through June (CNPS 2019). It is endemic to California, and its current range includes the Cascade Range, northern Sierra Nevada Foothills, and northern Sacramento Valley (CNPS 2019; Jepson Flora Project 2019). It typically grows in chaparral, cismontane woodland, and valley and foothill grassland (CNPS 2019). The microhabitat for depauperate milk-vetch includes vernally mesic sites, stony flats and shallow depressions, and thin soils of red sand or clay of volcanic origin (CDFW 2019). Depauperate milk-vetch is threatened by vehicles and non-native plants (CNPS 2019). Potentially suitable habitat for depauperate milk-vetch is present within the Study Area. However, this species has low potential to occur within the Study Area because the Study Area is located on the edge of its known range.

Implementation of Mitigation Measures MM BIO-18 and MM BIO-19 would reduce potential impacts to depauperate milk-vetch to: *Less than Significant with Mitigation Incorporated*.

Ferris' milk-vetch (*Astragalus tener* var*. ferrisiae*)

Ferris's milk-vetch has a CRPR of 1B.1, but it is not listed under FESA or CESA. This species is an annual herb in the pea family, and it blooms from April through May (CNPS 2019). It is endemic to California, and its current range includes the Sacramento Valley (CNPS 2019; Jepson Flora Project 2019). It is presumed extirpated from Solano County. It typically grows in meadows and seeps and valley and foothill grasslands (CNPS 2019). The microhabitat for Ferris's milk-vetch includes subalkaline flats on overflow land in the Central Valley, usually on dry, adobe soil (CDFW 2019). The majority of this species' habitat has been impacted by agriculture (CNPS 2019). This species has moderate potential to

occur within the Study Area based on the presence of potentially suitable habitat therefore potential impacts would be *Less than Significant with Mitigation Incorporated*.

Implementation of mitigation measures MM BIO-1b, MM BIO-18 and MM BIO-19 would reduce potential impacts to Ferris' milk-vetch to: *Less than Significant with Mitigation Incorporated*.

Alkali milk-vetch (*Astragalus tener* var*. tener*)

Alkali milk-vetch has a CRPR of 1B.1, but it is not listed under FESA or CESA. This species is an annual herb in the pea family, and it blooms from March through June (CNPS 2019). It is endemic to California, and its current range includes the southern Sacramento Valley, northern San Joaquin Valley, eastern San Francisco Bay Area, and Inner South Coast Ranges (CNPS 2019; Jepson Flora Project 2019). It is presumed extirpated from Contra Costa, Monterey, San Benito, Santa Clara, San Francisco, San Joaquin, Sonoma, and Stanislaus counties. It typically grows in alkali playas, valley and foothill grasslands, and vernal pools, often on adobe soils (CNPS 2019). The microhabitat for Ferris's milk-vetch includes low ground, alkali flats, and flooded lands (CDFW 2019). Alkali milk-vetch is threatened by development, competition from non-native plants, and habitat destruction, especially agricultural conversion (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to Alkali milk-vetch to: *Less than Significant with Mitigation Incorporated*.

Heartscale (*Atriplex cordulata* var. *cordulata*)

Heartscale has a CRPR of 1B.2, but it is not listed under FESA or CESA. This species is an annual herb in the goosefoot family that blooms from April through October (CNPS 2019). It is endemic to California, and its current range includes the Central Valley (CNPS 2019; Jepson Flora Project 2019). It is presumed extirpated from San Joaquin, Stanislaus, and Yolo counties. It typically grows on saline or alkaline soils in chenopod scrub, meadows and seeps, and sandy valley and foothill grassland habitats (CNPS 2019). The microhabitat for heartscale includes sandy soils in alkaline flats and scalds in the Central Valley (CDFW 2019). Heartscale is threatened by competition from non-native plants (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would reduce potential impacts to heartscale to: *Less than Significant with Mitigation Incorporated*.

Crownscale (*Atriplex coronata* var*. coronata*)

Crownscale has a CRPR of 4.2, but it is not listed under FESA or CESA. This species is an annual herb in the goosefoot family that blooms from March through October (CNPS 2019). It is endemic to California, and its current range includes the southern Sacramento Valley, the San Joaquin Valley, and the eastern Inner South Coast Ranges (CNPS 2019; Jepson Flora Project 2019). It typically grows in chenopod scrub, valley and foothill grassland, and vernal pool habitats (CNPS 2019). The microhabitat for this species includes fine, alkaline soils, and clay soils (CDFW 2019). Threats to this species have not been identified (CNPS 2019, CDFW 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would reduce potential impacts to crownscale to: *Less than Significant with Mitigation Incorporated*.

Lost Hills crownscale (*Atriplex coronata* var*. vallicola*)

Lost Hills crownscale has a CRPR of 1B.2 but is not listed under FESA or CESA. This species is an annual herb in the goosefoot family that blooms from April through August (CNPS 2019). It is endemic to California, and its current range includes the San Joaquin Valley (CNPS 2019; Jepson Flora Project 2019). It typically grows in chenopod scrub, valley and foothill grassland, and vernal pool habitats (CNPS 2019). The microhabitat for this species includes fine, alkaline soils (CDFW 2019). Threats to this species include grazing, vehicles, agricultural conversion, hydrological alterations, and energy development. Occurrences of this species in Alameda County are thought to be misidentifications of *A. coronata* var. *coronata* (R. Preston, pers. comm.). If correct, the Study Area is outside the range of this species, however for the purposes of this evaluation, this species will be treated as having a moderate potential to occur due to the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to Lost Hills crownscale to: *Less than Significant with Mitigation Incorporated*.

Brittlescale (*Atriplex depressa*)

Brittlescale has a CRPR of 1B.2, but it is not listed under FESA or CESA. This species is an annual herb in the goosefoot family, and it blooms from April through October (CNPS 2019). It is endemic to California, and its current range includes the Central Valley (CNPS 2019; Jepson Flora Project 2019). It typically grows in chenopod scrub, meadows and seeps, playas, valley and foothill grasslands, and vernal pools (CNPS 2019). The microhabitat for brittlescale includes alkaline and clay soils (CDFW 2019). Brittlescale is threatened by development, grazing, and trampling (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to brittlescale to: *Less than Significant with Mitigation Incorporated*.

Lesser saltscale (*Atriplex minuscula*)

Lesser saltscale has a CRPR of 1B.1, but it is not listed under FESA or CESA. This species is an annual herb in the goosefoot family, and it blooms from May through October (CNPS 2019). It is endemic to California, and its current range includes the San Joaquin Valley and San Francisco Bay Area (CNPS 2019; Jepson Flora Project 2019). It typically grows in chenopod scrub, playas, valley and foothill grassland, and vernal pools (CNPS 2019). Threats to lesser saltscale include agriculture and solar energy development (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to lesser saltscale to: *Less than Significant with Mitigation Incorporated*.

Vernal pool smallscale (*Atriplex persistens*)

Vernal pool smallscale has a CRPR of 1B.2, but it is not listed under FESA or CESA. This species is an annual herb in the goosefoot family, and it blooms from June through October (CNPS 2019). It is endemic to California, and its current range includes the Central Valley (CNPS 2019; Jepson Flora Project 2019). It is presumed extirpated from Stanislaus County. It typically grows in alkaline vernal pools (CNPS 2019). Threats to vernal pool smallscale include agriculture and flood control activities (CNPS 2019). Potentially suitable habitat for vernal pool smallscale is present within the Study Area. However, this species has low potential to occur within the Study Area because the Study Area is located on the edge of its known range so potential impacts would be *less than significant*.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would further avoid, minimize and/or reduce the potential for impacts to vernal pool smallscale.

Big-scale balsamroot (*Balsamorhiza macrolepis*)

Big-scale balsamroot has a CRPR of 1B.2, but it is not listed under FESA or CESA. This species is a perennial herb in the sunflower family, and it blooms from March through June (CNPS 2019). Its current range includes the Sierra Nevada Foothills, central High Sierra Nevada, Sacramento Valley, Inner North Coast Ranges, and eastern San Francisco Bay Area (CNPS 2019; Jepson Flora Project 2019). It typically grows in chaparral, cismontane woodland, and valley and foothill grasslands (CNPS 2019). The microhabitat for big-scale balsamroot includes some serpentine sites (CDFW 2019). Current threats to this species include grazing, residential and recreational development, energy development,

and non-native plants (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-18 and MM BIO-19 would reduce potential impacts to big-scale balsamroot to: *Less than Significant with Mitigation*.

Big tarplant (*Blepharizonia plumosa*)

Big tarplant has a CRPR of 1B.1, but it is not listed under FESA or CESA. This species is an annual herb in the sunflower family, and it blooms from July through October (CNPS 2019). It is endemic to California, and its current range includes the San Joaquin Valley and San Francisco Bay Area (CNPS 2019; Jepson Flora Project 2019). It is presumed extirpated from Solano County. It typically grows in valley and foothill grasslands (CNPS 2019). The microhabitat for big tarplant includes dry hills and plains in annual grassland with clay to clay-loam soils, often in burned areas (CDFW 2019). Historical occurrences of this species were likely extirpated by agriculture and non-native plants. Current threats to this species include urbanization, disking, residential development, and non-native plants (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-18 and MM BIO-19 would reduce potential impacts to big tarplant to: *Less than Significant with Mitigation Incorporated*.

Watershield (*Brasenia schreberi*)

Watershield has a CRPR of 2B.3, but it is not listed under FESA or CESA. This species is a perennial rhizomatous herb in the fanwort family, and it blooms from June through September (CNPS 2019). The current range of this species in California includes the Klamath Ranges, North Coast Ranges, High Cascades Range, High Sierra Nevada, Modoc Plateau (except the Warner Mountains), and Sacramento Valley (CNPS 2019; Jepson Flora Project 2019). It typically grows in freshwater marshes and swamps, including both natural and artificial water bodies (CNPS 2019, CDFW 2019). Threats to this species have not been identified (CNPS 2019, CDFW 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would reduce potential impacts to watershield to: *Less than Significant with Mitigation Incorporated*.

Valley Brodiaea (*Brodiaea rosea* ssp. *vallicola*)

Valley brodiaea has a CRPR of 4.2, but it is not listed under FESA or CESA. This species is a perennial bulbiferous herb in the brodiaea family, and it blooms from April through May, and sometimes in June. This species is endemic to California,

and its current known range includes the eastern Sacramento Valley. It typically grows in vernal pools and swales within valley and foothill grasslands. The microhabitat for valley brodiaea includes old alluvial terraces, and silty, sandy, or gravelly loam. Threats to valley brodiaea include urbanization (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to valley brodiaea to: *Less than Significant with Mitigation Incorporated*.

Mt. Diablo fairy-lantern (*Calochortus pulchellus*)

Mt. Diablo fairy-lantern has a CRPR of 1B.2, but it is not listed under FESA or CESA. This species is a perennial herb in the lily family, and it blooms from April through June (CNPS 2019). This species is endemic to California, and its current known range includes the San Francisco Bay Area (CNPS 2019; Jepson Flora Project 2019). It typically grows in chaparral, cismontane woodland, riparian woodland and valley and foothill grassland (CNPS 2019, CDFW 2019). Threats to this species include grazing, urbanization, horticultural collection, and feral pigs (CNPS 2019, CDFW 2019). Suitable habitat for Mt. Diablo fairy lantern is present within the study area. However, this species has low potential to occur within the Study Area because the Study Area is located on the edge of its known range so potential impacts would be *less than significant*.

Implementation of Mitigation Measures MM BIO-18 and MM BIO-19 would further avoid, minimize and/or reduce the potential for impacts to Mt. Diablo fairy lantern.

Bristly sedge (*Carex comosa*)

Bristly sedge has a CRPR of 2B.1, but it is not listed under FESA or CESA. This species is a perennial rhizomatous herb in the sedge family, and it blooms from May through September (CNPS 2019). The current range of this species in California includes the Klamath Ranges, interior North Coast Ranges, High Cascade Range, Central Valley, northern Central Coast, San Francisco Bay Area, and Modoc Plateau (CNPS 2019; Jepson Flora Project 2019). It is presumed extirpated from San Bernardino and San Francisco counties. It typically grows in coastal prairie, marshes and swamps, and valley and foothill grasslands (CNPS 2019). The microhabitat for bristly sedge includes lake margins and other wet places (CDFW 2019). Threats to bristly sedge include marsh drainage and road maintenance (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would reduce potential impacts to bristly sedge to: *Less than Significant with Mitigation Incorporated*.

Lemmon's jewelflower (*Caulanthus lemmonii*)

Lemmon's jewelflower has a CRPR of 1B.2, but it is not listed under FESA or CESA. This species is an annual herb in the mustard family, and it blooms from March through May (CNPS 2019). It is endemic to California, and its current range includes the southwestern San Joaquin Valley, southeastern San Francisco Bay Area, and South Coast Ranges (CNPS 2019; Jepson Flora Project 2019). It typically grows in pinyon and juniper woodland and valley and foothill grassland (CNPS 2019). Threats to this species include development, grazing, and vehicles (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-18 and MM BIO-19 would reduce potential impacts to Lemmon's jewelflower to: *Less than Significant with Mitigation Incorporated*.

Congdon's tarplant (*Centromadia parryi* ssp. *congdonii*)

Congdon's tarplant has a CRPR of 1B.1, but it is not listed under FESA or CESA. This species is an annual herb in the sunflower family, and it blooms from May through October (CNPS 2019). It is endemic to California, and its current range includes the Central Coast, San Francisco Bay Area, and South Coast Ranges (CNPS 2019; Jepson Flora Project 2019). It typically grows in alkaline valley and foothill grasslands (CNPS 2019). Threats to this species include development, grazing, and non-native plants (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-18 and MM BIO-19 would reduce potential impacts to Congdon's tarplant to: *Less than Significant with Mitigation Incorporated*.

Pappose tarplant (*Centromadia parryi* ssp. *parryi*)

Pappose tarplant has a CRPR of 1B.1, but it is not listed under FESA or CESA. This species is an annual herb in the sunflower family, and it blooms from May through November (CNPS 2019). It is endemic to California, and its current range includes the southern North Coast Ranges, southern Sacramento Valley, and northern Central Coast (CNPS 2019; Jepson Flora Project 2019). It typically grows in chaparral, coastal prairie, meadows and seeps, coastal saltmarshes, and valley and foothill grasslands (CNPS 2019). The microhabitat for pappose tarplant includes vernally mesic, often alkaline sites (CDFW 2019). Threats to this species include agriculture, competition from non-native plants, development, grazing, foot traffic, habitat disturbance, and road maintenance (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would reduce potential impacts to pappose tarplant to: *Less than Significant with Mitigation Incorporated*.

Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*)

Parry's rough tarplant has a CRPR of 4.2, but it is not listed under FESA or CESA. This species is an annual herb in the sunflower family, and it blooms from May through October (CNPS 2019). It is endemic to California, and its current range includes the southern Interior North Coast Ranges, Central Valley, and Modoc Plateau (CNPS 2019; Jepson Flora Project 2019). It typically grows in vernal pools and valley and foothill grasslands (CNPS 2019). The microhabitat for Parry's rough tarplant includes alkaline, vernally mesic seeps, sometimes on roadsides (CDFW 2019). Threats to this species include development, habitat alteration and disturbance, grazing, and road maintenance (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to Parry's rough tarplant to: *Less than Significant with Mitigation Incorporated*.

Hispid salty bird's-beak (*Chloropyron molle* ssp. *hispidum*)

Hispid salty bird's beak has a CRPR of 1B.1, but it is not listed under FESA or CESA. This species is an annual hemiparasitic herb in the broomrape family, and it blooms from June through September (CNPS 2019). It is endemic to California, and its current range includes the Central Valley (CNPS 2019; Jepson Flora Project 2019). It typically grows in meadows and seeps, playas, and valley and foothill grassland (CNPS 2019). The microhabitat for hispid salty bird's beak includes alkaline soils (CDFW 2019). Threats to this species include agricultural conversion, development, and grazing (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would reduce potential impacts to hispid salty bird's-beak to: *Less than Significant with Mitigation Incorporated*.

Soft salty bird's-beak (*Chloropyron molle* ssp. *molle*)

Soft salty bird's beak is listed as Endangered under FESA and Rare under CESA, and it has a CRPR of 1B.2. This species is an annual hemiparisitic herb in the broomrape family, and it blooms from June through November (CNPS 2019). It is endemic to California, and its current range includes the northern Central Coast and the Sacramento-San Joaquin Delta region of the Central Valley (CNPS 2019; Jepson Flora Project 2019). It is presumed extirpated from Marin, Sacramento, and Sonoma counties. It typically grows in coastal saltmarshes and

swamps (CNPS 2019). The microhabitat for soft salty bird's beak includes coastal saltmarsh with Distichlis, Salicornia, and Frankenia (CDFW 2019). Threats to this species include non-native plants, erosion, feral pigs, trampling, urbanization, and marsh drainage (CNPS 2019). Potentially suitable habitat for soft salty bird's-beak is present within the Study Area. However, this species has low potential to occur within the Study Area because the Study Area is located on the edge of its known range and there is limited salt-marsh habitat in the Study Area so potential impacts would be *less than significant*.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would further avoid, minimize and/or reduce the potential for impacts to soft bird's-beak.

Palmate-bracted salty bird's-beak (*Chloropyron palmatum*)

Palmate-bracted salty bird's beak is listed as Endangered under FESA and CESA, and it has a CRPR of 1B.1. This species is an annual hemiparisitic herb in the broomrape family, and it blooms from May through October (CNPS 2019). It is endemic to California, and its current range includes the Central Valley (CNPS 2019; Jepson Flora Project 2019). It is presumed extirpated from San Joaquin County. It typically grows on alkaline soils within chenopod scrub and valley and foothill grasslands (CNPS 2019). Palmate-bracted salty bird's beak typically occurs on Pescadero silty clay, which is alkaline, along with Distichlis, Frankenia, and other species characteristic of chenopod scrub (CDFW 2019). This species is threatened by agriculture, urbanization, vehicles, altered hydrology, grazing, and development (CNPS 2019). Potentially suitable habitat for palmate-bracted salty bird's-beak is present within the Study Area. However, this species has low potential to occur within the Study Area because the Study Area is located on the edge of its known range so potential impacts would be *less than significant*.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would further avoid, minimize and/or reduce the potential for impacts to palmate-bracted salty bird's-beak.

Bolander's water-hemlock (*Cicuta maculata* var. *bolanderi*)

Bolander's water-hemlock has a CRPR of 2B.1, but it is not listed under FESA or CESA. This species a perennial herb in the carrot family, and it blooms from July through September (CNPS 2019). The current range of this species in California includes the southern Sacramento Valley, Central Coast, and South Coast (CNPS 2019; Jepson Flora Project 2019). It is presumed extirpated from Santa Barbara County. It typically grows in coastal freshwater or brackish marshes and swamps (CNPS 2019). Threats to Bolander's water-hemlock include development, non-native plants, and hydrological alterations (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would reduce potential impacts to Bolander's water-hemlock to: *Less than Significant with Mitigation Incorporated*.

Slough thistle (*Cirsium crassicaule*)

Slough thistle has a CRPR of 1B.1 but is not listed under FESA or CESA. This species is an annual or perennial herb in the sunflower family, and it blooms from May to August (CNPS 2019). It is endemic to California, and its current range is limited to the San Joaquin Valley (CNPS 2019, Jepson Flora Project 2019). It typically grows in chenopod scrub, marshes and swamps, and riparian scrub (CNPS 2019). The microhabitat for slough thistle includes sloughs, riverbanks, and marshy areas (CDFW 2019). Threats to this species include agriculture and non-native plants (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would reduce potential impacts to slough thistle to: *Less than Significant with Mitigation Incorporated*.

Small-flowered morning-glory (*Convolvulus simulans*)

Small-flowered morning glory has a CRPR of 4.2 but is not listed under FESA or CESA. This species is an annual herb in the morning glory family, and it blooms from March to July (CNPS 2019). The current range of this species in California includes the southern Sierra Foothills, San Joaquin Valley, San Francisco Bay Area, inner and outer South Coast Ranges, South Coast, northern and southern Channel Islands, Western Transverse Ranges, and Peninsular Ranges excluding the San Jacinto Mountains. It typically grows in openings in chaparral, coastal scrub, and valley and foothill grassland (CNPS 2019). The microhabitat for small-flowered morning glory includes wet clay and serpentine ridges (CDFW 2019). Threats to this species include development, vehicle traffic, and non-native plants. Potentially suitable habitat for small-flowered morning-glory is present within the Study Area. However, this species has low potential to occur within the Study Area because the Study Area is located on the edge of its known range so potential impacts would be *less than significant*.

Implementation of Mitigation Measures MM BIO-18 and MM BIO-19 would further avoid, minimize and/or reduce the potential for impacts to small-flowered morning-glory.

Hoover's cryptantha (*Cryptantha hooveri*)

Hoover's cryptantha has a CRPR of 1A but is not listed under FESA or CESA. This species is an annual herb in the borage family, and it blooms from April to May (CNPS 2019). It is endemic to California, and its current range includes the northern and central San Joaquin Valley. It is presumed extirpated in Contra Costa, Madera, and Stanislaus counties, and has not been detected anywhere

within its known range since 1937 (CNPS 2019; Jepson Flora Project 2019). It typically grows in inland dunes and valley and foothill grassland (CNPS 2019). The microhabitat for Hoover's cryptantha includes coarse sand (CDFW 2019). Threats to this species include development and habitat conversion (CDFW 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-18 and MM BIO-19 would reduce potential impacts to Hoover's cryptantha to: *Less than Significant with Mitigation Incorporated*.

Peruvian dodder (*Cuscuta obtusiflora* var. *glandulosa*)

Peruvian dodder has a CRPR of 2B.2 but is not listed under FESA or CESA. This species is an annual parasitic vine in the morning glory family, and it blooms from July to October (CNPS 2019). Its current range in California includes the Central Valley and South Coast, and southern Outer North Coast Ranges; however, the last confirmed sighting of this species in California was in 1948 (CNPS 2019, Jepson Flora Project 2019). It is presumed extirpated from San Bernardino County, and records from Sacramento County are of uncertain identity. It typically grows in marshes and swamps (CNPS 2019). Threats to this species have not been identified (CNPS 2019, CDFW 2019). Potentially suitable habitat for Peruvian dodder present within the Study Area. However, this species has low potential to occur within the Study Area because the Study Area is located outside of its known range so potential impacts would be *less than significant*.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18 and MM BIO-19 would further avoid, minimize and/or reduce the potential for impacts to Peruvian dodder.

Livermore tarplant (*Deinandra bacigalupii*)

Livermore tarplant is listed as Endangered under CESA and has a CRPR of 1B.1 but is not listed under FESA. This species is an annual herb in the sunflower family, and it blooms from June to October (CNPS 2019). It is endemic to California, and its current range includes the northwest San Joaquin Valley (CNPS 2019, Jepson Flora Project 2019). It typically grows in meadows and seeps (CNPS 2019). The microhabitat for Livermore tarplant includes alkaline meadows (CDFW 2019). Threats to this species include urbanization and development (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would reduce potential impacts to Livermore tarplant to: *Less than Significant with Mitigation Incorporated*.

Recurved larkspur (*Delphinium recurvatum*)

Recurved larkspur has a CRPR of 1B.2 but is not listed under FESA or CESA. This species is a perennial herb in the buttercup family, and it blooms from March through June. It is endemic to California, and its current range includes the San Joaquin Valley, southern Inner South Coast Ranges, and western Mojave Desert (CNPS 2019; Jepson Flora Project 2019). It is presumed extirpated from the Sacramento Valley as well as from Butte and Colusa counties (CNPS 2019; Jepson Flora Project 2019). It typically grows in valley and foothill grassland, chenopod scrub, and cismontane woodland. The microhabitat for recurved larkspur includes alkaline soils in valley saltbush and valley chenopod scrub (CDFW 2019). Threats to this species include agricultural conversion, grazing, trampling, and non-native plants. This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-18 and MM BIO-19 would reduce potential impacts to recurved larkspur to: *Less than Significant with Mitigation Incorporated*.

Dwarf downingia (*Downingia pusilla*)

Dwarf downingia has a CRPR of 2B.2 but is not listed under FESA or CESA. This species is an annual herb in the bellflower family, and it blooms from March to May (CNPS 2019). The current range of this species in California includes the southern Outer North Coast Ranges, Inner North Coast Ranges, Sacramento Valley, northern and central San Joaquin Valley, and northern San Francisco Bay Area (CNPS 2019, Jepson Flora Project 2019). It typically grows in valley and foothill grassland and vernal pools (CNPS 2019). The microhabitat for dwarf downingia includes vernal lake and pool margins and a variety of vernal pool types (CDFW 2019). Threats to this species include urbanization, development, agriculture, grazing, non-native plants, vehicles, and industrial forestry. (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat and vernal pools will be avoided so potential impacts would be *less than significant*.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would further avoid, minimize and/or reduce the potential for impacts to dwarf downingia.

Mt. Diablo buckwheat (*Eriogonum truncatum*)

Mt Diablo buckwheat has a CRPR of 1B.1 but is not listed under FESA or CESA. This species is an annual herb in the buckwheat family, and it blooms from April to September, sometimes into December (CNPS 2019). It is endemic to California, and its current range includes the Sacramento-San Joaquin Delta region of the Central Valley (CNPS 2019, Jepson Flora Project 2019). It is presumed extirpated from Solano County. It typically grows in chaparral, coastal scrub, and valley and foothill grassland (CNPS 2019). The microhabitat for Mt.

Diablo buckwheat includes dry, exposed clay or sandy substrates (CDFW 2019). Threats to this species include trampling, non-native plants, and urbanization (CNPS 2019). Potentially suitable habitat for Mt. Diablo buckwheat is present within the Study Area. However, this species has low potential to occur within the Study Area because the Study Area is located on the edge of its known range.

Implementation of Mitigation Measures MM BIO-18 and MM BIO-19 would reduce potential impacts to Mt. Diablo buckwheat to: *Less than Significant with Mitigation Incorporated*.

Jepson's coyote thistle (*Eryngium jepsonii*)

Jepson's coyote-thistle has a CRPR of 1B.2 but is not listed under FESA or CESA. This species is a perennial herb in the carrot family, and it blooms from April to August (CNPS 2019). It is endemic to California, and its current range includes the southern Inner North Coast Ranges, the Sacramento-San Joaquin Delta region of the Central Valley, and the San Francisco Bay Area (CNPS 2019, Jepson Flora Project 2019). It typically grows in valley and foothill grassland and vernal pools (CNPS 2019). The microhabitat for Jepson's coyote-thistle includes clay soils (CDFW 2019). Threats to this species include development (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to Jepson's coyote thistle to: *Less than Significant with Mitigation Incorporated*.

Delta button-celery (*Eryngium racemosum*)

Delta button-celery has a CRPR of 1B.1 and is listed as Endangered under CESA but is not listed under FESA. This species is an annual or sometimes perennial herb in the carrot family, and it blooms from June to October (CNPS 2019). It is endemic to California, and its current range includes the northern Sierra Nevada Foothills and northern San Joaquin Valley (CNPS 2019, Jepson Flora Project 2019). It is presumed extirpated from San Joaquin County. It typically grows in riparian scrub in vernally mesic clay depressions (CNPS 2019). The microhabitat for Delta button-celery includes seasonally inundated floodplains on clay (CDFW 2019). Threats to this species include agriculture, non-native plants, and flood control activities (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would reduce potential impacts to Delta button-celery to: *Less than Significant with Mitigation Incorporated*.

Spiny-sepaled button-celery (*Eryngium spinosepalum*)

Spiny-sepaled button-celery has a CRPR of 1B.2 but is not listed under FESA or CESA. This species is an annual or perennial herb in the carrot family, and it blooms from April to June (CNPS 2019). It is endemic to California, and its current range includes the southern Sierra Nevada Foothills and the San Joaquin Valley (CNPS 2019, Jepson Flora Project 2019). It typically grows in valley and foothill grassland and vernal pools (CNPS 2019). The microhabitat for spiny-sepaled button-celery includes clay soil of granitic origin and vernal pools within grassland (CDFW 2019). Threats to this species include development, grazing, road maintenance, hydrological alterations, and agriculture (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to spiny-sepaled button-celery to: *Less than Significant with Mitigation Incorporated*.

Diamond-petaled California poppy (*Eschscholzia rhombipetala*)

Diamond-petaled California poppy has a CRPR of 1B.1 but is not listed under FESA or CESA. This species is an annual herb in the poppy family, and it blooms from March to April (CNPS 2019). It is endemic to California, and its current range includes the western San Joaquin Valley and eastern San Francisco Bay Area (CNPS 2019, Jepson Flora Project 2019). It is presumed extirpated from Contra Costa, Colusa, and Stanislaus counties. It typically grows in valley and foothill grassland (CNPS 2019). The microhabitat for diamond-petaled California poppy includes alkaline clay slopes and flats (CDFW 2019). Threats to this species include agriculture and grazing (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-18 and MM BIO-19 would reduce potential impacts to diamond-petaled California poppy to: *Less than Significant with Mitigation Incorporated*.

San Joaquin spearscale (*Extriplex joaquinana*)

San Joaquin spearscale has a CRPR of 1B.2 but is not listed under FESA or CESA. This species is an annual herb in the goosefoot family, and it blooms from April to October (CNPS 2019). It is endemic to California, and its current range includes the Inner North Coast Ranges, Central Valley, San Francisco Bay Area, and Inner South Coast Ranges (CNPS 2019, Jepson Flora Project 2019). It is presumed extirpated from Santa Clara, San Joaquin, and Tulare counties. It typically grows in chenopod scrub, meadows and seeps, playas, and valley and foothill grassland (CNPS 2019). The microhabitat for San Joaquin spearscale includes seasonal alkali wetlands or alkali sink scrub (CDFW 2019). Threats to this species include grazing, agriculture, development, and non-native plants

(CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to San Joaquin spearscale to: *Less than Significant with Mitigation Incorporated*.

Stinkbells (*Fritillaria agrestis*)

Stinkbells has a CRPR of 4.2 but is not listed under FESA or CESA. This species is a perennial bulbiferous herb in the lily family, and it blooms from March to June (CNPS 2019). It is endemic to California, and its current range includes the Inner North Coast Ranges, Sierra Nevada Foothills, Central Valley, and Central Western California (CNPS 2019, Jepson Flora Project 2019). It is presumed extirpated from Santa Cruz and San Mateo counties. It typically grows in chaparral, cismontane woodland, pinyon and juniper woodland, and valley and foothill grassland (CNPS 2019). The microhabitat for stinkbells includes non-native grasslands or grassy openings in clay soil, sometimes on serpentine (CDFW 2019). Threats to this species include development, grazing, vehicles, and non-native plants (CNPS 2019). Potentially suitable habitat for stinkbells is present within the Study Area. However, this species has low potential to occur within the Study Area because the Study Area is located on the edge of its known range and contains no serpentine soils.

Implementation of Mitigation Measures MM BIO-18 and MM BIO-19 would reduce potential impacts to stinkbells to: *Less than Significant with Mitigation Incorporated*.

Fragrant fritillary (*Fritillaria liliacea*)

Fragrant fritillary has a CRPR of 1B.2 but is not listed under FESA or CESA. This species is a perennial bulbiferous herb in the lily family, and it blooms from February to April (CNPS 2019). It is endemic to California, and its current range includes the Sacramento Valley and Central Western California (CNPS 2019, Jepson Flora Project 2019). It typically grows in cismontane woodland, coastal prairie, coastal scrub, and valley and foothill grassland (CNPS 2019). The microhabitat for fragrant fritillary includes grassland on various soils though usually on clay, and often on serpentine (CDFW 2019). Threats to this species include grazing, agriculture, urbanization, and non-native plants (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-18 and MM BIO-19 would reduce potential impacts to fragrant fritillary to: *Less than Significant with Mitigation Incorporated*.

Boggs Lake hedge-hyssop (*Gratiola heterosepala*)

Boggs Lake hedge-hyssop is listed as Endangered under CESA and has a CRPR of 1B.2 but is not listed under FESA. This species is an annual herb in the plantain family, and it blooms from April to August (CNPS 2019). The current range of this species in California includes the Inner North Coast Ranges, Cascade Ranges, northern and central Sierra Nevada Foothills, Central Valley, and the Modoc Plateau (CNPS 2019, Jepson Flora Project 2019). It typically grows in lake margins, marshes and swamps, and vernal pools (CNPS 2019). The microhabitat for Boggs Lake hedge-hyssop includes clay soils in vernal pools or lake margins (CDFW 2019). Threats to this species include agriculture, development, grazing, trampling, and vehicles (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to Boggs Lake hedge-hyssop to: *Less than Significant with Mitigation Incorporated*.

Diablo helianthella (Helianthella castanea)

Diablo helianthella has a CRPR of 1B.2 but is not listed under FESA or CESA. This species is a perennial herb in the sunflower family, and it blooms from March to June (CNPS 2019). It is endemic to California, and its current range includes the northern Central Coast and northern San Francisco Bay Area (CNPS 2019, Jepson Flora Project 2019). It is presumed extirpated from Marin and San Francisco counties. It typically grows in broadleafed upland forest, chaparral, cismontane woodland, coastal scrub, riparian woodland, and valley and foothill grassland (CNPS 2019). The microhabitat for Diablo helianthella includes interfaces between chaparral and oak woodland in rocky, azonal soils, often in partial shade (CDFW 2019). Threats to this species include urbanization, grazing, fire suppression, road maintenance, recreational activities, and non-native plants (CNPS 2019). This species has low potential to occur within the Study Area based on the presence of marginally suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to Diablo helianthella to: *Less than Significant with Mitigation Incorporated*.

Brewer's western flax (*Hesperolinon breweri*)

Brewer's western flax has a CRPR of 1B.2 but is not listed under FESA or CESA. This species is an annual herb in the flax family, and it blooms from May to July (CNPS 2019). It is endemic to California, and its current range includes the southern Inner North Coast Ranges, northwestern San Joaquin Valley, and northeastern San Francisco Bay Area (CNPS 2019, Jepson Flora Project 2019). It typically grows in chaparral, cismontane woodland, and valley and foothill grassland (CNPS 2019). The microhabitat for Brewer's western flax

includes rocky serpentine soil within chaparral and grasslands (CDFW 2019). Threats to this species include development and the construction of Los Vaqueros Reservoir (CNPS 2019). This species has low potential to occur within the Study Area based on the presence of marginally suitable habitat so potential impacts would be *less than significant*.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would further avoid, minimize and/or reduce the potential for impacts to Brewer's western flax.

Hogwallow starfish (*Hesperevax caulescens*)

Hogwallow starfish has a CRPR of 4.2 but is not listed under FESA or CESA. This species is an annual herb in the sunflower family, and it blooms from March to June (CNPS 2019). It is endemic to California, and its current range includes the Inner North Coast Ranges, Cascade Range Foothills, northern and southern Sierra Nevada Foothills, Central Valley, and Outer South Coast Ranges (CNPS 2019, Jepson Flora Project 2019). It is presumed extirpated from Napa and San Diego counties. It typically grows in valley and foothill grassland and vernal pools (CNPS 2019). The microhabitat for hogwallow starfish includes clay soils and mesic sites (CDFW 2019). Threats to this species include development, agriculture, and overgrazing (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to hogwallow starfish to: *Less than Significant with Mitigation Incorporated*.

Woolly rose-mallow (*Hibiscus lasiocarpos* var. *occidentalis*)

Woolly rose-mallow has a CRPR of 1B.1 but is not listed under FESA or CESA. This species is a perennial rhizomatous herb in the mallow family, and it blooms from June to September (CNPS 2019). It is endemic to California, and its current range includes the Cascade Range Foothills, central and southern Sacramento Valley, and the Sacramento-San Joaquin Delta region of the Central Valley (CNPS 2019, Jepson Flora Project 2019). It typically grows in marshes and swamps (CNPS 2019). The microhabitat for woolly rose-mallow includes moist, freshwater-soaked river banks and low peat islands in sloughs; it can also occur on riprap and levees (CDFW 2019). Threats to this species include habitat disturbance, development, agriculture, recreational activities, and channelization of the Sacramento River and its tributaries. It is also threatened by weed control measures and erosion (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would reduce potential impacts to wooly rose-mallow to: *Less than Significant with Mitigation Incorporated*.

Carquinez goldenbush (*Isocoma arguta*)

Carquinez goldenbush has a CRPR of 1B.1 but is not listed under FESA or CESA. This species is a perennial shrub in the sunflower family, and it blooms from August to December (CNPS 2019). It is endemic to California, and its current range includes the southern Sacramento Valley (CNPS 2019, Jepson Flora Project 2019). It typically grows in alkaline valley and foothill grassland (CNPS 2019). The microhabitat for Carquinez goldenbush includes alkaline soils, flats, and lower hills, on low benches near drainages and on tops and sides of mounds in swale habitat (CDFW 2019). Threats to this species include grazing, trampling, development and agriculture (CNPS 2019). Potentially suitable habitat for Carquinez goldenbush is present within the Study Area. However, this species has low potential to occur within the Study Area because the Study Area is located on the edge of its known range.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would reduce potential impacts to Carquinez goldenbush to: *Less than Significant with Mitigation Incorporated*.

Northern California black walnut (*Juglans hindsii*)

Northern California black walnut has a CRPR of 1B.1 but is not listed under FESA or CESA. This species is a perennial deciduous tree in the walnut family, and it blooms from April to May (CNPS 2019). It is endemic to California but has been used widely as rootstock for the English walnut (*J. regia*) with which it readily hybridizes, as well as in horticultural plantings, and is considered naturalized throughout much of its present range. Its historic range includes the southern Inner North Coast Ranges, southern Sacramento Valley, northern San Joaquin Valley, and San Francisco Bay Area (CNPS 2019, Jepson Flora Project 2019), but only three, possibly four extant occurrences in Contra Costa, Sacramento, and Napa counties have been confirmed to occur prior to extensive European settlement of California, and only these have generally been accepted as indigenous. Only one of these occurrences is considered a viable population (Potter, et al. 2018). It is presumed extirpated from Sacramento, Solano, and Yolo counties. It typically grows in riparian forest and riparian woodland (CNPS 2019). The microhabitat for Northern California black walnut includes deep alluvial soil associated with creeks or streams (CDFW 2019). Threats to this species include hybridization with orchard trees, urbanization, and conversion to agriculture (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would reduce potential impacts to Northern California black walnut to: *Less than Significant with Mitigation Incorporated*.

Contra Costa goldfields (*Lasthenia conjugens*)

Contra Costa goldfields is listed as Endangered under FESA and has a CRPR of 1B.1 but is not listed under CESA. This species is an annual herb in the sunflower family, and it blooms from March to June (CNPS 2019). It is endemic to California, and its current range includes the southern Sacramento Valley, Central Coast, and San Francisco Bay Area. It was formerly found in the North Coast, Outer North Coast Ranges, and South Coast (CNPS 2019, Jepson Flora Project 2019). It is presumed extirpated from Mendocino, Santa Barbara, and Santa Clara counties. It typically grows in cismontane woodland, playas, valley and foothill grassland, and vernal pools (CNPS 2019). The microhabitat for Contra Costa goldfields includes vernal pools, swales, and low depressions in open grassy areas (CDFW 2019). Threats to this species include development, habitat alteration, hydrological alterations, overgrazing, and non-native plants (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to Contra Costa goldfields to: *Less than Significant with Mitigation Incorporated*.

Ferris' goldfields (*Lasthenia ferrisiae*)

Ferris' goldfields has a CRPR of 4.2, but is not listed under FESA or CESA. This species is an annual herb in the sunflower family, and it blooms from February to May (CNPS 2019). It is endemic to California, and its current range includes the Sacramento Valley and San Joaquin Valley (CNPS 2019, Jepson Flora Project 2019). It typically grows in vernal pools (CNPS 2019). The microhabitat for Ferris' goldfields includes alkaline clay soils (CDFW 2019). Threats to this species include development, agriculture, vehicles, and foot traffic (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to Ferris' goldfields to: *Less than Significant with Mitigation Incorporated*.

Coulter's goldfields (*Lasthenia glabrata* ssp. *coulteri*)

Coulter's goldfields has a CRPR of 1B.1, but is not listed under FESA or CESA. This species is an annual herb in the sunflower family, and it blooms from February to June (CNPS 2019). The current range of this species in California includes the Inner North Coast Ranges, southern Sierra Nevada Foothills, Tehachapi Mountains Area, the Central Valley, Central Western California, the South Coast, northern Channel Islands, Peninsular Ranges, and western Mojave Desert (CNPS 2019, Jepson Flora Project 2019). It is presumed extirpated from Kern, Los Angeles, and San Bernardino counties. It typically grows in marshes and swamps, playas, and vernal pools (CNPS 2019). The microhabitat for

Coulter's goldfields includes alkaline soils, playas, sinks, and grasslands (CDFW 2019). Threats to this species include urbanization, agricultural development, road maintenance, foot traffic, and drought (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to Coulter's goldfields to: *Less than Significant with Mitigation Incorporated*.

Delta tule pea (*Lathyrus jepsonii* var. *jepsonii*)

Delta tule pea has a CRPR of 1B.2 but is not listed under FESA or CESA. This species is a perennial herb in the pea family, and it blooms from May to July (CNPS 2019). It is endemic to California, and its current range includes the Sacramento Valley and San Joaquin Valley (CNPS 2019, Jepson Flora Project 2019). It typically grows in marshes and swamps (CNPS 2019). The microhabitat for Delta tule pea includes freshwater and brackish marshes, usually on marsh and slough edges (CDFW 2019). Threats to this species include agriculture, water diversions, and erosion (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would reduce potential impacts to Delta tule pea to: *Less than Significant with Mitigation Incorporated*.

Legenere (*Legenere limosa*)

Legenere has a CRPR of 1B.1 but is not listed under FESA or CESA. This species is an annual herb in the bellflower family, and it blooms from April to June (CNPS 2019). It is endemic to California, and its current range includes the southern North Coast Ranges, southern Sacramento Valley, northern San Joaquin Valley, and San Francisco Bay Area (CNPS 2019, Jepson Flora Project 2019). It is presumed extirpated from Stanislaus County. It typically grows in vernal pools (CNPS 2019). The microhabitat for legenere includes beds of vernal pools (CDFW 2019). Threats to this species include grazing, road widening, non-native plants, and development (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to legenere to: *Less than Significant with Mitigation Incorporated*.

Heckard's pepper-grass (*Lepidium latipes* var*. heckardii*)

Heckard's pepper-grass has a CRPR of 1B.2 but is not listed under FESA or CESA. This species is an annual herb in the mustard family, and it blooms from March to May (CNPS 2019). It is endemic to California, and its current range includes the North Coast, North Coast Ranges, Central Valley, Central Coast, San Francisco Bay Area, Inner South Coast Ranges, and South Coast (CNPS 2019, Jepson Flora Project 2019). It typically grows in valley and foothill grassland (CNPS 2019). The microhabitat for Heckard's pepper-grass includes alkaline soils in grassland and sometimes vernal pool edges (CDFW 2019). Threats to this species include disking for fire protection, trampling, and grazing (CDFW 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to Heckard's pepper-grass to: *Less than Significant with Mitigation Incorporated*.

Mason's lilaeopsis (*Lilaeopsis masonii*)

Mason's lilaeopsis has a CRPR of 1B.2 and is listed as Rare under CESA. It is not listed under FESA. This species is a perennial rhizomatous herb in the carrot family, and it blooms from April to November (CNPS 2019). It is endemic to California, and its current range includes the southern Sacramento Valley, northern San Joaquin Valley, Central Coast, and northeastern San Francisco Bay Area (CNPS 2019, Jepson Flora Project 2019). It typically grows in marshes and swamps and riparian scrub (CNPS 2019). The microhabitat for Mason's lilaeopsis includes tidal zones in muddy or silty soil formed through river deposition or river bank erosion. It can be found in both brackish or freshwater (CDFW 2019). Threats to this species include erosion, channel stabilization, development, flood control projects, recreation, agriculture, shading that results from marsh succession, and competition with non-native plants (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, MM BIO-19 and MM BIO-20 would reduce potential impacts to Mason's lilaeopsis to: *Less than Significant with Mitigation Incorporated*.

MM BIO-20: Botanical Avoidance Zones

> Soil investigation activities will not be conducted within the intertidal zone of rivers or sloughs, as well as on in-channel islands, or shoals. If work in these areas is necessary, the Impact Area will be surveyed by a qualified botanist during tidal conditions that expose the intertidal area where Delta mudwort or Mason's lilaeopsis would occur. If Delta mudwort or Mason's lilaeopsis are identified, they will be flagged or mapped with a GPS for avoidance.

Delta mudwort (*Limosella australis*)

Delta mudwort has a CRPR of 2B.1 but is not listed under FESA or CESA. This species is a perennial stoloniferous herb in the figwort family, and it blooms from May to August (CNPS 2019). The current range of this species in California includes the Sacramento-San Joaquin Delta region of the Central Valley, and the Central Coast (CNPS 2019, Jepson Flora Project 2019). It typically grows in marshes and swamps and riparian scrub (CNPS 2019). The microhabitat for delta mudwort includes mud banks in marshy or scrubby riparian associations (CDFW 2019). Threats to this species include stream bank alteration, levee maintenance, erosion, recreational activities, and foot traffic (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, MM BIO-19 and MM BIO-20 would reduce potential impacts to Delta mudwort to: *Less than Significant with Mitigation Incorporated*.

Showy golden madia (*Madia radiata*)

Showy golden madia has a CRPR of 1B.1, but it is not listed under FESA or CESA. This species is an annual herb in the sunflower family, and it blooms from March through May (CNPS 2019). It is endemic to California, and its current range includes the San Joaquin Valley, San Francisco Bay Area, and Inner South Coast Ranges (CNPS 2019; Jepson Flora Project 2019). It typically grows in cismontane woodland and valley and foothill grassland (CNPS 2019). The microhabitat for showy golden madia includes adobe clay soils in grassland and among shrubs (CDFW 2019). Threats to this species include grazing and non-native species (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-18 and MM BIO-19 would reduce potential impacts to showy golden madia to: *Less than Significant with Mitigation Incorporated*.

Little mousetail (*Myosurus minimus* ssp. *apus*)

Little mousetail has a CRPR of 3.1, but it is not listed under FESA or CESA. This species is an annual herb in the buttercup family, and it blooms from March through June (CNPS 2019). Its current range in California includes the South Coast, Peninsular Ranges, Mojave Desert, Tehachapi Mountains Area, Inner North Coast Ranges, and the Central Valley (CNPS 2019). It typically grows in valley and foothill grassland and vernal pools (CNPS 2019). The microhabitat for little mousetail includes alkaline soils (CDFW 2019). Threats to this species include vernal pool habitat loss, grazing, development, and agriculture (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to little mousetail to: *Less than Significant with Mitigation Incorporated*.

Hoary navarretia (*Navarretia eriocephala*)

Hoary navarretia has a CRPR of 4.3 but it is not listed under FESA or CESA. This species is an annual herb in the phlox family, and it blooms from May to June (CNPS 2019). It is found in the Sacramento Valley, the northern and central Sierra Nevada Foothills, Inner North Coast Ranges, and the eastern San Francisco Bay Area (CNPS 2019; Jepson Flora Project 2019). It typically grows in cismontane woodland and valley and foothill grassland (CNPS 2019). The microhabitat for hoary navarretia includes vernally mesic sites (CDFW 2019). Threats to this species have not been identified (CNPS 2019). Potentially suitable habitat for hoary navarretia is present within the Study Area. However, this species has low potential to occur within the Study Area because the Study Area is located on the edge of its known range so potential impacts would be *less than significant*.

Implementation of Mitigation Measures MM BIO-18 and MM BIO-19 would further avoid, minimize and/or reduce the potential for impacts to hoary navarretia.

Tehama navarretia (*Navarretia heterandra*)

Tehema navarretia has a CRPR of 1B.1 but it is not listed under FESA or CESA. This species is an annual herb in the phlox family, and it blooms from April to June (CNPS 2019). It is found in the Sacramento Valley, the northern Sierra Foothills, and the North Coast Ranges (CNPS 2019; Jepson Flora Project 2019). It typically grows in valley and foothill grassland (CNPS 2019). The microhabitat for Tehema navarretia is mesic sites in grassland or vernal pools (Calflora 2018; CNPS 2018). There are no listed threats to this species (CNPS 2019). Potentially suitable habitat for Tehema navarretia is present within the Study Area. However, this species has low potential to occur within the Study Area because the Study Area is located on the edge of its known range and vernal pools will be avoided so potential impacts would be *less than significant*.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 19 would further avoid, minimize and/or reduce the potential for impacts to Tehema navarretia.

Baker's navarretia (*Navarretia leucocephala* ssp. *bakeri*)

Baker’s navarretia has a CRPR of 1B.1 but it is not listed under FESA or CESA. This species is an annual herb in the phlox family, and it blooms from April to July (CNPS 2019). It is endemic to California, and its current range includes the Klamath Ranges, North Coast Ranges, High Cascades Range, western Sacramento Valley, and northern San Francisco Bay Area (CNPS 2019; Jepson Flora Project 2019). It typically grows in cismontane woodland, meadows and

seeps, vernal pools, valley and foothill grassland, and lower montane coniferous forest (CNPS 2019). The microhabitat for Baker's navarretia is vernal pools and swales with adobe or alkaline soils (CDFW 2019). Threats to this species include development, habitat alteration, road construction, agriculture, and potentially non-native plants (CNPS 2019). Potentially suitable habitat for Baker's navarretia is present within the Study Area. However, this species has low potential to occur within the Study Area because the Study Area is located on the edge of its known range so potential impacts would be *less than significant*.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18 and MM BIO-19 would further avoid, minimize and/or reduce the potential for impacts to Baker's navarretia.

Adobe navarretia (*Navarretia nigelliformis* ssp. *nigelliformis*)

Adobe navarretia has a CRPR of 4.2 but is not listed under FESA or CESA. This species is an annual herb in the phlox family, and it blooms from April to June (CNPS 2019). It is endemic to California, and its current range includes the Inner North Coast Ranges, Sierra Nevada Foothills, Tehachapi Mountains Area, the Central Valley, and South Coast Ranges (CNPS 2019, Jepson Flora Project 2019). It typically grows in valley and foothill grassland and vernal pools (CNPS 2019). The microhabitat for adobe navarretia includes clay soils and sometimes serpentine (CDFW 2019). Threats to this species include grazing (CNPS 2019). Potentially suitable habitat for adobe navarretia is present within the Study Area. However, this species has low potential to occur within the Study Area because the Study Area is located on the edge of its known range and vernal pools will be avoided so potential impacts would be *less than significant*.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would further avoid, minimize and/or reduce the potential for impacts to adobe navarretia.

Shining navarretia (*Navarretia nigelliformis* ssp. *radians*)

Shining navarretia has a CRPR of 1B.2 but it is not listed under FESA or CESA. This species is an annual herb in the phlox family, and it blooms from April to July, and sometimes in March (CNPS 2019). It is endemic to California, and its current range includes the Central Valley, southern Sierra Nevada Foothills, and South Coast Ranges (CNPS 2019, Jepson Flora Project 2019). It typically grows in cismontane woodland, vernal pools, and valley and foothill grassland. Threats to this species include development, grazing, and competition from non-native plants (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to shining navarretia to: *Less than Significant with Mitigation Incorporated*.

Prostrate vernal pool navarretia (*Navarretia prostrata*)

Prostrate vernal pool navarretia has a CRPR of 1B.1 but is not listed under FESA or CESA. This species is an annual herb in the phlox family, and it blooms from April to July (CNPS 2019). It is endemic to California, and its current range includes the western San Joaquin Valley, Central Coast, San Francisco Bay Area, South Coast Ranges, central South Coast, and Peninsular Ranges (CNPS 2019, Jepson Flora Project 2019). It typically grows in coastal scrub, meadows and seeps, valley and foothill grassland, and vernal pools (CNPS 2019). The microhabitat for prostrate vernal pool navarretia includes mesic sites with alkaline soils (CDFW 2019). Threats to this species include vehicles, road maintenance, and recreational activities (CNPS 2019). Potentially suitable habitat for prostrate vernal pool navarretia is present within the Study Area. However, this species has low potential to occur within the Study Area because the Study Area is located on the edge of its known range and vernal pools will be avoided so potential impacts would be *less than significant*.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would further avoid, minimize and/or reduce the potential for impacts to prostrate vernal pool navarretia.

Colusa grass (*Neostapfia colusana*)

Colusa grass is listed as Threatened under FESA, Endangered under CESA, and has a CRPR of 1B.1. This species is an annual herb in the grass family, and it blooms from May through August (CNPS 2019). It is endemic to California, and its current range includes the Central Valley in Colusa, Merced, Solano, and Stanislaus counties (CNPS 2019; Jepson Flora Project 2019). However, it is presumed extirpated from Colusa County. It typically grows in large vernal pools with adobe soils (CNPS 2019). Colusa grass is threatened by agriculture, development, overgrazing, hydrological alterations, non-native plants, and habitat fragmentation and loss (CNPS 2019). Potentially suitable habitat for Colusa grass is present within the Study Area. However, this species has low potential to occur within the Study Area because the Study Area is located on the edge of its known range.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to Colusa grass to: *Less than Significant with Mitigation Incorporated*.

Slender Orcutt grass (*Orcuttia tenuis*)

Slender Orcutt grass is listed as Threatened under FESA, Endangered under CESA, and has a CRPR of 1B.1. This species is an annual herb in the grass family, and it blooms from May to September (CNPS 2019). It is endemic to California, and its current range includes the Inner North Coast Ranges, Cascade Ranges, Sacramento Valley, and Modoc Plateau (CNPS 2019, Jepson Flora Project 2019). It typically grows in vernal pools (CNPS 2019). The microhabitat

for slender Orcutt grass includes gravelly substrates (CDFW 2019). Threats to this species include agriculture, residential development, grazing, trampling, vehicles, recreational activities, logging, fire, and non-native plants (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to slender Orcutt grass to: *Less than Significant with Mitigation Incorporated*.

Sacramento Orcutt grass (*Orcuttia viscida*)

Sacramento Orcutt grass is listed as Endangered under FESA and CESA and has a CRPR of 1B.1. This species is an annual herb in the grass family, and it blooms from April to July (CNPS 2019). It is endemic to California, and its current range is limited to the Sacramento Valley (CNPS 2019, Jepson Flora Project 2019). It typically grows in vernal pools (CNPS 2019). Threats to this species include agriculture, urbanization, overgrazing, vehicles, and non-native plants (CNPS 2019). Potentially suitable habitat for Sacramento Orcutt grass is present within the Study Area. However, this species has low potential to occur within the Study Area because the Study Area is located on the edge of its known range and vernal pools will be avoided so potential impacts would be *less than significant*.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would further avoid, minimize and/or reduce the potential for impacts to Sacramento Orcutt grass.

Hairless popcornflower (*Plagiobothrys glaber*)

Hairless popcornflower has a CRPR of 1A but is not listed under FESA or CESA. This species is an annual herb in the forget-me-not family, and it blooms from March to May (CNPS 2019). It is endemic to California, and its current range includes the Central Coast and southern San Francisco Bay Area (CNPS 2019, Jepson Flora Project 2019); however, the last confirmed sighting of this species was in 1954 and it is presumed extirpated from all counties in which it was previously found (Alameda, Marin, San Benito, and Santa Clara). It typically grows in meadows and seeps and marshes and swamps (CNPS 2019). The microhabitat for hairless popcorn flower includes coastal salt marshes and alkaline meadows (CDFW 2019). Threats to this species have not been identified (CNPS 2019). Potentially suitable habitat for bearded popcornflower is present within the Study Area. However, this species has low potential to occur within the Study Area because the Study Area is located on the edge of its known range and wetlands will be avoided so potential impacts would be *less than significant*.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would further avoid, minimize and/or reduce the potential for impacts to hairless popcornflower.

Bearded popcornflower (*Plagiobothrys hystriculus*)

Bearded popcornflower has a CRPR of 1B.1, but it is not listed under FESA or CESA. This species is an annual herb in the borage family, and it blooms from April through May (CNPS 2019). It is endemic to California, and its current range includes the southwestern Sacramento Valley and the southeastern Inner North Coast Range (CNPS 2019; Jepson Flora Project 2019). It typically grows in vernal pools and mesic sites within valley and foothill grassland (CNPS 2019). Bearded popcornflower is threatened by disking, development, and non-native plants (CNPS 2019). Potentially suitable habitat for bearded popcornflower is present within the Study Area. However, this species has low potential to occur within the Study Area because the Study Area is located on the edge of its known range and vernal pools will be avoided so potential impacts would be *less than significant*.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would further avoid, minimize and/or reduce the potential for impacts to bearded popcornflower.

Eel-grass pondweed (*Potamogeton zosteriformis*)

Eel-grass pondweed has a CRPR of 2B.2, but it is not listed under FESA or CESA. This species is an annual aquatic herb in the pondweed family, and it blooms from June through July (CNPS 2019). The current range of this species in California includes the southern Inner North Coast Range, Central Valley, and Modoc Plateau (CNPS 2019; Jepson Flora Project 2019). It typically grows in freshwater marshes and swamps (CNPS 2019). The microhabitat for Eel-grass pondweed includes ponds, lakes, and streams (CDFW 2019). There are no listed threats to this species (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to eel-grass pondweed to: *Less than Significant with Mitigation Incorporated*.

California alkali grass (*Puccinellia simplex*)

California alkali grass has a CRPR of 1B.2, but it is not listed under FESA or CESA. This species is an annual herb in the grass family, and it blooms from March to May (CNPS 2019). The current range of this species in California includes the Tehachapi Mountains Area, the Central Valley, San Francisco Bay Area, and western Mojave Desert (CNPS 2019, Jepson Flora Project 2019). It is presumed extirpated from Kings County. It typically grows in chenopod scrub, meadows and seeps, valley and foothill grassland, and vernal pools (CNPS

2019). The microhabitat for California alkali grass includes alkaline, vernally mesic sinks, flats, and lake margins (CDFW 2019). Threats to this species include hydrological alterations, urbanization, agricultural conversion, development, habitat fragmentation, and solar energy development (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to California alkali grass to: *Less than Significant with Mitigation Incorporated*.

Sanford's arrowhead (*Sagittaria sanfordii*)

Sanford's arrowhead has a CRPR of 1B.2, but it is not listed under FESA or CESA. This species is a perennial rhizomatous herb in the water-plantain family, and it blooms from May through November (CNPS 2019). It is endemic to California, and its current range includes the northern North Coast, Klamath Ranges, Cascade Range Foothills, Central Valley, and northern South Coast (CNPS 2019; Jepson Flora Project 2019). However, it is presumed extirpated from the South Coast region, including Orange and Ventura counties. It typically grows in shallow freshwater marshes and swamps (CNPS 2019). The microhabitat for Sanford's arrowhead includes standing or slow-moving freshwater ponds, marshes, and ditches (CDFW 2019). Sanford's arrowhead is threatened by grazing, development, recreational activities, non-native plants, road widening, and channel alteration and maintenance (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would reduce potential impacts to Sanford's arrowhead to: *Less than Significant with Mitigation Incorporated*.

Marsh skullcap (*Scutellaria galericulata*)

Marsh skullcap has a CRPR of 2B.2, but it is not listed under FESA or CESA. This species is a perennial rhizomatous herb in the mint family, and it blooms from June through September (CNPS 2019). The current range of this species in California includes the northern High Sierra Nevada, Modoc Plateau, and the Sacramento-San Joaquin Delta region of the Central Valley (CNPS 2019; Jepson Flora Project 2019). It typically grows in lower montane coniferous forest, meadows and seeps, and marshes and swamps (CNPS 2019). The microhabitat for marsh skullcap includes swamps and wet places (CDFW 2019). Marsh skullcap is threatened by hydrological alterations, recreational activities, and non-native plants (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would reduce potential impacts to marsh skullcap to: *Less than Significant with Mitigation Incorporated*.

Side-flowering skullcap (*Scutellaria lateriflora*)

Side-flowering skullcap has a CRPR of 2B.2, but it is not listed under FESA or CESA. This species is a perennial rhizomatous herb in the mint family, and it blooms from July through September (CNPS 2019). The current range of this species in California includes the Sacramento-San Joaquin Delta region of the Central Valley, and Saline Valley in the Great Basin (CNPS 2019; Jepson Flora Project 2019). It typically grows in meadows and seeps, and marshes and swamps (CNPS 2019). The microhabitat for side-flowering skullcap includes wet meadows and marshes, and on logs in the Sacramento-San Joaquin Delta (CDFW 2019). There are no listed threats to this species (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would reduce potential impacts to side-flowering skullcap to: *Less than Significant with Mitigation Incorporated*.

Keck's checkerbloom (*Sidalcea keckii*)

Keck's checkerbloom is listed as Endangered under FESA and it has a CRPR of 1B.1, but it is not listed under CESA. This species is an annual herb in the mallow family, and it blooms from April through June (CNPS 2019). It is endemic to California, and its current range includes the southern Inner North Coast Range, and the central and southern San Francisco Bay Area (CNPS 2019; Jepson Flora Project 2019). It typically grows in cismontane woodland and valley and foothill grasslands (CNPS 2019). The microhabitat for Keck's checkerbloom includes grassy slopes in blue oak woodland on serpentine-derived, clay soils (CDFW 2019). There are no listed threats to this species (CNPS 2019). This species has low potential to occur within the Study Area because there is limited appropriate habitat and it is on the edge of the species range.

Implementation of Mitigation Measures MM BIO-18, and MM BIO-19 would reduce potential impacts to Keck’s checkerbloom to: *Less than Significant with Mitigation Incorporated*.

Long-styled sand-spurrey (*Spergularia macrotheca* var. *longistyla*)

Long-styled sand-spurrey has a CRPR of 1B.2 but is not listed under FESA or CESA. This species is an annual herb in the pink family, and it blooms from February to May (CNPS 2019). It is endemic to California, and its current range includes the Inner North Coast Ranges and the Central Valley (CNPS 2019, Jepson Flora Project 2019). It typically grows in meadows and seeps and marshes and swamps (CNPS 2019). The microhabitat for long-styled sand-

spurry includes alkaline soil (CDFW 2019). Threats to this species include development, habitat alteration, agriculture, and hydrological alterations (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would reduce potential impacts to long-styled sand-spurrey to: *Less than Significant with Mitigation Incorporated*.

Suisun Marsh aster (*Symphyotrichum lentum*)

Suisun Marsh aster has a CRPR of 1B.2, but it is not listed under FESA or CESA. This species is a perennial rhizomatous herb in the sunflower family, and it blooms from April through November (CNPS 2019). It is endemic to California, and its current range includes the southern Sacramento Valley, Central Coast, and San Francisco Bay Area (CNPS 2019; Jepson Flora Project 2019). It typically grows in brackish and freshwater marshes and swamps (CNPS 2019). Suisun Marsh aster is most often seen along sloughs with Phragmites, Scirpus, Rubus, and Typha (CDFW 2019). Suisun Marsh aster is threatened by marsh habitat alteration and loss, erosion, herbicide application, and non-native plants. (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-18, and MM BIO-19 would reduce potential impacts to Suisun marsh aster to: *Less than Significant with Mitigation Incorporated*.

Wright's trichocoronis (*Trichocoronis wrightii* var. *wrightii*)

Wright's trichocoronis has a CRPR of 2B.1, but it is not listed under FESA or CESA. This species is an annual herb in the sunflower family, and it blooms from May through September (CNPS 2019). The current range of this species in California includes the Central Valley and San Jacinto Valley (CNPS 2019; Jepson Flora Project 2019). It is presumed extirpated from Colusa, San Joaquin, and Sutter counties. It typically grows in alkaline soils within meadows and seeps, marshes and swamps, riparian forest, and vernal pools (CNPS 2019). The microhabitat for Wright's trichocoronis includes mud flats of vernal lakes, drying river beds, and alkali meadows (CDFW 2019). Wright's trichocoronis is threatened by agriculture and urbanization (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to Wright's trichocoronis to: *Less than Significant with Mitigation Incorporated*.

Saline clover (*Trifolium hydrophilum*)

Saline clover has a CRPR of 1B.2, but it is not listed under FESA or CESA. This species is an annual herb in the legume family, and it blooms from April through June (CNPS 2019). It is endemic to California, and its current range includes the Sacramento Valley, northwestern San Joaquin Valley, Central Coast, San Francisco Bay Area, and South Coast Ranges (CNPS 2019; Jepson Flora Project 2019). It typically grows in marshes and swamps, vernal pools, and mesic, alkaline sites within valley and foothill grassland (CNPS 2019). Saline clover is threatened by development, trampling, road construction, and vehicles (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-1b, MM BIO-12, MM BIO-18, and MM BIO-19 would reduce potential impacts to saline clover to: *Less than Significant with Mitigation Incorporated*.

Caper-fruited tropidocarpum (*Tropidocarpum capparideum*)

Caper-fruited tropidocarpum has a CRPR of 1B.1, but it is not listed under FESA or CESA. This species is an annual herb in the mustard family, and it blooms from March through April (CNPS 2019). It is endemic to California, and its current range includes the northwestern San Joaquin Valley and Outer South Coast Ranges (CNPS 2019; Jepson Flora Project 2019). It is presumed extirpated from Alameda, Contra Costa, Glenn, Santa Clara, and San Joaquin counties. It typically grows in valley and foothill grassland (CNPS 2019). The microhabitat for caper-fruited tropidocarpum includes alkaline clay soils (CDFW 2019). Caper-fruited tropidocarpum is threatened by grazing, military activities, trampling, and non-native plants (CNPS 2019). This species has moderate potential to occur within the Study Area based on the presence of potentially suitable habitat.

Implementation of Mitigation Measures MM BIO-18, and MM BIO-19 would reduce potential impacts to caper-fruited tropidocarpum to: *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 the California Department of Fish and Wildlife or the U.S. Fish and Wildlife Service?

Less than Significant with Mitigation Incorporated. Fifteen sensitive natural communities were identified as having the potential to occur within the Study Area based on review of the CNDDB (CDFW 2019). These include: alkali meadow, alkali seep, northern claypan vernal pool, northern hardpan vernal pool, valley needlegrass grassland, cismontane alkali marsh, coastal and valley freshwater marsh, coastal brackish marsh, elderberry savanna, Great Valley cottonwood riparian forest, Great Valley mixed riparian forest, Great Valley valley oak riparian

forest, sycamore alluvial woodland, valley sink scrub, and valley oak woodland. Further discussion of these habitat types as they relate to potential Impact Areas can be found in the species-specific discussions above.

Due to the pervasive presence of invasive species throughout the Delta and the disturbed nature of the proposed project sites, the project is not likely to result in the spread of invasive plant species between locations. Furthermore, all vehicles and equipment related to the project will remain on existing public and private roads until entering disturbed project sites, pristine native habitats will not be traversed by equipment, and emergent marsh, and vernal pool habitats will be avoided.

Implementation of Mitigation Measures MM BIO-12, for mitigation of potential impacts to vernal pool invertebrates, and MM BIO-1b, for mitigation of potential impacts to wetlands, would reduce potential impacts to alkali meadow, alkali seep, northern claypan vernal pool, northern hardpan vernal pool, cismontane alkali marsh, coastal and valley freshwater marsh, coastal brackish marsh, and valley sink scrub habitats to: *Less than Significant with Mitigation Incorporated*.

Implementation of Mitigation Measure MM BIO-13, for mitigation of potential impacts to Valley Elderberry Longhorn Beetle, would reduce potential impacts to elderberry savanna to: *Less than Significant with Mitigation Incorporated*.

Implementation of Mitigation Measure MM BIO-19, for mitigation of potential impacts to special-status plants as a result of minor vegetation removal, would reduce potential impacts to Great Valley cottonwood riparian forest, Great Valley mixed riparian forest, Great Valley oak riparian forest, sycamore alluvial woodland, and valley oak woodland to: *Less than Significant with Mitigation Incorporated*.

The Proposed Project would have the potential to minimally impact valley needlegrass grassland. Given the small and temporary footprint of each Impact Area, potential impacts to valley needlegrass grassland would be *Less than Significant*.

Therefore, the Proposed Project is not expected to 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 the USFWS.

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

No impact. The Proposed Project would not have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act because the Proposed Project would not subject wetlands to filling, removal, hydrological interruption or other means of adverse effect. As stated in the project description, evaluation of conditions at each on-land soil investigation Impact Area

will be conducted by qualified wetland delineators. If aquatic resources meeting the Corps definition of wetlands are observed within on-land soil investigation sites, those sites will be relocated outside of the boundaries of aquatic resources. Previously verified pre-jurisdictional determinations Existing Preliminary Jurisdictional Determinations will be utilized during mapping and field visits to ensure that the Proposed Project would avoid any areas that, as determined by a wetland specialist, may require a Wetland Delineation meet the Corps definition of wetlands. MM BIO 1b and MM BIO-12 reiterate the avoidance component presented in the project description. -

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?

Less than Significant with Mitigation Incorporated. The Proposed Project would not be expected to substantially interfere with the movement of any native or resident fish species, because the activities conducted overwater would be isolated in area and duration, and would not block, alter or degrade any of the waterways that these species are using for movement or migrations. Additionally, based on previous studies, overwater soil investigations will produce sound pressure levels (SEL) of no more than 120 dB to 146 dB (Illingsworth and Rocklin 2013), which are below the accepted threshold for causing either behavioral changes (>183 dB) or injury (>203 dB) to fishes (Popper and Hawkins 2019; NMFS noise assessment spreadsheet) in the vicinity.

Implementation of Mitigation Measure MM HYD-1 would reduce potential impacts to water quality to *Less than Significant with Mitigation Incorporated* (see Section 3.10, Hydrology and Water Quality). Additionally, implementation of Mitigation Measure MM BIO-14 would limit overwater work to only within the appropriate fish work window (August 1-October 31) when sensitive life stages of migratory fish would be less likely to occur in the Study Area.

The Proposed Project would not be expected to substantially interfere with established native resident or migratory corridors or interfere with the use of wildlife nursery sites, because of the limited duration and scope of each Impact Area. Additionally, the implementation of Mitigation Measures MM AES-2 and MM BIO-1 would ensure that migrating animals do not become entrapped or harmed and that no work be conducted outside of daylight hours and no artificial light sources, which could disturb nocturnal wildlife, would be used.

With the implementation of Mitigation Measures MM HYD-1, MM AES-2, MM BIO-14, and MM BIO-1 potential impacts to the movement of native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or native wildlife nursery sites would be reduced to: *Less than Significant with Mitigation Incorporated.*

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

No Impact. The Study Area overlaps six counties, each of which has a county general plan outlining goals and strategies for conservation of ecologically significant lands, wetlands, plant and wildlife habitat; protection of rare, threatened and endangered species of fish, wildlife and plants, significant plant communities, and other resources which stand out as unique because of their scarcity, scientific value, aesthetic quality or cultural significance; and encouragement of the preservation and restoration of the natural characteristics of each county.

The Proposed Project would not conflict with the policies and strategies outlined in the 2030 County Wide General Plan for Yolo County (Yolo County 2009), the Contra Costa County General Plan 2005-2020 (CCCDCD 2005), the San Joaquin County General Plan Policy Document (Mintierharnish Planning Consultants 2016), the East County Area Plan: A Portion of the Alameda County General Plan (ACCDAPD 1994), the Solano County General Plan (Solano County 2008) and the Sacramento County General Plan of 2005 – 2030 (Sacramento County 2011).

While there would be no impact regarding local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinances, implementation of Mitigation Measure MM AES-1, MM AES-2, MM BIO-1 through 20, MM HYD-1 and MM HAZ-1 through 4 would further avoid, minimize and/or reduce the potential for impacts.

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

Less than Significant Impact. The Study Area overlaps four Habitat Conservation Plans (HCP) and one Habitat Conservation Strategy:

- South Sacramento Habitat Conservation Plan (SSHCP) (County of Sacramento et al. 2018),
- (San Joaquin County Multi-Species Habitat Conservation and Open Space Plan (SJMSCP) (San Joaquin County 2000),
- Yolo County NHP (ICF 2018),
- East Alameda County Conservation Strategy (ICF 2010),

- East Contra Costa County Habitat Conservation Plan (East Contra Costa County Habitat Conservancy 2006), and
- Solano Multispecies Habitat Conservation Plan (LSA 2012).

The portion of the Study Area that overlaps the SSHCP would be the northeastern edge and includes Planning Unit 6 (County of Sacramento et al. 2018). The goal of the Plan is to provide streamlined, predictable federal and state permitting processes while creating a Preserve System to protect habitat, open space, and agricultural lands. Covered activities as defined by the SSHCP include urban development, mining, rural transportation projects, recycled water projects, covered activities in preserve setbacks, covered activities in stream setbacks, and covered activities in the Preserve System and Laguna Creek Wildlife Corridor. The Proposed Project would be a series of discreet soil investigations, would fully avoid any covered species or habitat and would not conflict with applicable avoidance and minimization measures, therefore it would not conflict with the SSHCP.

The portion of the Study Area that overlaps the SJMSCP is the Primary Zone for the Delta section. The goal of the Plan is to balance the conservation of open space and the need to convert open space to other uses while providing long-term management for biological resources, preserving land-owner rights, protecting the agricultural economy and accommodating population growth. The plan does not consider geotechnical or soil surveys to be site disturbing activities (San Joaquin County 2000) provided the sampling does not alter the hydrology of any wetland or alter the continuing occupation by any species of fish, wildlife or plant. The Proposed Project would be a series of discreet soil investigations, would fully avoid any wetland resources and would not alter species site occupations, therefore it would not conflict with the SJMSCP.

The portion of the Study area that overlaps with the Yolo County NHP would be in the eastern edge and includes planning units 21 (West Sacramento) and 15 (South Yolo Basin). The goal of the Yolo County HCP is to provide ESA permits and associate mitigation for development and infrastructure projects for the 50-year life of the document. Covered activities as defined by the HCP include urban or rural development, infrastructure, utilities, agricultural development, open space, aggregate mining, operations and maintenance, conservation strategy implementation and neighboring landowner protection. These activities are generally understood to have ground-disturbing effects, require vegetation management or have indirect effects on listed species. The Proposed Project would not conflict with the Yolo County HCP because ground-disturbing effects would be limited and temporary in nature, and vegetation management would be minimal.

The portion of the Study Area that overlaps with the East Alameda County Conservation Strategy is the northeastern tip and includes Conservation Zone 7. The goal of the East Alameda County Conservation Strategy is to provide baseline

biological resource and conservation priority inventories that can be used during project planning and permitting. As an informational program that seeks to help project proponents with permitting processes, the Proposed Project would not conflict with the goals outlined.

The portion of the Study Area that overlaps with the East Contra Costa County HCP would be in the southeast edge and includes Acquisition Analysis Zones 6d and 6e. The purpose of the East Contra Costa HCP is to protect and enhance the functions and ecological diversity of eastern Contra Costa County, by establishing guidelines to avoid, minimize, and mitigate, impacts on covered species and their habitats and wetlands within the region, while addressing the needs for urban expansion, infrastructure construction and ongoing operations and maintenance activities. The HCP seeks to obtain authorizations for take of covered species for covered activities. Geotechnical or soil investigation activities are not within the defined covered activities for the HCP. The Proposed Project would not conflict with the East Contra Costa County HCP because ground-disturbing effects would be limited and temporary in nature, and vegetation management would be minimal.

The portion of the Study Area that overlaps with the Solano Multispecies Habitat Conservation Plan is in the southeastern edge of the Plan area north of Rio Vista and is encompassed by Covered Activity Zone 3. The goals of the Solano Multispecies HCP are to preserve endangered species and habitats, maintain biodiversity, and allow for a healthy economy, private property rights and ongoing maintenance and operations. The activities planned within the Study Area are not included within the covered activities listed for Zone 3 within the HCP. The Proposed Project would not conflict with the Solano Multispecies Habitat Conservation Plan because ground-disturbing effects would be limited and temporary in nature, and vegetation management would be minimal.

While the Proposed Project would have a less than significant impact in regards to conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan, implementation of Mitigation Measures AES-1, MM AES-2, MM BIO-1 through 20, MM HYD-1 and MM HAZ-1 through 4 would further avoid, minimize and/or reduce the potential for impacts.

3.5 Cultural Resources

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
a) Would the project cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5?	☐	☒	☐	☐
b) Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	☐	☒	☐	☐
c) Would the project disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐

3.5.1 Environmental Setting

The archaeological record in the region of this Study Area is part of the established chronology of the Central Valley region of California, which includes the Sacramento Valley, San Joaquin Valley, and the Sacramento-San Joaquin Delta. Prehistoric resources that have been identified and located thus far in the Delta sub-region date back to as early as 8550 calibrated (cal) years Before Christ (B.C.). While there is potential for resources to exist dating to 11550 cal B.C. or earlier, archaeological deposits having these dates would be associated with landforms that have either been destroyed by natural processes or are deposited under more recent alluvial deposits (Rosenthal et al. 2007; Rosenthal and Meyer 2004). More frequently uncovered in the Study Area sub region are deposits associated with the Middle and Upper Archaic through the Emergent Period (5550 cal B.C. – European Contact).

Areas along waterways, especially rivers, floodplains, and alluvial fans, and high-elevation points near these features, are highly sensitive for cultural deposits due to a long-standing tendency to rely on waterways as a water source, food source, and as a convenient transportation route (be it travel on land or water). High elevation points along these waterways are common locations of prehistoric mounds and middens, which are complex deposits of cultural materials and organic matter, sometimes including human burials and occupation features that can be found subsurface as deep as 11 feet (3.5 meters) depending on the age, soil deposition pattern, and length of occupation (Rosenthal et al. 2007). This is particularly important to note as mounds were densely located along major waterways according to early-twentieth century documentation (one mound every 2-3 miles (3.2 to 4.8 kilometers)) (Schenck and Dawson 1929). Many of these were disturbed or obscured by agricultural development, levee construction, and erosion (Rosenthal et al. 2007), but this does not mean the cultural material is not still present within these areas.

Historical-to-modern aged artificial fills and cuts (including levees, sloughs, canals, and dredge spoils) are not easy to predict for buried deposits as prehistoric material was frequently ignored before federal regulations were established to protect archaeological material. During construction of these features, archaeological sites of any age, including prehistoric mounds, were frequently disturbed via cuts, used as artificial fill for structures such as levees, or were completely buried underneath artificial fill. There is little way to predict the likelihood of encountering deposits within these features without some form of explicit geoarchaeological testing, as they cannot be predicted for with currently available process-based models (Meyer and Rosenthal 2007).

There is a moderate to high potential for encountering surface and buried deposits from the historic era (post-European contact, but especially since circa. 1850) throughout the Study Area (Rosenthal and Meyer 2004; Meyer and Rosenthal 2007; Meyer and Rosenthal 2008; Reynolds 2012). This material is the most likely to be well preserved and closest to the surface, though sometimes can extend quite deep due to features such as historically sealed wells and privies. Historic-era resources are likely to be encountered no matter the geological age, especially in the Study Area, as historical maps for these areas indicate structures, trails/wagon roads, and properties dating back to at least 1850 (BLM 2019; USGS 2019). Historic era cultural resources also include levees, railroads, roads, and other built environment structures older than 50 years that are within the Study Area for this Proposed Project, such as Levee Unit 115.

This Proposed Project also requires consideration of the underwater archaeological record due to overwater boring activity. The rivers were used for transportation both prehistorically and historically within the region, and the Sacramento River has one of the better researched histories for maritime activity. Tule balsa boats, dugout canoes, and reed balsa boats were used for activities such as fishing along the lower Sacramento River by Patwin, Nisenan, and Miwok tribes respectively (CSLC 1988). European ships started exploring up the Sacramento River as early as 1772, and regular traffic along the river became established in 1839 with the founding of Sacramento by John Sutter and the development of surrounding settlements and

ranches (CSLC 1988). There are at least 100 historic shipwrecks known from archival research that occurred in the Sacramento River between Sacramento City and Sherman Island alone. Many of these have not been relocated, with only rough estimations as to their locations established by the Shipwreck Database and previous research by the California State Lands Commission (CSLC 1988; CSLC 2019); however, some historical shipwrecks have been encountered during previous projects, and locations of these have been recorded in the California Historical Resources Information System (CHRIS). The potential for encountering historical material is higher than for prehistoric within submerged contexts due to a tendency of poor preservation of organic material in water.

3.5.1.1 Regulatory Setting

Cultural resources include any artifact, object, building, structure, site, shipwreck, area, or place that is historical and/or archaeological in nature. State laws and regulations providing the definitions, protections, and management of cultural resources relevant to this Proposed Project include:

- California Environmental Quality Act, Pub. Resources Code, sections 21083.2 and 21084.1
- California Environmental Quality Act, CEQA Guidelines section 15064.5
- California Public Resources Code sections 5020.1, 5024 et seq. and 5097.98
- California Health and Safety Code sections 7050.5(b)and 7050.5(c)

3.5.1.2 Methods and Cultural Resource Inventory Findings

For the purposes of the Cultural Resources Review, each individual Impact Area was assessed with a 60-foot (18 meter) radius buffer (i.e. 120-foot (36 meter) diameter buffer) for equipment staging and accessibility. Geophysical Lines were assessed using a 20-foot buffer for the same purposes. Previous studies and recorded cultural resources within a 0.25-mile radius buffer were searched for and examined in addition to the Impact Area to help evaluate the potential sensitivity for cultural resources within the proposed Study Area.

CHRIS record searches from the Northwest Information Center (NWIC), North Central Information Center (NCIC), and the Central California Information Center (CCaIC) were conducted to identify all previously recorded cultural resources and any resources listed in or eligible for listing in the California Register of Historical Resources and/or the National Register of Historic Places. A Native American Heritage Commission (NAHC) Sacred Lands File search request for the Study Area was also made and found 3 of the quadrangles within the Study Area as having Sacred Lands on file. A search of the Office of Coast Survey's Automated Wreck and Obstruction Information System (AWOIS) was additionally conducted to locate any potential underwater cultural resources as part of the survey effort (Office of Coast Survey 2018). Previously conducted geoarchaeological sensitivity studies covering the Study Area (Rosenthal and Meyer 2004; Meyer and Rosenthal 2007; Meyer and Rosenthal 2008; Reynolds

2012), producing maps and data on the likelihood of encountering buried deposits based on local geology, soil deposition processes, landforms, and radiocarbon data were reviewed. Also examined were historical maps (BLM 2019; USGS 2019) and aerial photography (NETR 2019). Finally, information on previous pedestrian surveys within the Study Area was examined from CHRIS data and DWR projects recorded in the Cultural Resources Section's Geodatabase.

Only approximately 22% of the Impact Areas have previous field studies (including survey coverage, subsurface testing, and/or excavations) reported that we know of at this time. Of the areas previously studied, there are nine previously recorded cultural resources within the Study Area, three of which have not been previously evaluated for eligibility as a historical resource for the California Register of Historic Resources (CRHR). Two of these have been provided recommendations for ineligibility based on an examination of past studies and information about the resource. No previously identified cultural resources, including those potentially eligible as historic properties, are located within the Impact Areas for the overwater boring locations. In addition, no locations from the AWOIS are located within those Impact Areas. Table 5 summarizes all previously recorded cultural resources within the study area.

P-39-004492 is the only previously recorded resource that has both built environment and archaeological components. The resource was not officially evaluated but was suggested to have potential eligibility for the CRHR under Criteria 1, 2, and 4 in 2003 (Kelley and Huster 2003). The report suggested that the potential for data under criteria 3 would have been located near the farmhouse structures, outside of this project's Study Area. Unfortunately, all built environment components of the site, except for the levees along the borders of the site, were removed as part of preparation for housing development by 2006 according to the site record. This was confirmed by examining aerial photography from 2005 and 2009 (NETR 2019). The site record additionally noted that test trenches had been excavated by LSA Associates, Inc., in 2006, and that only recent materials had been found. Based on this information, the site is lacking in the necessary integrity that could make it eligible under Criteria 1-4 for both the built environment and archaeological components. Therefore, this site is recommended ineligible for CRHR.

P-07-004730 was previously evaluated as ineligible for the NRHP (Germano 2005) and the evaluation was concurred on by the Office of Historic Preservation in 2006. The ineligibility evaluation for the NRHP for P-07-004730 provides enough information to justify a recommendation that the resource should also be evaluated as ineligible for CRHR.

P-57-000132 is previously unevaluated because, in studies where it has been within the project area, cultural resource specialists tend to concur that the oak tree groves and associated natural habitat are not possible to define as either an archaeological or historical resource (Peirce 2017; Scher et al. 2018). Though the valley oaks may technically be old enough to count as historic in age, they are naturally occurring groves. Thus, this resource is considered ineligible for CRHR. However, this does not

preclude this resource from being considered a Tribal Cultural Resource as valley oaks were considered important resources, including for food and for construction, by various tribes (Anderson 2005).

For the purposes of this study, P-57-000596, which is located within the Study Area and has not been evaluated, is assumed to be eligible for the California Register of Historic Resources (CRHR) and a historical resource under CEQA. Those resources that have either been previously recommended as historical resources or listed as historical resources for CRHR are also treated as historical resources within this study. Thus, there are five previously recorded historical resources within the study area: P-07-004698, P-34-001497, P-34-002102, P-34-002143, and P-57-000596.

Table 6: Cultural Resources within Study Area

Resource Number	Resource Type	Resource Description	Eligibility for California Register of Historic Resources
P-07-004698	Historic	DFD Facilities - Forebay, Levee, Gates, etc.	Recommended eligible under Criteria 1 and 3 (ICF 2013)
P-07-004730	Historic	Canal	Recommended ineligible
P-34-001497 (CA-SAC-1092H)	Historic	Railroad (Walnut Grove Branch - So. Pacific Railroad)	Listed eligible under Criteria 1 and 3
P-34-002102	Historic	vegetation/ landscaping/ ranch	Listed eligible by keeper of property under Criteria 2 and 3
P-34-002143	Historic	Levee Unit 115	Recommended ineligible as stand-alone resource, eligible under Criterion 1 as district component (Prince-Buitenhuys et al. 2019;pages 24-25)
P-39-004492	Historic	Farmhouse, associated structures, and levee	Unevaluated, recommended ineligible (NETR 2019; site record; Kelley and Huster 2003)
P-48-000787	Historic	Levee	Recommended ineligible (Sikes and Arrington 2012)

P-57-000132	N/A	Naturally occurring valley oak groves and riparian habitat	Unevaluated (Recommended ineligible) (Peirce 2017; Scher et al. 2018)
P-57-000596	Historic	Tree Rows	Unevaluated

3.5.2 Discussion

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

Less than Significant with Mitigation Incorporated. The Proposed Project as designed would not cause a substantial adverse change in the significance of a historical resource pursuant to Section 15064.5 of the CEQA guidelines. Of the locations in the Study Area previously studied, amounting to approximately 22% of the Study Area, the majority of the locations have no known historical resources. There are five previously recorded historical resources (P-07-004698, P-34-001497, P-34-002102, P-34-002143, P-57-000596) that overlap with 34 Impact Areas. Of these 34 Impact Areas, 31 are boring units and three are CPT units. The CPT units overlap with P-34-001497 and P-39-004492 exclusively.

Impact Areas that would be located on top of or near a levee feature would have no substantial adverse change the resource, and due to the limited nature of the Proposed Project activities, important aspects of a levee's or railroad alignment's integrity or characteristics that depends on environmental factors around the feature (specifically categories of setting, feeling, location, and design) would not be significantly damaged.

No soil exploration would occur on top of recorded structures/features or in a spot that would impact structural integrity of those resources, and incorporation of mitigation measure MM BIO-1 ensures that no trees would be damaged. For known recorded historical resources, as well as the remaining 78% of the Study Area that has not undergone previous field studies, incorporation of mitigation measures MM CUL-1, CUL-2, CUL-3, and CUL-4 (below) would further reduce potential effects to previously unidentified historical resources to a less than significant level.

MM CUL-1:

a. All Impact Area would be reviewed by a qualified archaeologist to evaluate the potential for impacts, if any, to cultural resources.

b. Locations that have no previous survey coverage must be surveyed by, or under the direct supervision of a qualified archaeologist prior to the start of any ground disturbing activities.

c. If the archaeologist observes cultural or potential tribal cultural resources within the Impact Area or associated resource buffer as identified by a qualified archaeologist, the location will be shifted the minimum distance necessary to reduce the potential for significant cultural resource impacts without significantly increasing potential impacts to other resources.

d. A tribal representative from the consulting tribes will be invited to participate in the pre-activity field visits and archaeological surveys in Impact Areas specified as an area of interest/concern during consultation by that consulting tribe/tribes.

e. Consulting tribes will be informed of any potential tribal cultural resources located within the study area specified as an area of interest/concern by a consulting tribe/tribes.

f. If a suitable location cannot be determined within adjacent areas, then the soil investigation at that location would not be conducted.

MM CUL-2:

a. Should any unexpected cultural resources be exposed during project activities, all work would immediately stop in the immediate vicinity (e.g. 100 feet (30 meters)) of the find until it can be evaluated by a qualified archaeologist and an appropriate plan of action can be determined in consultation with the State Office of Historic Preservation, as necessary.

b. If the resource is associated with Native American contexts or is a potential Tribal Cultural Resource and is within a region specified as an area of interest/concern by a consulting tribe/tribes, the appropriate consulting tribal entity/entities will be contacted and consulted with to produce an appropriate plan of action.

MM CUL-3:

Should human remains be discovered during the course of project activities, all work would stop immediately in the vicinity (e.g. 100 feet (30 meters)) of the finds until they can be verified. The coroner would be contacted in accordance with Health and Safety Code section 7050.5(b). Protocol and requirements outlined in Health and Safety Code sections 7050.5(b) and 7050.5(c) as well as Public Resources Code section 5097.98 would be followed.

MM CUL-4:

> Cultural sensitivity training will be provided for the environmental monitors and individuals conducting the field activities and geological analysis to ensure awareness about cultural resources, including identification of and proper protocol for handling any unexpected finds.

Most overwater boring locations have not been previously surveyed (only two of 57 have been subject to underwater remote sensing survey; ICF 2012; Panamerican Consultants 2010). As the boring locations are underwater, a pedestrian survey of the Area of Potential Effect (APE) is unfeasible, but pre-activity site visits as discussed in MM-CUL-1 will still be conducted near the water on land to evaluate possibilities based on what is visible from the land. This, along with underwater hazard surveys planned as part of the project description, will provide sufficient field coverage for cultural resources avoidance for overwater areas that have not been previously examined. This is because they will identify any signs of structures, shipwrecks, objects, or other forms of obstructions underwater and allow the boring location to be adjusted within the APE to avoid hitting the obstruction.

For previously undiscovered historical resources that may be located subsurface, MM CUL-2 through MM CUL-4 will provide training to those that will be present during the soil investigations activities at the locations that have been cleared by MM-CUL-1 and will aid in identification and prevention of substantial impacts to any sub-surface previously undiscovered resources that may appear during boring and CPT activities. Geophysical studies that do not involve any soil penetration would not be at risk of damaging any sub-surface deposits.

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

Less than Significant with Mitigation Incorporated. The Proposed Project as designed would not cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines section 15064.5. There are no known previously recorded archaeological resources within the Study Area. Incorporation of mitigation measure MM CUL-1 would further reduce potential impacts to less than significant for any unique archeological resources not currently recorded. MM CUL-2 through MM CUL-4 will provide training to those that will be present during the soil investigations activities at the locations that have been cleared by MM-CUL-1 and will aid in identification and prevention of substantial impacts to any previously undiscovered unique archaeological resources that may appear during boring and CPT activities. Geophysical studies that do not involve any soil penetration will not be at risk of damaging any sub-surface deposits.

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

Less than Significant with Mitigation Incorporated. No known locations of human remains are located within the Study Area. The Proposed Project would not disturb any human remains with known locations, including those interred outside of formal cemeteries. Incorporation of MM CUL-1 through AMM CUL-4 would ensure that any potential impacts to known and previously undiscovered human remains would be reduced to less than significant.

3.6 Energy

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during Project construction or operation?	☐	☐	☒	☐
b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

3.6.1 Environmental Setting

Energy systems in California include electricity from renewable and non-renewable sources, natural gas, petroleum, and other fuels. The production of electricity requires the consumption or conversion of energy resources, including natural gas, coal, hydropower, nuclear, and renewable sources such as wind, solar, geothermal, and biomass/ cogeneration, into energy. Energy production and energy use both result in the depletion of nonrenewable resources (e.g., oil, natural gas, coal, etc.) and emission of pollutants.

According to the California Energy Commission, gasoline remains the dominant fuel within the transportation sector, with diesel fuel and aviation fuels following. In 2016, California consumed approximately 15 billion gallons of gasoline and approximately 3.35 billion gallons of diesel fuel. An increasing amount of electricity is being used for transportation energy, which is chiefly attributed to the acceleration of light-duty plug-in electric vehicles. In 2016, transportation in California consisting of light-duty vehicles, medium/heavy-duty vehicles, trolleys, and rail transit consumed approximately 1.53 million megawatt hours (CEC 2017).

The California Air Resources Board's (CARB) On-Road Heavy-Duty Diesel Vehicles (Truck and Bus) Regulation requires diesel trucks that operate in California to be upgraded to reduce emissions. Lighter and older heavier trucks must be replaced starting in 2015. By 2023 nearly all trucks would have 2010 model year engines or

equivalent. In 2020, only vehicles compliant with the Truck and Bus regulation will be eligible for registration in California (CARB 2019). The In-Use Off-Road Diesel Vehicle Regulation is intended to reduce emissions from in-use, off-road, heavy-duty diesel vehicles in California by impose limits on idling, requiring all vehicles to be reported to CARB, restrict the addition of older vehicles into fleets, and require fleets to reduce emissions by retiring, replacing, or repowering older engines, or installing exhaust retrofits. The In-Use Off-Road Diesel Vehicle Regulation would subsequently help to improve fuel efficiency and reduce GHG emissions.

3.6.2 Discussion

a) Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Less than Significant Impact. The Proposed Project involves soil investigations and would consume energy in the form of gasoline and diesel fuel through the operation of drill rigs, heavy off-road equipment, trucks, worker traffic, and barge or drill ship usage during project activities. There is no operational energy use associated with the Proposed Project. Consumption of energy resources would be temporary, localized, and would cease upon the completion of activities. Additionally, vehicles used for Proposed Project activities would be required to comply with all federal and state efficiency standards. The temporary nature of the Proposed Project ensures project activities would not result in wasteful, inefficient, or unnecessary energy consumption. While there would be a less than significant impact regarding wasteful, inefficient, or unnecessary consumption of energy resources, implementation of Mitigation Measure MM GHG-1 would further avoid, minimize and/or reduce the potential for impacts.

b) Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

No impact. The Proposed Project would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Proposed Project activities would employ efficient vehicles in compliance with CARB standards, is temporary in nature, and would not include generating or altering an existing energy source. Therefore, the Proposed Project would have no impact as it would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

3.7 Geology and Soils

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project 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 California Geological Survey Special Publication 42.)	☐	☐	☒	☐
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
c) Would the project result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
c) Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Proposed Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☐	☒
d) Would the project 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?	☐	☐	☐	☒
e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒
f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geological feature?	☐	☐	☐	☒

3.7.1 Environmental Setting

The Study Area consists of on-land and overwater Impact Areas distributed across six counties: Alameda, Contra Costa, Sacramento, San Joaquin, Solano and Yolo Counties. The California Geologic Survey of California Department of Conservation has determined the Impact Areas within Contra Costa, Sacramento, San Joaquin, Solano and Yolo Counties to be mostly composed of quaternary deposits of alluvium, lake,

playa and terrace deposits that are both consolidated and semi-consolidated throughout the Central Valley. In Alameda County, we can expect the soil to both have characteristics of quaternary deposits listed above and Mesozoic sedimentary and metasedimentary rocks, specifically, upper cretaceous sandstone, shale and conglomerate rock material (DOC 2010b).

Based on available web soil surveys and the vast distribution of the Impact Areas we can generalize that the surface soils will likely consist of alternating layers of silts, clays, loams and sand with some gravels which are underlain by either sedimentary rock or quaternary deposits (USDA 2019).

An “active” fault is one that shows displacement within the last 11,000 years and, therefore, is considered more likely to generate a future earthquake than a fault that shows no sign of recent rupture. The California Geologic Survey has mapped various active and inactive faults in the region. There are several active faults located within or surrounding all six counties overlapping the Study Area: Antioch, Calaveras, Cleveland Hills, Concord, Greenville-Marsh Creek, Hayward, San Andreas, San Joaquin and Sierra Nevada Faults. There is a generally low to moderate liquefaction potential at and around several Impact Areas.

3.7.2 Discussion

a) Would the project 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 California Geological Survey Special Publication 42.)

Less than Significant Impact. As with the entire San Francisco Bay Area, the southern Impact Areas are subject to strong ground motion resulting from earthquakes on nearby faults. No Impact Areas are within a currently designated Alquist-Priolo Earthquake Fault Zone (DOC 2015a). Additionally, the footprint of each Impact Area is small and temporary. Additionally, the limited nature of the Proposed Project minimizes potential adverse impacts related to ruptures of known earthquake faults. While there would be a less than significant impact, implementation of Mitigation Measures MM AES-1 and MM AGR-1 would further avoid, minimize and/or reduce the potential for impacts.

ii) Strong seismic ground shaking?

Less than Significant Impact. The Impact Areas are in a seismically active region that has historically been affected by strong seismic ground shaking. Ground shaking is a general term referring to all aspects of motion of the earth’s surface resulting from an earthquake and is normally the major cause of damage in

seismic events. The extent of ground shaking associated with an earthquake depends on the magnitude and intensity of the earthquake, distance from the epicenter, and local geologic conditions. Major active faults in the region that could cause ground shaking at the Impact Areas include Antioch, Calaveras, Cleveland Hills, Concord, Greenville-Marsh Creek, Hayward, San Andreas, San Joaquin and Sierra Nevada Faults. The closest active fault is the Greenville-Marsh Creek Fault, which is located 9 miles southwest of the most southern Impact Area. The most recent seismic event occurred in January of 1980 when two earthquakes of Richter magnitude 5.5 and 5.8 occurred along this fault (McJunkin and Ragsdale 1980). The Impact Areas are small, work would be temporary, and not anticipated to cause enough ground disturbance to result in strong seismic shaking. While there would be a less than significant impact, implementation of Mitigation Measures MM AES-1 and AGR-1 would further avoid, minimize and/or reduce the potential for impacts.

iii) Seismic-related ground failure, including liquefaction?

No Impact. Liquefaction is the transformation of saturated, loose, fine-grained sediment to a fluid-like state because of earthquake shaking or other rapid loading. Soils most susceptible to liquefaction are loose to medium dense, saturated sands, silty sands, sandy silts, non-plastic silts and gravels with poor drainage, or those capped by or containing seams of impermeable sediment. According to the USGS Susceptibility Map of the San Francisco Bay Area, the proposed activities are in regions designated as a low to moderate risk of liquefaction (ABAG 2018, DOC 2010b).

Although no historic examples of seismically-induced levee failure in the Delta have been documented, the USGS notes that the levees have not been subjected to strong shaking. According to the USGS, “Levees were either smaller or nonexistent in 1906 when the region was strongly shaken by the great San Francisco earthquake (USGS 1999). However, due to recent earthquake activity in 1980 on the Greenville-Marsh Creek Fault which resulted in no liquefaction, and the California Department of Conservation (DOC) Seismic Hazards Reports available via the DOC website which shows that there have not been any reported liquefaction within the vicinity of the Project Boundary in areas identified as landslide or liquefaction zones (DOC 2020), and the limited footprint of each soil exploration, ground failure, including liquefaction and levee failure, is not expected to occur.

While there would be no impact, implementation of Mitigation Measures MM AES-1 and AGR-1 would further avoid, minimize and/or reduce the potential for impacts.

iv) Landslides?

No impact. Seismically induced landslides and other slope failures are common occurrences during or soon after earthquakes in areas with significant ground slopes. Geotechnical investigation record information did not identify landslides as

a potential hazard in the Impact Areas. The Impact Areas are not located in areas susceptible to landslide risk and there are no mapped areas of landslide deposits larger than 200 feet (DOC 2015b). The criteria used to delineate the relative hazard areas included the nature of the geologic materials underlying the surface, the steepness of slopes, the presence or absence of visible slope failures, and the presence or absence of active forces that could cause failures. The Impact Areas are in relatively flat areas, which do not have a potential for landslide. Therefore, the Proposed Project would have no impact.

b) Would the project result in substantial soil erosion or the loss of topsoil?

Less than Significant Impact. The footprint of each Impact Area is small (only includes the soil investigation site itself and the area required for parking for field personnel), temporary, and would not involve significant alterations to the topsoil (only the soil borehole/CPT hole itself would affect topsoil). While there would be a less than significant impact to soil erosion or the loss of top soil, implementation of Mitigation Measures MM AES-1 and AGR-1 would further avoid, minimize and/or reduce the potential for impacts.

c) Would the project 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?

No Impact. DWR geologists considered the suitability of the geologic units for soil investigation in their siting of proposed Impact Areas. If the soil is deemed unstable by a geologist during the reconnaissance site visits required as part of the Proposed Project, or at any time thereafter, the Impact Area will be moved to decrease potential of on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. Because the Proposed Project requires avoidance of these types of risks/impacts, no impact is anticipated as a result of the Proposed Project.

d) Would the project 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?

No Impact. Expansion and contraction of volume can occur when expansive soils undergo alternating cycles of wetting (swelling) and drying (shrinking). During these cycles, the volume of the soil changes. Expansive soils are common throughout California and can cause damage to foundations and slabs unless properly treated during construction. The Proposed Project does not include the construction of any structures that, when built on expansive soils, may result in direct or indirect risk to life or property. While there would be no impact, implementation of Mitigation Measures MM AES-1 and AGR-1 would further avoid, minimize and/or reduce the potential for impacts.

e) Would the project have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

No impact. Septic tanks and alternative wastewater disposal systems would not be installed on the Impact Areas. Therefore, no impact is anticipated as a result of the Proposed Project.

f) Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

No impact. There are no known unique paleontological resources or sites or unique geologic features within the Impact Areas that would be directly or indirectly destroyed during work or from work completed. While there are no current maps that can be referenced to confirm the presence or absence of unique paleontological resources or sites or unique geologic features, based upon the small footprint of the rigs, including that these rigs are typically deployed on existing anthropological features (roads, levees, barges, etc), no impact is anticipated (Pers Comm. Margaret Janes 2019). Therefore, no impact is anticipated as a result of the Proposed Project.

3.8 Greenhouse Gas Emissions

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b) Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☒	☐	☐

3.8.1 Environmental Setting

In May 2012, DWR adopted the DWR Climate Action Plan-Phase I: Greenhouse Gas Emissions Reduction Plan (GGERP), which details DWR's efforts to reduce its greenhouse gas (GHG) emissions consistent with Executive Order S-3-05 and the Global Warming Solutions Act of 2006 (Assembly Bill 32). DWR also adopted the Initial Study/Negative Declaration prepared for the GGERP in accordance with the CEQA Guidelines review and public process. The GGERP (DWR 2012) provides estimates of historical (back to 1990), current, and future GHG emissions related to operations, construction, maintenance, and business practices (e.g. building-related energy use). The GGERP specifies aggressive 2020 and 2050 emission reduction goals and identifies a list of GHG emissions reduction measures to achieve these goals.

DWR specifically prepared its GGERP as a "Plan for the Reduction of Greenhouse Gas Emissions" to meet the requirements of CEQA Guidelines section 15183.5. That section provides that such a document, which must meet certain specified requirements, "may be used in the cumulative impacts analysis of later projects." Because global climate change, by its very nature, is a global cumulative impact, an individual project's compliance with a qualifying GHG Reduction Plan may suffice to mitigate the project's incremental contribution to that cumulative impact to a level that is not "cumulatively considerable." (See CEQA Guidelines, § 15064, subd. (h)(3). More specifically, "later project-specific environmental documents may tier from and/or incorporate by

reference" the "programmatic review" conducted for the GHG emissions reduction plan. "An environmental document that relies on a greenhouse gas reduction plan for a cumulative impacts analysis must identify those requirements specified in the plan that apply to the project, and, if those requirements are not otherwise binding and enforceable, incorporate those requirements as mitigation measures applicable to the project." (CEQA Guidelines § 15183.5, subd. (b)(2).)

Section 12 of the GGERP outlines the steps that each DWR project will take to demonstrate consistency with the GGERP. These steps include:

a. Analysis of GHG emissions from construction of the Proposed Project,

b. Determination that the construction emissions from the Proposed Project do not exceed the levels of construction emissions analyzed in the GGERP,

c. Incorporation of DWR's project level GHG emissions reduction strategies into the design of the Proposed Project,

d. Determination that the Proposed Project does not conflict with DWR's ability to implement any of the "Specific Action" GHG emissions reduction measures identified in the GGERP, and

e. Determination that the Proposed Project would not add electricity demands to the State Water Project system that could alter DWR's emissions reduction trajectory in such a way as to impede its ability to meet its emissions reduction goals.

Consistent with these requirements, a GGERP Consistency Determination Checklist is attached as Appendix B, documenting that the Proposed Project has met each of the required elements.

3.8.2 Discussion

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

Less than Significant. GHG emissions for the Proposed Project have been calculated to be 6,203.2 $mtCO_{2e}$ (Appendix B). Based on the analysis provided in the GGERP and the demonstration that the Proposed Project is consistent with the GGERP (as shown in the attached Consistency Determination Checklist), DWR as the lead agency has determined that the Proposed Project's incremental contribution to the cumulative impact of increasing atmospheric levels of GHGs is less than cumulatively considerable; therefore, impacts due to Proposed Project activities would be less than significant.

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

Less than Significant with Mitigation Incorporated. The State CEQA Guidelines require environmental analyses to evaluate both the level of GHG emissions associated with a project and the project's consistency with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions.

DWR has developed a GGERP (DWR 2012) to guide its efforts in reducing GHG emissions. The GHG emissions reduction measures proposed in the GGERP were developed for the purpose of reducing emissions of GHGs in California as directed by Executive Order S-3-05 and Assembly Bill 32. DWR has established the following GHG Emissions Reduction Goals:

- Reduce GHG emissions from DWR activities by 50% below 1990 levels by 2020; and
- Reduce GHG emissions from DWR activities by 80% below 1990 levels by 2050.

Pre-construction and Final Design BMPs from the GGERP are designed to ensure that individual projects are evaluated, and their unique characteristics taken into consideration when determining if specific equipment, procedures, or material requirements are feasible and efficacious for reducing GHG emissions from the project. By incorporating the Pre-construction and Final Design BMPs, the Proposed Project conforms to, and would not conflict with, applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions; therefore, there would be no impact. All variances from the GGERP were approved by the DWR CEQA Climate Change Committee (Appendix B).

All applicable pre-construction and final design BMPs from the GGERP, with variances as noted above, were incorporated as mitigation measures into this document. Mitigation Measure MM GHG-1 would ensure that any impacts would be reduced to less than significant with mitigation incorporation.

MM GHG-1:

a. Evaluate project characteristics, including location, project work flow, site conditions, and equipment performance requirements, to determine whether specifications of the use of equipment with repowered engines, electric drive trains, or other high efficiency technologies are appropriate and feasible for the project or specific elements of the project.

b. Minimize idling time by requiring that equipment be shut down after five minutes when not in use (as required by the State airborne toxics control

measure [Title 13, section 2485 of the California Code of Regulations]). This requirement will be enforced by the environmental monitor.

c. Maintain all soil investigation equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition.

d. Implement tire inflation program on jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every two weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site weekly for correct tire inflation.

e. Encourage carpools or shuttle vans for worker commutes as feasible.

3.9 Hazards and Hazardous Materials

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☒	☐	☐
b) Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
c) Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Would the project 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?	☐	☐	☐	☒

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	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 Proposed Project result in a safety hazard or excessive noise for people residing or working in the Proposed Project area?	☐	☐	☒	☐
f) Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
g) Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires?	☐	☐	☒	☐

3.9.1 Environmental Setting

This section addresses issues related to environmental hazards and hazardous materials in the Study Area. The Proposed Project activities require the use of minor amounts of hazardous materials, typically in the form of fuel, oil, and lubricants for equipment. Hazards include accidental spills of hazardous materials, the presence of existing subsurface contamination, the risk of wildfire, and aircraft safety. If encountered, contaminated soil can pose a health and safety threat to workers or the public.

3.9.2 Discussion

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

Less than Significant Impact with Mitigation Incorporated. The Proposed Project would not require extensive or on-going use of acutely hazardous materials or substances. Proposed Project activities would require limited transport, storage, and use of equipment and materials, and routine transport of vehicles that use hazardous materials (e.g. motor oil, gasoline, diesel), as well as limited disposal of hazardous materials. In addition, contractors that handle hazardous materials are required to have a Hazardous Materials Plan that describes the hazardous materials they use, and how the materials will be properly stored, used, transported, and disposed of. In addition, proper spill management, including response plans and spill kits, would be implemented and maintained onsite, as is currently required by DWR. None of the Proposed Project components would generate new sources of hazardous materials.

The potential for impacts due to hazards and hazardous materials will be reduced to less than significant with the incorporation of Mitigation Measures BIO-1, regarding removal of refuse, MM-HAZ 1 and BMM-HAZ 2 regarding development of a Hazardous Materials Plan and a Spill Prevention and Response Plan.

MM HAZ-1:

a. A Plan(s) (often a contractor's safety plan) with a section on Hazardous Materials shall be written and kept on site that describes the hazardous materials used during project activities, and how the materials will be properly stored, used, transported, and disposed of. The Plan will be shared with local fire and emergency personnel and their mutual aid districts. All hazardous materials shall be properly labeled and be recycled properly or disposed of at a properly licensed disposal facility.

b. The contractor shall contact the local fire agency and the local CUPA for any site-specific requirements regarding hazardous materials or hazardous waste containment or handling.

c. If hazardous materials, such as oil, batteries or paint cans, are encountered in the Impact Area, the contractor(s) shall carefully remove and dispose of them according to the Safety Plan and Spill Prevention and Response Plan. All hazardous materials will be disposed of at a properly licensed disposal facility.

d. Contact of chemicals with precipitation shall be minimized by storing chemicals in watertight containers or in a storage shed (completely enclosed), with appropriate secondary containment to prevent any spillage or leakage.

e. Quantities of toxic materials, such as equipment fuels and lubricants, shall be stored with secondary containment that is capable of containing 110% of the primary container(s).

f. Petroleum products, chemicals, fuels, lubricants, and non-storm drainage water or water contaminated with the aforementioned materials shall not contact soil and not be allowed to enter surface waters or the storm drainage system. All lubricants used downhole shall be non-petroleum based pursuant to common industry practice.

g. All toxic materials, including waste disposal containers, shall be covered when they are not in use, and located as far away as possible from a direct connection to the storm drainage system or surface water.

h. Sanitation facilities (e.g., portable toilets) shall be sited in a manner that avoids any direct connection to the storm drainage system or receiving water.

i. Sanitation facilities shall be regularly cleaned and/or replaced and inspected daily for leaks and spills.

MM HAZ-2:

A Plan(s) (often a contractor's safety plan) with a section on Spill Prevention and Response Plan shall be developed by the Contractor and submitted to DWR before any ground-disturbing activities in order to prevent the accidental release of chemicals, fuels, lubricants, and non-storm drainage water (including untreated wastewater) into channels. The Plan will be shared with local fire and emergency personnel and their mutual aid districts. The following measures shall be included in the Plan:

a. All field personnel shall be appropriately trained in spill prevention, hazardous material control, and cleanup of accidental spills.

b. Equipment and materials for cleanup of spills will be available on site and spills and leaks shall be cleaned up immediately and disposed of according to guidelines stated in the Spill Prevention and Response Plan.

c. Field personnel shall ensure that hazardous materials are properly handled, and natural resources are protected by all reasonable means, including compliance with Code of Federal Regulations (CFR) containment measures for tanks containing hazardous materials (see 40 CFR Section 264.175).

d. Spill prevention kits shall always be in close proximity when using hazardous materials (e.g., at crew trucks and other logical locations). All field personnel shall be advised of these locations.

e. Field personnel shall routinely inspect the work site to verify that spill prevention and response measures are properly implemented and maintained.

f. Field personnel will routinely inspect the work site to verify that the Spill Prevention and Response Plan is properly implemented and maintained. Staff will notify contractors immediately if there is a noncompliance issue and will require immediate correction of any noncompliant behavior.

g. Absorbent materials will be used on small spills located on impervious surface rather than hosing down the spill; wash waters shall not discharge to the storm drainage system or surface waters. For small spills on pervious surfaces such as soils, wet materials will be excavated and properly disposed rather than burying it. The absorbent materials will be collected and disposed of properly and promptly.

   As defined in 40 CFR 110, a federal reportable spill of petroleum products is the spilled quantity that:

   - Violates applicable water quality standards;
   - Causes a film or sheen on, or discoloration of, the water surface or adjoining shoreline; or
   - Causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.

h. If a spill is reportable, the contractor will notify the DWR staff, and the DWR staff will take action to contact the appropriate safety and cleanup crews to ensure that the Spill Prevention and Response Plan is followed. A written description of reportable releases must be submitted to the Regional Board and the California Department of Toxic Substances Control (DTSC). This submittal must contain a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an

explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. The releases will be documented on a spill report form.

i. If a significant spill has occurred, and results determine that project activities have adversely affected surface water or groundwater quality, a detailed analysis will be performed to the specifications of DTSC to identify the likely cause of contamination. This analysis will include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this analysis, the DWR or contractors will select and implement measures to control contamination, with a performance standard that surface, and groundwater quality must be returned to baseline conditions. These measures will be subject to approval by the DWR, DTSC, and the Regional Board.

b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?

Less than Significant Impact with Mitigation Incorporated. The Proposed Project would require the use of vehicles and equipment that may have a slight potential for accidentally spilling oil or fuel. The previously noted Hazardous Materials Plan would include procedures for responding to accidental releases. To reduce potential impacts to less than significant, Proposed Project activities would incorporate Mitigation Measures MM HAZ-1, MM HAZ-2 and MM HAZ-3 which would be employed to prevent stockpiling and an accidental release or spill from occurring and containing an accidental release or spill if it did occur.

MM HAZ-3:

a. Stockpiling materials, portable equipment, vehicles, and supplies, including chemicals, will be restricted to areas adjacent to the drill or CPT rig, and not adjacent or within riparian and wetlands areas or other sensitive habitats

b. Stockpiling materials, portable equipment, vehicles, and supplies, including chemicals, will be restricted to docks or within the drill barge or ship.

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

No Impact. There are no schools within one-quarter mile of an Impact Area and only one school, Oak Ridge National Laboratory, Geographic Information Sciences and Technology Group, within one half mile of any Impact Area. Since significant quantities of hazardous materials would not be used during Proposed Project activities, no impacts to existing or proposed schools are anticipated to occur. While there would be no impact, implementation of Mitigation Measures MM HAZ-1, MM

HAZ-2, and PUB-1 would further avoid, minimize and/or reduce the potential for impacts.

d. Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or the environment?

No Impact. The Impact Areas are not included on any lists of hazardous materials sites maintained by the State Water Resources Control Board or the Department of Toxic Substances Control that are compiled pursuant to Government Code Section 65962.5. Thus, Proposed Project activities would not create a significant hazard to the public or the environment and therefore no impacts would occur.

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?

Less Than Significant Impact. The Study Area is within two miles of the Byron Airport. The Byron Airport is a public-use airport located approximately one-half mile west of the nearest Impact Area. The Proposed Project's temporary features are largely below the ground surface and would not pose a safety hazard to airport use. The Contra Costa County Airport Land Use Compatibility Plan (Schutt Moen Associates 2000) describes all Byron Airport compatibility polices that will be adhered to, to ensure safety hazards are addressed within the plan area. In addition, the Proposed Project would not involve any aircraft or helicopter uses for soil investigation activities or operations.

Proposed Project activities are expected to create minor noise of brief duration from the operation of vehicles and drill rigs associated with Proposed Project activities, that will combine with ongoing regional activities, such as traffic along State Route 4 and Byron Highway, possible rail operations of the Union Pacific Mococo line, existing air traffic from the Byron Airport, and distant industrial operations. The maximum noise from truck-mounted drill rigs and CPT rigs is 120 dba at the rig. The maximum noise from seismic geophysical surveys is 70 dba at 7 meters. While equipment is working, ambient noise levels will increase slightly. Existing activities in the area currently generate the same or more noise than would be expected from the activities of the Proposed Project. While there would be a less than significant impact, implementation of Mitigation Measures MM NOI-1, AES-2, and MM PUB 1 would further avoid, minimize and/or reduce the potential for impacts.

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

Less Than Significant Impact. During the Proposed Project period, emergency response routes and plans would not be impacted by Proposed Project activities at the Impact Areas. Proposed Project activities conducted would be of limited size and duration. While there would be a less than significant impact on the implementation of or physically interfering with an adopted emergency response plan or evacuation plan, implementation of Mitigation Measure MM PUB-1 would further avoid, minimize and/or reduce the potential for impacts.

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

Less Than Significant Impact. The California Department of Forestry and Fire Protection (CalFire) has created a severity system to rank fire hazards and examine wildland fire potential across the state. These zones found on CalFire maps account for the speed and intensity of potential fire, ability of embers to spread and multiply, loading of fuel, topographic conditions, and local climate (e.g. temperature and likelihood of strong winds). In total, there are three CalFire designations for fire hazards, which are moderate, high, and very high. Typically, homes that are located within high or very high CalFire severity zones are considered lacking in adequate wildland or structural fire protection. CalFire has designated the Study Area as being near a moderate or high threat of fire (CalFire 2017), however, the Proposed Project itself is not likely to cause any risk of fire due to the nature of the activity. While this would be a less than significant impact, implementation of Mitigation Measures MM BIO-1 and MM HAZ-4 would further avoid, minimize and/or reduce the potential for impacts.

MM HAZ-4:

a. The contractor would develop a fire protection and prevention plan which incorporates fire safety measures on all equipment with the potential to create a fire hazard.

b. The plan would ensure that fire suppression equipment is onsite and that all employees have received appropriate fire safety training.

c. The Plan will be shared with local fire and emergency personnel and their mutual aid districts.

3.10 Hydrology and Water Quality

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	☐	☐	☐	☒
b) Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Proposed Project may impede sustainable groundwater management of the basin?	☐	☐	☐	☒
c) Would the project 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: a. result in substantial erosion or siltation on- or off-site? b. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite? c. 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	☐	☐	☐	☒

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d) Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to Proposed Project inundation?	☐	☐	☐	☒
e) Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐

3.10.1 Environmental Setting

The Proposed Project will have on-land as well as over-water soil explorations. The Study Area stretches over a large area spanning Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties, with most of the borings being along rivers, such as the False River, Old River, Sacramento River, San Joaquin River, and a few sloughs and canals. All the Impact Areas are in or near agricultural lands with a few Impact Areas that have suburban areas nearby within the Study Area. DWR will obtain and comply with a 401 Water Quality Certification from the State Water Resources Control Board to ensure compliance with all applicable water quality standards, limitations, and restrictions.

All the proposed Impact Areas are in the Sacramento and San Joaquin River Basins, which are under the jurisdiction of the Regional Central Valley Water Board. DWR Bulletin 118-80 identifies 63 groundwater basins in the Sacramento watershed area and 39 groundwater basins in the San Joaquin watershed area. There are additional areas not identified in the DWR Bulletin with groundwaters that have beneficial uses in the Sacramento and San Joaquin watershed areas. Groundwater levels vary from 20 feet at Grand Island to 200 feet at Hood near Merritt Island (DWR 2019).

3.10.2 Discussion

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

No Impact. The Proposed Project would not violate water quality standards, waste discharge requirements, or degrade surface and groundwater quality. Bentonite drilling fluids are considered to have very little toxicity and are the industry standard used in accordance with California regulations (Water Well Standards, DWR 74-81

and 74-90). The casing of the drill apparatus is smaller than most piers and would not impede water flow. The drilling rods, samplers, and other down-hole equipment pass through the inside of the casing, which separates them from the water. While there would be no impact regarding violation of water quality standards or waste discharge requirements or degrading surface or groundwater quality, implementation of Mitigation Measures MM HYD-1, MM BIO-2, MM AES-1, and MM AGR-1 would further avoid, minimize and/or reduce the potential for impacts.

MM HYD-1:

a. All fueling and maintenance of vehicles or other equipment for on-land soil investigation activities shall occur on established private access roads, or in designated staging areas at least 50 feet (15 meters) away from any on-site water feature. Fueling and maintenance activities will be conducted sufficiently away from public roadways to ensure safety of workers and the public. Secondary containment for fuel and gas tanks will be used to prevent spills from entering any water features.

b. Absorbent materials will be available on-site. Any accidental leaks or spills will be immediately cleaned up per the procedures identified in the contractors Spill Prevention and Response Plan, and the equipment will not be able to return to the project area until it has been repaired sufficiently to prevent further leaks or spills.

c. For overwater soil investigations positive barriers consisting of hay waddles and/or other suitable type of spill-stoppage materials will be placed around the work area on the barge and ship decks.

d. Discarded soil samples, cuttings, and excess drilling fluids will be kept in a closed system, to prevent spillage of the drilling fluid and will be disposed of off-site at an appropriate landfill.

e. All over-water work will include the use of conductor casings to confine the drill fluid and cuttings to the drill hole and the operating deck of the barge or drill ship and prevent any inadvertent spillage into the water. Soil samples will be collected from within the conductor casing. The casing will remain in place until the bore hole is complete and has been filled in, to minimize sediment disturbance of the slough or river bottom.

f. During overwater soil investigations a qualified environmental monitor will watch for colored plumes (an indication that drilling fluid or other material is entering the water and may affect water quality). If found, activities will cease until appropriate corrective measures have been completed or it has been determined that the environment will not be harmed.

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

No impact. The Proposed Project would not decrease groundwater supplies or interfere substantially with groundwater recharge because no water would be pumped from any on- or off-site groundwater sources for the Proposed Project, and no changes would be made to the permeability of surfaces as a result of the work. Although the Proposed Project could bore up to 200 feet (61 meters) below the slough or river bottom and into the groundwater basin, the boreholes would be backfilled with cement-bentonite grout in accordance with California regulations and industry standards (Water Well Standards, DWR 74-81 and 74-90), therefore no impact on groundwater supplies, recharge or sustainable management, would occur from the Proposed Project.

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:

a. result in substantial on- or off-site erosion or siltation?

No Impact. Ground disturbance due to the Proposed Project only includes the boreholes or CPT holes, and is temporary. Over-water borings would be separated from the water, fully contained within the casing. Therefore, it would not result in substantial on- or off-site erosion or siltation. While there would be no impact, implementation of Mitigation Measure MM AES-1 and MM AGR-1 would further avoid, minimize and/or reduce the potential for impacts.

b. substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding?

No impact. The Proposed Project would not substantially increase the rate or amount of surface runoff in a manner which would result in on- or off-site flooding because soil investigation activities are minimal in ground disturbance area and are temporary in nature. Soil investigation activities would not require the addition of significant areas of impervious surface therefore no impacts to rates or amount of runoff would occur.

c. 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?

No impact. The Proposed Project would not create or contribute to runoff water or provide additional sources of polluted runoff because no additional sources runoff would be generated by the Proposed Project. Bentonite drilling fluids are considered to have very little toxicity and are the industry standard used in

accordance with California regulations (Water Well Standards, DWR 74-81 and 74-90), and would be fully contained within the casing. While there would be no impact, implementation of Mitigation Measures MM HYD-1, MM HAZ-1, and MM HAZ-2 would further avoid, minimize and/or reduce the potential for impacts.

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

No impact. The Proposed Project is not located within a tsunami or seiche zone and would not affect the existing risk of flood hazard, seiche, tsunami or release of pollutants and would not increase populations located with an area subject to these risks.

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

Less than Significant Impact. The Proposed Project would not conflict with or obstruct implementation of a water quality control plan, including the Bay-Delta Water Quality Control Plan or a sustainable groundwater management plan because Proposed Project activities are limited in scope and duration. Additionally, DWR will obtain and comply with a 401 Water Quality Certification from the State Water Resources Control Board to ensure compliance with all applicable water quality standards, limitations, and restrictions. While there would be a less than significant impact, implementation of Mitigation Measures MM HYD-1, MM HAZ-1, and MM HAZ-2 would further avoid, minimize and/or reduce the potential for impacts.

3.11 Land Use and Planning

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project physically divide an established community?	☐	☐	☐	☒
b) Would the project cause 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?	☐	☐	☐	☒

3.11.1 Environmental Setting

The Study Area includes portions of Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties. Land use zoning codes in the Study Area allow a variety of uses including agriculture, outdoor recreation, wildlife habitat, public facilities, and limited areas for commercial, industrial, and rural residential development (Delta Protection Commission 2010).

3.11.2 Discussion

a) Physically divide an established community?

No impact. The Proposed Project work would be temporary in nature and limited to soil investigations which would not alter or change the existing land use and would not divide an established community. Therefore, there would be no impact.

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?

No impact. Consistent with our project description, the Proposed Project work would be temporary in nature and limited to soil exploration which would not alter or change the existing land use and would not conflict with any land use plan, policy or regulation. Therefore, there would be no impact.

3.12 Mineral Resources

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

3.12.1 Environmental Setting

In order to protect valuable mineral resources, present in California, State Legislature adopted the Surface Mining and Reclamation Act (SMARA). This Act implements the "classification-designation" process that is intended to inform local agencies of mineral resource significance, their locations within County jurisdiction and to potentially aide in local land-use decisions. The Proposed Project footprint extends through six counties, general plans from these counties were used to determine mineral resource locations and correlated policies under local agency jurisdiction.

The Yolo, Sacramento and San Joaquin County General Plans indicate no known mineral resource deposits within Proposed Project Impact Areas of the three counties; however, there is potential overlap with natural gas fields. The proposed Impact Area may also overlap with mineral resource deposits in Solano County; however, limited available data makes the mineral resource significance unknown. Review of the Contra Costa and Alameda County General Plans indicates that locations of proposed soil investigations would be outside areas of known mineral resource deposits or natural gas fields in these counties.

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?

Less Than Significant. According to the California Department of Conservation Division of Mines; no mining operations are known to be present within the project area. However, due to lack of data in Solano County, there is potential for the Impact Areas of the project footprint to be located over significant mineral resource deposits. Natural gas is also a potential occurrence under Impact Areas located in regions of Yolo, Sacramento and San Joaquin County. Soil investigations are the best way to gain complete understanding of subsurface geology and mineral resource deposits; the geotechnical studies for the Proposed Project will provide incidental benefits in the form of increased data collection and geological understanding. Due to there being no interruptions of existing mining operations or potential future mining opportunities in the Impact Areas, the Proposed Project will not result in loss of available known significant mineral resources.

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?

Less Than Significant. As explained in the environmental setting and answer (a) above there is potential for significant mineral resource deposits in Solano County, but this is uncertain due to lack of historical investigations in the area. Additionally, there are known natural gas regions in Yolo, Sacramento and San Joaquin County that have the potential to overlap with the Impact Areas for the Proposed Project. However, the activities of the Proposed Project consist of soil investigations that would result in a minimal disturbance area for each soil investigation site and site would be returned to as close to pre-activity conditions as possible. Therefore, no impact to locally important mineral resources are anticipated due to the Proposed Project.

3.13 Noise

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?	☐	☐	☒	☐
b) Would the project result in generation of excessive ground borne vibration or ground borne noise levels?	☐	☐	☒	☐
c) For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☒	☐

3.13.1 Environmental Setting

The Study Area includes portions of Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties. The following section describes noise sources for each county, compiled from the Delta Plan Amendments Program Environmental Impact Report (Delta Stewardship Council 2017).

3.13.1.1 Alameda County

Stationary noise sources include agricultural operations, a school, and the C.W. “Bill” Jones Pumping Plant. Mobile sources include the following:

- Traffic noise along the corridors of Byron-Bethany Road and Interstate 580
- Aircraft from the Byron Airport
- Motorized boats in the Bethany Reservoir

Vibration sources include construction equipment and traffic on rough roads.

3.13.1.2 Contra Costa County

Stationary noise sources include agricultural operations, parks and school playing fields, landscape maintenance, marinas and boat harbors, and commercial and industrial sources. Commercial and industrial sources include heating and cooling equipment, natural gas compression stations, and heavy equipment use. Mobile sources include the following:

- Traffic noise along the corridors of SR-4 and SR-160
- Rail operations for freight and passenger traffic
- Aircraft from the Byron Airport and Buchanan Field
- Motorized boats along the San Joaquin River

Vibration sources include construction equipment, steel-wheeled trains, heavy industrial facilities, and traffic on rough roads.

3.13.1.3 Sacramento County

Mobile noise sources include agricultural operations, parks and school playing fields, landscape maintenance, and commercial and industrial sources. Commercial and industrial sources include heating and cooling equipment, natural gas compression stations, and heavy equipment use. Transportation noise sources include the following:

- Traffic along the corridors of Interstate 5 (I-5) and Interstate 80 (I-80), U.S. Highway 50 (US 50), and State Route (SR) 160
- Rail operations for freight and passenger traffic
- Aircraft associated with the Sacramento International Airport, Sacramento Executive Airport, Franklin Field Airport, and Borges-Clarksburg Airport
- Motorized boats along the Sacramento River

Vibration sources include construction equipment, steel-wheeled trains, and traffic on rough roads.

3.13.1.4 San Joaquin County

Stationary noise sources include agricultural operations, parks and school playing fields, landscape maintenance, marinas and boat harbors, and commercial and industrial sources. Commercial and industrial sources include heating and cooling equipment, natural gas compression stations, and heavy equipment use. Transportation noise sources include the following:

- Traffic along the corridors of I-5, SR-4, and SR-12
- Rail operations for freight and passenger traffic
- Aircraft from the Stockton Metropolitan Airport, Kingdon Airpark, Lodi Airport, Lodi Airpark, Tracy Municipal Airport, and New Jerusalem Airport
- Motorized boats along the San Joaquin River
- Port of Stockton shipping and good distribution activities

Vibration sources include construction equipment, steel-wheeled trains, and traffic on rough roads.

3.13.1.5 Solano County

Stationary noise sources in the county include agricultural operations, parks and school playing fields, landscape maintenance, marinas and boat harbors, and commercial and industrial sources. Commercial and industrial sources include heating and cooling equipment, natural gas compression stations, and heavy on-site equipment use. Transportation noise sources include the following:

- Traffic noise along the corridors of Interstate 680, SR-84, SR-113, SR-160, and SR-12
- Rail operations for freight and passenger traffic
- Aircraft from the Rio Vista Municipal Airport, Travis Air Force Base, and Nut Tree Airport
- Motorized boats along the Sacramento River

Vibration sources include construction equipment, steel-wheeled trains, and traffic on rough roads.

3.13.1.6 Yolo County

Stationary noise sources include agricultural operations, parks and school playing fields, landscape maintenance, marinas and boat harbors, and commercial and industrial sources. Commercial and industrial sources include heating and cooling equipment, natural gas compression stations, and heavy equipment use. Transportation noise sources include the following:

- Traffic noise along the corridors of I-5, I-80, and SR-84
- Rail operations for freight and passenger traffic

- Aircraft from the Sacramento International Airport and Bourges-Clarksburg Airport
- Motorized boats along the Sacramento River

Vibration sources include construction equipment, steel-wheeled trains, and traffic on rough roads.

3.13.2 Discussion

a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?

Less than Significant Impact. Noise from the geotechnical drilling equipment is generally comparable to the noise produced by diesel trucks. The maximum noise from truck-mounted drill rigs and CPT rigs is 120 dBA at the rig. The maximum noise from seismic geophysical surveys is 70 dba at 7 meters. While equipment is working, ambient noise levels will increase slightly. Short-term impacts resulting from the Proposed Project include increased localized noise level and small vibrations created primarily from the drill rig engine and short durations from the Standard Penetration Tests. The noise produced during SPT sampling would be approximately 79-84 dBA for the drill rig at 50 feet from the source; with intermittent noise between 80-90 dBA for SPT sampling drives at 50 feet from the source. These values for noise produced are from the United States Department of Transportation Federal Highway Administration Construction Noise Handbook (USDOT 2006). As a reference, this sound level is equivalent to the range of the average dB for a gas lawnmower at 100 feet (70) dB to gas lawnmower at 3 feet (90 dB) (WADOT 2019). This would represent a similar level of sound as many of the ambient sound producing elements of the project area including motorized boats (limited to 88 dB to 90 dB in California; USCG) along the river, agricultural vehicles (85 dB at idle to 100 dB when operating for a tractor (Smith 2011)) and traffic noise on main roadways (59 dB to 79 dB depending upon number of cars travelling at 40- 55 mph) (WADOT 2019). DWR is not subject to local zoning ordinances, however local zoning ordinances provide an example of suitable thresholds to consider for the activities of the Proposed Project. Within Sacramento, San Joaquin, and Alameda counties construction is exempt from county noise standards as long as the work occurs during the daytime hours, which vary by county (Sacramento County Ordinance 6.68.090; San Joaquin County Development Title Sec 9-1025.9; Alameda County Ordinance 4-10.5(10)). Contra Costa County Ordinance Code and Yolo County Ordinance Code do not have a specific construction noise ordinance. Solano County does have a specific noise ordinance (Solano County Ordinance 28.1-50) that essentially limits construction noise to 20 dBA above 55 dBA, or ambient noise whichever is higher, for more than 2 minutes or 90dBA at the property line of the receptor. While noise from the Proposed Project would result in slight localized increases it would less than significant because it would be consistent with ambient

noise from the range of existing activities, Proposed Project activities would not occur within 100 ft of potential sensitive receptors by maintaining this buffer from residences and small buildings (MM AES-1), and work would be limited to daytime hours (MM AES-2). Implementation of NOI-1 (mufflers would be appropriately tuned and utilized) would further avoid, minimize and/or reduce the potential for impacts.

MM NOI-1:

All equipment will be properly tuned and shall utilize appropriate mufflers.

b) Generation of excessive ground borne vibration or ground borne noise levels?

Less than Significant Impact. The vibrations from on-land truck mounted drill rigs and CPT rigs are minimal and vibrations are typically not detectable by people outside of the immediate area. Vibrations from the EnviroVibe Minibuggy vehicle are relatively small, but mild vibrations can typically be felt by people within approximately 50 feet (15 meters) of the EnviroVibe Minibuggy; at 100 feet (30 meters), vibrations are typically not detectible by people. The levels of vibration are much smaller than vibrations required to induce damage in buildings and infrastructure.

Vibrations from over-water soil boring explorations are minimal. The Shelby tube and piston samplers are collected by hydraulic pressure. No vibrations are produced from pushing tube samples. The Pitcher Barrel samples drills into the ground using rotary techniques (soil coring) producing no more vibrations than boring drilling. Therefore, potential impacts from the generation of ground borne vibration or noise levels 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 two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Less Than Significant Impact. There are 20 soil investigation sites within two miles of the Byron Airport. The Byron Airport is a public-use airport located approximately one-half mile west of nearest Impact Area. The maximum noise from the closest soil investigation site which is located adjacent to Byron highway is 120 dba at the rig. The landscape surrounding the Impact Areas is considered open space with physical barriers such as hills that would dampen the noise level as it travels away from its source. Additionally, the noise would not be considerably different than that of the vehicle traffic at Byron highway. Therefore, the Proposed Project would not expose people residing or working in the vicinity of the Impact Areas to excessive noise levels, resulting in less than significant impacts.

3.14 Population and Housing

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project 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)?	☐	☐	☐	☒
b) Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

3.14.1 Environmental Setting

The Proposed Project locations are found within Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties.

3.14.1.1 Alameda County

The California Department of Finance estimated that the population for Alameda County is approximately 1,669,301 people, with approximately 605,977 housing units (Department of Finance 2019) throughout the 14 incorporated cities as well as the six unincorporated communities and rural areas throughout the 813 square miles of the County (Alameda County 2018).

3.14.1.2 Contra Costa County

The western and northern communities of Contra Costa County are highly industrialized, while the inland areas contain a variety of urban, suburban/residential, commercial, light industrial and agricultural uses (CCCDCD 2005). The 2019 population

estimate by the California Department of Finance indicates that Contra Costa County is home to approximately 1,155,879 residents, with approximately 416,062 housing units (Department of Finance 2019).

3.14.1.3 Sacramento County

Sacramento County covers approximately 990 square miles and has seven incorporated cities: Sacramento, Elk Grove, Citrus Heights, Folsom, Galt, Isleton, and Rancho Cordova. Sacramento County also contains a number of mature communities in the unincorporated area. Sacramento County is unique in that they have a large percentage of residents who live in the county, but not within the boundary of any of the seven incorporated cities (Sacramento County 2011). The California Department of Finance 2019 population estimate for Sacramento County is approximately 1,546,174 people, with approximately 574,449 housing units (Department of Finance 2019).

3.14.1.4 San Joaquin County

The California Department of Finance estimates that the 2019 population for San Joaquin County is approximately 770,385 people, with approximately 246,521 housing units (Department of Finance 2019). Approximately 80 percent of the San Joaquin County's population resides in the cities, and of this number, almost 54 percent are in Stockton (San Joaquin County 2015).

3.14.1.5 Solano County

Solano County encompasses approximately 910 square miles (830 square miles of land and 80 square miles of water). Approximately 128 square miles of the county, or 14 percent of the total land area, lies within seven incorporated cities: Benicia, Dixon, Fairfield, Rio Vista, Suisun City, Vacaville, and Vallejo (Solano County 2008). The 2019 population estimate by the California Department of Finance indicates that Solano County is home to approximately 441,307 residents, with approximately 159,586 housing units (Department of Finance 2019).

3.14.1.6 Yolo County

Yolo County includes the cities of Davis, West Sacramento, Winters and Woodland and 621,224 acres of unincorporated area. The unincorporated area contains several communities, including Capay, Clarksburg, Dunnigan, Esparto, Guinda, Knights Landing, Madison, Monument Hills, Rumsey, Yolo and Zamora (Yolo County 2009). The California Department of Finance estimates that the 2019 population of Yolo County is approximately 222,581 people, with approximately 77,679 housing units (Department of Finance 2019).

3.14.2 Discussion

a) Would the project 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)?

No impact. The Proposed Project does not include proposing new homes or businesses, nor would it require adding roads or other infrastructure in association with the activities. Impact Areas are mostly located on or adjacent to roads and road shoulders in disturbed areas and the Proposed Project activities are minor and short in duration. For up to 15 days at each site, a limited amount of additional people and vehicles would be present in the Impact Area. Soil investigation crews would not be required to relocate to the Impact Area, and therefore would not require new homes or businesses in the area. The additional vehicles on each Impact Area would not require extensions of roads or other infrastructure. Therefore, the Proposed Project activities would not induce population growth in the area, either directly or indirectly.

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

No impact. The Proposed Project activities would be temporary, discreet work that has a small footprint at each Impact Area and would not require infrastructure. Occasionally there may need to have additional people at the Impact Areas but for standard CPT and boring field practices there would likely be six or fewer people on site regularly. Not all vehicles would be necessary for every site. Drilling locations are mostly located on or adjacent to roads and road shoulders in disturbed areas, which would not require the displacement of existing people or housing. Therefore, the Proposed Project activities do not have the potential to displace existing people or housing.

3.15 Public Services

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the project 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 including:				
Fire protection?	☐	☐	☒	☐
Police Protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

3.15.1 Environmental Setting

The Proposed Project locations are found within Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties.

3.15.1.1 Law Enforcement

Law enforcement services in unincorporated areas are provided by county sheriff's offices. The county sheriff's offices typically administer county jails, the coroner's office, and the Office of Emergency Services. Incorporated cities have their own police departments that provide law enforcement. Services provided by police departments typically include response to calls, investigations, surveillance, and routine patrols. The California Highway Patrol (CHP) is the primary law enforcement agency for state highways and roads. Services provided by the CHP include law enforcement, traffic control, accident investigation, and the management of hazardous materials spills. The California Department of Fish and Wildlife is responsible for enforcing laws related to hunting and fishing (Delta Stewardship Council 2017).

3.15.1.2 Fire Protection and Emergency Medical Services

Cities, counties, and special districts provide emergency medical rescue and fire protection services. Some agencies provide advanced life support via fire department ambulances, paramedic squads, and/or by the placement of firefighter/paramedics on fire engines. Many fire districts, fire departments, and county sheriff's offices also maintain special squads or response units for handling water rescues. Medical-related emergencies constitute the majority of calls to which fire districts receive and respond, and fire suppression makes up the minority. Portions of outlying areas may also be protected by the State Department of Forestry and Fire Protection. Fire facilities are located strategically to achieve targeted response times. Factors that affect response times include circulation, development, geographic distance, and population growth. Response time goals are shorter in urban locations compared to rural areas (Delta Stewardship Council 2017).

Emergency medical services include emergency dispatch (911), ambulances, and hospitals and medical care services. Dispatch for fire and medical response is becoming increasingly regionalized and specialized, and some fire departments are involved in regional fire dispatch. Chance of survival is related to how quickly a patient receives medical attention, particularly in situations where a patient has stopped breathing or is having a heart attack. The Center for Public Safety Excellence, formerly named the Commission on Fire Accreditation International, recommends a 50-second dispatch time at least 90 percent of the time. Additional time is factored in for response once dispatch communicates the emergency to the responder. Ambulance response time standards in individual communities are based on the urban or rural character. Ambulance response times typically allow several additional minutes in rural areas compared to urban areas. Ambulance services are provided by the local fire districts or are contracted through private companies. Fire departments are equipped to provide

first responder services, including basic life support and, in some cases, advanced life support, until an ambulance service arrives. Private ambulance companies obtain operating permits to provide advanced life support and ambulance transport services within a region (Delta Stewardship Council 2017).

3.15.1.3 Hospitals

Hospitals located within the Delta counties include St. Joseph's Medical Center, Dameron Hospital, San Joaquin General Hospital, Sutter Delta Medical Center, Sutter Tracy Community Hospital, Lodi Memorial Hospital, Kaiser Foundation Hospitals, Methodist Hospital of Sacramento, Sutter Davis Hospital, Sutter Memorial Hospital, and Mercy General Hospital.

3.15.1.4 Public Schools

Services within the public-school districts range from preschool through high school levels, including traditional, alternative, and charter schools (Delta Stewardship Council 2017). Proposed Project activities will occur within or in close proximity to multiple school districts in the Delta counties, including Washington Unified School District, River Delta Joint Unified School District, Elk Grove Unified School District, Dixon Unified School District, Davis Joint Unified School District, New Hope Elementary School District, Galt Joint Union High School District, Lodi Unified School District, Tracy Unified School District, Oakley Union Elementary School District, Byron Union Elementary School District, Knightsen Elementary School District, Liberty Union High School District, Lincoln Unified School District, Mountain House Elementary School District, and Lammersville Joint Unified School District.

3.15.1.5 Libraries

Each county provides public library services to its residents, often in coordination with cities. Public libraries typically are funded by local property taxes, state funds, library fines and fees, grants, and donations. In addition to traditional services, county libraries increasingly provide additional community services such as adult literacy programs, mobile book services, children's programs, and internet access. Demand for library services is affected by population growth and demographic changes (Delta Stewardship Council 2017).

3.15.1.6 Parks

The Delta contains numerous parks, wildlife areas, ecological reserves, and open spaces. Some of these areas within or in close proximity to the Proposed Project area includes Delta Meadows, Stone Lakes National Wildlife Refuge, Cosumnes River Preserve, Brannon Island State Recreation Area, Franks Tract State Recreation Area, Vic Fazio Yolo Wildlife Area, and small public parks located within communities.

3.15.2 Discussion

a) Would the project 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:

Fire protection?

Less than Significant Impact. Proposed Project activities are minor (requiring limited amounts of additional people and vehicles on site) and short in duration (up to 15 days per site). Proposed Project activities would not increase the demand on fire protection services, either due to an increased worker population or due to Proposed Project-related hazards. During the Proposed Project period, emergency response routes and plans would not be impacted by Proposed Project activities at each site. While a small subset of proposed soil investigation sites along Highway 160 may require flaggers or temporary lane closures, the Proposed Project would not require any road \closures. The Proposed Project would not significantly impair or interfere with emergency access, including any emergency response or evacuation routes. Service ratios, response times, and other performance objectives will not be significantly impacted during Proposed Project activities as it relates to fire protection. While there would be a Less Than Significant impact to fire protection, implementation of Mitigation Measures MM PUB-1 and TRANS-1 would further avoid, minimize and/or reduce the potential for impacts.

MM PUB-1

a. A Plan(s) (often Contractor's safety plan) with a section on Fire Protection and Prevention will be submitted to DWR for review and approval which incorporates fire safety measures on all equipment with the potential to create a fire hazard.

b. The contractor will prepare a Safety Plan in accordance with the DWR protocols.

Police protection?

No Impact. Proposed Project activities are minor (requiring limited amounts of additional people and vehicles on site) and short in duration (up to 15 days per site). During the Proposed Project period, emergency response routes and plans would not be impacted by Proposed Project activities at the site. While a small subset of proposed soil investigation sites along Highway 160 may require flaggers or temporary lane closures, the Proposed Project would not require any road or land closures. The Proposed Project would not significantly impair or interfere with

emergency access, including any emergency response or evacuation routes. Service ratios, response times, and other performance objectives will not be significantly impacted during Proposed Project activities as it relates to police protection.

Proposed Project activities would not increase the demand on police protection services, either due to an increased worker population or due to Proposed Project-related hazards and would therefore not result in impacts which would require new or additional police protection. While there would be no impact to police protection, implementation of Mitigation Measures MM PUB-1 and TRANS-1 would further avoid, minimize and/or reduce the potential for impacts.

Schools?

No impact. Proposed Project activities are minor and short in duration and will not impact service ratios or any other performance objective for schools within the Proposed Project area. Additionally, as discussed above in the Population and Housing Section, Proposed Project activities will not induce any population growth that would necessitate building new schools. Therefore, the Proposed Project activities would not result in impacts which would require new or additional schools.

Parks?

No impact. While some Proposed Project activities will occur within or in close proximity to parks, wildlife areas, ecological reserves, and open spaces, drilling locations are mostly located on or adjacent to roads and road shoulders in disturbed areas, and will only require limited amounts of additional people and vehicles at each site. Because Proposed Project activities are minor and short in duration (up to 15 days per site), disturbances to these areas will be minimal and the Proposed Project activities would not result in impacts which would require new or additional parks.

Other public facilities?

No impact. Due to the nature of Proposed Project activities (minor and occurring over a short duration of time), service ratios and other performance objectives will not be impacted during Proposed Project activities as it relates to other public facilities, including those such as hospitals and libraries. Proposed Project activities would not increase the demand on public facilities, either due to an increased worker population or due to Proposed Project-related hazards. The Proposed Project activities would not result in impacts which would require new or additional public facilities.

3.16 Recreation

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project 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?	☐	☐	☐	☒
b) Would the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	☐	☐	☐	☒

3.16.1 Environmental Setting

The Delta and Suisun Marsh region is a one-of-a-kind place whose mix of land and water offers diverse and authentic recreation opportunities. While privately-owned farmland is off-limits to the public, publicly-managed lands and waterways, including parks, boating facilities, some levees, and some road rights-of-way, support diverse recreation activities. Recreation opportunities include fishing, boating along miles of navigable waterways; bird watching, other nature activities, and hunting; enjoying region restaurants, campgrounds, picnic areas, and historic buildings; and events that draw visitors to taste local produce and wine and learn about this unique place (California State Parks 2011).

3.16.2 Discussion

a) 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?

No impact. The Proposed Project area is currently used for recreational activities such as boating, water skiing, fishing and other land-based activities as described

above. However, Proposed Project impacts are minor in scope and short term in duration so soil investigation activities will not significantly impair public access to these waterways or recreational facilities. Barge operations will be coordinated with the United States Coast Guard and will not impede boat traffic. The Proposed Project work would not increase the use of use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. Therefore, the Proposed Project would have no impact on use of existing parks and recreational facilities.

b) Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

No impact. The Proposed Project is limited to soil investigations which would be limited in scope and temporary in nature. Proposed Project activities do not include construction or expansion of recreational facilities; therefore, Proposed Project activities would not require the construction or expansion of recreational facilities.

3.17 Transportation

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☐	☒	☐
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3 subdivision (b)?	☐	☐	☐	☒
c) Would the project substantially increase hazards due to geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
d) Would the project result in inadequate emergency access?	☐	☐	☒	☐

3.17.1 Environmental Setting

The Study Area includes parts of Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties within the Right-of-Way on local farm roads, county roads, and Caltrans highways. Alameda County, Contra Costa County, Sacramento County, San Joaquin County, Solano County, Yolo County, and Caltrans have regulatory authority over the transportation network in the Study Area. The counties establish regulations for unincorporated areas of the county and Caltrans has jurisdiction over the state highway system. The Impact Areas in the Study Area include the Right-of-Way of local farm roads on private property, county roads, and Caltrans highways.

Local traffic is subject to the policies and regulations of each county. Under Streets and Highways Code Section 1460-1470 County Road Commissioners may issue written permits authorizing making an opening or excavation for any purpose in any county

highway, place, change, or renew an encroachment. The road commissioner may also require a satisfactory bond be paid. In the Study Area, Impact Areas associated with transportation under county jurisdiction that could be affected by the Proposed Project include:

- Contra Costa County Road – Byron Highway;
- Sacramento County Road – Lambert Road;
- San Joaquin County Roads - W Walnut Grove Road, and N Staten Island Road; and.
- Yolo County Roads – Clarksburg Road, and N Courtland Road.

Caltrans is responsible for planning, designing, constructing, operating, and maintaining all state-owned roadways throughout the state. Federal highway standards are implemented in California by Caltrans. Caltrans has jurisdiction over State highways and sets maximum load limits for trucks and safety requirements for oversized vehicles that operate on highways. Caltrans requires a traffic analysis be conducted depending on the number of trips conducted at different levels of service conditions. DWR will coordinate with Caltrans to satisfy these requirements. In the Study Area, Impact Areas under Caltrans jurisdiction that could be affected by the Proposed Project include: State Route 160, State Route 4, State Route 104 - Twin Cities Road, State Route 220, and State Route 84.

CEQA Guidelines Section 15064.3 establishes a new method for analyzing certain transportation impacts created by a project. Under the new requirements, circulation impacts must be analyzed based on vehicle miles traveled ("VMT"). VMT "refers to the amount and distance of automobile travel attributable to a Proposed Project. Other relevant considerations may include the effects of the Proposed Project on transit and non-motorized travel." (CEQA Guidelines, section 15064.3, subd. (a).) With this update to the CEQA guidelines, the Proposed Project's potential "effect on automobile delay shall not constitute a significant environmental impact." Each Lead Agency is responsible for establishing their own thresholds of significance and may elect to be governed by the provisions of this section immediately or wait until the July 1, 2020 deadline.

While the General Plans for Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties outline goals and policies that include reduction of VMTs, they have not yet adopted VMT standards pursuant to Section 15064.3 of the CEQA guidelines.

3.17.2 Discussion

a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Less than Significant Impact. The Proposed Project consists of soil ingestions, which are temporary in nature and would not permanently alter the circulation system, including transit, roadway, bicycle, and pedestrian facilities, or alter the use of these facilities. The Proposed Project does not conflict with local VMT standards, as the

counties which the Study Area is located have not yet adopted these standards. During operation of the drilling equipment there will be multiple vehicles on site which may delay traffic or cause traffic congestion. However, temporary congestion and/or lane closures would not conflict with any applicable plans, programs, ordinances, or policies. While this would be a less than significant impact, implementation of MM BIO-1, MM GHG-1, and MM TRANS-1 would further avoid, minimize and/or reduce the potential for impacts.

MM TRANS-1

a. Appropriate traffic controls will be implemented, based on the conditions at each soil investigation site, according to standards set by Caltrans and counties. Flaggers may be used during ingress and egress of boring equipment and work crews to allow flow of traffic while maintaining safety measures for the crew, especially if these activities occur in areas of heavy traffic or reduced visibility. Lane closures will be implemented when soil investigation sites are within or immediately adjacent to public roadways and will employ safety measures such as advance warning areas and flaggers, as prescribed by Caltrans and county regulations. Public notifications will be made in coordination with Caltrans, counties, CHP, and other entities. Traffic controls and lane closures will consider access for emergency services and be coordinated through the encroachment permit processes implemented by Caltrans and counties, with CHP coordination as required.

b. Parking on public roads and thoroughfares by crew vehicles will be avoided to the maximum extent practicable to allow for the flow of traffic to continue.

c. No public roads, waterways or land access will be closed.

d. For overwater sites, the project area shall be a no-wake zone, with boats not exceeding 5 mph within 500 feet (152 meters) of the work area.

b) Would the Proposed Project conflict or be inconsistent with CEQA Guidelines section 15064.3 subdivision (b)?

No impact. The Proposed Project is temporary in nature and is not considered a “land use project” or “transportation project”, and therefore will not alter the land use and subsequently generate additional sustained amounts of VMT. Section 15064.3, subdivision (a), states, “For the purposes of this section, ‘vehicle miles traveled’ refers to the amount and distance of automobile travel attributable to a project.” The term “automobile” refers to on-road passenger vehicles, specifically cars and light trucks (Office of Planning and Research 2018).

Proposed Project activities equate to only a limited number of trips per day at any specific soil investigation location while field activities are occurring. Because of this

small number of trips and the temporary nature of the activity, the Proposed Project would not result in a significant increase in VMT. Both DWR and the counties in which the Proposed Project is located have not yet elected to be governed by the VMT provision of Section 15064.3, so there is currently no VMT standards to compare VMTs of the Proposed Project. The Proposed Project does not conflict with CEQA Guidelines section 15064.3 subdivision (b); therefore, there is no impact due to the Proposed Project.

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

No impact: The Proposed Project does not include any changes to the existing roadway. No sharp curves, dangerous intersection, or incompatible uses will result from this Proposed Project; therefore, there will be no impact.

d) Result in inadequate emergency access?

Less than Significant Impact. Traffic delays may occur due to soil investigation related activities. In case of an emergency, or if an emergency vehicle needs to pass, easily moved equipment will be moved immediately to maintain emergency vehicle access. On major roads, one full lane will be available at all times for emergency vehicles. Emergency service providers will be notified of soil investigation activities along roads that may cause delays. The Proposed Project would not close access to any access roads and would not result in the redesign or alteration of any public roadways, nor would emergency access be blocked. While there would be a less than significant impact to emergency access, implementation of Mitigation Measures MM HAZ-3, MM GHG-1, MM TRANS-1 and MM TRANS-2 would further avoid, minimize and/or reduce the potential for impacts.

3.18 Tribal Cultural Resources

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code 5020.1 (k), or	☐	☒	☐	☐
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	☐	☒	☐	☐

3.18.1 Environmental Setting

The Study Area includes regions inhabited traditionally by multiple California Native American Tribes. Ethnographic literature from the late nineteenth and early twentieth century writes that the Delta Yokuts, Nisenan, Miwok, Northern Valley Yokuts, and Patwin/Wintun occupied territories within the Study Area (Kroeber 1925; Kroeber 1929; Wilson and Towne 1978; Johnson 1978; Levy 1978b; Wallace 1978). The Delta Yokuts occupied an area along the lower course of the San Joaquin River from its confluence with the Merced River east of Newman to the delta sloughs north of Stockton (Golla 2011:153), within Northern Valley Yokuts territory. The Ohlone/Costanoan were reported in the ethnographic literature as originally residing nearby to the west and southwest of the Study Area region (Kroeber 1925; Levy 1978a) but are also relevant to the Study Area. Modern descendants of tribes connected to the Study Area are members of various tribal organizations and were reached out to for the initial study for this Proposed Project (see methodology below).

Fundamental limitations to the ethnographic record highlight the importance of tribal consultation in identifying tribal cultural resources. Ethnographically reported boundaries between tribes are one version of territories, and many areas had multiple claimants, such as parts of the Sacramento River Delta where different Miwok and Yokuts groups laid claim in different interviews (Latta 1977:80). It is also important to remember that groups had multiple tribes belonging to them (Kroeber 1925; Latta 1977), and that divisions between groups weren't as clear cut as presented in published studies, as many tribes shared different practices, including rituals (such as the Kuksu Cult), trade networks, and food ways (Kroeber 1925; Heizer 1978). The categories as laid out are heavily based on linguistic relationships, who was available and willing to be interviewed, and the ethnographer's individual discretion and understanding. These interviews occurred at a time after Missionization, Mexican occupation, and decades of United States occupation, all of which impacted many California Native Americans and tribes and changed the landscape and knowledge base (Heizer 1978; Field 1992). Archaeologically, people moved and interacted with other tribes regularly and tribal boundaries were not as firm or static as portrayed in the ethnographic studies from the late nineteenth/early twentieth century. Mobility and large spheres of interaction are evidenced by, among other things, traded artifactual material, cultural patterns crossing ethnographically defined boundaries, and ancient DNA studies (Monroe 2014; Milliken et al. 2007; Rosenthal et al. 2007). Many modern tribes have been working to preserve and revitalize their language and culture and teach it to the younger generations (e.g. Field 1992; Johnson 2019; Yoche Dehe Wintun Nation 2019). Thus, it is important to recognize the primacy of modern tribes in telling their own history and recognizing their own tribal cultural resources. Additional information and references on California Native American Tribes within the Study Area is provided in the confidential Cultural Resources Inventory Report prepared for this project.

Cultural resources, as discussed in the Cultural Resources Section of this IS/MND, may be tribal cultural resources. This includes historical resources as defined in Public Resources Code Section 5024.1 and 15064.5, unique archaeological resources as

defined by Public Resources Code 21083.2, and non-unique archaeological resources (e.g. isolated finds or common resource types). As is discussed in the Cultural Resources Section of this document, the Study Area is particularly sensitive for cultural resources because areas along waterways are a frequent location for archaeological sites, including prehistoric mounds, middens, occupation sites, and human burials. In the ethnographic literature, villages were located along the major rivers and creeks within the Study Area, and the area around them were used for gathering, hunting, and fishing (Kroeber 1925; Kroeber 1929; Wilson and Towne 1978; Johnson 1978; Levy 1978b; Wallace 1978). Some villages also had ritual centers such as dance halls, and villages also were used for mourning and burial in some traditions (Kroeber 1925; Kroeber 1929; Wilson and Towne 1978; Johnson 1978; Levy 1978b; Wallace 1978). Artificial fill-and-cut structures such as levees commonly were built through and of materials from cultural sites because archaeological material was frequently ignored before federal regulations were developed to protect these resources (Rosenthal et al. 2007; Meyer and Rosenthal 2007). Therefore, the Study Area is generally highly sensitive for potential tribal cultural resources in the same way it is highly sensitive for cultural resources (refer to Section 3.5 Cultural Resources).

Tribal cultural resources can also refer to places or cultural landscapes. Mt. Diablo is an excellent example of a place and landscape of significance to multiple tribes within the Study Area. Multiple accounts refer to Mt. Diablo as the location where, among other things, figures from creation narratives were from, a spiritually significant location related to spirits and the land of the dead, and a place where dogs came from (Ortiz 1989). Multiple accounts refer to the mountain as a “powerful” or “sacred” location (Ortiz 1989). Given this, the mountain itself is a “sacred place” and tribal cultural resource. Viewsheds of the mountain can sometimes also be considered tribal cultural resources as Mt. Diablo is a prominent figure on the landscape.

3.18.1.1 Regulatory Setting

Tribal cultural resources include any site, feature, place, sacred place, object, or cultural landscape with cultural value to a California Native American Tribe. These must be listed or eligible for listing in the California Register of Historical Resources (CRHR) or in a local register of historical resources, or else be determined by the CEQA lead agency as a significant resource pursuant to state laws and regulations. Key state laws and regulations provide for the definition, protection, and management of tribal cultural resources. Those that are relevant to this Proposed Project include:

- California Assembly Bill No. 52 (AB-52)
- California Environmental Quality Act, Public Resources Code, sections 21073, 21074, 21080.3.1, 21080.3.2, 21082.3, 21084.2, and 21084.3; CEQA Guidelines, section 15064.5
- Public Resources Code sections 5020.1, 5024.1, 5097.94, and 5097.98
- Health and Safety Code section 7050.5(b) and 7050.5(c)
- California Native American Graves Protection and Repatriation Act (Health and Safety Code Division 7, Part 2, Chapter 5; sections 8010-8030)

3.18.1.2 Methods and Consultation Results

A Native American Heritage Commission (NAHC) Sacred Lands File search request for the Study Area was made, resulting in 3 of the quadrangles within the Study Area being found to have Sacred Lands on file. A Native American Tribal Contact list was provided with 21 different individuals from tribes in the region. Tribes that have previously requested consultation under AB-52 with DWR with interest in the Study Area were additionally reached out to pursuant to AB-52. The tribes sent letters were the Amah Mutsun Tribal Band of Mission San Juan Bautista, Colfax-Todd Valley Consolidated Tribe, Buena Vista Rancheria of Me-Wuk Indians Cortina Rancheria – Kletsel Dehe Band of Wintun Indians, California Valley Miwok Tribe, Costanoan Rumsen Carmel Tribe, California Valley Miwok Tribe, Indian Canyon Mutsun Band of Costanoan, Ione Band of Miwok Indians, Muwekma Ohlone Indian Tribe of the SF Bay Area, The Ohlone Indian Tribe, Nashville Enterprise Miwok-Maidu-Nishinam Tribe, Tsi Akim Maidu, Shingle Springs Band of Miwok Indians, United Auburn Indian Community (UAIC), The Confederated Villages of Lisjan, Wilton Rancheria, and the Yoha Dehe Wintun Nation. Tribes sent letters under AB-52 were the Yocha Dehe Wintun Nation, UAIC, Wilton Rancheria, and the Ione Band of Miwok Indians. All finalized letters were sent August 29, 2019. Follow up communication by phone and/or email was sent on September 20th and 23rd for all individuals written to on the contact list. Written responses requesting consultation were received from 5 tribes, and 2 additional tribes provided comments over follow-up phone calls in September. Of the five tribes requesting consultation, Wilton Rancheria, UAIC, and the Ione Band of Miwok Indians were further consulted with under AB52 and the California Valley Miwok Tribe, Shingle Springs Rancheria, and Northern Valley Yokuts Tribe were consulted with under DWR's Tribal Engagement Policy.

AB52 consultation with the UAIC was closed by email on January 9, 2020, while consultation with the Ione Band of Miwok Indians was closed by email on June 23, 2020. In a letter sent via email on June 30, 2020, Wilton Rancheria closed consultation citing Public Resources Code Section 21080.3.2 (b)(2), "A party, acting in good faith and after reasonable effort, concluded that mutual agreement cannot be reached". DWR is committed to continuing to coordinate with Wilton Rancheria and all consulting tribes through our Department's Tribal Engagement Policy and implementation of the proposed mitigation measures.

California Historical Resources Information System (CHRIS) record searches from the Northwest Information Center (NWIC), North Central Information Center (NCIC), and the Central California Information Center (CCaIC) were conducted to identify all previously recorded cultural resources and any resources listed in or eligible for listing in the California Register of Historical Resources and/or the National Register of Historic Places. Previously conducted geoarchaeological sensitivity studies covering the

Proposed Project region (Rosenthal and Meyer 2004; Meyer and Rosenthal 2007; Meyer and Rosenthal 2008; Reynolds 2012), producing maps and data on the likelihood of encountering buried deposits based on local geology, soil deposition processes, landforms, and radiocarbon data were reviewed. Also examined were historical maps (BLM 2019; USGS 2019) and aerial photography (NETR 2019). Finally, information on previous pedestrian surveys within the Study Area was examined from CHRIS data and DWR Proposed Projects recorded in the Cultural Resources Section's Geodatabase. Approximately 22% of the planned locations for soil explorations have previous field studies (including survey coverage, subsurface testing, and/or excavations) reported that are known at this time (refer to Section 3.5 Cultural Resources for summary of findings).

As a result, multiple tribal cultural resources were identified within the region of the Study Area, with two within the Study Area according to GIS maps and multiple being within a quarter mile. The tribe expressed that these locations need confirmation via survey work and requested that the pre-activity site visits and associated cultural survey as outlined in MM-CUL-1 be conducted and findings reported to them before activities start. In accordance with MM-CUL-1, should the resources be confirmed the locations of the soil investigations will be moved or not conducted in order to avoid any impacts to the resources. Information specifying the location, nature, or use of these areas is not provided in this IS/MND do to the confidential nature of tribal cultural resources submitted by the tribe through the consultation process (Public Resources Code Section 21082.3(c)(1)).

Multiple tribes expressed that they could not specify any particular tribal cultural resource locations due to the fact they have not had physical access to much of the Study Area previously and/or do not have the location of cultural resources that are potential tribal resources. Given this, some tribes requested to be able to coordinate visiting the soil exploration locations during the pre-activity field visits when the archaeological survey is occurring, or else be informed of the results of the surveys after they occur. Additionally, concerns were expressed related to soil explorations that occur within levees, and requests were made to be contacted in case resources were identified during survey, monitoring, or sampling. Cultural sensitivity training was also requested for the Proposed Project.

A request for tribal monitors to be present anytime an archaeological or environmental monitor is present was also made. This project would not, however, have archaeological or tribal monitors for the actual soil exploration activities. Monitoring for cultural and tribal cultural resources is only effective when the project is occurring adjacent or on the location of a resource that has been previously identified and the monitor is able to prevent the resource from being disturbed, and/or when it is possible for the monitor to effectively observe the soil being removed from the earth during an activity likely to produce a substantial impact to a previously unidentified cultural or tribal cultural resource in the subsurface. In this case, the existing project design and mitigation

measures render monitoring ineffective for prevention of significant damage to resources. The reasons for this are as follows:

1. Resource identification efforts on the surface during pre-activity site visits would be guiding avoidance for any resources identifiable on the surface and will be moving or removing soil exploration units in order to prevent disturbances to cultural resources or potential cultural resources. This is in accordance with mitigation measure MM-CUL-1.

2. A CPT does not extract any soil, though it does penetrate the ground. A monitor monitoring for cultural material at a CPT location would not be able to identify any subsurface resources despite the soil disturbance. The diameter of a CPT (1” to 2”) is smaller in size than any soil disturbance archaeological testing methodology would create in testing for subsurface deposits, and therefore CPTs are less impact to a site than testing for the presence or absence of subsurface archaeological deposits. Given this, the soil disturbance from a CPT is would not produce a significant impact to previously unidentified subsurface deposits.

3. Boring units do extract soil, but the diameter of a bore-hole (maximum 8”) and a core sample is significantly smaller than what is created during subsurface archaeological testing for the presence or absence of resources. Standard sampling methods include Standard Penetration Tests which produce a core with an approximate diameter of 1.5”, Modified California Sampler produces a core with an approximate maximum diameter of 2.5”, Pitcher Barrel Samplers produce a core with an approximate maximum diameter of 3”, and Shelby tube style samplers (i.e. 101mm Geobarrel and 134mm Geobarrel shelly tubes) with an approximate range in core diameter between 2” to 5”.

    a. Many of these cores would not be processed in such a way that would allow the soil of the core to be examined immediately after soil extraction. As such, a monitor would be unlikely to have the opportunity to examine a core.

    b. These core sizes are not large enough to produce a notable disturbance to subsurface archaeological deposits. The risk of substantial impacts to a previously unknown subsurface deposit, given the size of the boreholes, is extremely low. Given the low risks of substantial subsurface impacts and small sizes of these cores, an archaeological monitor or tribal monitor during the boring activities would not be warranted.

    c. In the event a core is processed in such a way that the soil would be viewable while in the field, cultural sensitivity training for the environmental monitor and the field crew would be designed to aid in the identification of cultural material that could come out of the core (e.g., lithics and organic material less than 5” in maximum width within the geological time lens between the late Pleistocene and modern surface).

4. In the unlikely event a potential tribal cultural resource is identified through archaeological surveys or during field activities, the material would be reported to the consulting tribe with interest in the area and a plan would be made in consultation with the consulting tribe/tribes, in accordance with MM-CUL-2. In the case of human remains, MM-CUL-3 would be followed.

During consultation, discussion was also had about investigations, data on Delta geology may support a tribes understanding of historic landscapes, the depths of soils with potential to hold cultural and potential tribal cultural resources, and information on potential tribal cultural resources located throughout the Proposed Project Study Area. Providing data from the soil investigations would help tribes better identify tribal cultural resources for future projects within the study area region while causing non-significant impacts to tribal cultural resources and potential tribal cultural resources within the study area.

3.18.2 Discussion

Would the Proposed Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is?

a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code 5020.1 (k), or

b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Less than Significant with Mitigation Incorporated. The primary challenge for tribal cultural resources within the study area is that, though we have some information regarding the location of potential tribal cultural resources and know the study area is within a region highly sensitive for them, there has not been survey coverage to substantiate their locations. The subsurface footprint of the Impact Areas for CPTs and boring locations is minimal, but the potential for disturbances on the surface due to staging and activity related to set up on the surface for each location is higher. If possible, any impacts to any tribal cultural resources as defined above should be avoided. MM-CUL-1 has thus been designed to help avoid any project activities occurring on or in close proximity to any potential tribal cultural resources that are

identifiable on the surface, with the goal of avoiding both the surface deposit and providing a buffer to help avoid areas with high likelihood of subsurface deposits.

MM-CUL-2 and MM-CUL-3 are established for the unlikely event that previously unidentified subsurface deposits are discovered. As discussed in section 3.18.1.2, the risk for significant impact to tribal cultural resources and potential tribal cultural resources is extremely low due to the size of the boreholes, core samples, and CPTs, and the way these activities are conducted. However, to ensure that in moments where resources from the subsurface soils with potential cultural sensitivity are analyzed or visually examinable, MM-CUL-4 (Cultural Sensitivity Training) is in place to ensure those with stop work authority or those conducting analysis will be able to stop and implement MM-CUL-2 and/or MM-CUL-3 as appropriate.

Mitigation Measures as discussed in Section 3.5 address concerns for Tribal cultural resources.

3.19 Utilities and Service Systems

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	☐	☐	☐	☒
b) Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☐	☒
c) Would the project 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?	☐	☐	☐	☒
d) Would the project 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?	☐	☐	☐	☒

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
e) Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

3.19.1 Environmental Setting

3.19.1.1 Wastewater Collection and Treatment Systems

Wastewater collection and treatment services in the Study Area are provided by cities, counties, and special districts. Wastewater treatment facilities with collection systems typically are located in urban areas. In some rural areas where sewer service is unavailable, residents and businesses dispose of wastewater in on-site septic systems. Treatment plants for individual nonindustrial developments also exist in some areas to treat localized wastewater from mobile home parks, apartment complexes, and resorts. Municipal sewer systems consist of sewer collection pipelines, treatment facilities, and outfall structures or disposal systems. Secondary or tertiary treated effluents are typically discharged into rivers, streams, creeks, and sloughs. Methods of land disposal include evaporation/percolation ponds or application to irrigated agricultural lands. Recycled effluent is also used for industrial purposes or agricultural irrigation during the summer months. In some cases, municipalities may provide wastewater collection infrastructure and services that discharge to regional facilities owned and operated by another municipality (Delta Stewardship Council 2017).

Wastewater treatment facilities located near Impact Areas include the Discovery Bay Wastewater Treatment Facility, White Slough Wastewater Treatment Facility, Courtland Wastewater Treatment Facility, Isleton Wastewater Treatment Facility, and Rio Vista Wastewater Treatment Facility.

3.19.1.2 Water Supply and Distribution Systems

Water service providers in the Study Area include cities and counties, special districts, and private utilities. Water service providers range in size from those with a few service connections to those with thousands of connections. Most water service providers obtain their water from surface water, groundwater, or a combination of these sources. The amount of water available to these service providers is defined by water rights,

water contract agreements, groundwater pumping limitations, and the infrastructure required to treat, pump, and deliver water (Delta Stewardship Council 2017)

3.19.1.3 Solid Waste Management

Counties and cities are responsible for solid waste management planning, administration, and facility approval. Local enforcement agencies, authorized under the California Integrated Waste Management Act, are responsible for permitting of solid waste facilities. In locations that do not have an authorized local enforcement agency, solid waste facility permitting is under the jurisdiction of the state agency CalRecycle. Many municipalities enter into franchise agreements with private waste management businesses. Oversight of solid waste disposal facilities is conducted in cooperation with private collection and disposal businesses and other local and regional public agencies. The planning and operation of solid waste management facilities often is coordinated regionally because some communities do not have landfill sites within their boundaries, making it necessary to haul waste to an out-of-county/city facility for disposal. These communities utilize transfer stations and recycling facilities that are a component of local waste management solutions (Delta Stewardship Council 2017).

Resource recovery (recycling, composting, and waste-to-energy) is implemented to comply with state diversion regulations, to extend the life of landfills, to reduce environmental impacts of solid waste disposal, and to reuse resources. Resource recovery activities are commonly subject to performance measures and requirements in local Integrated Waste Management Plans (Delta Stewardship Council 2017).

Each county within the Proposed Project area contains solid waste facilities, including the Yolo County Central Landfill, Kiefer Landfill, Keller Canyon Landfill, Altamont Landfill & Resource Recovery Facility, Corral Hollow Landfill, and Lovelace Materials Recovery Facility and Transfer Station.

3.19.1.4 Electricity and Natural Gas

Energy providers within the Study Area include electric utility districts and natural gas companies. The existing energy utilities to the counties in the Study Area includes aboveground and underground electric transmission and distribution lines, power poles, and gas lines, including those from Pacific Gas and Electric Company (PG&E), Sacramento Municipal Utility District (SMUD), Transmission Agency of Northern California (TANC), and Western Area Power Administration (WAPA).

3.19.1.5 Communications

Regarding telecommunications, underground fiber trunk lines feed switching equipment, and overhead lines and poles supply individual service units. The communication lines typically are aligned parallel to the roadways and traverse roadways to supply the individual service units. Cable markers indicating underground cabling are located in some areas parallel to roadways. A network of telephone companies, cellular

communication companies, and cable companies also serves the region. New service to specific sites is provided on a case-by-case basis (United States Bureau of Reclamation 2009).

3.19.2 Discussion

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

No Impact. Proposed Project activities are minor and short in duration (up to 15 days per site), and do not require a change in utility or service systems. Wastewater services for soil investigation crews would be provided by temporary portable facilities, and the Proposed Project will not require relocation or construction of new water or wastewater treatment facilities. The Proposed Project will also not require the relocation or construction of new stormwater drainage facilities. The Proposed Project will not violate water discharge requirements or degrade surface water quality (see the Hydrology and Water Quality section, for more information on applicable MM-HYD-1 for water quality). Proposed Project activities will not interfere with any electric power, natural gas, or telecommunication facilities. While there would be no impact on the above utilities, implementation MM-UTI-1 would further avoid, minimize and/or reduce the potential for impacts.

MM UTI-1

A field reconnaissance, marking or staking the exploration site, and calling Underground Service Alert (USA) for utility clearance will be conducted by qualified personnel for each planned soil exploration location. Based upon the information gathered, sites will be adjusted to ensure no utilities are impacted.

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

No impact. Due to the minor and temporary nature of the soil exploration activities, the Proposed Project will not change the availability of existing water supplies. If needed, potable water supply needs are anticipated to be met with non-municipal water sources without any need for new water supply entitlements. Additionally, any potable water demand would be temporary and limited to the short duration of Proposed Project activities at each soil exploration site. Therefore, the Proposed Project activities would have no impact on existing water supplies available to serve the Proposed Project.

c) Result in a determination by the wastewater treatment provider that serves or may serve the Proposed Project that it has adequate capacity to serve the

Proposed Project's Proposed Projected demand, in addition to the provider's existing commitments?

No impact. The Proposed Project activities are minor and temporary and would not impact the service of wastewater treatment providers in the Study Area. Wastewater services for soil investigation crews would be provided by temporary portable facilities, and the Proposed Project will not require relocation or construction of new water or wastewater treatment facilities. The Proposed Project will not result in a determination by the wastewater treatment providers for inadequate capacity.

d) Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

No impact. Proposed Project activities are minor and the small amount of solid waste that could be generated at each Impact Area would not adversely affect the capacity of available landfills in the Proposed Project area. Based on the capacity of the landfills in the region, and the waste diversion requirements set forth by the State of California, the Proposed Project would not generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals.

e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

No impact. All cuttings and excess drilling fluid will be contained in drums, large containers, or vacuum trucks, and disposed of offsite at an appropriate landfill. Recirculation tanks (55-gallon storage drums) will be used to settle drill cuttings from drilling fluid. Discarded soil samples will also be placed in the storage drums. Drums would be stored on site at designated staging areas outside of environmentally sensitive areas for up to 4 weeks for environmental testing prior to landfill disposal. See Hazards & Hazardous Materials section for more information. Additionally, Proposed Project activities are minor and the disposal of the small amount of solid waste that could be generated at each Impact Area would comply with federal, state, and local management and reduction statuses and regulations related to solid waste. Therefore, there would be no impact.

3.20 Wildfire

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a) Would the project substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
b) Would the project, due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Proposed Project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☒	☐	☐
c) Would the project 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?	☐	☐	☐	☒
d) Would the project 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?	☐	☐	☐	☒

3.20.1 Environmental Setting

In California wildfire protection jurisdictions are separated and overseen by three areas of government: Local, State and Federal. Majority of the Impact Areas in Contra Costa, Sacramento, San Joaquin, Solano and Yolo County are in portions of their respective county's that are considered to be Local Responsibility Areas (LRA). Some of the Southern Proposed Project sites located in Alameda County are in State Responsibility Areas (SRA). Lastly, a few Proposed Project sites located in small regions Sacramento County and others in the Northern West portion of Alameda County are in Federal Responsibility Areas (FRA), (CalFire 2008).

LRA, SRA and FRA have each determined Fire Hazard Severity Zones (FHSZ) within each county, the zone classification is based on a multitude of factors: fire behavior models using vegetation density, adjacent wildland areas, and distance to wildland areas, another factor being the probability of a fire threatening nearby structures. The Proposed Project locations in Contra Costa, Sacramento, San Joaquin, Solano and Yolo County Counties all have FHSZ of low to no severity zones in their LRA and FRA, where the Proposed Project sites are proposed to take place. However, in the SRA portions of Alameda County the FHSZ is of moderate severity and in LRA portions of the county the Proposed Project locations are in areas of no severity (CalFire 2008).

3.20.2 Discussion

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

Less than Significant Impact. Strategic Fire Protection Planning prioritizes areas called wildland urban interfaces (WUI) where fire risks are not only a threat to areas of natural resources but also to "at risk communities" where large scale wildland fires may occur, posing a significant threat to life and property, these areas are known as wildland urban interfaces (CalFire 2014, USFS 2007).

There are only a few Proposed Project sites within a wildland urban interface, these few sites reside in Contra Costa County and Sacramento County (ArcGIS 2010). These counties abide by Local and State Responsibility procedures to ensure a minimum of wildfire protection is met. Both Contra Costa and Sacramento counties have Community Wildfire Protection Plans (CWPPs) which include measures to reduce the risk of wildfire and reference emergency operations/evacuation planning.

The Proposed Project will not impact public roads or highways, no complete road closures will take place, and soil investigation activities will not result in emergency vehicles or law enforcement delays. Additionally, safety and emergency response services will be covered in the Proposed Project's Job Hazard Assessment daily to ensure safe mobility while on the Proposed Project site and evacuation if necessary. The Proposed Project work will not hinder Contra Costa or Sacramento counties' ability to implement their CWPPs. While there would be a less than significant

impact on an adopted emergency response plan or emergency evacuation plan, implementation of Mitigation Measures MM-PUB-1 and HAZ-2 would further avoid, minimize and/or reduce the potential for impacts.

b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Proposed Project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Less than Significant with Mitigation Incorporated. There are tall, dry grasses surrounding some of the Impact Areas, the machinery and vehicles actively working on the Impact Areas have the potential to exacerbate wildfire risks. Mitigation Measure MM PUB-1 ensures that a plan will be prepared which incorporates fire safety measures, as well as a Safety Plan, and incorporation of these plans would include county specific emergency response considerations plans which would reduce the Proposed Project wildfire risk to 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?

No impact. The Proposed Project does not require the installation or maintenance of associated infrastructure (roads, fuel breaks, emergency water sources, powerlines or other utilities). Therefore, Proposed Project activities would have no impact on exacerbating wildfire risk or resulting in temporary or ongoing impacts to the environment.

d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?

No impact. This Proposed Project would not alter the current runoff regime and drainage of the Impact Areas, nor would it impact people or structures in a way that could pose significant risks through downslope or downstream flooding or landslides as a result of runoff, post-fire slope instability, or drainage changes. Therefore, no impact would occur as a result of the Proposed Project.

3.21 Mandatory Findings of Significance

ENVIRONMENTAL ISSUES	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
a. Does the project 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. Does the project have impacts that are individually limited but cumulatively considerable? ("Cumulatively considerable" meant that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of the other current projects and the effects of probable future projects)?	☐	☒	☐	☐
c. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

3.21.1 Environmental Setting

This Initial Study was prepared to assess the potential effects of the Proposed Project on the environment and significance of those effects. Due to the short term and temporary nature of the activities that comprise the Proposed Project, many potential significant impacts would be avoided or mitigated to less than significant with mitigation incorporated.

With the implementation of Mitigation Measures and the Mitigation Monitoring and Reporting Plan (MMRP), potential impacts to biological resources, cultural resources, greenhouse gas emissions, hazards and hazardous materials, tribal cultural resources, and wildfire resources from the Proposed Project would be avoided or reduced to less than significant with mitigation incorporated. The Proposed Project would result in no impacts to agricultural and forestry, land use and planning, population and housing, recreation, and utilities/service systems. Potential impacts to aesthetics, air quality, energy, geology and soils, hydrology and water quality, mineral resources, noise, public services, and transportation from the Proposed Project would be less than significant.

3.21.2 Discussion

a) Does the project 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?

Less than Significant with Mitigation Incorporated. As discussed in this Initial Study, the Proposed Project has the potential to impact biological resources, cultural resources, and tribal cultural resources but with the implementation of Mitigation Measures and the MMRP, the Proposed Project would 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) Does the project have impacts that are individually limited but cumulatively considerable? ("Cumulatively considerable" meant that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of the other current projects and the effects of probable future projects)?

Less than Significant with Mitigation Incorporated. Cumulative effects include the effects of future State, tribal, local, or private actions that are reasonably certain to occur in the Study Area are considered in this study. Future federal actions that are

unrelated to the Project are not considered in this section because they require separate consultation pursuant to section 7 of the Endangered Species Act (ESA).

Non-federal actions that are reasonably certain to occur in the Study Area include: (1) on-going non-Federal water diversions for irrigated agriculture and managed wetlands; (2) State and/or local levee maintenance activities; (3) stormwater and/or irrigation discharges; (4) point and non-point source pollution; (5) oil and gas produce discharges; (6) invasive species introductions; and, (7) climate change.

Related projects and cumulative impacts of those projects discussed below. In many instances, no impacts or less-than-significant cumulative impacts would occur because the impacts of the Proposed Project would be short-term and localized. In other cases, significant cumulative impacts would not occur because the Proposed Project with the implementation of the Mitigation Measures and the MMRP, those impacts would be avoided or reduced. In other cases, they would have beneficial impacts on resources because a number of projects are being proposed to improve aquatic resources in the Delta.

The Proposed Project would result in short-term temporary impacts that would mainly be limited to the Impact Area. While impacts to resource areas such as air quality and greenhouse gas emissions would contribute to more regional impacts, these impacts would not be cumulatively considerable because of the relative size of the proposed project.

Impacts to aesthetics, air quality, biological resources, cultural resources, energy, geology and soils, greenhouse gas emissions, hazards and hazardous materials, hydrology and water quality, mineral resources, noise, public services, transportation, tribal cultural resources, and wildfire have been determined to be less than significant or less than significant with mitigation incorporated and would not be cumulatively considerable. Therefore, cumulative impacts would be less than significant with mitigation incorporated.

3.21.2.1 Non-Federal Water Diversions

There are a number of unscreened non-Federal water diversions within the Study Area. Depending on the size, location, and period of operation, these unscreened diversions are believed to entrain various life stages of aquatic species, including listed salmonids and Delta Smelt. The results of a study conducted by Nobriga et al. (2008) suggest that entrainment of many Delta Smelt is not likely. In general, the littoral location and low-flow operational characteristics of these diversions are thought to reduce the risk of entraining Delta Smelt.

3.21.2.2 State and Local Levee Maintenance Activities

Levee maintenance activities by State and local entities within the Study Area are expected to continue and may include regular maintenance activities including mowing, disking, vegetation control, dredging of agricultural ditches and riprap repairs above the waterline. Additional anticipated State maintenance activities include:

Department of Water Resources- Routine Maintenance of Delta Levees Program Setback Levee Habitats

A Notice of Exemption (NOE) was filed on September 19, 2019 to cover routine maintenance of the southwest sides of Sherman (RD341) and Twitchell (RD 1601) Islands, located in Sacramento County. Anticipated work includes the control of non-native invasive plants and replanting with natives for fish, wildlife and recreation benefits.

Department of Water Resources- Environmental Permitting for Operations and Maintenance (EPOM)

DWR conducts operation and maintenance of multiple facilities of the federal flood control project within the Central Valley of CA. DWR conducts on-going maintenance activities on levees, channels, and appurtenant structures that are part of the Sacramento River Flood Control Project (SRFCP). DWR prepared the EIR to implement mandated maintenance activities associated with maintaining the proper functioning of flood control facilities in accordance with their original design. Maintenance work is sporadic and varies in location and timing. Most of the EPOM work is north of the proposed Study Area but it is possible that some work will occur in the northern portion of Study Area in Sacramento County.

The Environmental Impact Report (EIR) for EPOM was filed on September 19, 2017. The EIR was finalized and Notice of Determination (NOD) was filed on January 5, 2018.

3.21.2.3 Point and Non-Point Source Pollution

Adverse effects to designated critical habitat for Delta Smelt, Central Valley spring-run Chinook Salmon and Central Valley steelhead and proposed critical habitat for the Southern DPS Green Sturgeon may result from point and non-point source pollution (i.e. stormwater and/or irrigation discharges) which change the balance of important habitat constituents (i.e. salinity, turbidity, and water temperature, etc.) within the Study Area.

3.21.2.4 Oil and Gas Product Discharges

The introduction of contaminants from oil and gasoline product discharges as a result of on-going commercial and private shipping and boating within the Study Area is expected to continue. Implicated as potential stressors to aquatic species, these contaminants may adversely affect reproductive success and/or survival.

3.21.2.5 Invasive Species

Invasive species introductions are also expected to continue although it is difficult to predict the types of species introduced and the magnitude of the effects. Adverse effects from these introductions may include changes in water quality (i.e. turbidity), reductions in food supply, competition for space, and predation.

3.21.2.6 Climate Change

Global warming and climate change is an issue that has become more prominent over the past decade and one that certainly warrants consideration in the long-run. It has been predicted that global warming will increase Central Valley ambient air temperatures by 2°C to 7°C by the end of this century. Such an increase is anticipated to have a profound effect on Central Valley run-off and local hydrology. Within the Delta, anticipated effects are expected to include changes in seasonal flow patterns and increased water levels (as a result of general sea level rise). While difficult to predict, it is anticipated that such events will affect the distribution, and possibly even the abundance, of many aquatic species currently occupying the Delta seasonally or year-round.

3.21.2.7 Projects

Department of Water Resources- Lookout Slough
The Lookout Slough Tidal Habitat Restoration and Flood Improvement Project is proposed to help satisfy DWR's obligation to restore 8,000 acres of tidal marsh per the 2008 United States Fish and Wildlife Service (USFWS) Biological Opinion (BiOp) and the 2009 National Marine Fisheries Service (NMFS) BiOp, and to increase flood storage and conveyance, increase the resiliency of levees, and reduce flood risk within the Yolo Bypass. The proposed project site would be located in to the south of Duck Slough, to the west of Shag Slough, to the east of Cache Slough and to the south of Liberty Island Road. The propose project would be located near the Liberty Island Ecological Reserve, Liberty Island Conservation Bank, and Little Hastings Island Conservation Bank.

An Environmental Impact Statement/Environmental Impact Report (EIS/EIR) for this project is currently under development.

Department of Water Resources- Prospect Island Tidal Habitat Restoration Project
This project proposes to restore tidal action to 1,528 acres on the currently flooded Prospect Island in the Sacramento River Delta to improve productivity for Delta Smelt and salmonid species. This tidal habitat restoration project is located in Solano County. Project activities include clearing and invasive species control; excavation of tidal slough channels; removal of a portion of an internal cross levee; placement of excavated soils into remnant agricultural ditches and newly constructed berms and benches; dredging of the spur channel between Miner Slough and the southern portion of the site; limited planting and revegetation; and excavation of two levee breaches to establish tidal connectivity with Miner Slough.

The EIR for this project was filed on March 1, 2019. A NOD was filed on August 19, 2019.

Department of Water Resources- 2017 Storm Damage DWR Rehabilitation (SDDR) - Phases 4 and 5 Repair Sites

The proposed project would address non-emergency levee erosion repair sites (Phases 4 and 5) identified for repair in 2019 and 2020. This work is a follow on to the 2017 Storm Damage DWR Emergency Rehabilitation Program that rehabilitated emergency levee erosion repair sites (Phases 1 through 3) in 2017 and 2018.

The proposed project includes a total of 30 repair sites located in Yolo, Sutter, Tehama, Butte, Colusa, Glenn, San Joaquin, and Sacramento counties. Some of the SDDR projects are located outside of the proposed Study Area but it is possible that some work will occur along the Sacramento River and tributaries and within Sacramento and San Joaquin counties. The proposed project would repair and rehabilitate levees at the 30 locations using a variety of construction equipment, requiring different design considerations based on levee conditions. Construction activities would take place at each site throughout the summer/fall of 2019 or 2020. Each levee repair would require approximately 2 to 4 weeks of active construction and at least three sites would be repaired concurrently, with up to nine sites being repaired at the same time, based on limitations of hauling, air quality permitting, and other potential permit restrictions by responsible agencies.

The IS/MND for this project was filed on April 24, 2019. A NOD was filed on August 19, 2019.

Department of Water Resources- Sherman and Twitchell Islands Fish Screen Project

DWR proposes to place five self-cleaning, retractable fish screen at the waterslide termini of five DWR-owned intake siphons located on Sherman Island and Twitchell Island in order to reduce potential entrainment of Delta Smelt and other fish species by agricultural diversions on state-owned lands. Each installation will require modification of the existing intake siphon to accommodate attachment of the self-cleaning fish screen, construction of a structural steel access walkway, generator-powered winch retrieval track, and additional steel piles to support the structure. This project is located south of Rio Vista along Highway 160 on Sherman and Twitchell Islands in Sacramento County.

The IS/MND for this project was filed on March 3, 2016. A NOD was filed on April 15, 2016.

Department of Water Resources- Long-Term Operations of the State Water Project (SWP)

Under the proposed project, the SWP would continue to be operated to provide flood control and water supply for agricultural, municipal, industrial, recreational, and environmental purposes consistent with applicable legal requirements. SWP operations also would continue to be closely coordinated with the federal Central Valley Project (CVP), including the Coordinated Operating Agreements (COAs) with the US Bureau of Reclamation, and operational requirements from the ongoing re-initiation of Endangered

Species Act (ESA) consultation on coordinated long-term CVP and SWP operations. This proposed project crosses multiple county lines, including, but not limited to, Sacramento, Solano, Yolo and San Joaquin counties.

A Notice of Preparation (NOP) for an EIR was filed on August 19, 2019.

Department of Water Resources- Temporary Barriers Project (TBP)
The TBP refers to the annual installation, maintenance, and removal of up to four rock barriers in the channels of the southern portion of the Sacramento-San Joaquin Delta near the cities of Tracy and Lathrop in San Joaquin County, California. These barriers have been installed annually (with the exception of a few years) since 1991, and are designed to act as flow control structures, “trapping” tidal waters behind them following a high tide in order to improve water levels and circulation for local south Delta farmers. The TBP is anticipated to continue through water year 2022 and potentially further into the future.

All of the barriers are typically installed during the period between March and November each year. Three of the barriers (one each at Old River near Tracy, Middle River and Grant Line Canal) facilitate pumping by agricultural water diversions for irrigation purposes. A fourth barrier, the Head of Old River barrier, blocks migratory movements through the Old River channel and directs juvenile and adult anadromous fish species migration through the San Joaquin River corridor. None of the barriers can be constructed when ambient flows in the San Joaquin River exceed 5,000 cubic feet per second (cfs) as measured at the Vernalis monitoring station, as high flows can displace the rock barriers and create extremely hazardous and unsafe working conditions.

Department of Water Resources- Salmon Protection Tech Study
The purpose of the proposed Salmon Protection Technology Study (SPTS) project would be to construct and operate barriers at Delta junctions with known lower survival salmonid migratory pathways, study other emerging salmonid barrier technologies and collect salmonid survival and behavioral data.

Locations under consideration would include Georgiana Slough, Steamboat Slough, and Sutter Slough within Sacramento, Solano and/or San Joaquin counties. Work would be expected to occur for five years, annually, between 2020 and 2025.

As a result of the 2009 NMFS BiOp, the SWP and CVP operations must comply with Reasonable and Prudent Alternative (RPA) Action IV.1.3 to reduce diversion of juvenile salmonids into the central and south Delta. Currently, the presence of endangered salmon species in the south Delta require significant SWP and CVP operations curtailments. The SPTS project would provide the best available science and engineering for the final implementation of Salmon Survival Engineering Solutions Phase III.

Department of Water Resources- Bethany Dams Improvement Project

To ensure the long-term safety and operations of the State Water Project, DWR will conduct additional vegetation removal in the drainage ditches at Dams 1 and 2, remove accumulated sediment blocking the culvert in the drainage ditch at Dam 3, repair existing rodent burrow damage on the dam faces, establish a long-term, sustainable program of effective rodent control to reduce or eliminate further burrowing within the dam embankments, and perform annual maintenance to repair new rodent burrow damage at the four Bethany Reservoir Dams. This project is located near Tracy, California in Alameda County.

The IS/MND for this project was filed on August 13, 2018. A NOD was filed on September 18, 2019.

Department of Water Resources- Old Banks Landfill Cap Project

DWR is proposing to conduct the Old Banks Landfill Cap Project to cap the Old Banks Landfill (also known as the Harvey O. Banks Pumping Plant Landfill) in order to address concerns related to Landfill debris exposure raised by the Contra Costa County Health Department (CCCHD). This proposed project is located approximately 9 miles northwest of the city of Tracy and 12 miles northeast of the city of Livermore in Contra Costa County.

Landfill debris concerns would be addressed by DWR by confining the Landfill materials and preventing the Landfill contents from being exposed by rodent activities, as well as improving surface drainage, and minimizing future maintenance. Project activities include clearing existing vegetation, removing the upper 2 to 4 inches of topsoil of the Landfill crown, grading the existing Landfill crown by adding fill soil materials in localized areas in order to bring the site to grade, placing a commercially available rodent control barrier material, placing a 1-foot thick surface layer on top of the rodent control fill fabric to protect it, and returning the project site to near pre-project conditions by hydroseeding.

A Notice of Completion (NOC) for an IS/MND was filed on October 25, 2019.

U.S. Bureau of Reclamation- Reinitiation of Consultation on the Coordinated Long-Term Operation of the Central Valley Project

Under the proposed project, the U.S. Bureau of Reclamation prepared an Environmental Impact Statement to analyze potential modifications to the continued long-term operation of the Central Valley Project (CVP), for its authorized purposes, in a coordinated manner with the SWP, for its authorized purposes. This EIS evaluates alternatives to maximize water supply deliveries and optimizes marketable power generation consistent with applicable laws, contractual obligations, and agreements and to augment operational flexibility by addressing the status of listed species. This proposed project crosses multiple county lines, including, but not limited to, Sacramento, Solano, Yolo, Contra Costa, Alameda, and San Joaquin counties.

Public review for the Draft EIS closed on August 26, 2019.

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

Less than Significant with Mitigation Incorporated. Potential impacts from the Proposed Project would be short-term, temporary and localized and with the implementation of Mitigation Measures and the MMRP, there would be no substantial direct or indirect adverse environmental impacts to humans.

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Appendix A:
Wildlife and Plant Species Lists

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Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
Amphibians							
California tiger salamander	*Ambystoma californiense*	FT/ST	CDFW_WL-Watch List | IUCN_VU-Vulnerable	Cismontane woodland | Meadow & seep | Riparian woodland | Valley & foothill grassland | Vernal pool | Wetland	Need underground refuges, especially ground squirrel burrows, and vernal pools or other seasonal water sources for breeding.	High	Suitable upland and aquatic habitat may be present and several of the Impact Areas in Contra Costa and Alameda Counties are within 5 miles of recorded occurrences.
foothill yellow-legged frog	*Rana boylii*	-/CT	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_NT-Near Threatened | USFS_S-Sensitive	Aquatic | Chaparral | Cismontane woodland | Coastal scrub | Klamath/North coast flowing waters | Lower montane coniferous forest | Meadow & seep | Riparian forest | Riparian woodland |	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis.	None	No suitable habitat is present in the vicinity of the Study Area, and there are no reported occurrences within 5 miles.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
				Sacramento/San Joaquin flowing waters			
California red-legged frog	*Rana draytonii*	FT/-	CDFW_SSC-Species of Special Concern | IUCN_VU-Vulnerable	Aquatic | Artificial flowing waters | Artificial standing waters | Freshwater marsh | Marsh & swamp | Riparian forest | Riparian scrub | Riparian woodland | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters | South coast flowing waters | South coast standing waters | Wetland	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	High	Suitable upland and aquatic habitat may be present, and several of the Impact Areas in Contra Costa and Alameda Counties are within 5 miles of recorded occurrences.
western spadefoot	*Spea hammondii*	-/-	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern |	Cismontane woodland | Coastal scrub | Valley & foothill grassland | Vernal pool | Wetland	Occurs primarily in grassland habitats but can be found in valley-foothill hardwood	Moderate	Suitable habitat may be present, the Study Area is within the range of

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
			IUCN_NT-Near Threatened		woodlands. Vernal pools are essential for breeding and egg-laying.		the species, and multiple recent documents occurrences are near the Study Area.
Reptiles							
California legless lizard	*Anniella pulchra*	-/-	CDFW_SSC-Species of Special Concern | USFS_S-Sensitive	Chaparral | Coastal dunes | Coastal scrub	Sandy or loose loamy soils under sparse vegetation. Soil moisture is essential. They prefer soils with a high moisture content.	Low	Marginally suitable habitat may be present, the southern portion of the Study Area is within the range, and several of the Impact Areas in Contra Costa County are within 5 miles of recorded occurrences.
California glossy snake	*Arizona elegans occidentalis*	-/-	CDFW_SSC-Species of Special Concern	Open desert | Grasslands | Shrublands |	Patchily distributed from the eastern portion of San	Moderate	The Study Area is within the range of the species,

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
				Chaparral | Woodlands	Francisco Bay, southern San Joaquin Valley, the Coast, Transverse and Peninsular ranges, south to Baja California. Uses a range of scrub and grassland habitats, often with loose or sandy soils.		there is suitable habitat within the Study Area, and several occurrences nearby West and South of the Study Area.
western pond turtle	*Emys marmorata*	-/-	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_VU-Vulnerable | USFS_S-Sensitive	Aquatic | Artificial flowing waters | Klamath/North coast flowing waters | Klamath/North coast standing waters | Marsh & swamp | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters | | Wetland	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up	High	There are many known occurrences within the Study Area.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
					to 0.5 km from water.		
San Joaquin coachwhip	*Masticophis flagellum ruddocki*	-/-	CDFW_SSC-Species of Special Concern	Chenopod scrub | Valley & foothill grassland	Open, dry habitats with little or no tree cover. Found in valley grassland and saltbush scrub in the San Joaquin Valley. Needs mammal burrows for refuge and oviposition sites.	Moderate	The Study Area is within the range of the species and there is potentially suitable habitat present, however the nearest known occurrences are over 5 miles away.
Alameda whipsnake	*Masticophis lateralis euryxanthus*	FT/ST		Chaparral | Cismontane woodland | Coastal scrub | Valley & foothill grassland	Typically found in chaparral and scrub habitats but will also use adjacent grassland, oak savanna and woodland habitats. Mostly south-facing slopes and ravines, with rock	None	There is no suitable habitat in the Study Area, and the nearest known occurrences are over 3 miles away.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
					outcrops, deep crevices or abundant rodent burrows, where shrubs form a vegetative mosaic with oak trees and grasses.		
coast horned lizard	*Phrynosoma blainvillii*	-/-	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	Chaparral | Cismontane woodland | Coastal bluff scrub | Coastal scrub | Desert wash | Pinon & juniper woodlands | Riparian scrub | Riparian woodland | Valley & foothill grassland	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	Low	The Study Area is within the range of the species, marginally suitable habitat may be present, and several of the Impact Areas in Contra Costa County are within 2.5 miles of recorded occurrences.
giant garter snake	*Thamnophis gigas*	FT/ST	IUCN_VU-Vulnerable	Marsh & swamp | Riparian scrub | Wetland	Prefers freshwater marsh and low gradient	High	The project is within the range of the

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
					streams. Has adapted to drainage canals and irrigation ditches. This is the most aquatic of the garter snakes in California.		species, suitable habitat is present, and there are known occurrences within the footprint of the proposed activities.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
Birds							
Cooper's hawk	*Accipiter cooperii*	-/-	CDFW_WL-Watch List | IUCN_LC-Least Concern	Cismontane woodland | Riparian forest | Riparian woodland | Upper montane coniferous forest	Woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	Moderate	Suitable habitat exists throughout much of the Study Area.
tricolored blackbird	*Agelaius tricolor*	-/ST	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_EN-Endangered | NABCI_RWL-Red Watch List | USFWS_BCC-Birds of	Freshwater marsh | Marsh & swamp | Swamp | Wetland	Highly colonial species, most numerous in Central Valley & vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area	Moderate	Suitable habitat exists within the Study Area, and several recorded occurrences are located near the Study Area. Wintering birds and a few individuals have been

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
			Conservation Concern		with insect prey within a few km of the colony.		observed during breeding season, but no nesting colonies have been identified within 1/4 mile of the Study Area.
grasshopper sparrow	*Ammodramus savannarum*	-/-	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	Valley & foothill grassland	Dense grasslands on rolling hills, lowland plains, in valleys and on hillsides on lower mountain slopes. Favors native grasslands with a mix of grasses, forbs and scattered shrubs. Loosely colonial when nesting.	Low	Minimal suitable nesting habitat is present within the Study Area. Species has been observed rarely in the winter, although the Study Area is not within 5 miles of the known occurrences.
Lesser sandhill crane	*Antigone canadensis canadensis*	-/-	CDFW_SSC-Species of	Wetlands	Forages in harvested corn fields, winter	High	Suitable habitat present for foraging

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
			Special Concern		wheat, irrigated pastures, alfalfa fields, and fallow fields. Roosts in open shallowly flooded fields and wetlands.		and roosting, and they have been observed regularly in the winter within the Study Area.
Greater sandhill crane	*Antigone canadensis tabida*	-/-	CDFW_FP-Fully Protected	Wetlands	Forages in harvested corn fields, winter wheat, irrigated pastures, alfalfa fields, and fallow fields. Roosts in open shallowly flooded fields and wetlands.	High	Suitable habitat present for foraging and roosting, and they have been observed regularly in the winter within the Study Area.
golden eagle	*Aquila chrysaetos*	-/-	BLM_S-Sensitive | CDF_S-Sensitive | CDFW_FP-Fully Protected | CDFW_WL-Watch List | IUCN_LC-	Broadleaved upland forest | Cismontane woodland | Coastal prairie | Great Basin grassland | Great Basin	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range;	Moderate	Suitable foraging habitat exists in the Study area and Golden Eagle are regularly observed foraging. Suitable nest

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
			Least Concern | USFWS_BCC-Birds of Conservation Concern	scrub | Lower montane coniferous forest | Pinon & juniper woodlands | Upper montane coniferous forest | Valley & foothill grassland	also, large trees in open areas.		trees are present, but no nesting has been recorded within 1 mile of the Study Area.
great egret	*Ardea alba*	-/-	CDF_S-Sensitive | IUCN_LC-Least Concern	Brackish marsh | Estuary | Freshwater marsh | Marsh & swamp | Riparian forest | Wetland	Colonial nester in large trees. Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	High	Suitable habitat exists within the Study Area, and several recorded occurrences are located nearby.
great blue heron	*Ardea herodias*	-/-	CDF_S-Sensitive | IUCN_LC-Least Concern	Brackish marsh | Estuary | Freshwater	Colonial nester in tall trees, cliffsides, and sequestered	High	Suitable habitat exists within the Study Area,

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
				marsh | Marsh & swamp | Riparian forest | Wetland	spots on marshes. Rookery sites close to foraging areas: marshes, lake margins, tide-flats, rivers, streams, wet meadows.		and several recorded occurrences are located nearby.
short-eared owl	*Asio flammeus*	-/-	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	Great Basin grassland | Marsh & swamp | Meadow & seep | Valley & foothill grassland | Wetland	Found in swamp lands, both fresh and salt; lowland meadows; irrigated alfalfa fields. Tule patches/tall grass needed for nesting/daytime seclusion. Nests on dry ground in depression concealed in vegetation.	Moderate	Species has been observed at several locations throughout the Delta. If borings are located away from wetlands, no suitable nesting habitat in the Impact Areas.
burrowing owl	*Athene cunicularia*	-/-	BLM_S-Sensitive |	Coastal prairie |	Open, dry annual or	High	Several recorded

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
			CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Coastal scrub | Great Basin grassland | Great Basin scrub | Mojave Desert scrub | Sonoran desert scrub | Valley & foothill grassland	perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, such as California ground squirrel.		occurrences are located nearby, and suitable habitat exists within the Study Area.
ferruginous hawk	*Buteo regalis*	-/-	CDFW_WL-Watch List | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Great Basin grassland | Great Basin scrub | Pinon & juniper woodlands | Valley & foothill grassland	Open grasslands, sagebrush flats, desert scrub, low foothills and fringes of pinyon and juniper habitats. Eats mostly lagomorphs, ground squirrels, and mice. Population trends may	Moderate	Several documented occurrences of over-wintering birds occur within 0.5 to 3 miles of several of the Impact Areas, and they are observed regularly in the winter, but do not nest in CA

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
					follow lagomorph population cycles.		
Swainson's hawk	*Buteo swainsoni*	-/ST	BLM_S-Sensitive | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Great Basin grassland | Riparian forest | Riparian woodland | Valley & foothill grassland	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, & agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas with rodent populations.	High	Suitable nesting and foraging habitat found throughout the Study Area. There are known occurrences within the Study Area.
western snowy plover	*Charadrius alexandrinus nivosus*	FT/-	CDFW_SSC-Species of Special Concern | NABCI_RWL-Red Watch List |	Great Basin standing waters | Sand shore | Wetland	Sandy beaches, salt pond levees & shores of large alkali lakes. Needs sandy, gravelly or	None	The Study Area is not within 5 miles of the known occurrences, and no suitable habitat is

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
			USFWS_BCC-Birds of Conservation Concern		friable soils for nesting.		located within Study Area.
mountain plover	*Charadrius montanus*	-/-	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_NT-Near Threatened | NABCI_RWL-Red Watch List | USFWS_BCC-Birds of Conservation Concern	Chenopod scrub | Valley & foothill grassland	Short grasslands, freshly plowed fields, newly sprouting grain fields, & sometimes sod farms. Short vegetation, bare ground, and flat topography. Prefers grazed areas and areas with burrowing rodents.	Low	Winter records are located within 4.6 miles of the Study Area and minimal suitable habitat is present in the footprint; Species does not breed in CA.
northern harrier	*Circus hudsonius*	-/-	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	Coastal scrub | Great Basin grassland | Marsh & swamp | Riparian scrub |	Coastal salt & freshwater marsh. Nest and forage in grasslands, from salt grass in desert sink to	High	There are known occurrences within the Study area. Suitable nesting and foraging

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
				Valley & foothill grassland | Wetland	mountain cienagas. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.		habitat found throughout the Study Area.
western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	FT/SE	BLM_S-Sensitive | NABCI_RWL-Red Watch List | USFS_S-Sensitive | USFWS_BCC-Birds of Conservation Concern	Riparian forest	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	Low	There are known occurrences within the Study Area, and there is minimal suitable migratory habitat is present and species has been observed during migration.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
							Minimal habitat of suitable patch size for nesting, and species has not been recorded breeding in the vicinity in recent history.
snowy egret	*Egretta thula*	-/-	IUCN_LC-Least Concern	Marsh & swamp | Meadow & seep | Riparian forest | Riparian woodland | Wetland	Colonial nester, with nest sites situated in protected beds of dense tules. Rookery sites situated close to foraging areas: marshes, tidal-flats, streams, wet meadows, and borders of lakes.	High	Several recorded occurrences are located near Impact Areas, and suitable habitat exists within the Study Area.
white-tailed kite	*Elanus leucurus*	-/-	BLM_S-Sensitive | CDFW_FP-	Cismontane woodland | Marsh &	Rolling foothills and valley margins with	Moderate	Several recorded occurrences

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
			Fully Protected | IUCN_LC-Least Concern	swamp | Riparian woodland | Valley & foothill grassland | Wetland	scattered oaks & river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.		are located near Impact Areas, and suitable habitat exists within the Study Area.
California horned lark	*Eremophila alpestris actia*	-/-	CDFW_WL-Watch List | IUCN_LC-Least Concern	Marine intertidal & splash zone communities | Meadow & seep	Coastal regions, chiefly from Sonoma County to San Diego County. Also, main part of San Joaquin Valley and east to foothills. Short-grass prairie, "bald" hills, mountain	Moderate	Several of the proposed on-land Impact Areas in Contra Costa County are within 1-2 miles of recorded occurrences, and potentially suitable habitat

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
					meadows, open coastal plains, fallow grain fields, alkali flats.		may be present.
Yellow-Breasted Chat	*Icteria virens*	-/-	CDFW_SSC-Species of Special Concern| USFWS BCC-Bird of Conservation Concern	Riparian woodland	San Joaquin Delta in dense riparian understory with willow, blackberry and wild grape.	High	Suitable habitat is present and has been observed in riparian thickets and in-channel islands throughout the Sacramento-San Joaquin Delta.
merlin	*Falco columbarius*	-/-	CDFW_WL-Watch List | IUCN_LC-Least Concern	Estuary | Great Basin grassland | Valley & foothill grassland	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands & deserts, farms & ranches. Clumps of trees	Low	Suitable foraging habitat is present in the Study Area, but species has been observed foraging and several

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
					or windbreaks are required for roosting in open country.		recorded occurrences are located near Impact Areas.
prairie falcon	*Falco mexicanus*	-/-	CDFW_WL-Watch List | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Great Basin grassland | Great Basin scrub | Mojave Desert scrub | Sonoran Desert scrub | Valley & foothill grassland	Inhabits dry, open terrain, either level or hilly. Breeding sites located on cliffs. Forages far afield, even to marshlands and ocean shores.	Low	No suitable nesting habitat is located in the Study Area, but species has been observed foraging.
American peregrine falcon	*Falco peregrinus anatum*	FD/SD	CDF_S-Sensitive | CDFW_FP-Fully Protected | USFWS_BCC-Birds of Conservation Concern		Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape or a depression or	Low	No suitable nesting habitat is located in the Study Area, but species has been observed foraging. One recorded occurrence is within 2.5 miles of Impact

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
					ledge in an open site.		Areas, on the Rio Vista Bridge.
saltmarsh common yellowthroat	*Geothlypis trichas sinuosa*	-/-	CDFW_SSC-Species of Special Concern | USFWS_BCC-Birds of Conservation Concern	Marsh & swamp	Resident of the San Francisco Bay region, in fresh and salt water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	None	The Study Area is not within the range of the species.
loggerhead shrike	*Lanius ludovicianus*	-/-	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern | USFWS_BCC-Birds of	Broadleaved upland forest | Desert wash | Joshua tree woodland | Mojave Desert scrub	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert oases, scrub &	High	Several recorded occurrences are located near Impact Areas in Contra Costa and Alameda Counties, and

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
			Conservation Concern	| Pinon & juniper woodlands | Riparian woodland | Sonoran Desert scrub	washes. Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.		suitable habitat exists within the Study Area.
California black rail	*Laterallus jamaicensis coturniculus*	-/ST	BLM_S-Sensitive | CDFW_FP-Fully Protected | IUCN_NT-Near Threatened | NABCI_RWL-Red Watch List | USFWS_BCC-Birds of Conservation Concern	Brackish marsh | Freshwater marsh | Marsh & swamp | Salt marsh | Wetland	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	Moderate	Several recorded occurrences are located near Impact Areas, and suitable habitat exists within the Study Area.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
song sparrow ("Modesto" population)	*Melospiza melodia*	-/-	CDFW_SSC-Species of Special Concern	Open Woodlands | Tidal marshes | Grasslands | Chaparral | Agricultural fields	Inhabits a wide variety of habitats, nests from on the ground to 15 feet, often near water.	High	Several recorded occurrences are located near Impact Areas, and suitable habitat exists within the Study Area.
Suisun song sparrow	*Melospiza melodia maxillaris*	-/-	CDFW_SSC-Species of Special Concern | USFWS_BCC-Birds of Conservation Concern	Marsh & swamp | Wetland	Resident of brackish-water marshes surrounding Suisun Bay. Inhabits cattails, tules and other sedges, and Salicornia; also known to frequent tangles bordering sloughs.	None	The Study Area is not within the range of the species.
black-crowned night heron	*Nycticorax nycticorax*	-/-	IUCN_LC-Least Concern	Marsh & swamp | Riparian forest |	Colonial nester, usually in trees, occasionally in tule patches.	High	Suitable habitat exists within the Study Area,

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
				Riparian woodland | Wetland	Rookery sites located adjacent to foraging areas: lake margins, mud-bordered bays, marshy spots.		and several recorded occurrences are located near Impact Areas.
Osprey	Pandion haliatus	-/-	CDFW_WL-Watch List	Riparian forest | Lakes	Nest in snags, man-made structures or trees in open areas near water.	High	Suitable habitat is present, and the species has been observed foraging in the Study Area.
double-crested cormorant	*Phalacrocorax auritus*	-/-	CDFW_WL-Watch List | IUCN_LC-Least Concern	Riparian forest | Riparian scrub | Riparian woodland	Colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state. Nests along coast on sequestered islets, usually on ground with	High	Suitable habitat exists within the Study Area, and several recorded occurrences are located near Impact Areas.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
					sloping surface, or in tall trees along lake margins.		
white-faced ibis	*Plegadis chihi*	-/-	CDFW_WL-Watch List | IUCN_LC-Least Concern	Marsh & swamp | Wetland	Shallow freshwater marsh. Dense tule thickets for nesting, interspersed with areas of shallow water for foraging.	Moderate	The species is regularly observed in the Delta year-round. Limited nesting habitat present and borings will be located outside of wetlands where nesting might occur.
purple martin	*Progne subis*	-/-	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	Broadleaved upland forest | Lower montane coniferous forest	Inhabits woodlands, low elevation coniferous forest of Douglas-fir, ponderosa pine, and Monterey pine. Nests in old	Low	Species has been observed rarely in the area, and minimal suitable nesting habitat is present within the Study Area.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
					woodpecker cavities mostly; also, in human-made structures. Nest often located in tall, isolated tree/snag.		
California Ridgway's Rail	*Rallus obsoletus obsoletus*	FE/SE	CDFW_FP-Fully Protected	Brackish marsh | Marsh & swamp | Salt marsh | Wetland	Salt water and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay. Associated with abundant growths of pickleweed but feeds away from cover on invertebrates from mud-bottomed sloughs.	None	The Study Area is not within the range of the species.
bank swallow	*Riparia riparia*	-/ST	BLM_S-Sensitive |	Riparian scrub |	Colonial nester; primarily in	Low	No suitable nesting habitat

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
			IUCN_LC-Least Concern	Riparian woodland	riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.		is present in the Study Area, but species has been observed foraging, especially during migration.
Yellow Warbler	*Setophaga petechia*	-/-	CDFW_SSC-Species of Special Concern | USFWS_BCC-Birds of Conservation Concern	Riparian forest | Riparian scrub | Riparian woodland	Riparian obligate uses willow and shrub thickets, and other riparian plant species.	Moderate	Suitable habitat is present, and species has been observed during migration in the vicinity of the Study Area.
California Least Tern	*Sternula antillarum browni*	FE/SE	CDFW_FP-Fully Protected	Alkali playa	Nests along the coast from San Francisco Bay south to	Low	No suitable nesting habitat and no known colonies, foraging birds

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
					northern Baja California.		are rarely observed.
Least Bell's vireo	*Vireo bellii pusillus*	FE/SE	IUCN_NT-Near Threatened | NABCI_YWL-Yellow Watch List	Riparian forest | Riparian scrub | Riparian woodland	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 ft. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.	Moderate	Suitable habitat is present in the Study Area. Species formerly extirpated from the Central Valley, but recently species has been observed vocalizing during nesting season at Yolo Bypass WA, and Bradford Island . Breeding unconfirmed.
yellow-headed blackbird	*Xanthocephalus xanthocephalus*	-/-	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	Marsh & swamp | Wetland	Nests in freshwater emergent wetlands with dense vegetation and	Moderate	Suitable foraging habitat exists in the Study Area and the species is

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
					deep water. Often along borders of lakes or ponds. Nests only where large insects such as Odonata are abundant, nesting timed with maximum emergence of aquatic insects.		regularly observed foraging in the winter. Minimal suitable nesting habitat is present in the Study Area, and nesting records are over 5 miles away.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
Fish							
Green sturgeon (southern DPS)	*Acipenser medirostris*	FT/-		Aquatic | Sacramento/San Joaquin flowing waters |Estuary	Anadromous. Spawns in Sacramento River, moves to estuary as juvenile, and out to ocean as adult.	High	Found within the waterways of the Study Area.
Sacramento perch	*Archoplites interruptus*	-/-	AFS_TH-Threatened | CDFW_SSC-Species of Special Concern	Aquatic | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters	Historically found in the sloughs, slow-moving rivers, and lakes of the Central Valley. Prefers warm water. Aquatic vegetation is essential for young. Tolerates wide range of physio-chemical water conditions.	Low	Potentially found within waterways of the Study Area.
Delta smelt	*Hypomesus transpacificus*	FT/SE	AFS_TH-Threatened |	Aquatic | Estuary	Sacramento-San Joaquin	High	Found within the waterways

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
			IUCN_EN-Endangered		Delta. Seasonally in Suisun Bay, Carquinez Strait & San Pablo Bay. Seldom found at salinities > 10 ppt. Most often at salinities < 2ppt.		of the Study Area.
steelhead - Central Valley DPS	*Oncorhynchus mykiss irideus pop. 11*	FT/-	AFS_TH-Threatened	Aquatic | Sacramento/San Joaquin flowing waters		High	Found within the waterways of the Study Area.
chinook salmon - Central Valley spring-run ESU	*Oncorhynchus tshawytscha pop. 6*	FT/ST	AFS_TH-Threatened	Aquatic | Sacramento/San Joaquin flowing waters	Adult numbers depend on pool depth and volume, amount of cover, and proximity to gravel. Water temps >27 C are lethal to adults. Federal listing	High	Found within the waterways of the Study Area.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
					refers to populations spawning in Sacramento River and tributaries.		
chinook salmon - Sacramento River winter-run ESU	*Oncorhynchus tshawytscha pop. 7*	FE/SE	AFS_EN-Endangered	Aquatic | Sacramento/San Joaquin flowing waters	Sacramento River below Keswick Dam. Spawns in the Sacramento River, but not in tributary streams. Requires clean, cold water, between 6 and 14 C, over gravel beds for spawning.	High	Found within the waterways of the Study Area.
Sacramento splittail	*Pogonichthys macrolepidotus*	-/-	AFS_VU-Vulnerable | CDFW_SSC-Species of Special Concern |	Aquatic | Estuary | Freshwater marsh | Sacramento/San Joaquin flowing waters	Endemic to the lakes and rivers of the Central Valley, but now confined	High	Found within the waterways of the Study Area.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
			IUCN_EN-Endangered		to the Delta, Suisun Bay and associated marshes. Slow moving river sections, dead end sloughs. Requires flooded vegetation for spawning and foraging for young.		
longfin smelt	*Spirinchus thaleichthys*	FC/ST		Aquatic | Estuary	Euryhaline, nektonic & anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15-30 ppt but	High	Found within the waterways of the Study Area.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
					can be found in completely freshwater to almost pure seawater.		
eulachon	*Thaleichthys pacificus*	FT/-		Aquatic | Klamath/North coast flowing waters	Found in Klamath and Mad Rivers, Redwood Creek, and Smith River and Humboldt Bay tributaries. Spawn in lower reaches of coastal rivers with moderate water velocities and bottom of pea-sized gravel, sand, and woody debris.	Low	Potentially could migrate through waterways of the Study Area.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
Invertebrates							
Blennosperma vernal pool andrenid bee	*Andrena blennospermatis*	-/-		Vernal pool	This bee is oligolectic on vernal pool blennosperma. Bees nest in the uplands around vernal pools.	Low	Suitable habitat may be present, and the Study Area is within the range of the species, however the Study Area is not within 5 miles of recent known occurrences.
Antioch Dunes anthicid beetle	*Anthicus antiochensis*	-/-		Interior dunes	Usually found in bare unvegetated sand. Extirpated from Antioch Dunes, but found along the Sacramento River in Glenn, Tehema, Shasta, and Solono Counties and along the Feather River in Sutter County.	Low	Suitable habitat may be present within the Study Area, the project area is within the range and one reported occurrence is within 2 miles and a second is within 5 miles of the Study Area.
Sacramento anthicid beetle	*Anthicus sacramento*	-/-	IUCN_EN-Endangered	Interior dunes	Restricted to sand dune areas. Inhabit sand slipfaces among bamboo and willow but may not depend on presence of these plant species.	Low	Suitable habitat may be present within the Study Area, the project area is within the range and two reported occurrences are

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
							within 2 miles of Study Area.
Lange's metalmark butterfly	*Apodemia mormo langei*	FE/-	XERCES_CI-Critically Imperiled	Interior dunes	Inhabits stabilized dunes along the San Joaquin River. Endemic to Antioch Dunes, Contra Costa County. Primary host plant is *Eriogonum nudum var auriculatum*; feeds on nectar of other wildflowers, as well as host plant.	None	There is potential for some suitable habitat to be within the Study Area, however the Study Area is outside of the current known range, which is limited to the Antioch Dunes.
Crotch bumble bee	*Bombus crotchii*	-/-	IUCN_EN-Endangered		Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include *Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia*, and *Eriogonum.*	Moderate	Suitable habitat may be present within the project area, and the Study Area is within the range, although the nearest known occurrence s are over 5 miles away.
western bumble bee	*Bombus occidentalis*	-/-	USFS_S-Sensitive |		Found from Pacific Coast to the Colorado Rockies.	High	Potentially suitable habitat may be present,

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
			XERCES_IM-Imperiled		Select food plant genera: *Melilotus, Cirsium, Trifolium, Centaurea, Chrysothamnus, Eriogonum*		and the Study Area is within the species range, and two reported occurrences are within 2 miles and a third is within 5 miles of Impact Areas.
Conservancy fairy shrimp	*Branchinecta conservatio*	FE/-	IUCN_EN-Endangered	Valley & foothill grassland | Vernal pool | Wetland	Endemic to the grasslands of the northern two-thirds of the Central Valley; found in large, turbid pools. Inhabit astatic pools located in swales formed by old, braided alluvium; filled by winter/spring rains, last until June.	Moderate	Some suitable habitat could be present within the Study Area, and one reported occurrence is within 5 miles of the Study Area.
longhorn fairy shrimp	*Branchinecta longiantenna*	FE/-	IUCN_EN-Endangered	Valley & foothill grassland | Vernal pool | Wetland	Endemic to the eastern margin of the Central Coast mountains in seasonally astatic grassland vernal pools. Inhabit small, clear-water	Moderate	Some suitable habitat could be present within the Study Area, and two reported occurrences are within 5 miles of the Study Area.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
					depressions in sandstone and clear-to-turbid clay/grass-bottomed pools in shallow swales.		
vernal pool fairy shrimp	*Branchinecta lynchi*	FT/-	IUCN_VU-Vulnerable	Valley & foothill grassland | Vernal pool | Wetland	Endemic to the grasslands of the Central Valley, Central Coast mountains, and South Coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	Moderate	Some suitable habitat could be present within the Study Area, and multiple occurrences have been reported within 0.5 miles of several of the Impact Areas.
midvalley fairy shrimp	*Branchinecta mesovallensis*	-/-		Vernal pool | Wetland	Found in vernal pools in Southeastern Sacramento, the southern Sierra foothills, San Joaquin Vernal pool region, and San	Moderate	Some suitable habitat could be present within the Study Area, and one reported occurrence is within 0.5 miles of Impact Areas.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
					Joaquin, Madera, Merced and Fresno Counties.		
Sacramento Valley tiger beetle	*Cicindela hirticollis abrupta*	-/-		Sand shore	Sandy floodplain habitat in the Sacramento Valley. No beetles located during intensive 2001-2004 surveys. Requires fine to medium sand, terraced floodplains or low sandy water edge flats.	None	Thought to be extirpated. No suitable habitat could be present within the Study Area, and nearest occurrence is within 5 miles of the northern edge of the Study Area.
San Joaquin dune beetle	*Coelus gracilis*	-/-	BLM_S-Sensitive | IUCN_VU-Vulnerable	Interior dunes	Inhabits fossil dunes along the western edge of San Joaquin Valley; extirpated from Antioch Dunes (type locality) and is limited in current distribution of the western edge of the San Joaquin Valley. Inhabits sites containing sandy substrates.	None	The Study Area is outside to the known range of the species and there is no suitable habitat on site.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	FT/-		Riparian scrub	Occurs only in the Central Valley of California, in association with blue elderberry (*Sambucus mexicana*). Prefers to lay eggs in elderberries 2-8 inches in diameter; some preference shown for "stressed" elderberries.	High	Suitable elderberry bushes may be present within the Study Area, and several reported occurrences are within 2 miles of the Study Area.
Antioch efferian robberfly	*Efferia antiochi*	-/-		Interior dunes	Known only from Antioch, Fresno and Scout Island in the San Joaquin River.	None	The Study Area is outside of the known range of this species.
Delta green ground beetle	*Elaphrus viridis*	FT/-	IUCN_CR-Critically Endangered	Vernal pool | Wetland	Restricted to the margins of vernal pools in the grassland area between Jepson Prairie and Travis AFB. Prefers the sandy mud substrate where it slopes gently into the water, with low-	None	The Study Area is outside of the known range of this species.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
					growing vegetation, 25-100% cover.		
redheaded sphecid wasp	*Eucerceris ruficeps*	-/-		Interior dunes	Central California interior dunes. Nest in hard-packed sand utilizing abandoned halictine bee burrows.	None	While there are two reported occurrences from the 1950's, presumed extirpated, in the vicinity of the Study Area.
Bridges' coast range shoulderband	*Helminthoglypta nickliniana bridgesi*	-/-	IUCN_DD-Data Deficient	Valley & foothill grassland	Inhabits open hillsides of Alameda and Contra Costa counties. Tends to colonize under tall grasses and weeds.	None	Outside of known range.
Ricksecker's water scavenger beetle	*Hydrochara rickseckeri*	-/-		Aquatic | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters		Moderate	Suitable habitat is present in the Sacramento River, and there is a reported occurrence within 2 miles of the Study Area.
curved-foot hygrotus diving beetle	*Hygrotus curvipes*	-/-		Aquatic		Moderate	Suitable habitat may be present within the Study Area, and multiple reported

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
							occurrences are present within 2 miles of the Study Area.
Middlekauff's shieldback katydid	*Idiostatus middlekauffi*	-/-	IUCN_CR-Critically Endangered	Interior dunes	Only known from Contra Costa County and may be extirpated.	None	The Study Area is outside of the known range, and no suitable habitat is present.
vernal pool tadpole shrimp	*Lepidurus packardi*	FE/-	IUCN_EN-Endangered	Valley & foothill grassland | Vernal pool | Wetland	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water. Pools commonly found in grass-bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.	Moderate	Suitable habitat may be present within the Study Area, and multiple reported occurrences are present within 2 miles of the Study Area.
California linderiella	*Linderiella occidentalis*	-/-	IUCN_NT-Near Threatened	Vernal pool	Seasonal pools in unplowed grasslands with old alluvial soils underlain by hardpan or in sandstone depressions. Water	Moderate	Suitable habitat may be present within the Study Area, and multiple reported occurrences are present within 2

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
					in the pools has very low alkalinity, conductivity, and total dissolved solids.		miles of the Study Area.
molestan blister beetle	*Lytta molesta*	-/-		Vernal pool | Wetland		Low	Suitable habitat may be present within the Study Area, and one reported occurrence is 5 miles from the Study Area.
Hurd's metapogon robberfly	*Metapogon hurdi*	-/-		Interior dunes		None	The Study Area is outside of the known range, and no suitable habitat is present.
Antioch multilid wasp	*Myrmosula pacifica*	-/-		Interior dunes		None	The Study Area is outside of the known range, and no suitable habitat is present.
Antioch andrenid bee	*Perdita scitula antiochensis*	-/-		Interior dunes	Known only from Antioch Dunes and Oakley. Visits flowers of *Eriogonum, Gutierrezia*	None	The Study Area is outside of the known range, and no suitable habitat is present.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
					californica, Heterotheca grandiflora, Lessingia glandulifera.		
Antioch specid wasp	*Philanthus nasalis*	-/-		Interior dunes		None	The Study Area is outside of the known range, and no suitable habitat is present.
Antioch Dunes halcitid bee	*Sphecodogastra antiochensis*	-/-	XERCES_CI-Critically Imperiled	Interior dunes	Restricted to Antioch Dunes. Host plant is *Oenothera deltoides howellii*. This bee nests in the ground in stabilized sand dunes in open, xeric areas.	None	The Study Area is outside of the known range, and no suitable habitat is present.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
Santa Clara thorn-mint	*Acanthomintha lanceolata*	-/-/4.2		Chaparral (often serpentinite), Cismontane woodland, Coastal scrub	rocky. 80-1200m.	none	No habitat present, out of range.
large-flowered fiddleneck	*Amsinckia grandiflora*	FE/SE/ 1B.1		Cismontane woodland, Valley and foothill grassland	270-550m	moderate	Potentially suitable habitat present.
bent-flowered fiddleneck	*Amsinckia lunaris*	-/- /1B.2		Coastal bluff scrub, Cismontane woodland, Valley and foothill grassland	3-500m	low	Potentially suitable habitat present, however out of known range.
California androsace	*Androsace elongata ssp. acuta*	-/-/4.2		Chaparral, Cismontane woodland, Coastal scrub, Meadows and seeps, Pinyon and juniper woodland, Valley and foothill grassland	150-1305m	moderate	Potentially suitable habitat.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
Mt. Diablo manzanita	*Arctostaphylos auriculata*	-/-/1B.3		Chaparral (sandstone), Cismontane woodland	135-650m	none	No habitat present.
Contra Costa manzanita	*Arctostaphylos manzanita ssp. laevigata*	-/-/1B.2		Chaparral (rocky)	430-1100m	none	No habitat present.
depauperate milk-vetch	*Astragalus pauperculus*	-/-/4.3		Chaparral, Cismontane woodland, Valley and foothill grassland	vernally mesic, volcanic. 60-1215m	low	Potentially suitable habitat present, Study Area is on edge of known range.
Ferris' milk-vetch	*Astragalus tener var. ferrisiae*	-/-/1B.1		Meadows and seeps (vernally mesic), Valley and foothill grassland (subalkaline flats)	2-75m	moderate	Potentially suitable habitat present.
alkali milk-vetch	*Astragalus tener var. tener*	-/-/1B.2		Playas, Valley and foothill grassland (adobe clay), Vernal pools	alkaline. 1-60m	moderate	Potentially suitable habitat present.
heartscale	*Atriplex cordulata var. cordulata*	-/-/1B.2		Chenopod scrub, Meadows and seeps, Valley and foothill	saline or alkaline. 0-560m	moderate	Potentially suitable habitat present.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
				grassland (sandy)			
crownscale	*Atriplex coronata var. coronata*	-/-/4.2		Chenopod scrub, Valley and foothill grassland, Vernal pools	alkaline, often clay. 1-590m	moderate	Potentially suitable habitat present.
Lost Hills crownscale	*Atriplex coronata var. vallicola*	-/-/1B.2		Chenopod scrub, Valley and foothill grassland, Vernal pools	alkaline. 50-635m	moderate	Potentially suitable habitat present.
brittlescale	*Atriplex depressa*	-/-/1B.2		Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland, Vernal pools	alkaline, clay. 1-320m	moderate	Potentially suitable habitat present.
lesser saltscale	*Atriplex minuscula*	-/-/1B.1		Chenopod scrub, Playas, Valley and foothill grassland	alkaline, sandy. 15-200m	moderate	Potentially suitable habitat present.
vernal pool smallscale	*Atriplex persistens*	-/-/1B.2		Vernal pools (alkaline)	10-115m	low	Potentially suitable habitat present, however Study Area

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
							located on edge of range
big-scale balsamroot	*Balsamorhiza macrolepis*	-/-/1B.2		Chaparral, Cismontane woodland, Valley and foothill grassland	sometimes serpentinite. 45-1555m	moderate	Potentially suitable habitat present.
big tarplant	*Blepharizonia plumosa*	-/-/1B.1		Valley and foothill grassland	Usually clay. 30-505m	moderate	Potentially suitable habitat present.
watershield	*Brasenia schreberi*	-/-/2B.3		Marshes and swamps (freshwater)	30-2200m	moderate	Potentially suitable habitat present.
valley brodiaea	*Brodiaea rosea ssp. vallicola*	-/-/4.2		Valley and foothill grassland (swales), Vernal pools	Old alluvial terraces; silty, sandy, and gravelly loam. 10-335m	moderate	Potentially suitable habitat present.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
Brewer's calandrinia	*Calandrinia breweri*	-/-/4.2		Chaparral, Coastal scrub	sandy or loamy, disturbed sites and burns. 10-1220m	none	No habitat
Mt. Diablo fairy-lantern	*Calochortus pulchellus*	-/-/1B.2		Chaparral, Cismontane woodland, Riparian woodland, Valley and foothill grassland	30-840m	low	Suitable habitat present, however Study Area located on edge of range.
chaparral harebell	*Campanula exigua*	-/-/1B.2		Chaparral (rocky, usually serpentinite)	275 1250m	none	No habitat
bristly sedge	*Carex comosa*	-/-/2B.1		Coastal prairie, Marshes and swamps (lake margins), Valley and foothill grassland	0-625m	moderate	Potentially suitable habitat present.
Lemmon's jewelflower	*Caulanthus lemmonii*	-/-/1B.2		Pinyon and juniper woodland, Valley and foothill grassland	80-1580m	moderate	Potentially suitable habitat present.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
Congdon's tarplant	*Centromadia parryi ssp. congdonii*	-/-/1B.1		Valley and foothill grassland (alkaline)	0-230m	moderate	Potentially suitable habitat present.
pappose tarplant	*Centromadia parryi ssp. parryi*	-/-/1B.2		Chaparral, Coastal prairie, Meadows and seeps, Marshes and swamps (coastal salt), Valley and foothill grassland (vernally mesic)	often alkaline. 0-420m	moderate	Potentially suitable habitat present.
Parry's rough tarplant	*Centromadia parryi ssp. rudis*	-/-/4.2		Valley and foothill grassland, Vernal pools	alkaline, vernally mesic, seeps, sometimes roadsides. 0-100m	moderate	Potentially suitable habitat present.
Hispid salty bird's-beak	*Chloropyron molle ssp. hispidum*	-/-/1B.1		Meadows and seeps, Playas, Valley and foothill grassland	alkaline. 1-155m	moderate	Potentially suitable habitat present.
Soft salty bird's-beak	*Chloropyron molle ssp. molle*	FE/CR/1B.2		Marshes and swamps (coastal salt)	0-3m	low	Limited salt-marsh habitat present and the Study Area is located on the

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
							edge of the known range.
palmate-bracted salty bird's-beak	*Chloropyron palmatum*	FE/CE/ 1B.1		Chenopod scrub, Valley and foothill grassland	alkaline.05-155m	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.
Bolander's water-hemlock	*Cicuta maculata var. bolanderi*	-/- /2B.1		Marshes and swamps Coastal, fresh or brackish water	0-200m	moderate	Potentially suitable habitat present.
slough thistle	*Cirsium crassicaule*	-/- /1B.1		Chenopod scrub, Marshes and swamps (sloughs), Riparian scrub	3-100m	moderate	Potentially suitable habitat present.
small-flowered morning-glory	*Convolvulus simulans*	-/-/4.2		Chaparral (openings), Coastal scrub, Valley and foothill grassland	clay, serpentinite seeps.30-740m	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
Hoover's cryptantha	*Cryptantha hooveri*	-/-/1A		Inland dunes, Valley and foothill grassland (sandy)	9-150m	moderate	Potentially suitable habitat present.
Peruvian dodder	*Cuscuta obtusiflora var. glandulosa*	-/-/2B.2		Marshes and swamps (freshwater)	15-280m	low	Potentially suitable habitat, however the Study Area is outside of the known range.
Livermore tarplant	*Deinandra bacigalupii*	-/CE/1B.1		Meadows and seeps (alkaline)	150-185m	moderate	Potentially suitable habitat present, within 100 m of Study Area.
Hospital Canyon larkspur	*Delphinium californicum ssp. interius*	-/-/1B.2		Chaparral (openings), Cismontane woodland (mesic), Coastal scrub	195-1095m	none	No habitat
recurved larkspur	*Delphinium recurvatum*	-/-/1B.2		Chenopod scrub, Cismontane woodland, Valley and foothill grassland	alkaline. 3-790m	moderate	Potentially suitable habitat present.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
dwarf downingia	*Downingia pusilla*	-/-/2B.2		Valley and foothill grassland (mesic), Vernal pools	1-445m	moderate	Potentially suitable habitat present, within 100 m of Study Area.
Antioch Dunes buckwheat	*Eriogonum nudum var. psychicola*	-/-/1B.1		Inland dunes	0-20m	none	No habitat
Mt. Diablo buckwheat	*Eriogonum truncatum*	-/-/1B.1		Chaparral, Coastal scrub, Valley and foothill grassland	sandy. 3-350m	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.
Jepson's coyote thistle	*Eryngium jepsonii*	-/-/1B.2		Valley and foothill grassland, Vernal pools	clay. 3-300m	moderate	Potentially suitable habitat present.
Delta button-celery	*Eryngium racemosum*	-/CE/1B.1		Riparian scrub (vernally mesic clay depressions)	3-30m	moderate	Potentially suitable habitat present, within 100 m of Study Area.
spiny-sepaled button-celery	*Eryngium spinosepalum*	-/-/1B.2		Valley and foothill grassland, Vernal pools	80-975m	moderate	Potentially suitable habitat present.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
Contra Costa wallflower	*Erysimum capitatum var. angustatum*	FE/CE/ 1B.1		Inland dunes	3-20m	none	No habitat
diamond-petaled California poppy	*Eschscholzia rhombipetala*	-/- /1B.1		Valley and foothill grassland (alkaline, clay)	0-975m	moderate	Potentially suitable habitat present.
San Joaquin spearscale	*Extriplex joaquinana*	-/- /1B.2		Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland	alkaline. 1-835m	moderate	Potentially suitable habitat present.
stinkbells	*Fritillaria agrestis*	-/-/4.2		Chaparral, Cismontane woodland, Pinyon and juniper woodland, Valley and foothill grassland	Clay, sometimes serpentinite. 10-1555	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.
fragrant fritillary	*Fritillaria liliacea*	-/- /1B.2		Cismontane woodland, Coastal prairie, Coastal scrub,	Often serpentinite. 3-410m	moderate	Potentially suitable habitat present.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
				Valley and foothill grassland			
adobe-lily	*Fritillaria pluriflora*	-/-/1B.2		Chaparral, Cismontane woodland, Valley and foothill grassland	often adobe. 60-705m	none	No habitat
phlox-leaf serpentine bedstraw	*Galium andrewsii ssp. gatense*	-/-/4.2		Chaparral, Cismontane woodland, Lower montane coniferous forest	serpentinite, rocky. 150-1450m	none	No habitat
Boggs Lake hedge-hyssop	*Gratiola heterosepala*	-/CE/1B.2		Marshes and swamps (lake margins), Vernal pools	clay. 10-2375m	moderate	Potentially suitable habitat present.
Diablo helianthella	*Helianthella castanea*	-/-/1B.2		Broadleafed upland forest, Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland, Valley and foothill grassland	Usually rocky, axonal soils. Often in partial shade. 60-1300m	low	Marginally suitable habitat present.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
hogwallow starfish	*Hesperevax caulescens*	-/-/4.2		Valley and foothill grassland (mesic, clay), Vernal pools (shallow)	sometimes alkaline. 0-505m	moderate	Potentially suitable habitat present.
Brewer's western flax	*Hesperolinon breweri*	-/-/1B.2		Chaparral, Cismontane woodland, Valley and foothill grassland	usually serpentinite. 30-945m	low	Marginally suitable habitat present.
woolly rose-mallow	*Hibiscus lasiocarpos var. occidentalis*	-/-/1B.2		Marshes and swamps (freshwater)	Often in riprap on sides of levees. 0-120m	moderate	Potentially suitable habitat present.
Carquinez goldenbush	*Isocoma arguta*	-/-/1B.1		Valley and foothill grassland (alkaline)	1-20m	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
Northern California black walnut	*Juglans hindsii*	-/-/1B.1		Riparian forest, Riparian woodland	0-440m	moderate	Potentially suitable habitat present.
Contra Costa goldfields	*Lasthenia conjugens*	FE/-/1B.1		Cismontane woodland, Playas (alkaline), Valley and foothill grassland, Vernal pools	mesic. 0-470m	moderate	Potentially suitable habitat present.
Ferris' goldfields	*Lasthenia ferrisiae*	-/-/4.2		Vernal pools (alkaline, clay)	20-700m	moderate	Potentially suitable habitat present.
Coulter's goldfields	*Lasthenia glabrata ssp. coulteri*	-/-/1B.1		Marshes and swamps (coastal salt), Playas, Vernal pools	1-1220m	moderate	Potentially suitable habitat present.
Delta tule pea	*Lathyrus jepsonii var. jepsonii*	-/-/1B.2		Marshes and swamps	0-5m	high	Potentially suitable habitat present.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
				(freshwater and brackish)			
legenere	*Legenere limosa*	-/-/1B.1		Vernal pools	1-880m	moderate	Potentially suitable habitat present.
Heckard's pepper-grass	*Lepidium latipes var. heckardii*	-/-/1B.2		Valley and foothill grassland (alkaline flats)	2-200m	moderate	Potentially suitable habitat present.
Mason's lilaeopsis	*Lilaeopsis masonii*	-/CR/1B.1		Marshes and swamps (brackish or freshwater), Riparian scrub	0-10m	moderate	Potentially suitable habitat present.
Delta mudwort	*Limosella australis*	-/-/2B.1		Marshes and swamps (freshwater or brackish), Riparian scrub	Usually mud banks. 0-3m	moderate	Potentially suitable habitat present.
showy golden madia	*Madia radiata*	-/-/1B.1		Cismontane woodland, Valley and foothill grassland	25-1215m	moderate	Potentially suitable habitat present.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
Hall's bush-mallow	*Malacothamnus hallii*	-/-/1B.2		Chaparral, Coastal scrub	10-760m	none	No habitat
San Antonio Hills monardella	*Monardella antonina ssp. antonina*	-/-/3		Chaparral, Cismontane woodland	320-1000m	none	No habitat
little mousetail	*Myosurus minimus ssp. apus*	-/-/3.1		Valley and foothill grassland, Vernal pools (alkaline)	20-640m	moderate	Potentially suitable habitat present.
hoary navarretia	*Navarretia eriocephala*	-/-/4.3		Cismontane woodland, Valley and foothill grassland	vernally mesic. 105-400m	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.
Tehama navarretia	*Navarretia heterandra*	-/-/4.3		Valley and foothill grassland (mesic), Vernal pools	30-1010m	low	Potentially suitable habitat present, however the Study Area is located on the

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
							edge of the known range.
Baker's navarretia	*Navarretia leucocephala ssp. bakeri*	-/-/1B.1		Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland, Vernal pools	Mesic. 5-1740m	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.
adobe navarretia	*Navarretia nigelliformis ssp. nigelliformis*	-/-/4.2		Valley and foothill grassland vernally mesic, Vernal pools sometimes	clay, sometimes serpentinite. 100-1000m	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.
shining navarretia	*Navarretia nigelliformis ssp. radians*	-/-/1B.2		Cismontane woodland, Valley and foothill grassland, Vernal pools	Sometimes clay. 65-1000m	moderate	Potentially suitable habitat present.
prostrate vernal pool navarretia	*Navarretia prostrata*	-/-/1B.1		Coastal scrub, Meadows and seeps, Valley and foothill	Mesic. 3-1210m	low	Potentially suitable habitat present, however the Study Area is

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
				grassland (alkaline), Vernal pools			located on the edge of the known range.
Colusa grass	*Neostapfia colusana*	FT/CE/ 1B.1		Vernal pools (adobe, large)	5-200m	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.
Antioch Dunes evening-primrose	*Oenothera deltoides ssp. howellii*	FE/CE/ 1B.1		Inland dunes	0-30m	none	No habitat
slender Orcutt grass	*Orcuttia tenuis*	FT/CE/ 1B.1		Vernal pools	Often gravelly. 35-1760m	moderate	Potentially suitable habitat present.
Sacramento Orcutt grass	*Orcuttia viscida*	FE/CE/ 1B.1		Vernal pools	30-100m	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
bearded popcornflower	*Plagiobothrys hystriculus*	-/-/1B.1		Valley and foothill grassland (mesic), Vernal pools margins	often vernal swales. 0-274m	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.
eel-grass pondweed	*Potamogeton zosteriformis*	-/-/2B.2		Marshes and swamps (assorted freshwater)	0-1860m	moderate	Potentially suitable habitat present.
California alkali grass	*Puccinellia simplex*	-/-/1B.2		Chenopod scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools	Alkaline, vernally mesic; sinks, flats, and lake margins. 2-930m	moderate	Potentially suitable habitat present.
Sanford's arrowhead	*Sagittaria sanfordii*	-/-/1B.2		Marshes and swamps (assorted shallow freshwater)	0-650m	moderate	Potentially suitable habitat present.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
marsh skullcap	*Scutellaria galericulata*	-/-/2B.2		Lower montane coniferous forest, Meadows and seeps (mesic), Marshes and swamps	0-2100m	moderate	Potentially suitable habitat present.
side-flowering skullcap	*Scutellaria lateriflora*	-/-/2B.2		Meadows and seeps (mesic), Marshes and swamps	0-500m	moderate	Potentially suitable habitat present.
chaparral ragwort	*Senecio aphanactis*	-/-/2B.2		Chaparral, Cismontane woodland, Coastal scrub	sometimes alkaline.15-800m	none	No habitat
sweet marsh ragwort	*Senecio hydrophiloides*	-/-/4.2		Lower montane coniferous forest, Meadows and seeps	Mesic. 0-2800m	none	No habitat
Keck's checkerbloom	*Sidalcea keckii*	FE/-/1B.1		Cismontane woodland, Valley and foothill grassland	serpentinite, clay. 75-650m	low	Limited potentially suitable habitat present, and the Study Area is located on the edge of the known range.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
long-styled sand-spurrey	*Spergularia macrotheca var. longistyla*	-/-/1B.2		Meadows and seeps, Marshes and swamps	Alkaline. 0-225	moderate	Potentially suitable habitat present.
Suisun Marsh aster	*Symphyotrichum lentum*	-/-/1B.2		Marshes and swamps (brackish and freshwater)	0-3m	moderate	Potentially suitable habitat present.
Wright's trichocoronis	*Trichocoronis wrightii var. wrightii*	-/-/2B.1		Meadows and seeps, Marshes and swamps, Riparian forest, Vernal pools	alkaline. 5-435m	moderate	Potentially suitable habitat present.
saline clover	*Trifolium hydrophilum*	-/-/1B.2		Marshes and swamps, Valley and foothill grassland (mesic, alkaline), Vernal pools	0-300m	moderate	Potentially suitable habitat present.
caper-fruited tropidocarpum	*Tropidocarpum capparideum*	-/-/1B.1		Valley and foothill grassland (alkaline hills)	1-455m	moderate	Potentially suitable habitat present.
Crampton's tuctoria or Solano grass	*Tuctoria mucronata*	FE/CE/1B.1		Valley and foothill grassland (mesic), Vernal pools	5-10m	none	No habitat

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
oval-leaved viburnum	*Viburnum ellipticum*	-/- /2B.3		Chaparral, Cismontane woodland, Lower montane coniferous forest	215-1400m	none	No habitat

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Appendix B:

Air Quality and Greenhouse Gas (GHG) Analyses

Air Quality Total Exhaust Emissions, GHG Consistency Determination (CD), GHG Emissions Inventory and Calculation worksheet, and GGERP Pre-construction and Final Design BMPs

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TOTAL EXHAUST EMISSIONS (pounds/day)						Number of borings per county							Total exhaust emissions per activity, per county						
VEHICLES	WORK DAYS	ROG	NOX	PM10	PM2.5	Alameda	Contra Costa	Sacramento	San Joaquin	Solano	Yolo	Total		Alameda	Contra Costa	Sacramento	San Joaquin	Solano	Yolo
On-Land 50' Borings									24			24	Percentage of exhaust emissions				1.0		
Drill Rigs - 50-foot deep borings	44	0.3	3.1	0.1	0.1								On-land 50 Max daily exhaust emissions						
Water Truck	44	0.6	5.3	0.2	0.2								ROG				1.2		
Liftgate Truck	44	0.2	2.1	0.1	0.1								NOX				10.7		
Employee Vehicles	198	0.1	0.3	0.0	0.0								PM10				0.4		
Maximum Daily		1.2	10.7	0.4	0.4								PM2.5				0.4		
On-Land 125-150' Borings						3	22	1				26	Percentage	0.1	0.8	0.0			
Drill Rigs - 125- to 150-foot deep	104	0.3	3.1	0.1	0.1								On-land 125-150 Max daily exhaust emissions						
Water Truck	104	0.6	5.3	0.2	0.2								ROG	0.1	1.1	0.0			
Liftgate Truck	104	0.2	2.1	0.1	0.1								NOX	1.3	9.6	0.4			
Employee Vehicles	442	0.2	0.9	0.0	0.0								PM10	0.0	0.4	0.0			
Maximum Daily		1.3	11.3	0.4	0.4								PM2.5	0.0	0.3	0.0			
On-Land 175-200' Borings							24	54.0	14	2	38	132	Percentage of exhaus		0.2	0.4	0.1	0.0	0.3
Drill Rigs - 175- to 200-foot deep borings	917	0.3	3.1	0.1	0.1								On-land 175-200 Max daily exhaust emissions						
Water Truck	917	0.6	5.3	0.2	0.2								ROG		0.6	1.3	0.3	0.0	0.9
Tractor-Trailer Lowboy Truck	262	0.2	2.0	0.1	0.1								NOX		3.9	8.8	2.3	0.3	6.2
Liftgate Truck	917	0.2	2.1	0.1	0.1								PM10		0.1	0.2	0.1	0.0	0.2
Employee Vehicles	4002	2.0	9.0	0.1	0.1								PM2.5		0.1	0.2	0.1	0.0	0.2
Maximum Daily		3.3	21.4	0.6	0.5														
CPT Soundings							24	17	31	1	15	88	Percentage of exhaus		0.3	0.2	0.4	0.0	0.2
CPT Truck	220	1.0	9.8	0.4	0.3								CPT Max daily exhaust emissions						
Grout Truck	220	0.1	1.1	0.0	0.0								ROG		0.5	0.3	0.6	0.0	0.3
Tractor-Trailer Lowboy Truck	220	0.2	2.0	0.1	0.1								NOX		3.9	2.8	5.1	0.2	2.5
Employee Vehicles	800	0.3	1.6	0.0	0.0								PM10		0.1	0.1	0.2	0.0	0.1
Maximum Daily		1.7	14.4	0.5	0.4								PM2.5		0.1	0.1	0.2	0.0	0.1
Geophysical Survey									5			5	Percentage of exhaust emissions				1.0		
Envirovibe Rig	35	0.4	4.0	0.3	0.3								Geophysical survey Max daily exhaust emissions						
Tractor-Trailer Lowboy Truck	2	0.2	2.0	0.1	0.1								ROG				0.7		
Employee Vehicles	255	0.1	0.5	0.0	0.0								NOX				6.4		
Maximum Daily		0.7	6.4	0.4	0.3								PM10				0.4		
													PM2.5				0.3		
Over Water Borings							10	7	23	6	11	57	Percentage	0.0	0.2	0.1	0.4	0.1	0.2
Hazard Survey Boat (<50 HP)	171	0.5	3.9	0.4	0.4								Over Water boring Max daily exhaust emissions						
Drill Rig Barge/Tugboat or Ship	456	12.1	121.7	3.7	3.7								ROG		2.5	1.8	5.8	1.5	2.8
Worker Transport Boat	456	1.2	15.7	0.8	0.8								NOX		25.2	17.7	58.0	15.1	27.7
Employee Vehicles	1425	0.5	2.4	0.0	0.0								PM10		0.9	0.6	2.0	0.5	1.0
Maximum Daily		14.4	143.8	5.0	4.9								PM2.5		0.9	0.6	2.0	0.5	1.0

Based on:
Construction Equipment calculations based on Engine Emission Factors for 2020 from Sacramento Valley Air Quality Management District Road

Employee Vehicles calculatitons based on EMFAC2017 (v1.0.2) Emissions Inventory for 2010 MDV at 35 MPH

		Total exhaust emissions (pounds per day) p			
Location	Pollutant	YSAQMD	SMAQMD	BAAQMD	SJVAPCD
On-land	ROG	1.3	1.7	2.3	2.8
	NO_X	9.1	12.0	18.7	24.5
	PM_{10}	0.3	0.4	0.7	1.0
	$PM_{2.5}$	0.2	0.3	0.6	0.9
Overwater	ROG	4.3	1.8	2.5	5.8
	NO_X	42.9	17.7	25.2	58.0
	PM_{10}	1.5	0.6	0.9	2.0
	$PM_{2.5}$	1.5	0.6	0.9	2.0

Greenhouse Gas(GHG) Emissions Reduction Plan Consistency Determination

For Projects Using Contractors or Other Outside Labor

This form is to be used by DWR project managers to document a DWR CEQA project's consistency with the DWR Greenhouse Gas Emissions Reduction Plan. This form is to be used only when DWR is the Lead Agency and when contractors or outside labor and equipment are used to implement the project.

Additional Guidance on filling out this form can be found at:
http://dwrclimatechange.water.ca.gov/guidance_resources.cfm

The DWR Greenhouse Gas Emissions Reduction Plan can be accessed at:
https://water.ca.gov/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan

Project Name:	Soil Investigations for Data Collection in the Delta
Environmental Document Type:	IS/MND
Manager's Name:	Carolyn Buckman
Manager's E-mail:	Carolyn.Buckman@water.ca.gov
Division:	Executive
Office, Branch, or Field Division:	Delta Conveyance

Short Project Description:

The proposed project consists of on-land and over water soil investigations, including167 soil borings from 50 to 200 feet below ground surface, 103 cone-penetration tests from 50 to 200 feet below ground surface, and up to 5 geophysical survey investigation arrays. Soil investigation locations are spread throughout the area that has been identified as the potential study area for the Delta Conveyance. No ongoing operation or maintenance or emissions will be required post-project.

Project GHG Emissions Summary:

Total Construction Emissions	6,203.2	$mtCO_2e$
Maximum Annual Construction Emissions	4,135.5	$mtCO_2e$

☒ All other emissions from the project not accounted for above will occur as ongoing operational, maintenance, or business activity emissions and therefore have already been accounted for and analyzed in the GGERP.

Extraordinary Construction Project Determination:

Do total project construction emissions exceed 25,000 $mtCO_2e$ for the entire construction phase or exceed 12,500 $mtCO_2e$ in any single year of construction?

☒ No- Additional analysis not required ☐ Yes - Project specific emissions mitigation measures have been included in the environmental analysis document for the project

Project GHG Reduction Plan Checklist:

☐ All Project Level GHG Emissions Reduction Measures have been incorporated into the design or implementation plan for the project. (Project Level GHG Emissions Reduction Measures)

Or

☒ All feasible Project Level GHG Emissions Reduction Measures have been incorporated into the design or implementation plan for the project and Measures not incorporated have been listed and determined not to apply to the proposed project (include as an attachment)

☒ Project does not conflict with any of the Specific Action GHG Emissions Reduction Measures (Specific Action GHG Emissions Reduction Measures)

Would implementation of the project result in additional energy demands on the SWP system of 15 GWh/yr or greater?

☐ Yes ☒ No

If you answered Yes, attach a letter documenting that the project has consulted with the DWR SWP Power and Risk Office regarding the additional power requirements of the project.

Is there substantial evidence that the effects of the proposed project may be cumulatively considerable notwithstanding the proposed project's compliance with the requirements of the DWR GHG Reduction Plan?

☐ Yes ☒ No

If you answered Yes, the project is not eligible for streamlined analysis of GHG emissions using the DWR GHG Emissions Reduction Plan. (See CEQA Guidelines, section 15183.5, subdivision (b)(2).)

Based on the information provided above and information provided in associated environmental documentation completed pursuant to the above referenced project, the DWR CEQA Climate Change Committee has determined that:

☒ The entire proposed project is consistent with the DWR Greenhouse Gas Reduction Plan and the greenhouse gases emitted by the project are covered by the plan's analysis.

☐ The operational and maintenance phase of the project is consistent with the DWR Greenhouse Gas Reduction Plan and the greenhouse gases emitted by the project are covered by the plan's analysis. Emissions from the construction phase of the project are not covered by the DWR Greenhouse Gas Emissions Reduction Plan and will be mitigated as part of the project.

Project Manager Signature: Carolyn Mu Date: 11/13/19

C4 Approval Signature: Jennifer Morales Date: 11/14/2019

Attachments:

☒ GHG Emissions Inventory ☒ List and Explanation of excluded Project level GHG Emissions Reduction Measures ☐ SWP Power and Risk Office Consultation Letter

Links:
https://current.water.ca.gov/programs/icc/SitePages/Home.aspx
https://water.ca.gov/Programs/All-Programs/Climate-Change-Program

Project Activities for Soil Explorations - Inventory and Calculation of Greenhouse Gas Emissions

Emissions from Construction Equipment

Line	Type of Equipment	Maximum Number per Day	Total Operation Days	Average Hours Per Day	Total Operation Hours[1]	Fuel Consumption Per Hour (gal/hour)[2]	Total Fuel Consumption (gal. diesel)	CO_2e/gal diesel [3]	Total CO_2 Equivalent Emissions (metric tons)
2	**On-Land 50' Borings**								
3	Drill Rigs - 50-foot deep borings	1	44	10	440	14.07	6,191	0.010	64
4	Water Truck	1	44	10	440	7.55	3,323	0.010	35
5	Liftgate Truck	1	44	4	176	7.55	1,329	0.010	14
6	**7.553081794**								
7	Drill Rigs - 125- to 150-foot deep borings	1	104	10	1040	14.07	14,634	0.010	152
8	Water Truck	1	104	10	1040	7.55	7,855	0.010	82
9	Liftgate Truck	1	104	4	416	7.55	3,142	0.010	33
10	**On-Land 175-200' Borings**								
11	Drill Rigs - 175- to 200-foot deep borings	1	917	10	9170	14.07	129,033	0.010	1,341
12	Water Truck	1	917	10	9170	7.55	69,262	0.010	720
13	Tractor-Trailer Lowboy Truck	1	262	2	524	12.35	6,472	0.010	67
14	Liftgate Truck	1	917	4	3668	7.55	27,705	0.010	288
15	**CPT Soundings**								
16	CPT Truck	1	220	10	2200		-	0.010	-
17	Grout Truck	1	220	2	440	7.55	3,323	0.010	35
18	Tractor-Trailer Lowboy Truck	1	220	2	440	12.35	5,434	0.010	56
19	**Geophysical Survey**								
20	Envirovibe Rig	1	35	10	350	12.35	4,323	0.010	45
21	Tractor-Trailer Lowboy Truck	1	2	2	4	12.35	49	0.010	1
22	**Over Water Borings**								
23	Hazard Survey Boat (<50 HP)	1	171	10	1710	19.86	33,961	0.010	353
24	Drill Rig Barge/Tugboat or Ship	1	456	10	4560	43.50	198,360	0.010	2,061
25	Worker Transport Boat	1	456	4	1824	19.86	36,225	0.010	376
26	TOTAL						**550,622**		**5,722**

27 [1] An 8-hour work day is assumed, unless otherwise indicated

28 [2] California Air Resource Board Offroad 2007 Emissions Inventory fuel consumption factors for on-land estimates; California Air Resource Board 1999 Source Inventor

29 [3] World Resources Institute-Mobile combustion CO_2 emissions tool, June 2003 Version 1.2

30

31 **Emissions from Transportation of Construction Workforce**

32	Average Number of Workers per Day	Total Number of Workdays	Average Distance Travelled (round trip)	Total Miles Travelled	Average Passenger Vehicle Fuel Efficiency[4]	Total Fuel Consumption (gal. gasoline)	CO_2e/gal Gasoline [3]	Total CO_2 Equivalent Emissions (metric tons)
33	**On-Land 50' Borings**							
34	10	198	60	118800	20.8	**5711.5**	0.009	**51**
35	**On-Land 125-150' Borings**							
36	15	442	60	397800	20.8	**19125.0**	0.009	**172**
37	**On-Land 175-200' Borings**							
38	17	4002	60	4082040	20.8	**196251.9**	0.009	**1768**
39	**CPT Soundings**							
40	15	800	60	720000	20.8	**34615.4**	0.009	**312**
41	**Geophysical Survey**							
42	14	255	60	214200	20.8	**10298.1**	0.009	**93**
43	**Over Water Borings**							
44	13	1425	60	1111500	20.8	**53437.5**	0.009	**481**

45 [4] United States Environmental Protection Agency. 2008. Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2008. [EPA420-R-08-015]

Emissions from Transportation of Construction Materials

Trip Type	Total Number of Trips	Average Trip Distance	Total Miles Travelled	Average Semi-truck Fuel Efficiency	Total Fuel Consumption (gal. diesel)	CO_2e/gal Diesel [3]	Total CO_2 Equivalent Emissions (metric tons)
Delivery			0	6	0	0.010	0
Spoils			0	6	0	0.010	0
TOTAL							**0**

Construction Electricity Emissions

	MWh of electricity	$mtCO2_e$/ MWh [5]	CO_2 e emissions
Electricity Needed		0.277	0

[5] eGRID2010 Version 1.0 *CAMX-WECC sub-region*.

Total Construction Activity Emissions	6,203.2	(from lines 26, 44, 51, and 55)
Total Years of Construction	1.5	
Expected Start Date of Construction		

Estimated Project Useful life	1.5	Years
Average Annual Total GHG Emissions[7]	4,135.5	**MT CO_2 equivalents**
Max. Year Construction GHG Emissions[8]		**MT CO2 equivalents**

[7] short-term construction emissions amortized over life of project

[8] Emissions total from single year of construction when emissions peak (for multi-year construction projects)

NOTE: the Average Annual Total GHG Emissions is NOT the same value as the "Maximum Annual Emissions" (MAE) value that is required on the DWR GGERP Consistency Form for Projects Using Outside Labor and Equipment; The MAE is calculated to ensure that the project does not emit more than 12,500 mtCO2e in any given year

DWR Project Level GHG Emissions Reduction Measures

The following list of Best Management Practices (BMPs) for DWR construction and maintenance activities are recommended to reduce GHG emissions from construction projects. All projects that rely on the GGERP must implement the BMPs as part of the project or explain why the measures that have not been incorporated do not apply to the project. Variances from the standard BMPs that have been requested for this project are described below.

BMP 1. Evaluate project characteristics, including location, project work flow, site conditions, and equipment performance requirements, to determine whether specifications of the use of equipment with repowered engines, electric drive trains, or other high efficiency technologies are appropriate and feasible for the project or specific elements of the project.

BMP 2. Evaluate the feasibility and efficacy of performing on-site material hauling with trucks equipped with on-road engines.

> Variance requested: Material hauling is not required for the proposed soil investigations; therefore, this BMP does not apply.

BMP 3. Ensure that all feasible avenues have been explored for providing an electrical service drop to the construction site for temporary construction power. When generators must be used, use alternative fuels, such as propane or solar, to power generators to the maximum extent feasible.

> Variance requested: Electrical service drops are not feasible for this project as work willbe conducted at each site for no more than 15 days; therefore, this BMP does not apply.

BMP 4. Evaluate the feasibility and efficacy of producing concrete on-site and specify that batch plants be set up on-site or as close to the site as possible.

> Variance requested: Concrete production is not required for the proposed soil investigations; therefore, this BMP does not apply.

BMP 5. Evaluate the performance requirements for concrete used on the project and specify concrete mix designs that minimize GHG emissions from cement production and curing while preserving all required performance characteristics.

> Variance requested: Concrete is not required for the proposed soil investigations. Cement-bentonite mixture used to grout boreholes conforms to industry standards.

BMP 6. Limit deliveries of materials and equipment to the site to off peak traffic congestion hours.

Variance requested: Proposed soil investigations do not require substantial deliveries of materials and equipment and all vehicles will be removed at the end of each workday; therefore, it is not feasible to limit deliveries to off peak hours.

BMP 7. Minimize idling time by requiring that equipment be shut down after five minutes when not in use (as required by the State airborne toxics control measure [Title 13, Section 2485 of the California Code of Regulations]). Provide clear signage that posts this requirement for workers at the entrances to the site and provide a plan for the enforcement of this requirement.

Variance requested: This BMP shall be provided as part of the contract, but posting at each site is not feasible as the project activities will take place over diverse locations.

BMP 8. Maintain all construction equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition. Maintenance schedules shall be detailed in an Air Quality Control Plan prior to commencement of construction.

Variance requested: Because this is not a construction project, an Air Quality Control Plan is not required. All equipment will be maintained in proper working condition and preventative maintenance will be conducted as recommended.

BMP 9. Implement tire inflation program on jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every two weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site weekly for correct tire inflation. Procedures for the tire inflation program shall be documented in an Air Quality Management Plan prior to commencement of construction.

Variance requested: Because this is not a construction project, an Air Quality Control Plan is not required. Tire inflation will be checked and corrected as needed.

BMP 10. Develop a project specific ride share program to encourage carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes.

Variance requested: The proposed project locations are remote and spread over a wide geographic area; therefore, providing transit passes and bicycle parking would not be beneficial. Use of carpools and shuttle vans will be encouraged to the extent feasible.

BMP 11. Reduce electricity use in temporary construction offices by using high efficiency lighting and requiring that heating and cooling units be Energy Star compliant. Require that all contractors develop and implement procedures for turning off computers, lights, air conditioners, heaters, and other equipment each day at close of business.

> Variance requested: Temporary construction offices will not be used for the proposed soil investigations; therefore, this BMP does not apply.

BMP 12. For deliveries to project sites where the haul distance exceeds 100 miles and a heavy duty class 7 or class 8 semi-truck or 53-foot or longer box type trailer is used for hauling, a SmartWay[27] certified truck will be used to the maximum extent feasible.

> Variance requested: Vehicles of the type described above will not be needed for the proposed soil investigations; therefore, this BMP does not apply.

BMP 13. Minimize the amount of cement in concrete by specifying higher levels of cementitious material alternatives, larger aggregate, longer final set times, or lower maximum strength where appropriate.

> Variance requested: Concrete is not required for the proposed soil investigations; therefore, this BMP does not apply.

BMP 14. Develop a project specific construction debris recycling and diversion program to achieve a documented 50% diversion of construction waste.

> Variance requested: The proposed soil investigations are not expected to generate construction debris other than soil cuttings which must be disposed of at a landfill per environmental permitting requirements; therefore, this BMP does not apply.

BMP 15. Evaluate the feasibility of restricting all material hauling on public roadways to off-peak traffic congestion hours. During construction scheduling and execution minimize, to the extent possible, uses of public roadways that would increase traffic congestion.

> Variance requested: The proposed project will not require substantial material hauling and as the project location will change frequently, impacts to a particular public roadway will be insignificant and unlikely to increase traffic congestion; therefore, this BMP does not apply.

Appendix C:
Detailed Maps of Impact Areas

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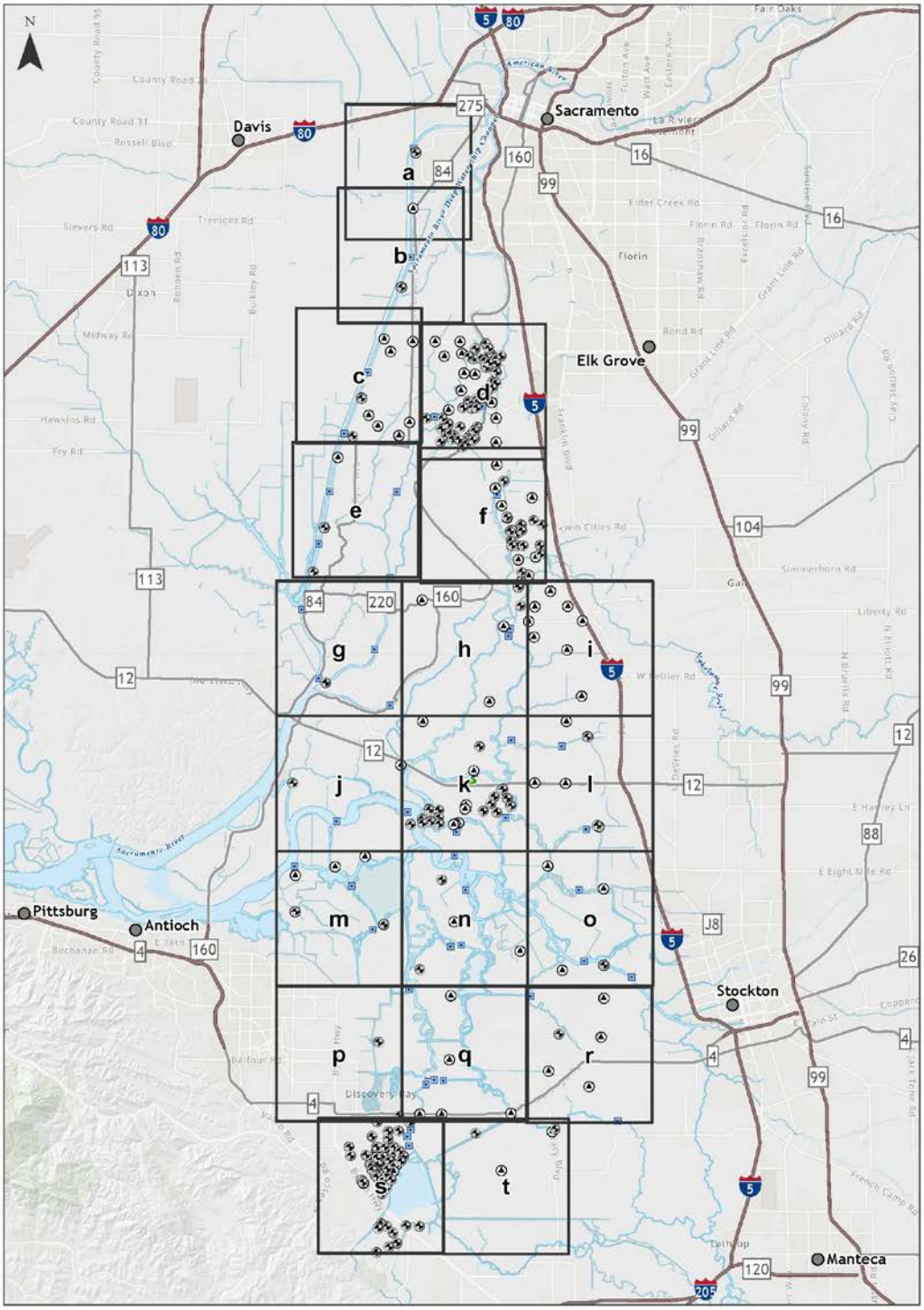
N
Davis
Sacramento
Elk Grove
Pittsburg
Antioch
Stockton
Manteca
a
b
c
d
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h
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k
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m
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s
t
Soil Investigations for
Data Collection in the Delta
Appendix C Project Locations - Index
CPT
Boring
Overwater Boring
GeophysicalLine
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Source: ESRI , USGS
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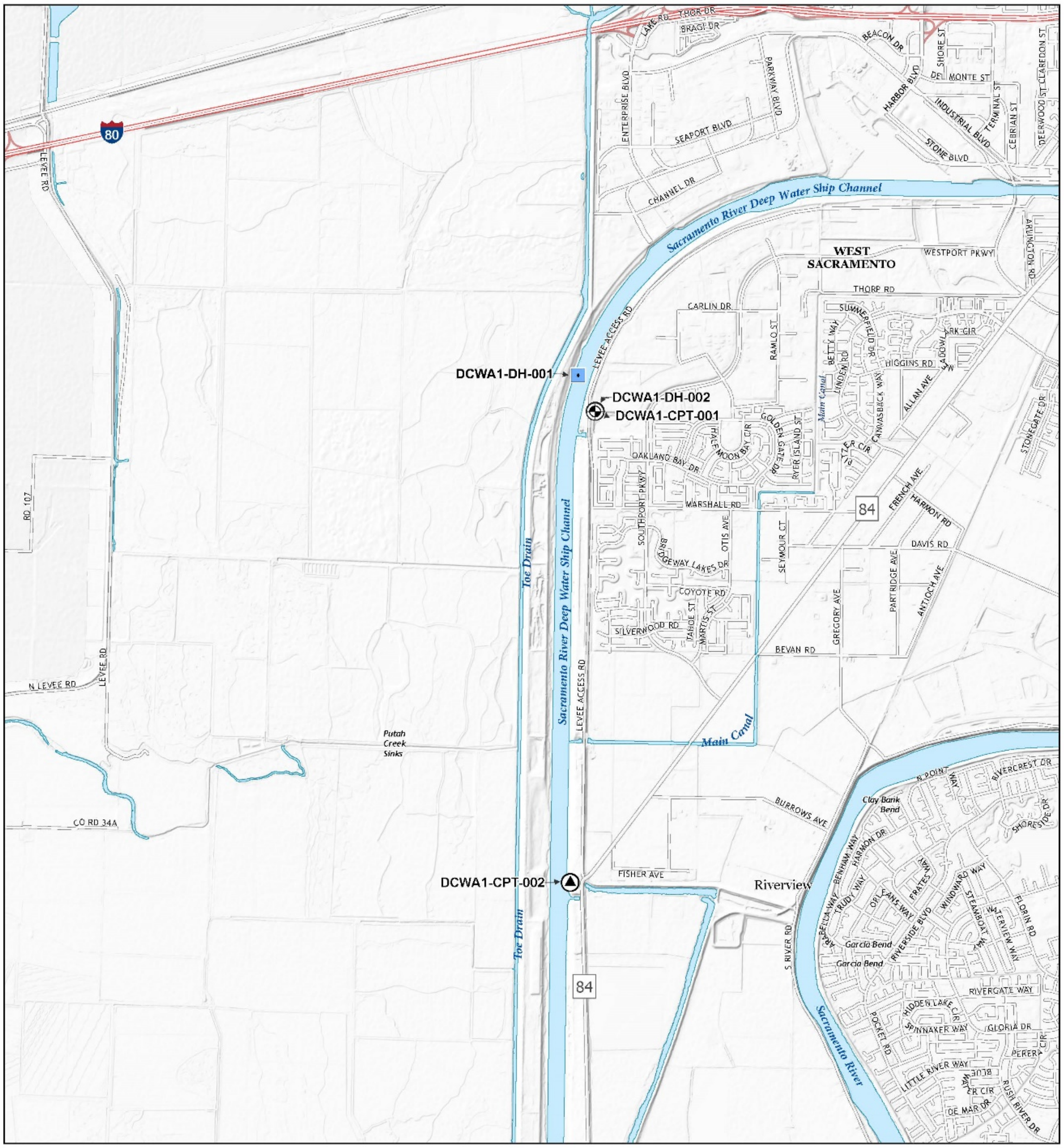
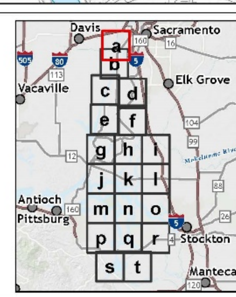
Miles



Soil Investigations for Data Collection in the Delta

Appendix C - 1a. Project Locations

CPT
Boring
Overwater Boring



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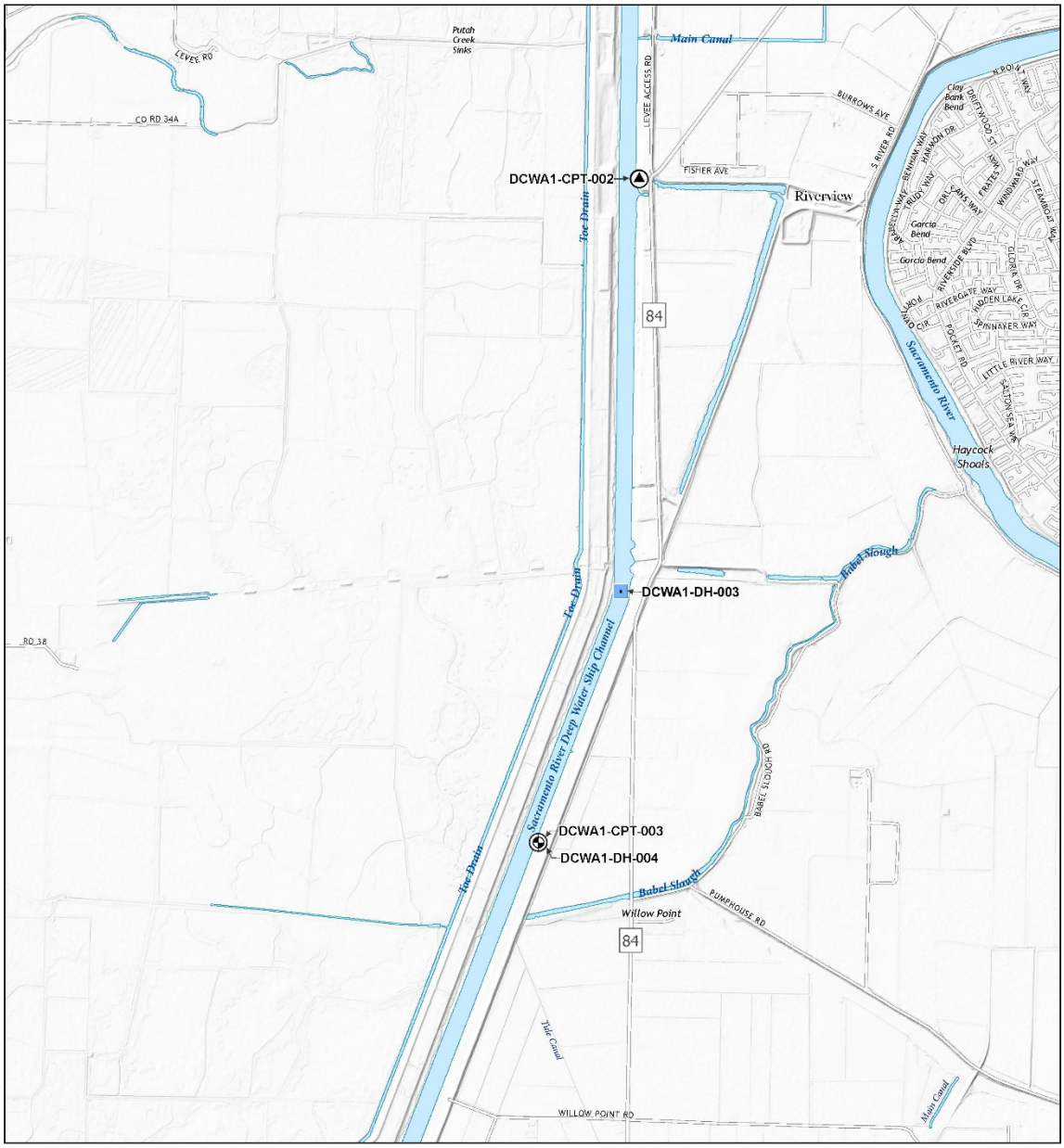

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Soil Investigations for Data Collection in the Delta

Appendix C - 1b. Project Locations

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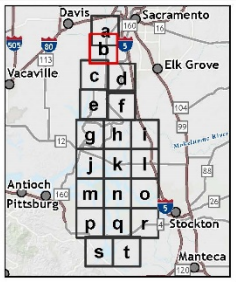
Boring
Overwater Boring



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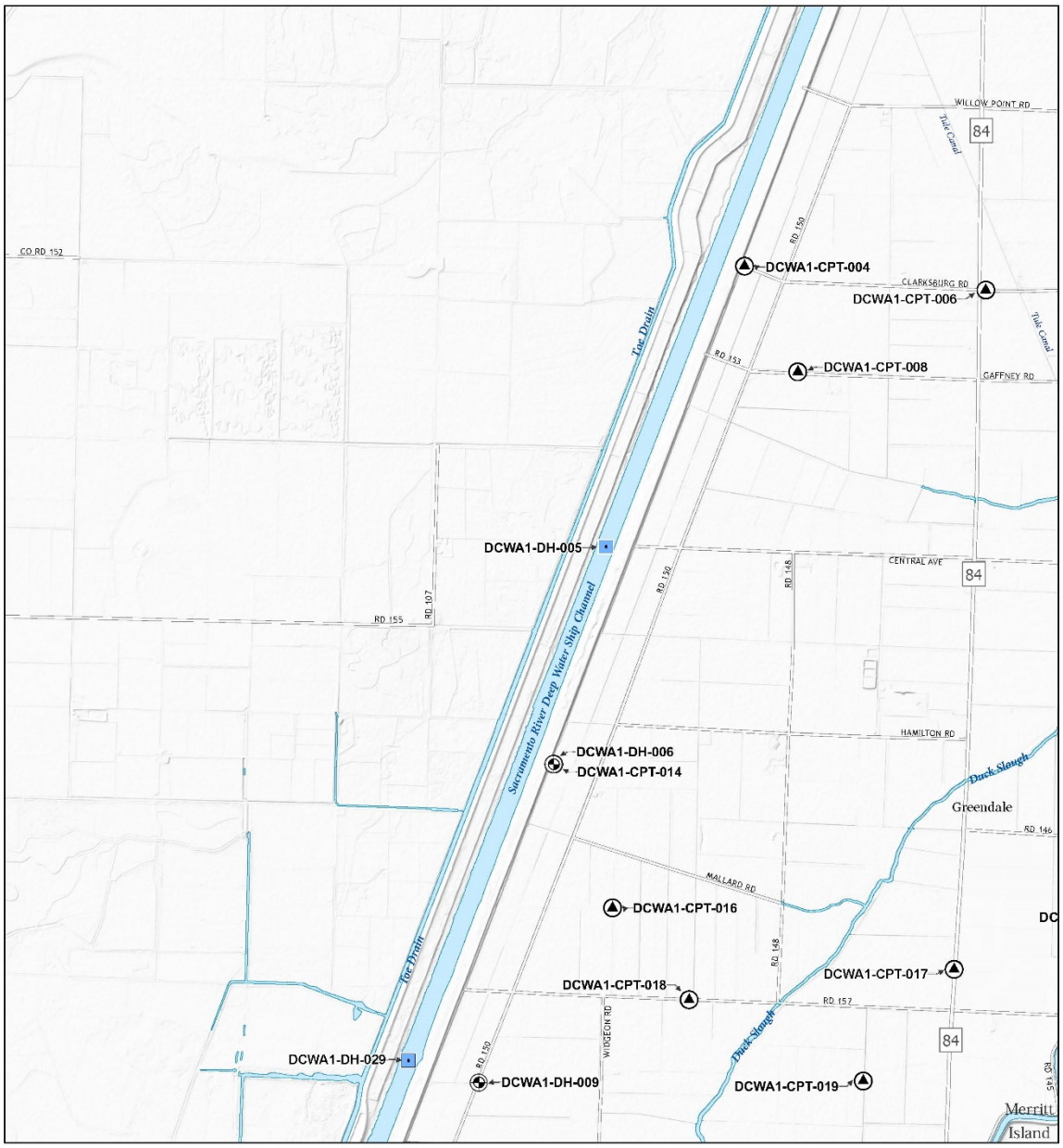

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Soil Investigations for Data Collection in the Delta

Appendix C - 1c. Project Locations

CPT
Boring
Overwater Boring

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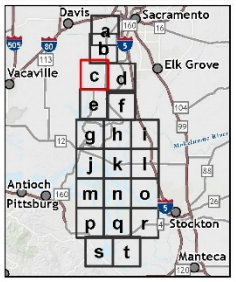
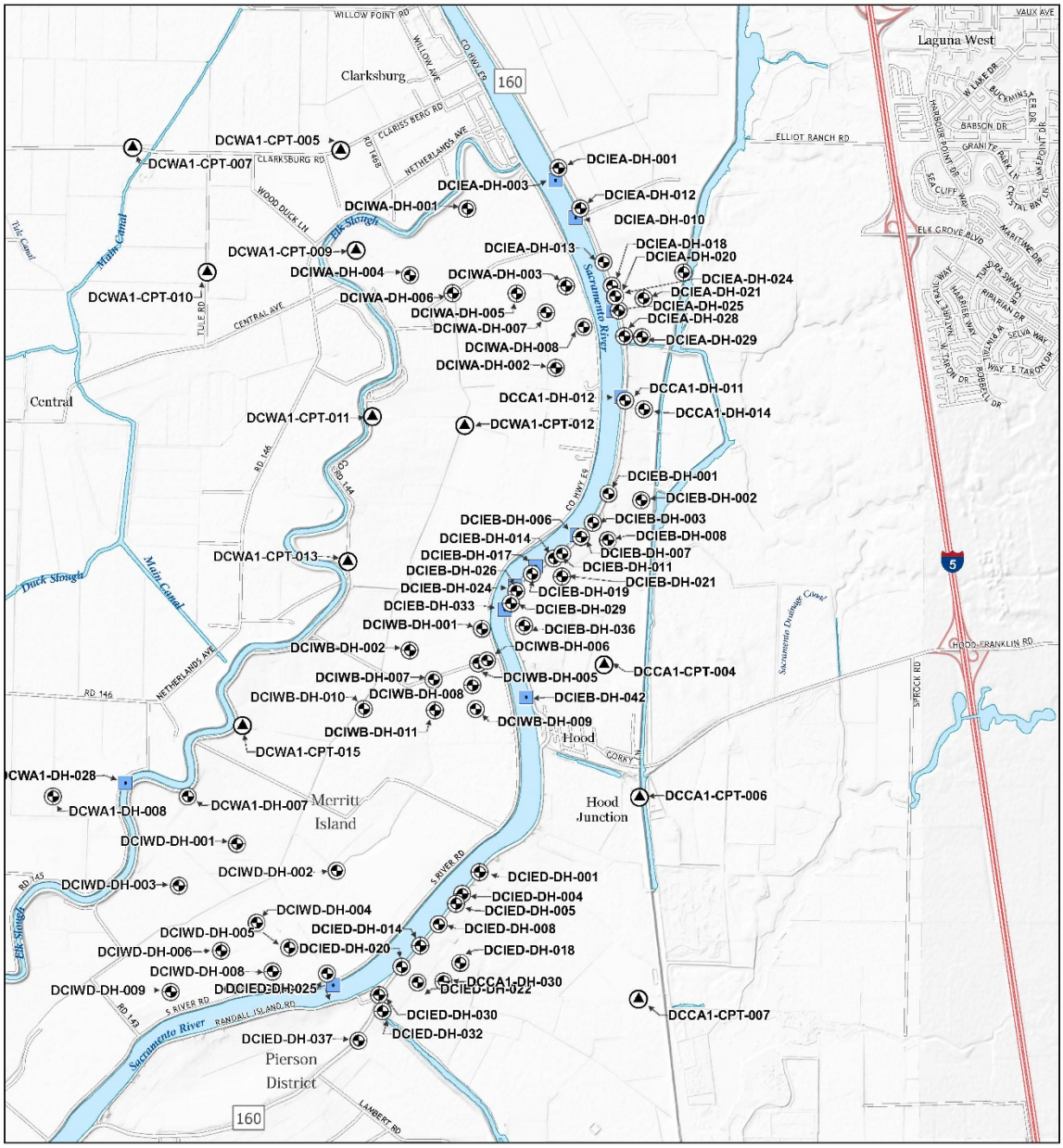
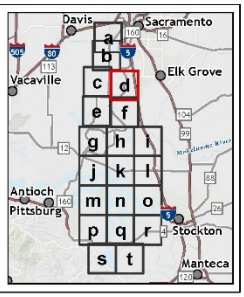




Soil Investigations for Data Collection in the Delta

Appendix C - 1d. Project Locations

CPT
Boring
Overwater Boring



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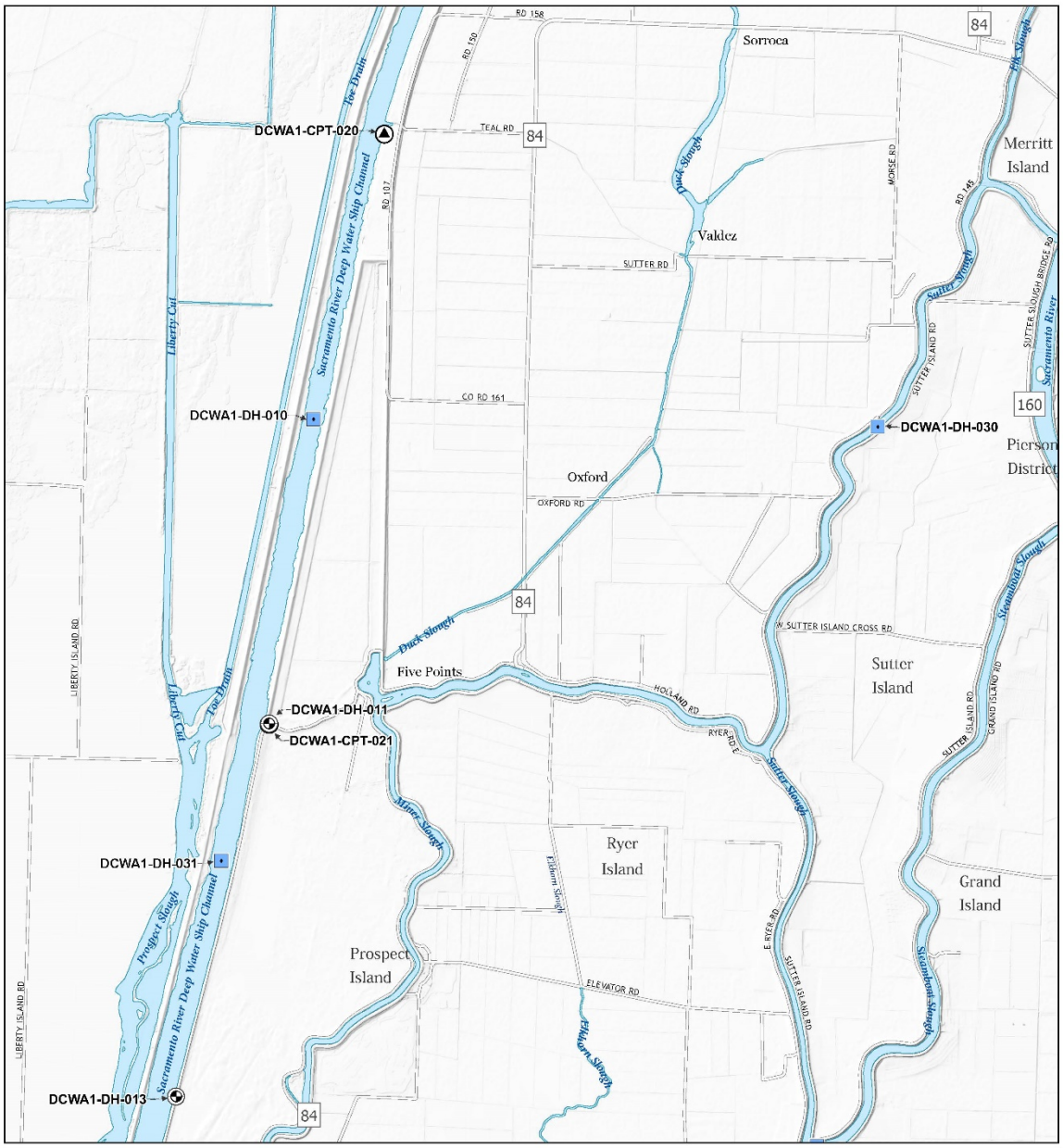

Soil Investigations for Data Collection in the Delta

Appendix C - 1e. Project Locations

CPT
Boring
Overwater Boring

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Scale: 1:24,000

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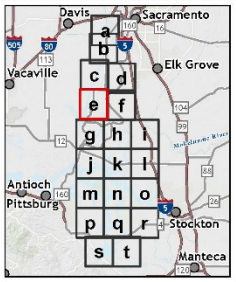

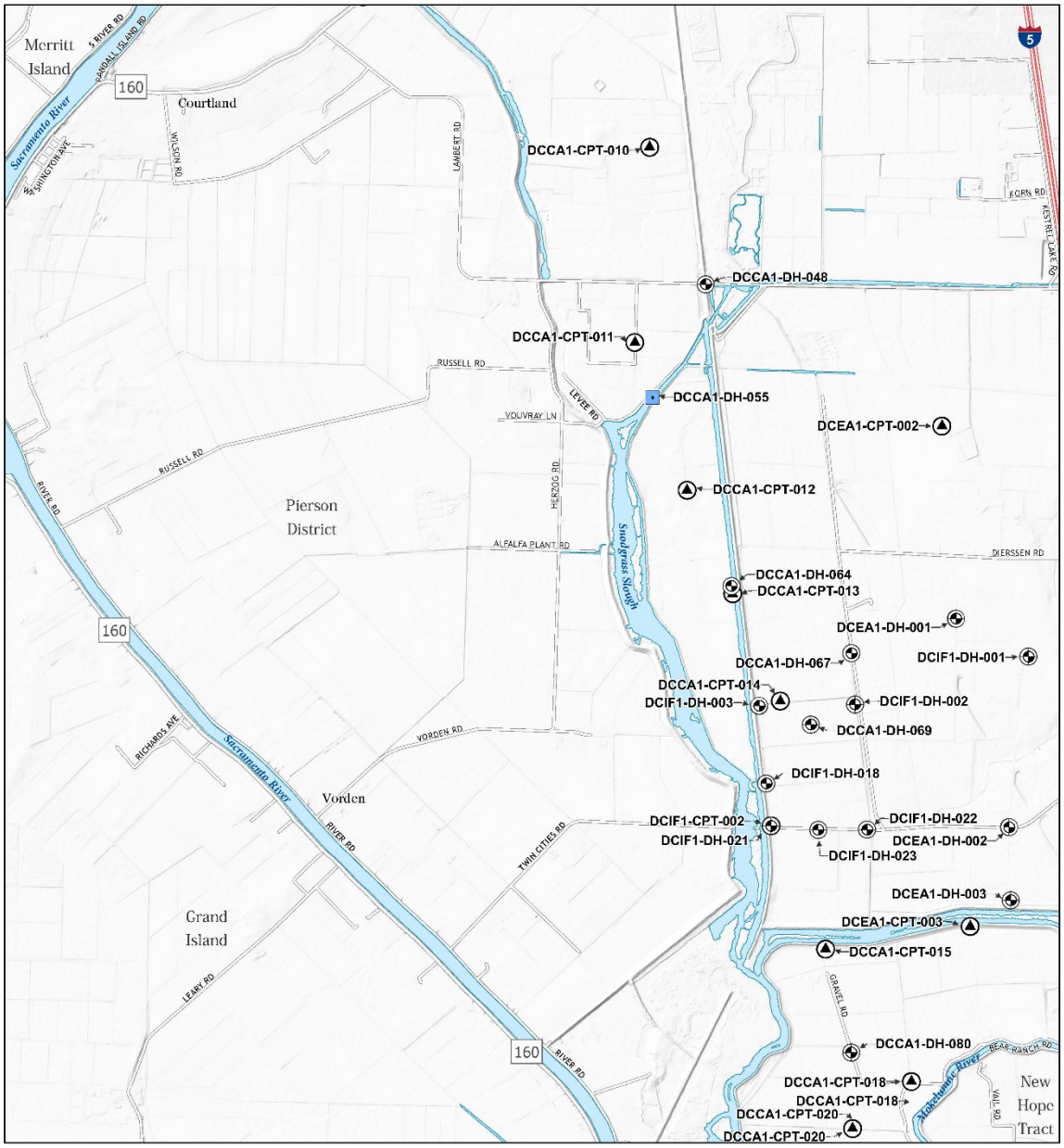

Soil Investigations for Data Collection in the Delta

Appendix C - 1f. Project Locations

CPT
Boring
Overwater Boring

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Source: Delta Lidar 2017, USGS
Scale: 1:24,000

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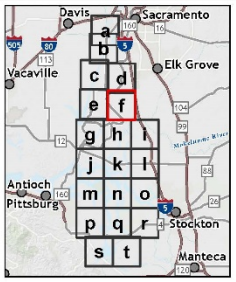

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Soil Investigations for Data Collection in the Delta

Appendix C - 1g. Project Locations

Boring

Overwater Boring

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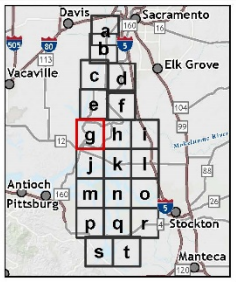

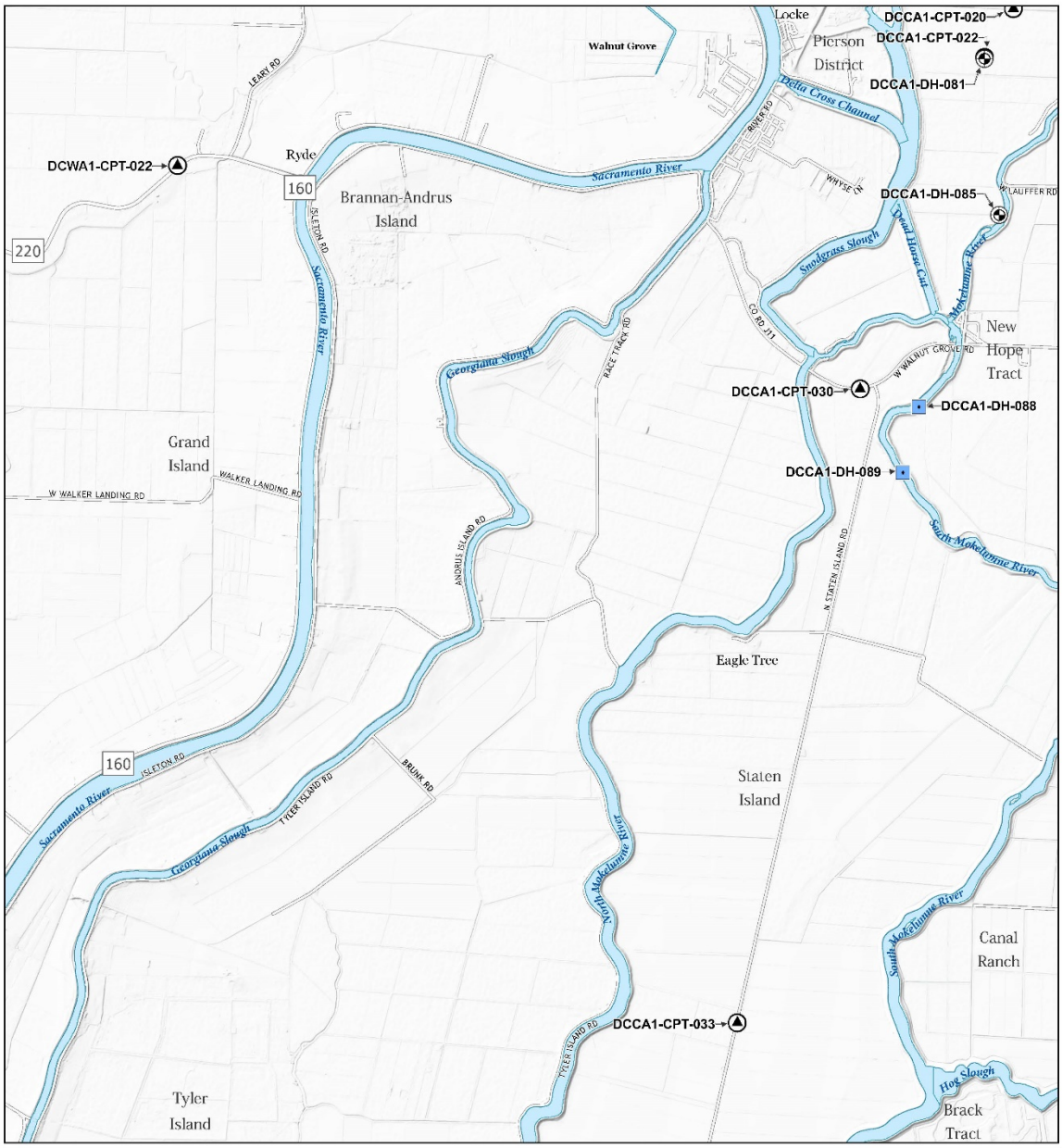

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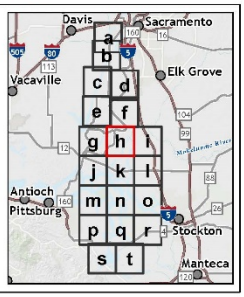
Soil Investigations for Data Collection in the Delta

Appendix C - 1h. Project Locations

CPT
Boring
Overwater Boring



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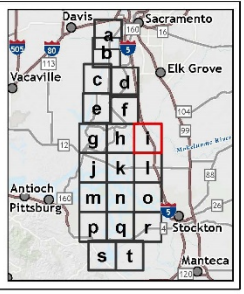
Soil Investigations for Data Collection in the Delta

Appendix C - 1i. Project Locations

CPT



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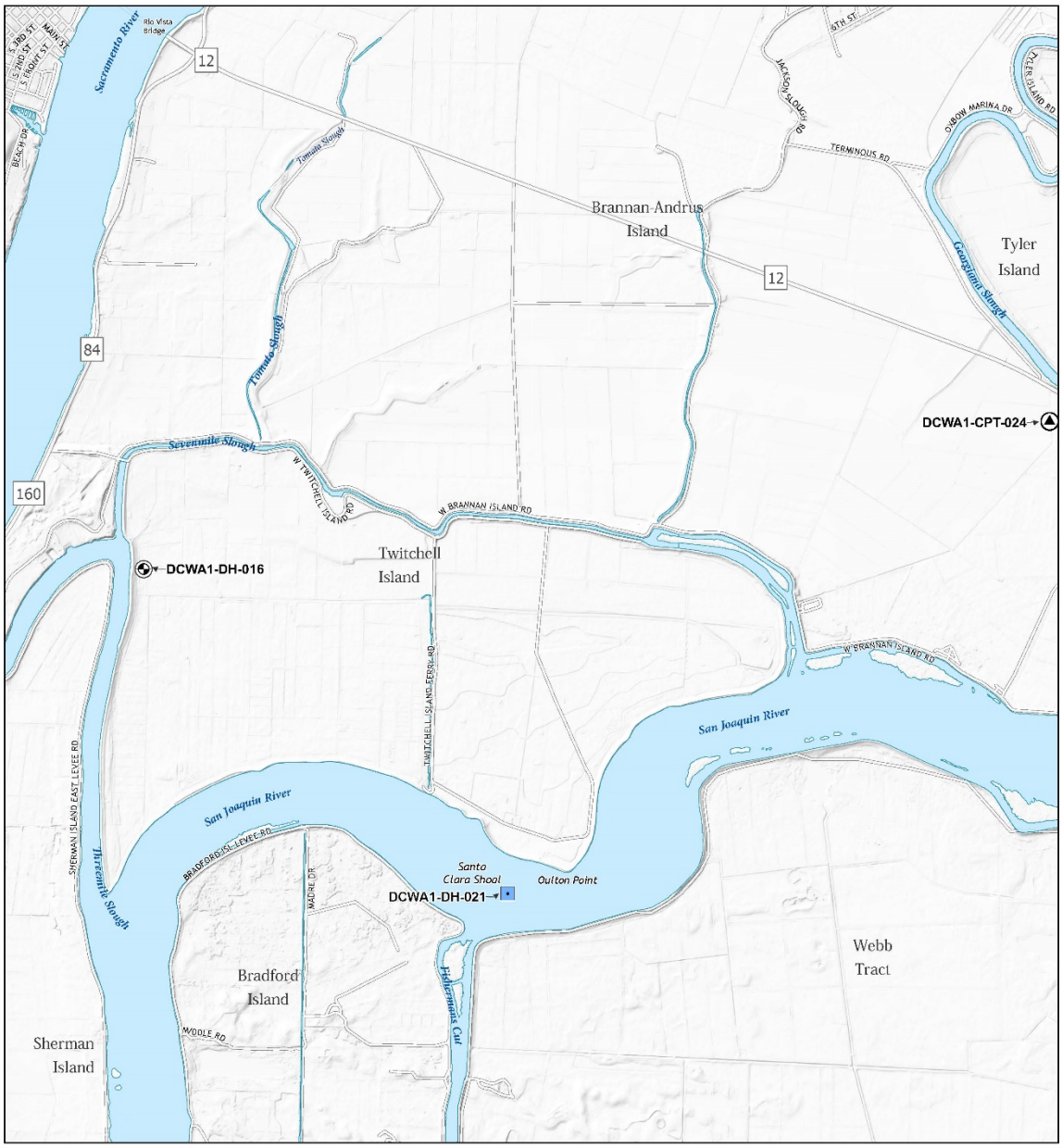

Soil Investigations for Data Collection in the Delta

Appendix C - 1j. Project Locations

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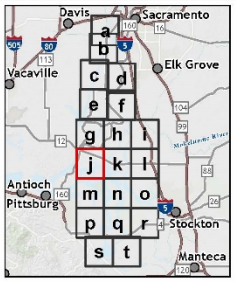

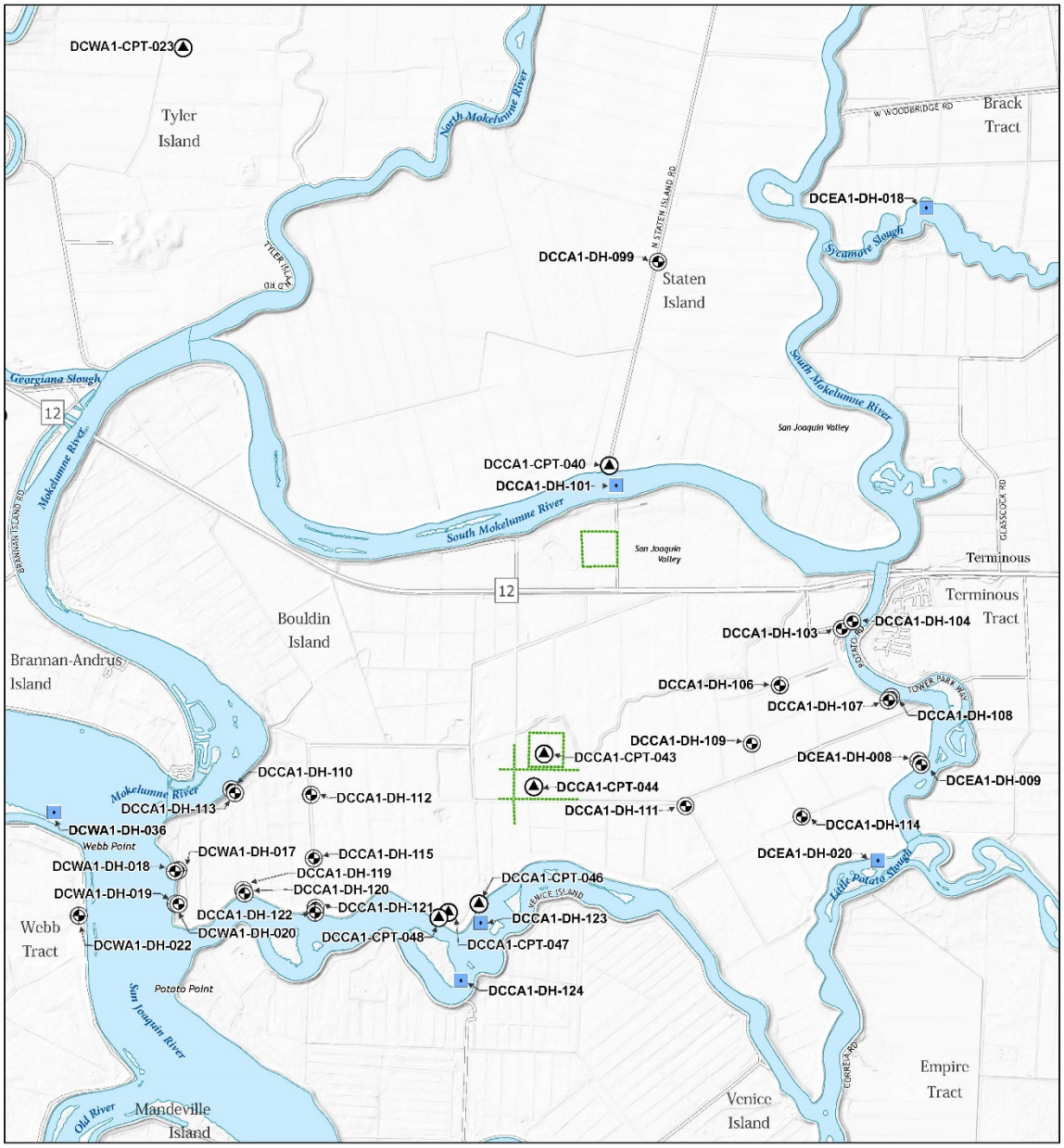
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Tyler Island
North Mokelumne River
W WOODBRIDGE RD
Brack Tract
DCEA1-DH-018
N STATEN ISLAND RD
DCCA1-DH-099
Staten Island
Sycamore Slough
TYLER ISLAND RD
Georgiana Slough
12
Mokelumne River
BRANNAN ISLAND RD
South Mokelumne River
San Joaquin Valley
DCCA1-CPT-040
DCCA1-DH-101
South Mokelumne River
San Joaquin Valley
GLASSCOCK RD
Terminous
12
Terminous Tract
Bouldin Island
DCCA1-DH-103
DCCA1-DH-104
BOUCHER RD
Brannan-Andrus Island
DCCA1-DH-106
TOWER PARK WAY
DCCA1-DH-107
DCCA1-DH-108
DCCA1-DH-109
DCCA1-CPT-043
DCEA1-DH-008
DCEA1-DH-009
DCCA1-DH-110
DCCA1-CPT-044
Mokelumne River
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DCCA1-DH-114
DCWA1-DH-036
Webb Point
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DCCA1-DH-115
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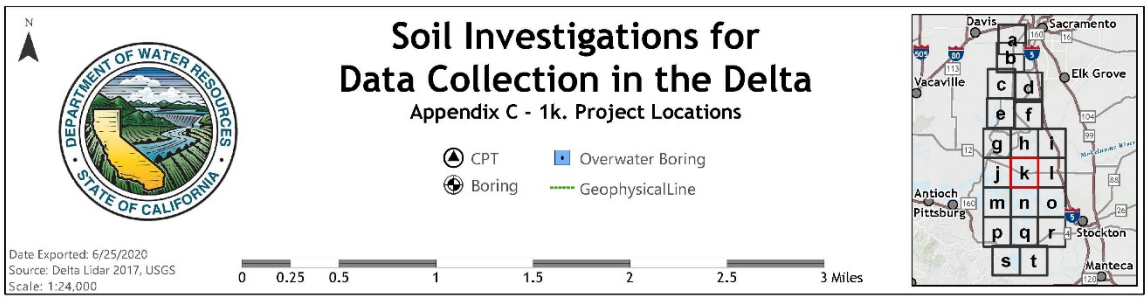
DCWA1-DH-018
DCCA1-DH-119
DCCA1-DH-120
DCCA1-CPT-046
DCWA1-DH-019
DCCA1-DH-122
DCCA1-DH-121
VENICE ISLAND
DCCA1-DH-123
Little Potato Slough
Webb Tract
DCWA1-DH-020
DCCA1-CPT-048
DCCA1-CPT-047
DCWA1-DH-022
Potato Point
DCCA1-DH-124
San Joaquin River
CORREIA RD
Empire Tract
Old River
Mandeville Island
Venice Island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DEPARTMENT OF WATER RESOURCES
STATE OF CALIFORNIA
Soil Investigations for Data Collection in the Delta
Appendix C - 1k. Project Locations
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Boring
Overwater Boring
GeophysicalLine
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0 0.25 0.5 1 1.5 2 2.5 3 Miles
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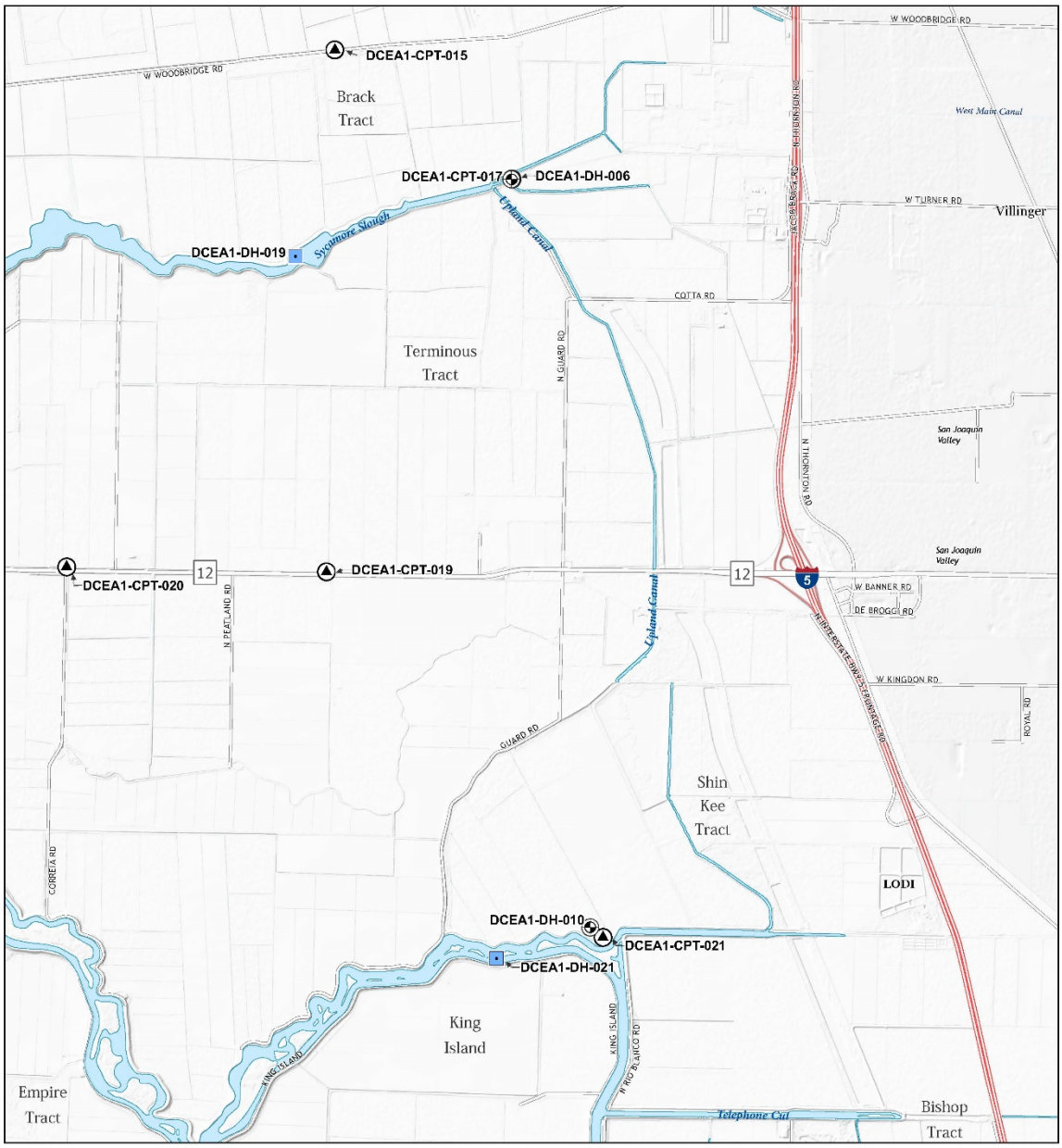
Vacaville
Elk Grove
Antioch
Pittsburg
Stockton
Manteca
a b c d e f g h i j k l m n o p q r s t



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Soil Investigations for Data Collection in the Delta

Appendix C - 1l. Project Locations

CPT
Boring
Overwater Boring

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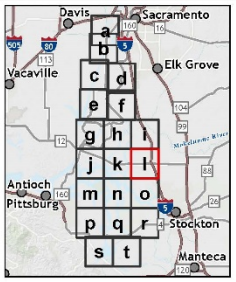

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Soil Investigations for Data Collection in the Delta

Appendix C - 1m. Project Locations

CPT
Boring
Overwater Boring

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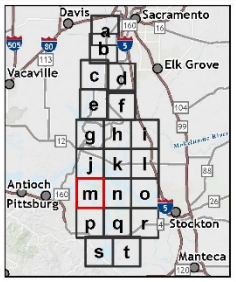
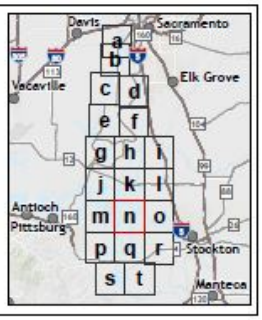


Soil Investigations for Data Collection in the Delta

Appendix C - 1n. Project Locations

CPT
Boring
Overwater Boring



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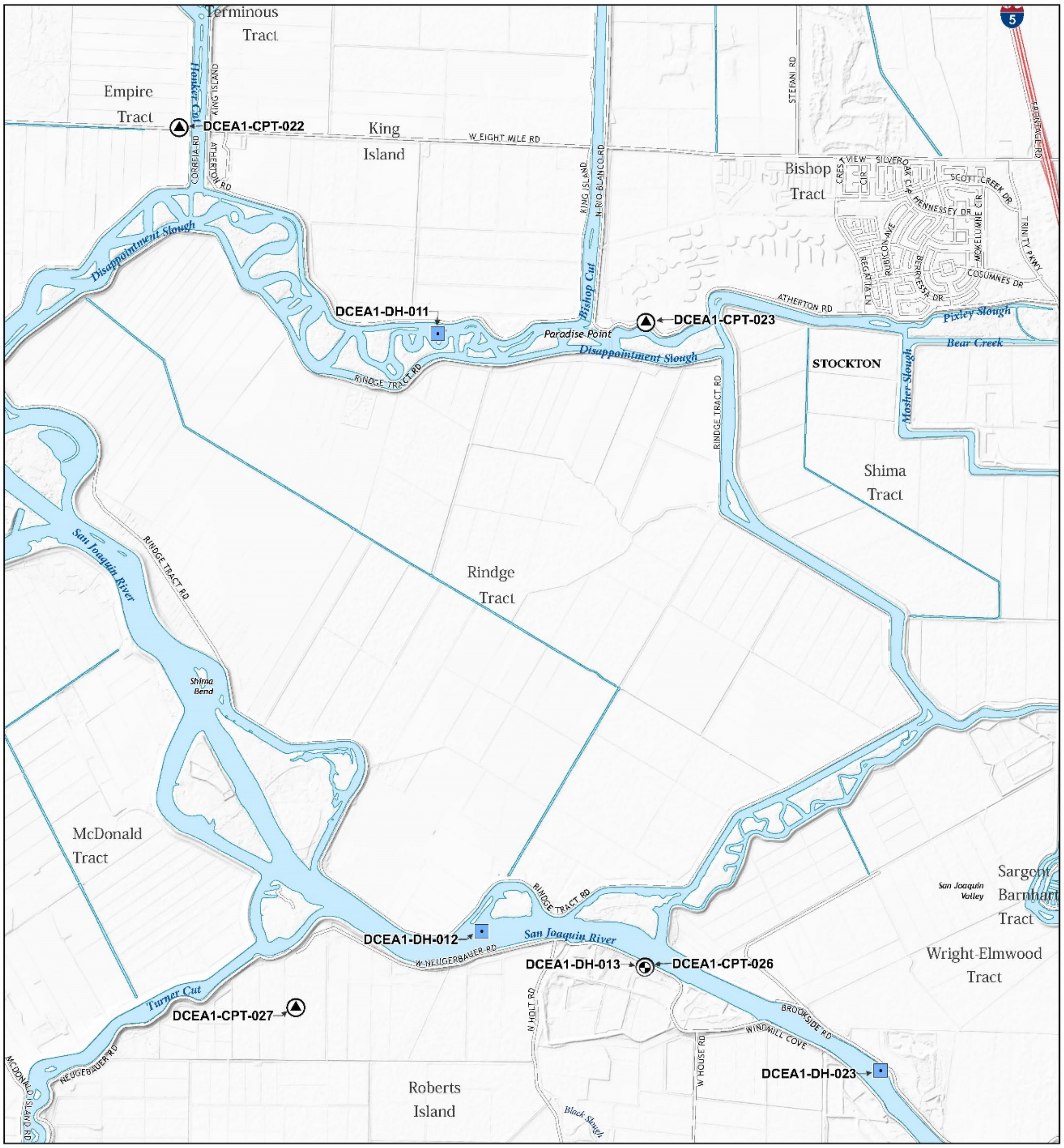

Soil Investigations for Data Collection in the Delta

Appendix C - 1o. Project Locations

CPT
Boring
Overwater Boring

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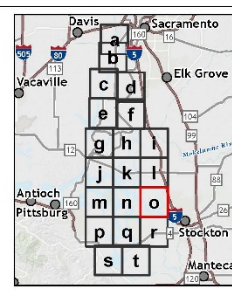

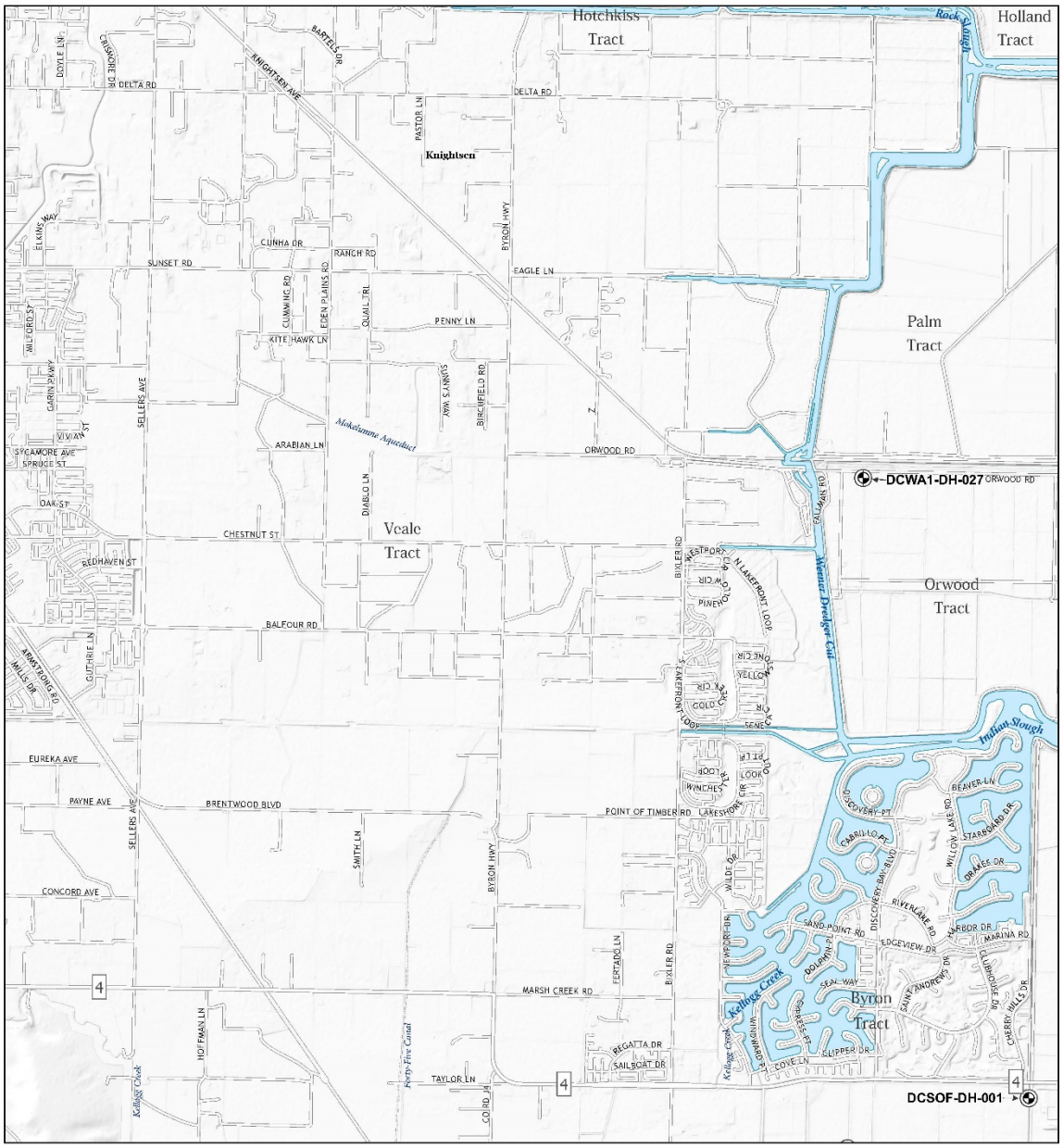

Soil Investigations for Data Collection in the Delta

Appendix C - 1p. Project Locations

Boring

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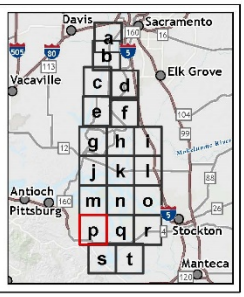
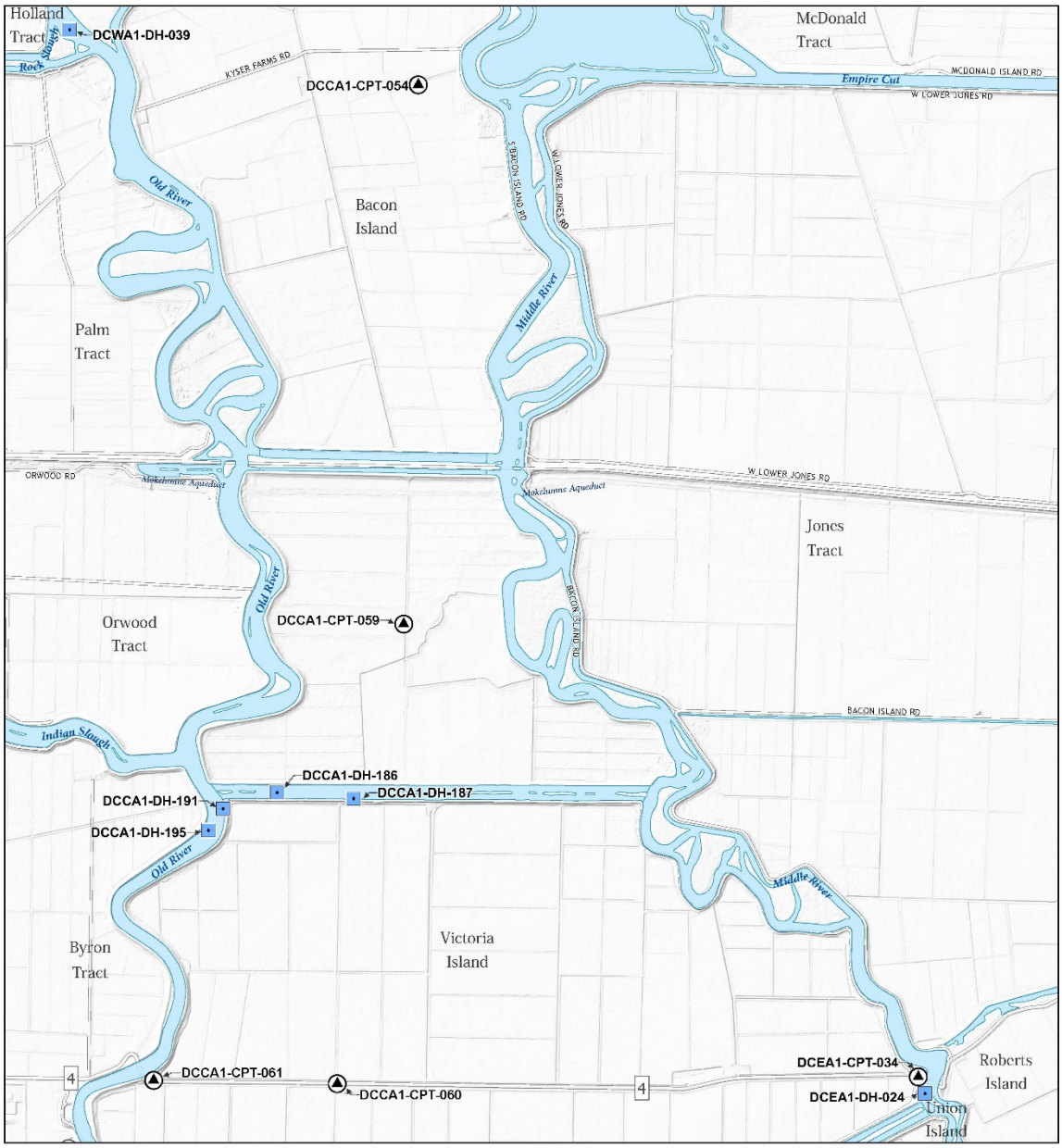
Scale: 1:24,000

0 0.25 0.5 1 1.5 2 2.5 3 Miles





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DEPARTMENT OF WATER RESOURCES · STATE OF CALIFORNIA ·

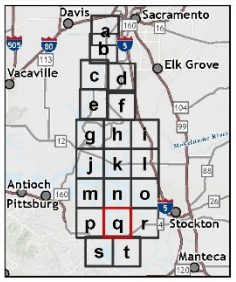
Soil Investigations for Data Collection in the Delta

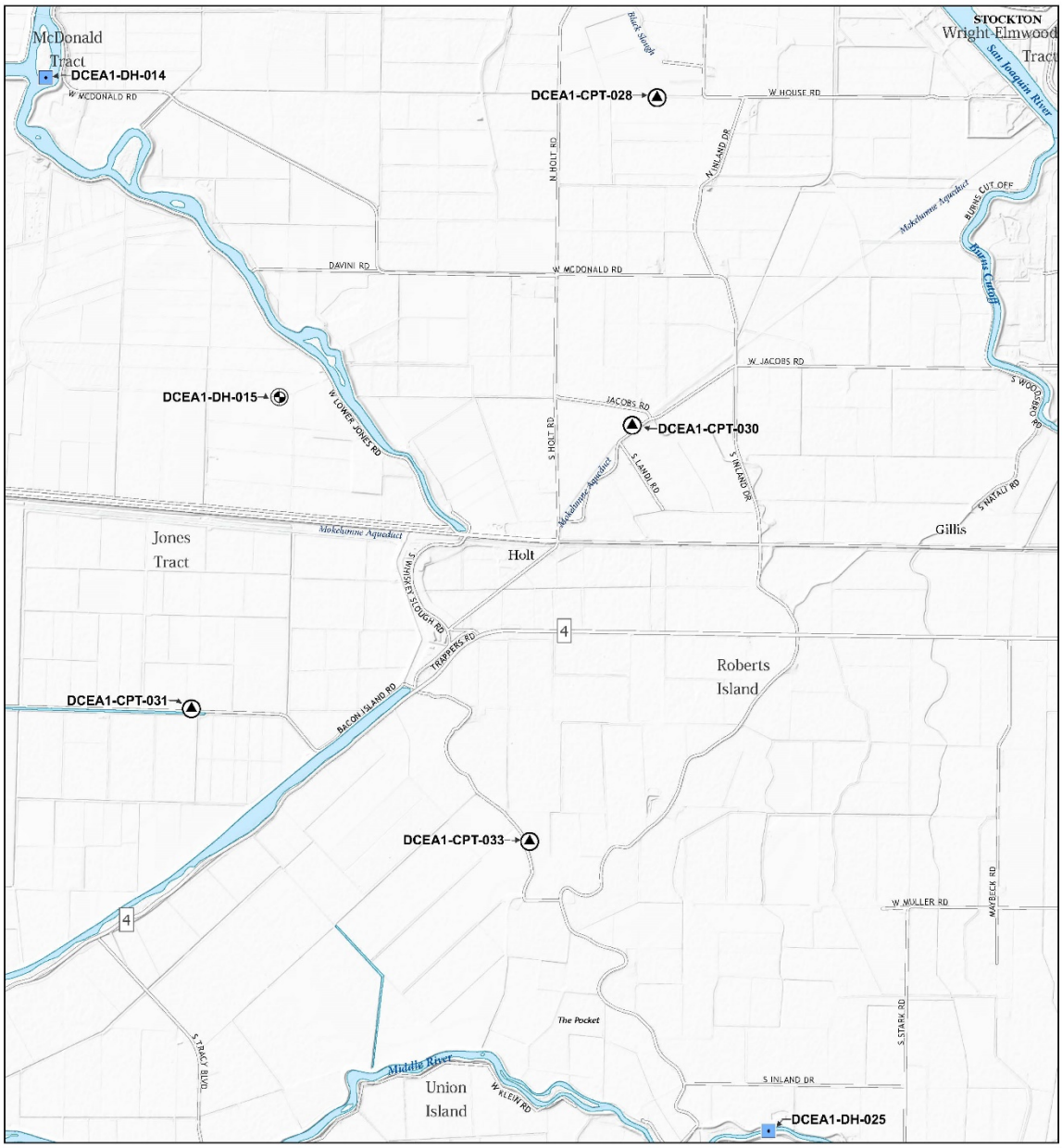
Appendix C - 1q. Project Locations

CPT
Boring
Overwater Boring

Date Exported: 6/25/2020
Source: Delta Lidar 2017, USGS
Scale: 1:24,000

0 0.25 0.5 1 1.5 2 2.5 3 Miles





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DEPARTMENT OF WATER RESOURCES · STATE OF CALIFORNIA ·

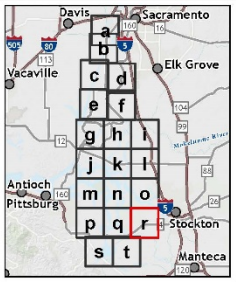
Soil Investigations for Data Collection in the Delta

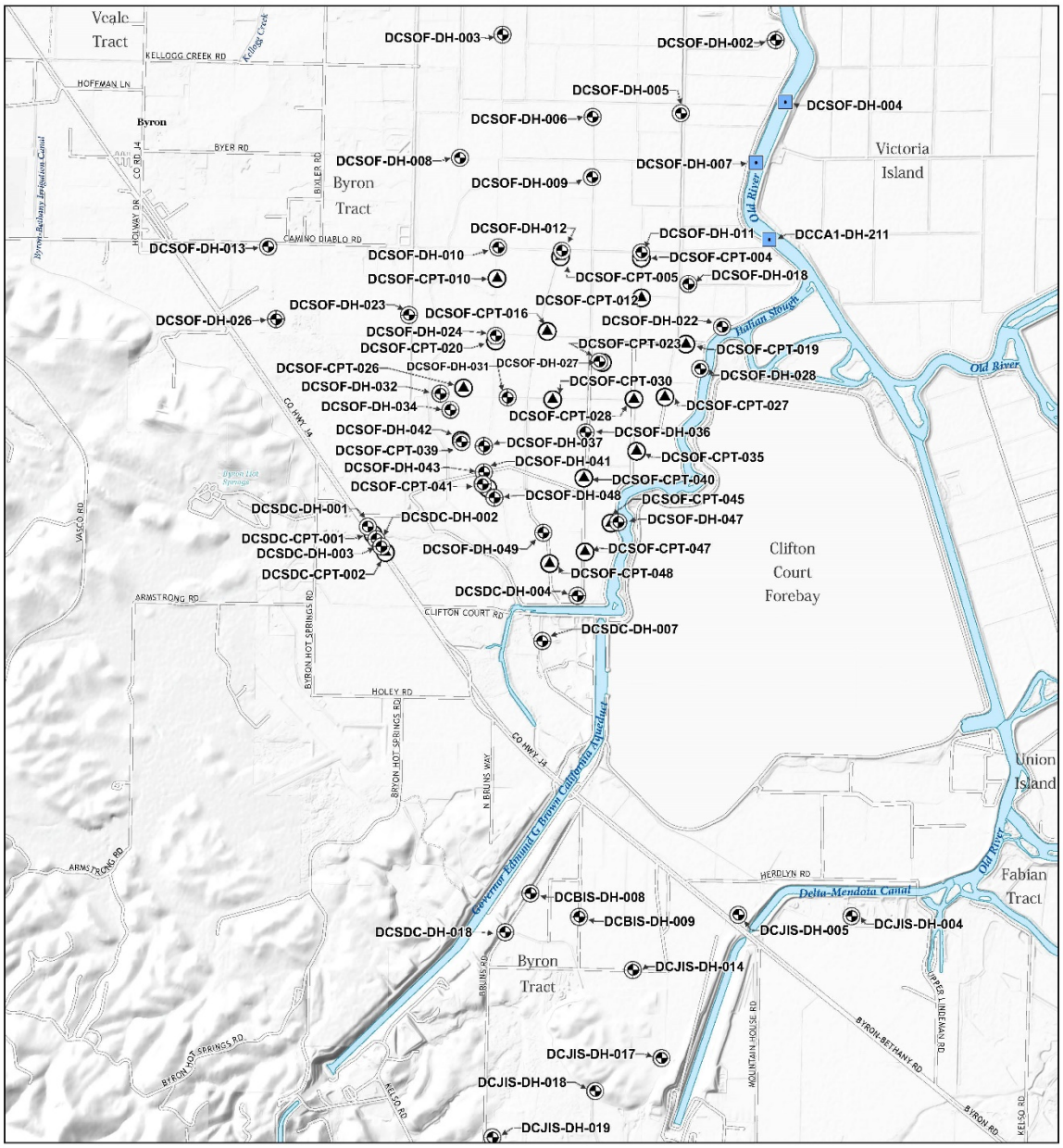
Appendix C - 1r. Project Locations

CPT
Boring
Overwater Boring

Date Exported: 6/25/2020
Source: Delta Lidar 2017, USGS
Scale: 1:24,000

0 0.25 0.5 1 1.5 2 2.5 3 Miles





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DEPARTMENT OF WATER RESOURCES · STATE OF CALIFORNIA

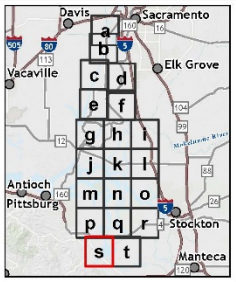
Soil Investigations for Data Collection in the Delta

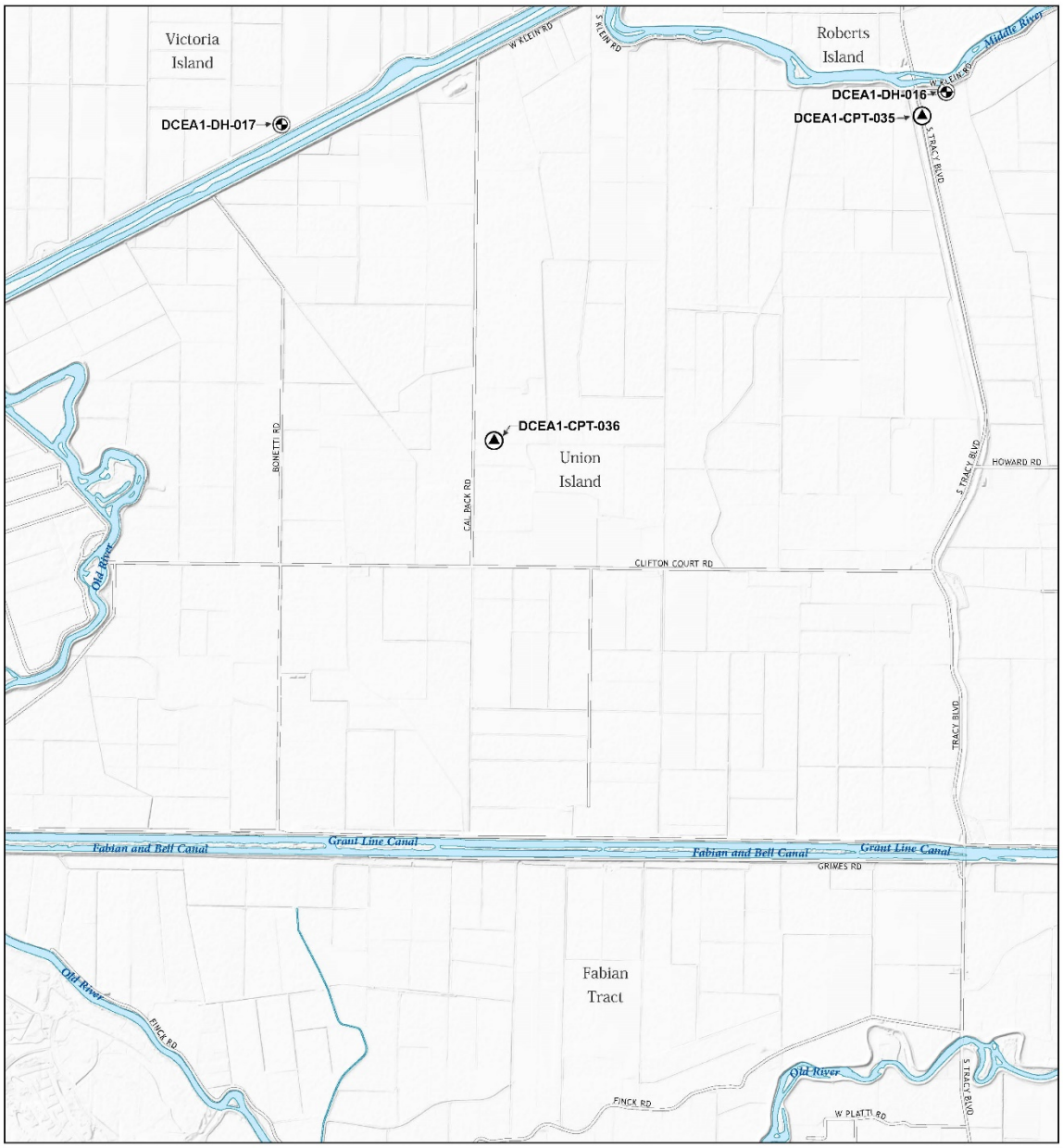
Appendix C - 1s. Project Locations

CPT
Boring
Overwater Boring

Date Exported: 6/25/2020
Source: Delta Lidar 2017, USGS
Scale: 1:24,000

0 0.25 0.5 1 1.5 2 2.5 3 Miles





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Soil Investigations for Data Collection in the Delta

Appendix C - 1t. Project Locations

CPT Boring

Date Exported: 6/25/2020
Source: Delta Lidar 2017, USGS
Scale: 1:24,000

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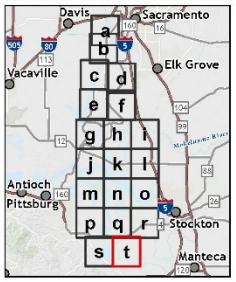

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Appendix D:
Response to Comments

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Soil Investigations for Data Collection in the Delta

Response to Comments on Draft Initial Study Mitigated Negative Declaration

July 2020

California Department of Water Resources

1416 Ninth Street

Sacramento, CA 95814

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PREAMBLE TO RESPONSES TO COMMENTS

This appendix contains every substantive comment received on the IS/MND and its response. Prior to deciding whether to adopt the MND and to approve the Proposed Project, DWR has considered each comment together with the IS/MND, pursuant to CEQA Guidelines, Section 15074, subdivision (b). Although not required, DWR has taken the additional step of responding to comments in order to promote transparency and responsiveness (see State CEQA Guidelines, Section 15073). With the same intent, DWR opted to extend the comment period, from the required 30 days for IS/MNDs submitted to the State Clearinghouse, to 56 days, closing on January 15, 2020 (State CEQA Guidelines, Section 15105, subdivision (b) and Section 15073, subdivision (a)). The agency has further opted to respond to comments received after the expiration of the comment period, although also not required under existing CEQA guidance on responding to comments even for environmental impact reports (EIRs) (see *Citizens of Goleta Valley v. Board of Supervisors* (1990) 52 Cal.3d 553, 567; see also Pub. Resources Code, Section 21091, subdivision (d)). The full content of the comment letters received is included verbatim in Table 1 and digital copies of the comment letters can be made available upon request. Where the letters received on the IS/MND have multiple comments, they are divided and numbered as separate comments.

MASTER RESPONSE 1: No Significant Environmental Issue Raised in Comment

Several comments contain only background or introductory material, or statements of opposition to the Proposed Project or the potential, future Delta Conveyance Project (DCP). Even where an agency's environmental document is an EIR as opposed to an IS/MND, this type of comment does not raise any "significant environmental issue" that warrants a substantive response under existing CEQA requirements (see State CEQA Guidelines, Section 15088, subdivision (a); see also *Browning-Ferris Industries v. City Council* (1986) 181 Cal.App.3d 852, 862). Therefore, substantive responses are not given for these comments.

MASTER RESPONSE 2: Proposed Project Is Independent from the Delta Conveyance Project

Several comments assert that the Proposed Project is not independent from the DCP and, therefore, DWR is improperly piecemealing by not evaluating the two projects together as one. "Piecemealing" occurs when a project is split into multiple segments, thereby not analyzing the "whole of the action," as is required under CEQA (State CEQA Guidelines, Section 15378, subdivision (a)). Piecemealing is not consistent with the requirements of CEQA because it has the potential to inaccurately minimize environmental impacts by "chopping a large project into many little ones" (*Bozung v.*

Local Agency Formation Com. (1975) 13 Cal.3d 263, 283–284). Two prevailing legal tests have long been used by courts to determine piecemealing in a CEQA context: the test articulated by the California Supreme Court in *Laurel Heights Improvement Assn. v. Regents of the University of California* (1988) 47 Cal.3d 376, 396 [*Laurel Heights I*]; and the "independent utility" test first described by the court in *Del Mar Terrace Conservancy, Inc. v. City Council of the City of San Diego* (1992) 10 Cal.App.4th 712, 732–733. Although these legal tests have mainly been developed in connection with projects for which EIRs have been prepared, their logic makes them equally applicable to projects for which agencies have prepared IS/MNDs. As demonstrated below, the Proposed Project is not a piecemealed portion of the DCP.

No Piecemealing under the California Supreme Court Test

In *Laurel Heights I*, the California Supreme Court determined that a CEQA document "must include an analysis of the environmental effects of future expansion or other action if: (1) it is a reasonably foreseeable consequence of the initial project; and (2) the future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects" (*supra*, 47 Cal.3d at p. 396). Under this test, the Proposed Project is not the first phase of the DCP and need not be addressed within the same environmental document.

First, the DCP is not "a reasonably foreseeable consequence" of the Proposed Project. The Proposed Project is a short-term information and data gathering exercise that exists independent of any future water conveyance project. The information gathered by the Proposed Project can assist in informing and refining both the DCP EIR's project description and the alternatives to the proposed DCP. While not required for the DCP, using this information in this way is expected to result in better impact analysis, more meaningful environmental review, and a more appropriate range of alternatives—*not* an artificial minimization of significant impacts, as is the concern with piecemealing (see *Bozung v. Local Agency Formation Com.*, *supra*, 13 Cal.3d at pp. 283–284; see also *Stopthemillenniumhollywood.com v. City of Los Angeles* (2019) 39 Cal.App.5th 1, 17-–20 [requiring a project be defined with enough particularity for the public and decisionmakers to meaningfully understand its components and impacts]). Further, the Proposed Project does not "legally compel" any DCP project-level planning, adoption, or implementation (see *Banning Ranch Conservancy v. City of Newport Beach* (2012) 211 Cal.App.4th 1209, 1223 [*Banning Ranch*]; and State CEQA Guidelines, Section 15126.6, subdivision (a)). Any water conveyance facilities constructed and operated under the DCP are being "contemplated," but they remain speculative pending a series of decisions, actions, and phases to occur separate and apart from the Proposed Project, (i.e., project planning and development, independent CEQA review, certification of CEQA document, project approval, project funding, property acquisition, project implementation). Indeed, implementation of the Proposed Project could assist DWR in determining in the DCP EIR that the DCP should not be approved. Additionally, it is entirely possible that the information gathered for the Proposed Project could be used

for nothing other than furthering the existing data and information that DWR collects regarding the Delta region, or it could be used for various other future design considerations, including levee stability. Under these circumstances, CEQA does not require that the current MND for a comparatively modest and temporary information-gathering project be expanded into a full EIR for a dramatically larger and permanent major infrastructure project.

Moreover, although the Proposed Project does not presume completion of the DCP, the evaluation of the proposed DCP will proceed regardless of the Proposed Project—it must. The Delta Reform Act provides that one of the state's objectives for the Delta is to "[i]mprove the water conveyance system" for California. (Wat. Code Section 85020(f).) Consistent with this objective, the State must "upgrade Delta infrastructure" to ensure water supply quantity and quality (Draft IS/MND, p. 1). As stated by Governor Newsom, "'[w]e need to protect our water supply…and meet the needs of cities and farms,'" and "moderniz[ing] our water infrastructure" is the only solution (DWR, *State Initiates State Initiates Environmental Review for Proposed Delta Conveyance Project, Begins Public Scoping* (Jan. 15, 2020), available online at https://water.ca.gov/News/News-Releases/2020/Delta-Conveyance-NOP). The proposed DCP, and its predecessor projects (the former Bay Delta Conservation Plan [BDCP] /California [CA] WaterFix Project), was conceptualized well prior to the Proposed Project and its eventual approval and implementation is neither dependent nor conditioned on the Proposed Project. No causal connection is created between the Proposed Project and DCP approval merely because the Project offers information to assist DWR in ascertaining feasible alternative conveyance routes. The primary connection between the two projects, aside from informational, is one of simple practicality—the Proposed Project will save DWR time and taxpayers money by providing information that will allow the agency to fine tune the description of the proposed DCP and its feasible EIR alternatives.

Commenters have suggested that the current MND should treat the DCP as part of the proposed Project because, under the second element of the two-part *Laurel Heights* piecemealing test, including the DCP within the proposed Project would "change the scope or nature" of the Proposed Project or its environmental effects. This suggestion misapplies the *Laurel Heights* piecemealing test, in which the causation element, discussed above, is the first and key element. Under the test, a CEQA document "must include an analysis of the environmental effects of future expansion or other action if: (1) it is a reasonably foreseeable *consequence* of the initial project; *and* (2) the future expansion or action will be significant in that it will likely change the scope or nature of the *initial* project or its environmental effects." Here, the lack of causation renders the second part of the two-part test superfluous. As explained above, implementation of the proposed Project will not necessitate or render inevitable a decision by DWR to proceed with the DCP. Any policy decision to proceed with the DCP will be wholly independent of the proposed information gathering project and will be based on a myriad of other

factors, including analysis in a separate CEQA document and a balancing of competing interests. This is so even though the information to be obtained from the Proposed project is relevant to the DCP and can contribute to a better EIR for the DCP. In short, even if inclusion of the DCP would expand the scope of the "initial project," there would still be no piecemealing in the absence of causation.

Regardless, it is the nature of the proposed Project that the DCP, coming later in time, would not "change the scope or nature of the *initial* project or its environmental effects." The work conducted under the Proposed Project largely will be completed by the time the DCP is approved and implemented—there will be limited to no overlap. Any data gathering that might not have not occurred upon DCP approval would be completed as described in the IS/MND, and therefore would not exceed the scope and nature of the current project description (see *Banning Ranch*, *supra*, 211 Cal.App.4th at p. 1225 [a physical increase in the initial project constitutes a change in scope and nature]).

This piecemealing assessment is consistent with conclusions reached by the Sacramento Superior Court in its decision in *Central Delta Water Agency, et al. v. Cal. Dept. Water Resources* (Nov. 2, 2011, 34-2010-80000698). There, the court found against piecemealing claims made in response to an IS/MND that was prepared by DWR in 2010 for a comparable geotechnical project that was similarly proposed to gather data and information for use in planning alternative alignments for the previous Delta water conveyance project. The court explicitly held that the two projects "need not be analyzed together" because the latter "cannot be characterized as a foreseeable consequence" of the former and that "neither [the] scope nor [the] environmental effects" of the information gathering project "will change with the development of" the water conveyance project. The court used the same reasoning and reached the same conclusions as DWR has here.

No Piecemealing under the "Independent Utility" Test

The Proposed Project also withstands piecemealing scrutiny under the "independent utility" test. This test asks whether a project has an independent utility that justifies its separate analysis and approval, even if it is arguably part of a larger scheme (*Del Mar Terrace Conservancy, Inc. v. City Council of the City of San Diego* (1992) 10 Cal.App.4th 712, 732–733). This independent utility should serve a useful purpose, regardless of whether future activity is approved and implemented, thereby demonstrating that a future project is not a consequence of the initial project (see *Aptos Council v. County of Santa Cruz* (2017) 10 Cal.App.5th 266, 280, fn. 3).

Here, the Proposed Project serves the fundamental and useful purpose of information gathering, as described above, so that DWR may fulfill its duty to "use its best efforts to find out and disclose all that it reasonably can" (State CEQA Guidelines, Section 15144, quoted in *Banning Ranch*, *supra*, 2 Cal.5th at p. 938). Indeed, a principal purpose of the

Proposed Project is to “inform the design…and development” of the DCP and its upcoming environmental review process with high quality geological information that will lead to better future environmental analysis and better ultimate decision-making (Draft IS/MND, p.1). This principal purpose differs from that of the proposed DCP, which would be to implement a water conveyance project. When the “principal purpose for [a proposed] project” differs from the “principal purpose” of a future project, and wherein the Proposed project “does not ‘depend on’ construction of the [future project],” the Proposed project is considered “a separate project” and therefore independent CEQA review “does not constitute illegal ‘piecemealing’” (*Communities for a Better Environment v. City of Richmond* (2010) 184 Cal.App.4th 70, 101). (Here, even if the DCP is never constructed, and there is no certainty that it will be, the Proposed Project will move forward and any information gathered would be used by DWR for some other useful endeavor (see above for more detail on other uses for project information). And, as stated above, even if the Proposed Project were not implemented, the DCP would move forward, thereby differentiating not just their purposes but also their functions.

The Proposed Project and DCP are independent endeavors that may be part of a larger scheme to ultimately provide information to support the potential approval of actions to provide reliable water to the State but are not “integral parts of the same project” (*Sierra Club v. West Side Irrigation Dist.* (2005) 128 Cal.App.4th 690, 698). One can, and does, exist without the other, albeit their coexistence will save time and money for the State and taxpayers. Additionally, any decision made by DWR in a prior CEQA document to include exploratory drilling as part of a larger water conveyance project “is not determinative, or even probative, of whether [such drilling activity] is part of a single larger project that must be considered in a [single CEQA document]” (*Paulek v. Department of Water Resources* (2014) 231 Cal.App.4th 35, 48). DWR’s intent is to refine environmental review to best utilize the resources of the State.

Conclusion

As “a question of law,” piecemealing is determined based on the undisputed facts on the record (*Tuolumne County Citizens for Responsible Growth, Inc. v. City of Sonora* (2007) 155 Cal.App.4th 1214, 1224). Here, the facts demonstrate that the Proposed Project and the potential, future DCP have different purposes, timelines, approvals, and implementation, allowing them to properly undergo separate CEQA review. These projects may be somewhat related, but they are not interdependent, and, therefore, not piecemealed by utilizing separate CEQA analysis. By arguing that DWR may not pursue the Proposed Project independent of the future DCP project, commenters are essentially attacking DWR for its efforts to ensure that the future EIR for the proposed DCP will be as solid and informative as possible, and that any future conveyance project will be well-designed in light of the realities of the subsurface conditions in the Delta.

MASTER RESPONSE 3: IS/MND Is an Appropriate Informational Document

Several comments declare that the IS/MND provides an inadequate level of detail and therefore fails as an informational document. CEQA requires that a negative declaration contain a "brief description of the project"; the project location "preferably shown on a map"; the name of the project proponent; a proposed finding of no significant effect on the environment with a brief description of reasons why; the completed initial study; and mitigation measures, "if any" (State CEQA Guidelines, Section 15071 and Section 15371). As with all CEQA documents, an IS/MND should "[i]nform governmental decision makers and the public about the potential, significant environmental effects of proposed activities" and require any feasible project changes, such as mitigation measures, to reduce or eliminate those effects (*Id*., Section 15002, subdivision (a)).

The Draft IS/MND satisfies all of these requirements. It includes 247 total pages, with an 18-page project description, 192 pages of technical environmental analysis, 38 mitigation measures, five locational maps, and two technical appendices. It also contains the name of the Project proponent (DWR) and a determination that "there will not be a significant effect" on the environmental because mitigation measures "will be implemented as part of the Proposed Project" (Draft IS/MND, pp. I, iii). The content of, and detail within, the IS/MND meets and exceeds CEQA requirements.

Lighthouse Field Beach Rescue v. City of Santa Cruz, (2005) 131 Cal.App.4th 1170, is instructive in this regard. In *Lighthouse*, the lead agency's initial study was found to be informationally inadequate because it "failed to consider the whole of the project," which ultimately resulted in inadequate analysis (Id., at p. 1200). In that case, the lead agency failed entirely to consider an integral component of a general plan amendment that would allow for an increase in unleashed dogs in public spaces (Id.). By not acknowledging this likely increase, the initial study could not properly analyze the full potential environmental effects of those revisions—effects which were repeatedly and contentiously pointed out by the public and experts. Here, the IS/MND does not suffer from the same affliction. The environmental analysis assumes full implementation of the Proposed Project, which in turn presents the maximum amount of activity that would be conducted to provide "appropriate coverage" at its "maximum total duration" using the maximum amount of equipment (Draft IS/MND, p. 4)—a conservative approach that was honed after years of agency experience conducting this exact type of work. As a result of this conservative approach, the IS/MND analyzes more than simply the "whole of the project." Unlike the document in *Lighthouse*, the IS/MND looks above and beyond what is likely to actually occur into what could possibly occur in the most extreme of circumstances.

The amount of detail presented in the 18-page project description and the 192-page environmental analysis provides ample "'material necessary [for] informed decisionmaking and informed public participation'" (*Lighthouse Field Beach Rescue v. City of Santa Cruz*, supra, at p. 1202). Despite assertions made in some comments, it

fulfills all informational and content requirements of CEQA for negative declarations and thus fulfills the primary CEQA directive that “decisions be informed” while maintaining its efficiency as an IS/MND, not an EIR, (State CEQA Guidelines, Section 15003, subdivision (j)). For example, Comment 8 suggests that maps in the IS/MND showing individual investigation locations are not detailed enough—too “high altitude”— and thereby preclude a “detailed and meaningful description and analysis.” The IS/MND intentionally presents each investigation location on four separate, full-page maps in a manner that identifies their individual locations, their proximity to one another, and their regional orientation (Draft IS/MND, pp. 5–8). This was done purposefully to properly illustrate the spatial “distribution of the various types of…investigations,” so as to fully inform decision makers and the public, but also to maintain compliance with CEQA directives for brevity in MND project descriptions (Id., p. 4; State CEQA Guidelines, Section 15071, subdivision (a)). This use of maps is just one example of how the IS/MND adheres to CEQA standards. Each comment questioning the adequacy of the IS/MND is specifically addressed, as warranted, in its respective response with reference to this master response and the legal authority herein.

As demonstrated, the IS/MND is a thorough document as measured by all statutory, regulatory, and court standards. In an effort to be responsive to commenter concerns, DWR has made a few revisions to the Final IS/MND to clarify, enhance, and correct information presented in the Draft (see State CEQA Guidelines, Section 15073.5). For example, additional locational maps have been added in a new appendix to provide a more detailed view of investigation locations, although such material was made available to the public during the comment period (see Response to Comment 8). Other select revisions have been made to mitigation measures to make minor corrections and include additional units of measurement, documentation procedures, consistent terminology, specific conformity and professional standards, and secondary safety procedures. These revisions and corrections are not substantial or necessary to reduce impacts to a less-than-significant level; they serve to clarify information by, for example, providing metric system units (see AES-1, AGR-1, AIR-1, BIO-3 to BIO-13, BIO-15 to BIO-18, CUL-2 to CUL-3, HYD-1, and TRANS-1), and enhance existing effectiveness by, for example, adding specific other regulatory requirements (see HAZ-2) (see State CEQA Guidelines, Section 15073.5, subdivision (b)). Because none of these revisions or corrections are necessary to avoid potentially significant effects, they are not “substantial” and therefore recirculation of the IS/MND is not required (Id., subdivision (c)).

In addition to this IS/MND document, DWR will prepare and adopt a mitigation, monitoring, and reporting plan (MMRP) upon Project approval (see Master Response 4).

MASTER RESPONSE 4: EIR Is Not Warranted

Several comments assert that an EIR must be prepared for the Proposed Project, along with an accompanying MMRP, on their theory that not all impacts can be reduced to a less-than-significant level, as concluded in the IS/MND, or that other potentially significant impacts exist that were not properly considered. CEQA requires lead agencies to use "a negative declaration when a project…will not have a significant effect on the environment" (State CEQA Guidelines, Section 15006, subdivision (e)). However, if an agency is confronted with substantial evidence, in light of the whole record, that a "project may have a significant effect on the environment," then an EIR "shall be prepared" (Public resources Code, Section 21010, subdivision (d); State CEQA Guidelines, Section 15064, subdivision (f)(1)). Any legal challenge to the adoption of an IS/MND on these grounds must make a "fair argument" that a significant environmental impact may occur (*Lighthouse Field Beach Rescue v. City of Santa Cruz* (2005) 131 Cal.App.4th 1170, 1181).

There is no "reasonable possibility" that a significant environmental impact would occur through implementation of the Proposed Project, including adopted mitigation, as is supported in the responses to comments (*Pocket Protectors v. City of Sacramento* (2004) 124 Cal.App.4th 903, 927). Analysis in the IS/MND confirms this conclusion. Each potentially significant environmental impact will clearly be mitigated to a less-than-significant level by one or more of the 38 mitigation measures presented in the IS/MND so that it will not present "a substantial, or potentially substantial, adverse change" on the physical environment (State CEQA Guidelines, Section 15382; see also Public Resources Code, Section 21080, subdivision (c)(2)). Any modest, isolated environmental impacts that may occur as a result of the Proposed Project would be incremental and not substantially adverse, and thus would not trigger the preparation of an EIR.

For example, Comment 221 suggests that noise from underwater geotechnical drilling "could be a potential significant impact on aquatic species," despite mitigation measures and project design. However, scientific evidence shows that, while Project-related noise *may* cause some minor temporary change in the behavior of *individual* fish, that nonlethal change would not be substantially adverse to the species as a whole or to any discrete, self-sustaining population of fish and would not substantially reduce the number or restrict the range of a rare, threatened or endangered species. These types of impacts on fish populations, which go beyond effects on small numbers of individual fish, are where CEQA's concerns lie. (See CEQA Guidelines, § 15065, subd. (a)(1) [significant effect occurs where a proposed project may "substantially reduce the number or restrict the range of an endangered, rare or threatened species"; or "cause a fish … population to drop below self-sustaining levels"]; see also *Eureka Citizens for Responsible Government v. City of Eureka* (2007) 147 Cal.App.4th 357, 376, quoting *Mira Mar Mobile Community v. City of Oceanside* (2004) 119 Cal.App.4th 477, 492 ["'[u]nder CEQA, the question is whether a project will affect the environment [] in general, not whether a project will affect particular persons.'"). This is just one example

showing that the Proposed Project as mitigated would not have a significant effect on the environment. Each comment asserting otherwise is specifically addressed, as warranted, in its respective response with reference to this master response and the legal authority herein.

To ensure easy tracking of compliance, these mitigation measures will be included in the MMRP. The MMRP will assign specific project activities to individual measures, define who is responsible for implementation, and state the timeline for implementation. If DWR approves the Proposed Project, DWR will adopt the MMRP at that time (State CEQA Guidelines, Section 15074, subdivision (d)).

When discussing whether an EIR should be prepared for the Proposed Project, it is useful to note that the Project consists of up to 275 individual activities (see Draft IS/MND, p. 4), any one of which would likely be categorically exempt from CEQA review under either, or both, Sections 15304 (minor alterations to land) or 15306 (information collection) of the State CEQA Guidelines because of their negligible impact on the environment and public utility. The spatial and scheduling disparity amongst these individual activities ensures there will be no additivity of environmental effects, with no potential for synergy or considerable contribution to a significant cumulative effect. However, out of an abundance of consideration for public concerns, instead of employing a series of exemptions for this data collection, DWR opted to consolidate each investigatory action into one project to provide an opportunity for public review and comment. The result is this IS/MND, which is the suitable document for this type of low-to-no impact project activity that is otherwise eligible to forgo CEQA review (see State CEQA Guidelines, Section 15300).

Master Response 3 shows that the IS/MND is an appropriate informational CEQA document. The IS/MND does not require substantive revisions. Nor does the Proposed Project trigger the need for a comprehensive EIR.

MASTER RESPONSE 5: Consultation and Notification Was Appropriate

Several comments insist that DWR failed to properly consult with responsible and trustee agencies throughout the CEQA process for this IS/MND because it did not consult with reclamation districts and counties within which portions of the Proposed Project will occur. Some of these comments also assert that notification to reclamation districts within the study area was improper.

CEQA requires a lead agency to “consult informally with all responsible agencies and all trustee agencies responsible for resources affected by the project to obtain the recommendations of those agencies as to whether an EIR or a negative declaration should be prepared” as soon as “a lead agency has determined that an initial study will be required for the project” (State CEQA Guidelines, Section 15063, subdivision (g)). It also requires specific notification protocol (Id., Sections 15072 and 15073). As

discussed in detail below, DWR's consultation and notification was appropriate because: (1) there are no responsible agencies with which to consult; (2) trustee agencies were properly consulted; and (3) no resources will be affected by the project such that consultation or notification of additional public agencies is required.

No Local Responsible Agencies Exist; Therefore No Additional Consultation Is Required

Responsible agencies are those that have responsibility for "carrying out or approving a project" because they have some "discretionary approval power over the project" (Public Resources Code, Section 21069; State CEQA Guidelines, Section 15381). DWR has understood from the onset that reclamation districts, counties, and flood protection control boards ~~those~~ do not possess any discretionary approval authority over the Proposed Project and, therefore, are not responsible agencies and need not be consulted (see State Clearinghouse [SCH] Summary Form for Electronic Document Submittal for SCH Number 2019119073, available at: https://ceqanet.opr.ca.gov/2019119073/2 [omitting local agencies from the list of "responsible and trustee agencies"]). Any encroachment permits that might be necessary would be ministerial and constrained by the language in the relevant authorizing statute(s). DWR, as the proponent of a "sovereign activity of the State," is not subject to local land use regulations from which any such approval authority would derive—it is immune, as are its agents (see *Town of Atherton v. Superior Court* (1958) 159 Cal.App.2d 417, 428, citing to *Hall v. Taft* (1956) 47 Cal.2d 177, 183; see also Government Code, section 53091, subdivision (d), which suspends local ordinances for the purposes of locating of water transmission facilities; *Lawler v. City of Redding* (1992) 7 Cal.App.4th 778, 784, where the court affirmed that section 53091 recognizes "an intergovernmental immunity from [local agency] regulations;" State Water Code, Section 131 authorizing the DWR to "employ such assistance as may be necessary for the proper discharge of its duties"). Unless the Legislature expressly waives this immunity in a statute, which it has not done here, the general rule is that a local agency cannot regulate State activities (*Del Norte Disposal, Inc. v. Department of Corrections* (1994) 26 Cal.App.4th 1009, 1013).

This general rule, as it specifically pertains to soil investigation activities within the scope of the Proposed Project, has been upheld in a recent legal challenge wherein the court tentatively held that DWR is immune from county well ordinance requirements—see Master Response 6 for more detail on this issue (*County of Sacramento v. DWR* (Mar. 13, 2020, JCCP 4594) [tentative opn.]). Furthermore, the California Supreme Court determined that the State has the right to enter property and conduct "extensive investigatory testing and exploration" in consideration of "acquisition of that property for a public project," where the "public project" at issue was the prior water conveyance project and the "extensive investigatory testing and exploration" was the same geotechnical investigatory activity being proposed here (*Property Reserve, Inc. v. Superior Court* (2016) 1 Cal.5th 151, 184). The court found an "unquestioned need" for this geotechnical exploration to avoid "the ill-advised and premature" acquisition of

property. Such geotechnical activity is allowable on either public or private property, without landowner consent so long as a court order is obtained (Id., at p. 200–202).

Thus, DWR may both enter property and conduct exploratory drilling (as described in the Project's description) without obtaining permits from local agencies, as part and parcel of State authority and immunity when furthering public water projects. The "development of the water resources of the State is of vital concern," which is why the State was given the power by the Legislature "to determine in what way the water of the State…should be developed for the greatest public benefit" (State Water Code, Section 105). This reasoning is also why the Legislature specifically gave DWR the authority to both "[p]revent the disruption of water supplies derived from the [Delta]" and "[i]mprove the quality of [its] drinking water supplies," which is exactly what the Proposed Project purports to assist with (Id., Section 139.4). As a result of this lack of local agency authority, reclamation districts and counties cannot be considered "responsible agencies" under CEQA, and thereby, need not be consulted.

State sovereignty aside, counties have represented that drilling permits are ministerial and, therefore, do not impose the discretionary approval required for CEQA consultation. Likewise, no evidence has been presented that shows how any approval that might be given by a reclamation district for geotechnical work, as described in the Proposed Project, would be discretionary. But, even if such approvals were considered discretionary, they would not extend to work conducted by DWR for the Proposed Project. Reclamation districts are statutorily authorized to exercise control *only* over "reclamation works" that are "necessary for the unwatering, watering, or irrigation of district lands and other district operations" (State Water Code, Sections and 50652 and 50013). The Proposed Project is neither a reclamation works project nor one that is required for the purposes listed above—it is an information gathering exercise (see Master Response 2 for more detail on this point). Therefore, because no local responsible agencies exist for the Proposed Project, no consultation with these agencies is required.

Trustee Agencies Were Properly Consulted

A trustee agency is a state agency "that has jurisdiction by law over natural resources affected by the project" (Public Resources Code, Section 21070; State CEQA Guidelines, Section 15386). Trustee agencies for the Proposed Project, as identified by Section 15386 of the State CEQA Guidelines, include the California Department of Fish and Wildlife (CDFW) and the State Lands Commission (SLC) (see Draft IS/MND, p. 2). DWR consulted with CDFW on several occasions during preparation of the IS/MND. DWR had previously consulted with the SLC and developed a coordination memorandum of understanding (MOU) for these types of activities. In addition, DWR consulted with the SLC after completion of the Draft IS/MND, pursuant to the long-standing coordination MOU between the two agencies. Therefore, proper trustee agency consultation occurred.

Notification Was Proper

A lead agency must "provide a notice of intent to adopt a negative declaration or mitigated negative declaration to the public, responsible agencies, trustee agencies, and the county clerk of each county within which the proposed project is located…" (State CEQA Guidelines, Section 15072, subdivision (a)). When this required notification is sent to responsible and trustee agencies or "other agencies with jurisdiction by law over resources affected by the project," the lead agency must attach a "copy of the proposed negative declaration or [MND] and the initial study…" (Id., Section 15073, subdivision (c)). DWR did just this. DWR sent notification of the NOI and proposed IS/MND, via a readily accessible web address, to thousands of individuals and organizations from November 15 through November 25, 2019, as well as posting notifications at 16 different locations throughout the study area. Recipients included trustee agencies, county clerks, tribes and tribal representatives, property owners, reclamation districts via membership, various stakeholders, the State Clearinghouse (see Id., Subdivisions (a), (b)), assorted federal agencies, historical societies, and each contact on DWR's master contact list that is comprised of more than 7,000 entries and includes any person, organization, or agency that has shown interest and signed up to be on any notification list associated with the larger water conveyance effort or any related projects, at any time in the last approximately 12 years. Reclamation districts within the study area received notification through their membership, made up of landowners within a district—all of whom were notified via regular mail on November 18, 2019. Further, any representative from a reclamation district who is on the master contact list also received notification. Therefore, proper notification occurred and, specifically, reclamation districts within the study area were adequately notified.

However, it should be noted that, although reclamation districts were notified, there is no CEQA mandate to do so in this instance because they are neither responsible agencies nor agencies "with jurisdiction by law over resources affected by the project," pursuant to State CEQA Guidelines, Section 15073, subdivision (c) and Section 15366. As stated above in this master response under the discussion on responsible agencies, reclamation district authority is statutorily constrained to "reclamation works," which consists largely of infrastructure related to "unwatering, watering, or irrigation of district lands" (State Water Code, Sections and 50652 and 50013). Thereby, reclamation districts cannot exercise legal jurisdiction (regulatory authority) over the natural resources within their borders—not by statute or through land ownership. Nor do they possess any discretionary, or other, permitting authority over the State's activities in this instance (see State CEQA Guidelines, Section 15366). Any notification of the IS/MND given to reclamation districts was done as a courtesy and by agency practice but not as a CEQA requirement.

Conclusion

CEQA requires lead agencies to consult with responsible and trustee agencies during the preparation of an IS/MND if it is determined that any resources over which they have jurisdiction may be affected by a project. Here, reclamation districts and counties cannot be classified as responsible agencies as a matter of law because of State sovereignty, therefore consultation with those entities is not required, and all trustee agencies were properly consulted by DWR. Further, notification was properly sent pursuant to CEQA requirements.

MASTER RESPONSE 6: Permits Not Required for Drilling Associated with the Proposed Project

Some comments insist that DWR must obtain permits from counties prior to conducting any drilling associated with the geotechnical investigation included as part of the Proposed Project. However, this assertion is inaccurate. As described in Master Response 5, DWR possesses sovereign immunity from local agency regulation, unless the Legislature expressly waives such immunity, which it has not done here. This immunity applies to the types of drilling activities contemplated under the proposed Project, which do not involve drilling for water, as tentatively determined through recent litigation (*County of Sacramento v. DWR* (Mar. 13, 2020, JCCP 4594) [tentative opn.]). In a suit against DWR, the County of Sacramento claimed that DWR must obtain a County permit and follow County water well ordinance requirements when conducting its geotechnical drilling. DWR argued, and the court has agreed thus far, that the State Water Code grants the agency sovereign immunity to conduct this work, which does not involve drilling water wells. Any expansion of a County water well ordinance to attempt to regulate this different type of drilling activity does not expand the scope of the limited waiver of sovereign immunity set forth in State Water Code, Section 13801, subdivision (c), that requires counties to create such an ordinance for water well standards *only*. Nor does it override the statutory language in Section 13755 that grants DWR its authority or the requirement for an express legislative waiver of that authority (see *Del Norte Disposal, Inc. v. Department of Corrections* (1994) 26 Cal.App.4th 1009, 1013). Furthermore, any evidence showing that other State agencies have, in the past, obtained County permits for their sovereign and immune work is not dispositive of what DWR must do now. If anything, it shows the lengths the State will go to courteously avoid conflict with local agencies, when it is reasonable to do so. Therefore, DWR need not obtain local permits for soil drilling, or other geotechnical activities associated with the Proposed Project. Notwithstanding a permit, DWR’s drilling work, including mitigation conducted as part of the Proposed Project, is consistent with the substantive provisions of the County requirements.

Comment #	Letter	Comment	Response
			PREAMBLE See Master Responses document
			Master Response 1: No Significant Environmental Issue Raised in Comment See Master Responses document
			Master Response 2: Proposed Project Is Independent from Delta Conveyance Project See Master Responses document
			Master Response 3: IS/MND Is an Appropriate Informational Document See Master Responses document
			Master Response 4: EIR Is Not Warranted See Master Responses document
			Master Response 5: Consultation and Notification Was Appropriate See Master Responses document
			Master Response 6: Permits Not Required for Drilling Associated with the Proposed Project See Master Responses document

1	Joyce Berube	I am writing in OPPOSITION of the Single Tunnel Plan in any Form. We Must discontinue our Attacks on the Natural Flow of all things, Especially Water. Rivers Estuaries and natural flows. If there Truly is Any Shortage of Water for Central CA AG -- They and the POWER DISTRICTS must accept the blame. The California Delta, along with the San Francisco, San Pablo, and Suisun bays, is the largest estuary on the Pacific Coast, and is home to over 750 plant and animal species. The Delta supports vibrant commercial and recreational fisheries. Eighty percent of the state's commercial fishery species either live in or migrate through the Delta, including four Chinook salmon runs, sturgeon, and striped bass. Several earthquake faults run under or near the Delta, and seismic risk to the levees is a major concern. A massive earthquake could potentially cause multiple levee failures and draw salty water from San Francisco Bay deep into the Delta, jeopardizing the fresh water flows that much of California's population and agriculture depends on. #1) Ag can and should function utilizing water saving methods which are Available #2) Ag Should be limited as to the Varieties being planted. #3) Ag should be Cultivated for the Needs within their area of the country / world. No more planting for Corporate Ag and Overseas Buyers !! Why should a Central CA resident have to pay $14# for almonds ???? #4) It's all being pushed in a reversed economy. AG functioned well in the early 20th century here in CA #5) STOP THE OVER GROWTH AND CITY DEVELOPMENTS !! If this is So Necessary for AG, Non =-0- should go to cities and Housing areas !! #6) CA has lost Far Too Many wetlands ~ Rivers ~ and Habitats, which also means destroyed Riparian areas #7) Fish ~ Wildlife ~ and Flora have been decimated by altered flows of our Rivers #8) The Smelt are Just a bottom of the food cycle indication of a Much Worse Tragedy in the making. ABANDON THE SITES RESERVOIR AND THE DELTA TUNNEL (S) ~ IT IS ANOTHER WASTE OF MY TAXPAYER DOLLARS !	See Master Response 1 and Master Response 2.

2	Central Delta Water Agency & South Delta Water Agency	1. Unlawful Piecemealing/Segmentation. At this point it is difficult to keep track of how many separate CEQA “soil investigation” projects DWR has embarked upon in furtherance of an isolated conveyance facility. I believe the instant IS/MND is at least the third in recent years. This pattern and practice of splitting up these soil investigations, as well as separating them from the underlying isolated conveyance facility they are being undertaken to support, constitutes unlawful “piecemealing” or “segmentation” of the “project” (hereinafter referred jointly as “piecemealing”). Under CEQA “‘[p]roject’ means the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment . . . .” (Guidelines, § 15378, subd. (a), emphasis added.) As the court explains in Orinda Assn v. Board of Supervisors (1986) 182 Cal.App.3d 1145, at page 1171: A public agency is not permitted to subdivide a single project into smaller individual sub-projects in order to avoid the responsibility of considering the environmental impact of the project as a whole. “The requirements of CEQA, ‘cannot be avoided by chopping up proposed projects into bite-size pieces which, individually considered, might be found to have no significant effect on the environment or to be only ministerial.’ [Citation.]” [Citation].	See Master Response 2.

3	Central Delta Water Agency & South Delta Water Agency	Here DWR has unlawfully piecemealed the project on at least three (3) different levels all of which are squarely contrary to CEQA. a. Unlawful Separation of the Soil Investigations from the Underlying Tunnel Project. The true underlying project at issue is the development and implementation of a single tunnel Delta conveyance project (Tunnel Project). The IS/MND admits as much in its project description: The Department of Water Resources (DWR) plans to conduct soil investigations for the purposes of measuring physical properties of the soils, location of the groundwater table, and other typical geologic and geotechnical parameters that will be used to inform and evaluate alternatives, consistent with Executive Order N-10-19, for a proposed single tunnel Delta conveyance . . . consistent with Governor Newsom's new approach to modernize Delta water conveyance. (IS/MND, p. ii.) To the extent the "planning, acquisition, development [or] operation[/implementation]" (Guidelines, § 15126) of the Tunnel Project requires soil investigations such as the instant investigations, which DWR alleges it indeed does, then those investigations are undeniably part of "the whole of an action" at issue, i.e., part of the development and implementation of the Tunnel Project. CEQA makes it clear that "[a]ll phases of project planning, implementation, and operation must be considered in the initial study of the project." (Guidelines, § 15063, subd. (a)(1), emphasis added; see also, Guidelines, § 15126 ["All phases of a project must be considered when evaluating its impact on the environment: planning, acquisition, development, and operation"].) The "development" or "planning" phase of the Tunnel Project, and all activities included as part of those phases, must therefore be considered along with all of the other phases and all of the other activities associated with those phases. DWR's instant attempt to separate the soil investigations from the rest of the phases and activities associated with the Tunnel Project and assess their environmental impacts in isolation of those phases and activities is precisely the type of piecemealing that is squarely prohibited under CEQA. The fact that DWR may believe it needs various information to develop the Tunnel Project, and to prepare an comprehensive EIR for the Tunnel Project, does not mean it can extract various information gathering activities from the Tunnel Project as a whole and treat those activities in isolation from the rest of the Tunnel Project. Instead, DWR must follow one of the procedures which CEQA provides to address the situation, such as the instant one, where the development phase of the project includes activities that have the potential to result in direct or indirect physical changes to the environment. Those procedures include the use of a "staged," "programmatic," or "master" EIR. (See Guidelines, §§ 15167, 15168 & 15175, respectively.) (See e.g., Guidelines, § 15165 ["Where individual projects are, or a phased project is, to be undertaken and where the total undertaking comprises a project	See Master Response 2.

		with significant environmental effect, the lead agency shall prepare a single program EIR for the ultimate project as described in Section 15168”].) Those special types of EIRs are precisely designed to avoid the unlawful piecemealing which is taking place with the Tunnel Project. The hallmark of those types of EIRs is that they start out broad and allow for subsequent “tiering off” that broad EIR to focus on more site specific activities. Here, DWR is doing the exact opposite by starting out with an environmental document that focuses on very site specific activities, i.e., the soil investigations, which does not and cannot tier off any broader EIR for the Tunnel Project because there is no such broader EIR. DWR is simply mistaken to the extent it believes information from any of the proposed soil investigations is “necessary” in order to prepare a meaningful EIR for the Tunnel Project. To the extent any such information is necessary, not for the preparation of the EIR for the Tunnel Project, but, instead, is necessary for the “planning, acquisition, development [or] operation[/implementation]” (Guidelines, § 15126) of the Tunnel Project, then it is clear, as discussed above, that the gathering of that information is part of the “whole of the action” of the Tunnel Project and must be examined within the environmental document being prepared for the Tunnel Project “as a whole.” (See also, Guidelines, § 15165 [“Where an individual project is a necessary precedent for action on a larger project . . . with significant environmental effect, an EIR must address itself to the scope of the larger project”].) DWR must accordingly refrain from performing any activities associated with the planning, acquisition, development or operation/implementation of the Tunnel Project which have the potential to result in one or more individual or cumulative direct, or reasonably foreseeable indirect, potentially substantial adverse changes to the environment (which the instant soil investigations have as is evidenced by the need for a Mitigated Negative Declaration). Such activities must first be thoroughly discussed and analyzed as a whole in a broad based EIR for the Tunnel Project prior to being carried out. (See e.g., Guidelines 15004, subd. (b)(2) [“public agencies shall not undertake actions concerning the proposed public project that would have a significant adverse effect . . . before completion of CEQA compliance”].)	

4	Central Delta Water Agency & South Delta Water Agency	b. Unlawful Separation of the Instant Soil Investigations from Future Additional Soil Investigations in Support of the Tunnel Project. On top of the above-described piecemealing, there is another level of unlawful piecemealing that is taking place. The instant soil investigations are only a portion of the totality of soil investigations for the Tunnel Project that are anticipated, and hence, reasonably foreseeable. For example, DWR's Final EIR/EIS for the prior Tunnel Project, i.e., the "BDCP/CA WaterFix Project," released back in 2016 (2016 Final EIR/EIS), anticipated and planned for the following: The proposed Phase 2a and 2b exploration on land will consist of approximately 1,500–1,550 exploration locations, including drilling boreholes and performing CPTs as well as conducting approximately 60 shallow test pit excavations (typically 4 feet wide, 12 feet long, and 12 feet deep) in soils to evaluate bearing capacity, physical properties of the sediments, location of the groundwater table, and other typical geologic and geotechnical parameters. (See Exhibit "A," p. 3-165.) The instant IS/MND's "on land" component "only" contemplates 167 soil borings, 103 cone penetration tests and five (5) noninvasive geophysical survey sites. (IS/MND, p. 4.) Hence, 1,550 minus 275 leaves 1,280 on land exploration locations entirely unaccounted for in the instant IS/MND. A similar disparity exists with "overwater" soil investigations. DWR's 2016 Final EIR/EIS anticipated and planned for "[a]pproximately 90–100 overwater geotechnical borings and CPTs . . . ." (2016 Final EIR/EIS, p. 3-166.) The instant IS/MND, on the other hand, states that "[o]verwater soil investigations will consist of 57 soil borings . . ." (IS/MND, p. 4). Hence, 43 anticipated overwater soil investigations are entirely unaccounted for in the instant IS/MND. Additionally, DWR's 2016 Final EIR/EIS anticipated and planned for other types of soil investigations, including "approximately 60 shallow test pit excavations," "temporary pumping wells" and "piezometers." Under CEQA all of these additional future anticipated and planned for soil investigations in furtherance of the Tunnel Project constitute parts of "the whole of an action, which has a potential for resulting in either a direct physical change in the environment, or a reasonably foreseeable indirect physical change in the environment . . . ." (Guidelines, § 15378, subd. (a), emphasis added.) As such, separating those additional future anticipated and planned for soil investigations from the much smaller group of soil investigations addressed in the instant IS/MND once again constitutes the precise type of "subdivid[ing] a single project into smaller individual sub-projects" and "chopping up proposed projects into bite-size pieces which" which is squarely prohibited by CEQA. (Orinda Assn v. Board of Supervisors (1986) 182 Cal.App.3d 1145, 1171.) [Footnote 1: Moreover, Exhibit A, page 3-164 references a "Draft Geotechnical Exploration Plan (Phase 2) for the Alternative 4 conveyance alignment	See Master Response 2. The exploratory work evaluated in the IS/MND is a separate project under CEQA from the former BDCP/CA WaterFix Project. Geotechnical information collected via soil investigations can be used for both preliminary considerations of potential alternatives, as described in the IS/MND and Master Response 2, and/or for final design and construction of an approved project, as was contemplated in the previously prepared BDCP/CA WaterFix Project EIR/EIS, for which DWR has since rescinded its approval. Implementation of the Proposed Project does not preclude the potential need for future geotechnical information collection in support of final design and construction of an approved project; however, this work would be considered a separate project that would either undergo separate CEQA review or be assessed for an exemption to CEQA review (see Master Response 4). To note, the DCP that is currently being contemplated, and for which the Proposed Project may supply data, is significantly smaller in scope than the former BDCP/CA WaterFix Project—and likely would require less, if any, future geotechnical information collection. Further, as noted in Master Response 2, an agency's decision to include certain activity within an EIR at one time, does not mean that it must do so every time; nor does it mean that those activities must be considered together as part of the larger project.

		(MPTO).” Is there a current version of such a plan for the instant soil investigations and/or the underlying Tunnel Project? If so, DWR must fully disclose it and discuss it in connection with the instant IS/MND. Also, as DWR is aware, DWR has a so-called “protocol” that it is following with respect to the currently pending soil investigations. That too, or an updated version, needs to be fully disclosed and discussed in the instant IS/MND.].	

5	Central Delta Water Agency & South Delta Water Agency	c. Unlawful Separation of the Instant Soil Investigations from Other "Field Study" Activities Associated with the Tunnel Project. With the prior Tunnel Project, i.e., the BDCP/CA WaterFix Project, DWR embarked upon extensive so-called "Field Studies" to gather various information in furtherance of the "planning, acquisition, development [or] operation[/implementation]" of the BDCP/CA WaterFix Project. (Guidelines, § 15126.) Such "Field Studies" included numerous activities including the following: (1) geodetic aerial and ground mapping and surveying; (2) utilities surveys; (3) cultural resource studies including archaeological surveys and architectural and historic resource evaluations; (4) botanical surveys; (5) fisheries studies including recreational, fisheries and hydrologic surveys; (6) wildlife surveys including vernal pool, reptilian, amphibian, avian and mammal surveys; (7) "after-survey" biological monitoring by a permitted biologist; and (8) a "Phase 1 Environmental Site Assessment" to evaluate the study area for potential environmental hazards or degradation caused by the release of hazardous materials. Those Field Study activities were set forth in detail in DWR's proposed orders it filed in its lawsuits against landowners wherein it sought court permission to perform these activities against the landowners' will. (See "In re: Department of Water Resources Cases," Coordinated Action: JCCP 4594, San Joaquin County Superior Court.) Those Field Study activities were separate and apart from the type of surveys discussed in the instant IS/MND that are related to identifying suitable soil investigation sites. Because DWR is continuing its pattern and practice of separating the underlying Tunnel Project into "bite-size pieces" for purposes of CEQA analysis, it remains a mystery what other Field Studies may be anticipated or planned for, or are reasonably foreseeable, that DWR is wrongfully omitting from the instant IS/MND. As discussed below, CEQA imposes a duty on DWR to describe and address any and all such Field Studies, and any and all other anticipated or planned for, or reasonably foreseeable, components of the "planning, acquisition, development [or] operation[/implementation]" of the Tunnel Project in a single CEQA document. (Guidelines, § 15126.) CEQA does not tolerate such Field Studies or other components being relegated to mysteries to the public and addressed separately under CEQA at some future time, if at all. [Footnote 2: In this regard, the CDWA is informed and believes that DWR has been performing, and continues to perform, various "field study" surveys and examinations in furtherance of the underlying Tunnel Project on Bouldin Island and on Byron Tract (earthquake fault analysis). DWR would, of course, know exactly what other such surveys or examinations are taking place, and CEQA mandates that it disclose them and incorporate them into its review of the "whole of the action" at issue.]	See Master Response 2 and Response to Comment 4.

6	Central Delta Water Agency & South Delta Water Agency	2. The Instant Piecemealing Also Violates the Principles in Laurel Heights I. As the California Supreme Court explains in Laurel Heights Improvement Assn. v. Regents of University of California (1988) 47 Cal.3d 376 ("Laurel Heights I," at page 396 We hold that an EIR must include a analysis of the environmental effects of future expansion or other action if: (1) it is a reasonably foreseeable consequence of the initial project; and (2) the future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects. According to DWR, the soil investigations are necessary for the development and implementation of the Tunnel Project. (See e.g., IS/MND, p. ii.) As a result, the outcome of those activities will help determine the nature and feasibility of some of the components of the Tunnel Project, namely the conveyance components (which include intake facilities, forebays, etc.). Accordingly, a "reasonably foreseeable consequence" of the soil investigations is that one or more conveyance components will be pursed by DWR and ultimately constructed and implemented. While there is no guarantee at this point that any particular conveyance component will ultimately be constructed and implemented, such a guarantee is not required. All that is required is that such construction and implementation be "reasonably foreseeable." It is irrefutable that some type of an "isolated conveyance facility" is at least "reasonably foreseeable." For example, according to DWR, Governor Newsom has essentially already made up his mind (and hence made an unlawful pre-determination in advance of the CEQA process) that DWR should construct and operate a "single tunnel Delta conveyance" facility. (See IS/MND, p. ii; see also, p. 1 ["On February 12, 2019, Governor Newsom introduced a new approach to modernize Delta water conveyance, one which included the consideration of a new, single-tunnel project alternative (Executive Order N-10-19)"].) The only decisions left to be made are the details of such a tunnel, i.e., matters such as its precise location, size, operating parameters and the like, not whether a tunnel should be constructed at all. (See IS/MND, p. ii.) Accordingly, if the instant soil investigations are necessary for the development and implementation of the Tunnel Project, then it is clear that the construction and implementation of such a tunnel is indeed a "reasonably foreseeable consequence" of those investigations. Without those investigations such a facility could not be approved, constructed or implemented. The second prong of Laurel Heights I considers whether "the future expansion or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects." (Laurel Heights I, supra, 47 Cal.3d 376, 396.) This prong is even more obvious. There can be no question that including the construction and operation of a tunnel in the project description of the instant soil investigations "will likely change the scope or nature of the initial project or its environmental effects." Accordingly, both prongs of Laurel Heights I are easily satisfied and, at a minimum, all	See Master Response 2.

		aspects of the planning, acquisition, development and operation/implementation of the Tunnel Project must be described, and their potential environmental impacts must be addressed together, in a single environmental document, which DWR has thus far failed to do.	
7	Central Delta Water Agency & South Delta Water Agency	3. Inadequate Project Description. Related to the improper piecemealing is an overall and threshold failure to thoroughly explain what is the “whole of the action” that constitutes the underlying Tunnel Project, as well as what constitutes the entire “soil investigation” component of that project. As the court explains in Lighthouse Field Beach Rescue v. City of Santa Cruz (2005) 131 Cal.App.4th 1170, at page 1202: “Where an agency fails to provide an accurate project description, or fails to gather information and undertake an adequate environmental analysis in its initial study, a negative declaration is inappropriate. [Citation.]” [Citation.] Without a meaningful description of the “whole the action” being addressed, meaningful environmental review of that action is impossible. As discussed above, the instant IS/MND only contains parts of the much larger “soil investigation” component of the Tunnel Project that DWR has embarked upon, and the IS/MND essentially provides no discussion or description whatsoever about the primary component of the true underlying project, the Tunnel Project. The omission of this information is highly prejudicial and “‘subverts the purposes of CEQA [because] it omits material necessary to informed decisionmaking and informed public participation.’ [Citation.]” (Lighthouse Field Beach Rescue v. City of Santa Cruz, supra, 131 Cal.App.4th 1170, 1202.)	See Master Response 2.

8	Central Delta Water Agency & South Delta Water Agency	4. The IS/MND fails to Discuss and Analyze the Project at an Adequate Level of Detail. The IS/MND's description of the proposed soil investigation sites is far too general to facilitate meaningful CEQA review. This constitutes a failure to adequately describe the project itself as well as a failure to analyze the project at a sufficient level of detail. Among other things, this lack of detail "'subverts the purposes of CEQA [because] it omits material necessary to informed decisionmaking and informed public participation.' [Citation.]" (Lighthouse Field Beach Rescue v. City of Santa Cruz, supra, 131 Cal.App.4th 1170, 1202.) For example, the IS/MND provides a mere four (4) pages of extremely high altitude maps showing the locations of soil investigations. (IS/MND, pp. 5-8.) At that altitude, neither the decision makers nor the public can meaningfully consider and address the potentially significant impacts from those investigations. Attached here as Exhibit "B," is an example of the types of maps that DWR provided to the Court when it sought the right to force its way onto lands to conduct prior soil investigations. With these zoomed-in maps one can begin to understand the surrounding location and, hence, the potentially significant impacts from the investigations. These zoomed-in maps also critically show the proposed temporary access routes that will be utilized. At a minimum this level of detail must be provided in the IS/MND and proposed access routes need to be disclosed and subjected to public review and comment. The IS/MND must then thoroughly describe the surrounding environment and circumstances for each soil investigation site, including nearby crops, utilities, including power lines, irrigation canals/pipes, drainage canals/pipes, public and private roadways, homes, buildings, agricultural or domestic wells, livestock, horses, terrestrial species and their habitat, cultural and historical resources, etc. All in all, the most basic CEQA requirement, i.e., a detailed and meaningful description and analysis of the proposed location and access route for each and every proposed soil investigation site, is entirely lacking in the IS/MND. The fact that there are 200 or more soil investigation sites does not mean the foregoing description and analysis can simply be omitted out of convenience because it is burdensome. Instead, that fact that DWR wants to perform so many soil investigation sites means DWR has considerably more work to do to properly describe and subject all of those sites to meaningful and legally adequate CEQA review.	The Draft IS/MND presents each investigation location on four separate, full-page maps in a manner that identifies both their individual locations as well as their proximity to one another and their regional orientation (see Draft IS/MND, pp. 58). These maps were intended to give the reviewer an appropriate overview of the project within the context of the spatial environment. For clarification, an additional appendix (Appendix C) with maps at a more detailed scale have been added to the Final IS/MND. Additionally, the specific soil investigation site geospatial information, in KMZ or ARCGIS format, were made available upon request to facilitate review by any and all interested parties throughout the entire public review period and beyond. On December 19, 2020, with 27 days left in the public comment period, the Delta Conveyance webpage was updated to ensure the wider public was aware that ARCGIS and KMZ files were available upon request. These geospatial data files allow the reviewer to overlay the sites with aerial imagery, and other geospatially referenced data, and zoom in to specific locations. The exhibits (maps) referenced in the comment contain material provided by DWR to a court in relation to a separate project during litigation for a court-ordered entry. They were not included in any CEQA document for that project. Nor are such maps required or warranted under CEQA. As discussed in Section 2.0 of the Final IS/MND, access would be limited to existing roadways. Specific access on private property, would be subject to negotiation with the landowner during acquisition of entry permission upon approval of a Proposed Project. See Response to Comment 29 for more detail on landowner permissions. CEQA does not require that an IS/MND possess certainty or an exhaustive evaluation, but it should include a discussion of potential impacts and appropriate mitigation so as to inform decisionmakers and the public (see State CEQA Guidelines, Section 15002, subdivision (a)). In fact, CEQA specifically calls for brevity in negative declarations—in the project descriptions and in their description of a project's lack of significant effects (id., Section 15071, subdivision (a) and Section 15371). The IS/MND considers the available routes and "access conditions" and proposes mitigation measures to ensure impacts would be less than significant, regardless of the final access routes determined, by conservatively assuming that a myriad of potential resources may be encountered and a maximum amount of equipment would be used (see Draft IS/MND, pp. 2, 4, 9). This includes pre-activity site surveys among other things. See also Master Response 3.

9	Central Delta Water Agency & South Delta Water Agency	5. The IS/MND Improperly Allows its Reconnaissance Team to Relocate Soil Investigation Sites at their Discretion. The IS/MND states at page 2, with emphasis added: Mapped locations are approximate, several days to several weeks prior to investigations, DWR and Delta Conveyance Design and Construction Authority (DCA) engineers, geologists, environmental scientists, and the cultural resource team will perform a reconnaissance level site visit. The Impact Area for any given soil location is considered the soil investigation site itself and the area required for parking for various field personnel. If the team observes utility, biological, cultural, or other resource concerns within the Impact Area or associated resource buffer, the location will be shifted the minimum distance necessary to reduce the potential for utilities, biological or cultural resource impacts to a less than significant level without increasing impacts to other resources. If a suitable location cannot be determined within adjacent areas, then the soil investigation at that location will not be conducted. One of the major deficiencies in this approach is that the IS/MND has provided no guidance or "performance standards" that DWR's reconnaissance team must follow when determining (1) whether there are any "resource concerns" at a particular site; and (2) if there are, whether a new location reduces impacts to a less than significant level without increasing impacts on other resources. With regard to the latter, for example, what constitutes reducing impacts to a less than significant level? Is that up to the discretion of one or more members of the reconnaissance team? Where are the guidelines DWR is requiring them to use to make that determination? Similarly, what constitutes "increasing impacts to other resources?" As far as the CDWA can tell, the IS/MND provides zero guidance on these critical questions and, instead, improperly defers them to essentially the whims or one or more members of its reconnaissance team. This lack of mandated guidance violates CEQA in numerous respects including the overall failure to provide adequate and enforceable mitigation measures to reduce or avoid potentially significant impacts, as well as the improper deferral of mitigation measures.	See Master Response 3 and Master Response 4. There are no deficiencies inherent in the approach to ensuring minimization or avoidance of impacts by including the flexibility to move or eliminate impact areas based upon the findings of onsite reconnaissance surveys. The level of detail provided is sufficient, and the mitigation measures that have been proposed are sufficient to avoid significant impacts or reduce significant impacts to less than significant levels. Very broad performance standards of the kind recommended by the commenter – for dealing with any and all "resource concerns" that might arise and for identifying desirable drilling sites – are not necessary to avoid the occurrence of significant effects. For any particular potential site, a number of considerations may come into play, not just broad singular performance standards capable of dealing with all resource issues under singular standards. There is no one performance standard dealing with all resource concerns. Nor is there a single standard describing the perfect drilling site. More complex calculations are necessary. Even for an EIR, as opposed to a mitigated negative declaration, a project description must contain only "sufficient information" to evaluate environmental impacts but need not include "extensive detail" (State CEQA Guidelines, Section 15124). Here, the Project's description, inclusive of these reconnaissance surveys and avoidance techniques, gives sufficient detail to fully evaluate environmental impacts, as evidenced by the 190+ pages of analysis presented in Chapter 3.0. However, to clarify and enhance the document, Section 2.0, Proposed Project Description, has been revised in the Final IS/MND to include more detail on these reconnaissance surveys, which were initially presented within Section 1.3 of the Draft IS/MND as project components. As stated in Section 2.0, it is, and has been since the Project's inception, DWR's intent to avoid environmental resources entirely, whenever possible. Indeed, it is the very nature of this Project that DWR's team will make on-the-ground determinations about how to completely avoid impacts to natural resources where possible. Thus, avoidance is the primary performance standard to be satisfied in most instances. Aerial imagery was utilized in determination of the locations of the proposed soil investigation sites to support avoidance of impacts to sensitive resources. As described in the IS/MND (Draft IS/MND, p. 2 and Final IS/MND, Section 2.0), these proposed sites will be scouted by a site reconnaissance team that will choose final site locations and Impact Areas to avoid potential hazards and sensitive resources. The reconnaissance survey team will encompass the needed expertise to adequately evaluate the site on the ground, identify resources that are present and adjacent, and identify further survey needs. This team will be made up of engineers and environmental/cultural specialists with expertise in the following disciplines: wildlife biologist familiar with the local fauna, botanist/ wetland specialist familiar with the local flora and wetlands, cultural resources specialist familiar with the region and its cultural resources (Native American, archeological and historical),

			geologist/geological engineer with an understanding of the data goals of the project (id.). Additionally, a representative from the Real Estate office will be present to ensure that any stipulations set forth for the visit regarding access are followed (see Final IS/MND, Section 2.0). This team will use their knowledge and expertise to make professional judgements based upon existing conditions, to ensure that resources are protected and that significant impacts are avoided. Implementation of the adopted mitigation measures will further ensure that no significant impacts will occur as a result of Project work. Avoidance will occur where it can be achieved; in other instances, the limited nature of the work will result in impacts that, either before or after mitigation, do not rise to the level of being potentially significant. The above-referenced reconnaissance surveys are an integral part of the Proposed Project and as such are environmentally analyzed throughout the IS/MND. Performance standards, while sometimes required for mitigation measures in an EIR, are not required for components of a project (see State CEQA Guidelines, Section 15126.4, subdivision (a)(1)(B)). Performance standards are intended to evaluate "the efficacy of the mitigation measures to be implemented in the future" (*Center for Biological Diversity v. Department of Conservation* (2019) 36 Cal.App.5th 210, 239). Nevertheless, here, there are a number of mitigation measures that have resource-specific performance standards included within them. These pertain to DWR's commitments that sites will be located to avoid sensitive environmental resources, to ensure a sufficient distance between drilling activities and sensitive resources so that no impact to biological species will occur (i.e., no "take" of FESA or CESA listed species and avoidance of wetlands and other non-tidal aquatic features as defined under CWA) as well as no impact to cultural resources and utilities, as determined by a bevy of qualified professionals (see revised Section 2.0 in the Final IS/MND). Further, mitigation will ensure that areas of impact will be returned to as close to pre-activity conditions as possible (see MMs AES-1, AGR-1).

10	Central Delta Water Agency & South Delta Water Agency	6. The IS/MND Fails to Provide Sufficient Details Regarding the “Reconnaissance Level Site Visits.” As just discussed, the IS/MND states at page 2, Mapped locations are approximate, several days to several weeks prior to investigations, DWR and Delta Conveyance Design and Construction Authority (DCA) engineers, geologists, environmental scientists, and the cultural resource team will perform a reconnaissance level site visit. The IS/MND lacks an adequate description and discussion of what those reconnaissance level site visits will entail. For example, how many individuals will be involved; how many and what type of vehicles; what type of equipment and tools will be used; will there be any invasive activities, such as shallow digging; any extraction of vegetation; how many hours or days will these unspecified number of people be accessing the sites, etc. Thus far, the IS/MND fails to provide sufficient details of these site visits to enable the potential individual and cumulative environmental impacts from the site visits to be meaningfully considered.	See Master Response 3 and Response to Comment 8 regarding level of detail required in the IS/MND. Each proposed site location was initially selected based upon the best available information regarding impact avoidance and potential value of information gained by the action. Tools used to evaluate the initial placement of the proposed drill locations included available aerial imaging, and searches of available resources such as databases for biological, historical, geological, cultural, and other information regarding existing conditions, as identified in Section 1.3 of the Final IS/MND. DWR currently has limited access to the proposed soil investigation sites and would seek to acquire access upon project approval. Reconnaissance level site visits are initial physical visits to a proposed project location to determine the overall existing conditions on the ground and determine the final Impact Area. Reconnaissance level surveys are non-invasive, aside from staking the final soil investigation location, and would be conducted to “ground-truth” assumptions made during environmental review by identifying the potential for presence of species and availability of suitable habitat and locating any potential resources that should be avoided (see Draft IS/MND, p. 2 and Final IS/MND, Section 2.0). As stated in Response to Comment 9, the surveys will be conducted by a team that encompasses the needed expertise to adequately evaluate the site on the ground, and to identify any further survey needs. These site visits would average 5-6 specialists, as indicated in the Draft IS/MND (p. 2; see also Final IS/MND, Section 2.0), and would average one visit per impact area.

11	Central Delta Water Agency & South Delta Water Agency	7. Failure to Consult With All Responsible and Trustee Agencies. Guidelines section 15063, subdivision (g), provides: Consultation. As soon as a lead agency has determined that an initial study will be required for the project, the lead agency shall consult informally with all responsible agencies and all trustee agencies responsible for resources affected by the project to obtain the recommendations of those agencies as to whether an EIR or a negative declaration should be prepared. . . . "For the purposes of CEQA, the term 'responsible agency' includes all public agencies other than the lead agency which have discretionary approval power over the project." (Guidelines, §15381.) a. Failure to Consult with Reclamation Districts. The numerous local reclamation districts with levee systems in the vicinity of the proposed soil investigations constitute "responsible agencies" for purposes of CEQA. Reclamation districts are local public agencies governed by Water Code section 50000 et seq. Water Code section 50652 provides that "[t]he board [of trustees of reclamation districts] shall exercise general supervision and complete control over the construction, maintenance and operation of the reclamation works, and generally over the affairs of the district. "'Reclamation works' means such public works and equipment as are necessary for the unwatering, watering, or irrigation of district lands and other district operations." (Wat. Code, § 50013.) Accordingly, each reclamation district with levees (or any other reclamation works) in the vicinity of the proposed drilling has "discretionary approval power" over such drilling and, hence, constitutes a "responsible agency" for purposes of CEQA. Attached hereto as Exhibit "C" is declaration, and attached hereto as "Attachment D" is a statement, from Christopher H. Neudeck, a Registered Civil Engineer in the State of California that has worked with the Delta Islands including flood control, drainage and irrigation for the past twenty-eight (28) years, and serves as the District Engineer for numerous reclamation districts throughout the Delta. In those declarations Mr. Neudeck explains the types of concerns and issues which reclamation districts must address in connection with the proposed soil investigations. Given the obvious direct impacts on reclamation works as a result of the proposed soil investigations, from hauling equipment to and from the sites across reclamation district levees or drainage canal banks, to physically stationing and operating drilling and equipment directly on or near such levees or canal banks, it is completely unacceptable for DWR to bypass its mandatory duty to consult with reclamation districts "as soon as [it] determined that an initial study will be required for the project . . ." pursuant to Guidelines section 15063, subdivision (g).	See Master Response 5.

		Consultation and ultimate coordination with reclamation districts is not only necessary to avoid potentially substantial adverse impacts to reclamation works, and to avoid substantial interferences with levee patrolling and emergency flood fighting or levee repair, but also to avoid interference with the districts' routine operation and maintenance of its works, which includes the need to avoid interfering with non-emergency levee repair and rehabilitation. The suitability of haul routines, the wear and tear of the districts' levees and roadways from DWR's drilling rigs and other equipment, especially during the rainy season when the ground is soft and most vulnerable to significant wear and tear, and the provision of equipment, materials and a plan for controlling seepage, boils, piping, levee slumping or other adverse levee or drainage problems that may result from the activities, are all matters DWR must consult with districts on and for which DWR must ultimately obtain the districts' approval. As noted in Mr. Neudeck's statement: As it stands, DWR's proposed project suffers from an overall lack of any meaningful detail in terms of when and where such geotechnical activities will take place and, hence, what specific reclamation works DWR will be impacting during the performance of such activities, i.e., during the hauling of equipment to and from the sites, the stationing and operation of equipment at the sites, etc. If DWR had properly undertaken the mandatory consultation with reclamation districts required by section 15063, subdivision (g), there would have been an opportunity to discuss and set forth that detail for the benefit of everyone involved, not to mention the benefit to the CEQA process which was substantially thwarted in the absence of such detail.	

12	Central Delta Water Agency & South Delta Water Agency	i. Seepage Concerns. With regard to the well-established and well-recognized concerns reclamation districts and all others with responsibilities over levees in the Delta have over “seepage,” which Mr. Neudeck discusses in his above-referenced declaration and statement, enclosed herewith is additional information which discusses the problems and concerns associated with seepage. See for example, page 14 of “Analytical Study on Flood Induced Seepage Under River Levees” (a copy of which is attached hereto as Exhibit “E”), which provides: “Whenever a levee is subjected to a differential hydrostatic head of water as a result of river stages higher than the surrounding land, seepage enters the pervious substratum through the bed of the river and riverside borrow pits or the riverside top stratum or both, and creates an artesian head and hydraulic gradient in the sand stratum under the levee. This gradient causes a flow of seepage beneath the levee and the development of excess pressures landward thereof. If the hydrostatic pressure in the pervious substratum landward of the levee becomes greater than the submerged weight of the top stratum, the excess pressure will cause heaving of the top blanket, or will cause it to rupture at one or more weak spots with a resulting concentration of seepage flow in the form of sand boils. “In nature, seepage usually concentrates along the landside toe of the levee, at thin or weak spots in the top stratum, and adjacent to clay-filled swales or channels. Where seepage is concentrated to the extent that turbulent flow is created, the flow will cause erosion in the top stratum and development of a channel down into the underlying silts and fine sands, which frequently exist immediately beneath the top stratum. As the channel increases in size or length, or both, a progressively greater concentration of seepage flows into it with a consequent greater tendency for erosion to progress beneath the levee. “The amount of seepage and uplift hydrostatic pressure that may develop landward of a levee is related to the river stage, location of seepage entrance, thickness and perviousness of the substratum and of the landside top stratum, underground storage, and geological features. Other factors contributing to the activity of the sand boils caused by seepage and hydrostatic pressure are the degree of seepage concentration and the velocity of flow emerging from the boils.” See also, the Corps’ publication entitled, “Performance of Levee Under seepage Controls; A Critical Review,” attached hereto as Exhibit “F,” which discusses the problems with “preferential” pathways through the soil which are often referred to as “defects” or “discontinuities” in the soil profile. (See e.g., [“There is considerable evidence that boil occurrence is often related to concentration of seepage at discontinuities and defects in the top [soil] blanket” [id., p. 14]; and “[soil] permeability [is] controlled by defects in the top [soil] blanket (cracks, root holes, fenceposts, etc.) rather than properties of intact soil” [id., p. 5].) Additionally, see also the Corps’ ER 1110-1-1807, entitled “Engineering and Design, Drilling in Earth Embankment Dams and Levees,” discussed below and attached here to as Exhibit	See Response to Comment 38 and Response to Comment 39. The project as described is consistent with US Army Corps of Engineers (USACE) standards and requires DWR, as part of the project, to obtain Section 408 permission prior to Project implementation, which will only be granted if the project is found to be not injurious to the public interest or not impair the usefulness of the levee (see Final IS/MND, Section 1.2; see also 33 USC § 408, subdivision (a)). Section 408 permission would not be granted, and therefore project activity on levees would not occur, if the Proposed Project would impair a levee’s usefulness through substantial soil erosion. Significance determinations in Section 3.7.2 (b) of the IS/MND accurately reflect this fact. As part of the Section 408 permission process that is included in the project description, an approved Drilling Program Plan (DPP) will be prepared for all explorations within USACE-jurisdictional levees. This DPP will address seepage to ensure that all Section 408 permission criteria are met. All explorations within levees will be backfilled/sealed in accordance with State of California Water Well Standards (Bulletins 74-81 & 74-90). Additionally, as clarified in the project description, during the acquisition of site access, DWR would coordinate with property owners, including local land management agencies, on site specific considerations at that time (see Final IS/MND Section 2.0). See Response to Comment 29 for more detail on landowner permissions.

		"G," which discusses, among other impacts, the potential for drilling on or near levees to create preferential seepage paths. Finally, see Exhibit "J" which includes several photos of boils that have erupted from referential seepage paths as a result of borings. Avoiding the exacerbation of the problems associated with seepage as a result of DWR's proposed soil investigations is one of many reasons why it is imperative that DWR consult with, and obtain the approval of, local reclamation districts who have the statutory responsibility to operate and maintain their respective levee and drainage systems, as well as the familiarity of the areas along their levees and drainage systems where seepage problems are of the greatest concern.	
13	Central Delta Water Agency & South Delta Water Agency	ii. Access to Levees and Lands to Conduct Reconnaissance Level Field Surveys. As discussed above, the IS/MND states at page 2, Mapped locations are approximate, several days to several weeks prior to investigations, DWR and Delta Conveyance Design and Construction Authority (DCA) engineers, geologists, environmental scientists, and the cultural resource team will perform a reconnaissance level site visit. Such reconnaissance site visits would appear to require foot and/or vehicle access over reclamation district levees and perhaps over other reclamation facilities (e.g., drainage canals) and, hence, permission from the reclamation districts as well as from any underlying fee landowners and any tenants must be obtained. The incorporation of these reconnaissance visits is yet another reason why the proposed activities encroach within reclamation districts' statutory jurisdiction and/or their express or implied easements (or fee interests, as the case may be) over their reclamation works and, therefore, qualify as "responsible agencies" with "discretionary approval power" over DWR's proposed activities.	See Master Response 5 and Master Response 6. See also Response to Comment 9, Response to Comment 10, and Response to Comment 29. Any necessary encroachment permits, or specific access landowner permissions, as stated in Response to Comment 12, would be sought from pertinent parties prior to accessing the site.
14	Central Delta Water Agency & South Delta Water Agency	b. Failure to Consult with Counties. The CDWA is informed and believes that the affected Counties also constitute responsible agencies under CEQA that must be afforded the same treatment discussed above for reclamation districts. For example, among other potential permits, CDWA is informed and believes that DWR must obtain permits from the Counties to ensure among other things, that the borings do not contaminate, or create opportunities for contamination of, the underlying groundwater basins.	See Master Response 5 and Master Response 6. All explorations will be backfilled/sealed in accordance with State of California Water Well Standards (Bulletins 74-81 & 74-90). The methods outlined in this IS/MND include the use of bentonite clay to stabilize the boreholes and transport the cuttings to the surface. The drilling mud coats the borehole walls and prevents losses of drilling mud into the formation. At the completion of drilling, cement-bentonite grout is injected at the base of the boring, displacing the drilling mud from the borehole and sealing the hole (see IS/MND, Section 2.2.1). In this way, the project ensures that groundwater will not be contaminated by the borings in a way that would cause groundwater quality to be substantially degraded (see IS/MND, Section 3.10.2(a)). Section 3.10 of the IS/MND discusses potential impacts to groundwater quality and finds that none exist.

15	Central Delta Water Agency & South Delta Water Agency	c. Failure to Properly Consult with Other Responsible and Trustee Agencies. As noted above, Guidelines section 15063, subdivision (g), provides: Consultation. As soon as a lead agency has determined that an initial study will be required for the project, the lead agency shall consult informally with all responsible agencies and all trustee agencies responsible for resources affected by the project to obtain the recommendations of those agencies as to whether an EIR or a negative declaration should be prepared. The IS/MND fails to include a statement that such consultation took place with “all responsible agencies and all trustee agencies” or that any such recommendations were obtained. Accordingly, without evidence to the contrary, the CDWA hereby alleges that DWR has failed to properly perform that consultation and obtain those recommendations. DWR should set forth the date when it determined that an initial study will be required for the project and provide a list of all of such agencies it consulted with “as soon as” that determination was made. It should thereafter set forth any recommendations provided by those agencies.	See Master Response 5.

16	Central Delta Water Agency & South Delta Water Agency	8. DWR Failed to Timely Provide a Copy of the Notice of Intent and IS/MND to All Applicable Public Agencies. While Guidelines section 15063, subdivision (g), requires early consultation with "all responsible agencies and all trustee agencies responsible for resources affected by the project" "[a]s soon as [DWR] determined that an initial study will be required for the project," after DWR has completed that initial study, DWR has the further mandatory obligation to send a copy of that initial study, along with the mitigated negative declaration and notice of intent, to all of those same agencies plus to a much broader category of public agencies, i.e., to "every other public agency with jurisdiction by law over resources affected by the project." (Guidelines, § 15073, subd. (c).) As Guidelines section 15073, subdivision (c), explains: A copy of the proposed negative declaration or mitigated negative declaration and the initial study shall be attached to the notice of intent to adopt the proposed declaration that is sent to every responsible agency and trustee agency concerned with the project and every other public agency with jurisdiction by law over resources affected by the project. (Emphasis added.)[Footnote 3: Guidelines section 15087, subdivision (h): "Public agencies should compile listings of other agencies, particularly local agencies, which have jurisdiction by law and/or special expertise with respect to various projects and project locations. Such listings should be a guide in determining which agencies should be consulted with regard to a particular project."] As with the public notice provisions discussed above regarding providing timely notice tothe public, "substantial rather than complete compliance with CEQA-mandated notice procedures [is] an abuse of discretion requiring vacating of the administrative decision." (Gilroy Citizens for Responsible Planning v. City of Gilroy (2006) 140 Cal.App.4th 911, 922-923.) DWR should once again provide a list of all of such agencies it sent a copy of the IS/MND and Notice of Intent to and provide proof of when it sent those copies. CDWA is informed and believes DWR has failed to send copies, timely or otherwise, to all of such agencies, including, in particular, to all affected reclamation districts. In the event DWR disagrees that reclamation districts constitute "responsible agencies," a reclamation district nevertheless clearly falls within the definition of a "public agency with jurisdiction by law over resources affected by the project," and, hence, DWR was required to timely send them copies of such documents per Guidelines section 15073, subdivision (c). (The time frame copies were required to be sent in order to provide them the mandatory 30 day review period was discussed above.) Pursuant to Guidelines section 15379, "'Public agency' includes any state agency, board, or commission and any local or regional agency, as defined in these guidelines." Pursuant to Guidelines section 15368 (with emphasis added): "Local agency" means any public agency	See Master Response 5.

		other than a state agency, board, or commission. Local agency includes but is not limited to cities, counties, charter cities and counties, districts, school districts, special districts, redevelopment agencies, local agency formation commissions, and any board, commission, or organizational subdivision of a local agency when so designated by order or resolution of the governing legislative body of the local agency. Guidelines section 15366 defines “jurisdiction by law” as follows (with emphasis added): (a) ‘Jurisdiction by law’ means the authority of any public agency: (1) To grant a permit or other entitlement for use, (2) To provide funding for the project in question, or (3) To exercise authority over resources which may be affected by the project. (b) A city or county will have jurisdiction by law with respect to a project when the city or county having primary jurisdiction over the area involved is: (1) The site of the project; (2) The area in which the major environmental effects will occur; and/or (3) The area in which reside those citizens most directly concerned by any such environmental effects.” Reclamation districts are local public entities, i.e., “special districts,” which unquestionably have “the authority . . . to exercise authority over resources which may be affected by the project.” (Guidelines, § 15366.) As discussed above, Water Code section 50652 provides that “[t]he board [of trustees of reclamation districts] shall exercise general supervision and complete control over the construction, maintenance and operation of the reclamation works, and generally over the affairs of the district.” And “‘[r]eclamation works’ means such public works and equipment as are necessary for the unwatering, watering, or irrigation of district lands and other district operations.” (Wat. Code, § 50013.) It is irrefutable that numerous reclamation districts’ levees, drainage facilities and/or other reclamation works “may be affected by the project.” (Guidelines, § 15366.) Accordingly, DWR had a duty pursuant to Guidelines section 15073, subdivision (c), to timely send such districts copies of the IS/MND and Notice of Intent, which CDWA is informed and believes it failed to do. CDWA is also informed and believes DWR likewise failed to timely send copies of such documents to many other types of public agencies “with jurisdiction by law over resources affected by the project.” (Guidelines, § 15073, subd. (c).) CDWA can only verify DWR’s compliance with section 15073 after DWR fully discloses the agencies it send such documents to and when it sent them.	

17	Central Delta Water Agency & South Delta Water Agency	9. There is Substantial Evidence to Support a Fair Argument that the Project May Have a Significant Effect on the Environment. As the court explains in Lighthouse Field Beach Rescue v. City of Santa Cruz (2005) 131 Cal.App.4th 1170, at pages 1181-1182: “The decisionmaking body [of the lead agency] shall adopt the proposed negative declaration ... only if it finds on the basis of the whole record before it (including the initial study and any comments received), that there is no substantial evidence that the project will have a significant effect on the environment....” (Guidelines, § 15074, subd. (b).) “Prior to carrying out or approving a project for which a negative declaration has been adopted, the lead agency shall consider the negative declaration together with comments that were received and considered ....” (§ 21091, subd. (f); see Guidelines, § 15074, subd. (b).) The lead agency must prepare an EIR if it “is presented with a fair argument that a project may have a significant effect on the environment,” even where it is also “presented with other substantial evidence that the project will not have a significant effect.” (Guidelines, § 15064, subd. (f)(1); see §§ 21080, subd. (d), 21082.2, subd. (d), 21151, subd. (a); No Oil, Inc. v. City of Los Angeles (1974) 13 Cal.3d 68.) This is because “an EIR is the key to environmental protection under CEQA.” (Id. at p. 75.) As the court explains in Natural Resources Defense Council v. Fish & Game Com. (1994) 28 Cal.App.4th 1104, at pages 1119-1120: In No Oil, Inc. [v. City of Los Angeles (1974) 13 Cal.3d 68], the court defined the word “may,” in the phrase “may have a significant effect,” as a reasonable possibility.” [Citations.] This definition was meant to impose a low threshold requirement for preparation of an EIR, calling for preparation whenever it could be “fairly argued” that the project may have a significant environmental effect. [Citations.] Pursuant to Guidelines section 15382 “significant effect on the environment” means: [A] substantial, or potentially substantial, adverse change in any of the physical minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance. (Emphasis added.) Thus, the threshold is even further lowered by the fact that a “significant effect on the environment” includes changes that are merely “potentially” substantial as well as those that are in fact or “actually” substantial. Guidelines section 15384, subdivision (a), further provides: “Substantial evidence” as used in these guidelines means enough relevant information and reasonable inferences from this information that a fair argument can be made to support a conclusion, even though other conclusions might also be reached. Whether a fair argument can be made that the project may have a significant effect on the environment is to be determined by examining the whole record before the lead agency. . . .	See Master Response 3 and Master Response 4. The comment does not point to any specific deficiency in the IS/MND that can be discussed in this response.

		Thus, when fleshed out, the requirement in Public Resources Code section 21064.5 that "there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment," means that a "fair argument" cannot be made that the project, as revised, has the "reasonable possibility" of resulting in a "potentially substantial [] adverse [physical] change [to the environment]." In the instant case, such a fair argument can be easily made and, as a result, additional mitigation measures must be imposed to eliminate that reasonable possibility of a significant effect and the IS/MND must thereafter be recirculated pursuant to Guidelines section 15073.5 or an EIR must be prepared.	
18	Central Delta Water Agency & South Delta Water Agency	a. There is a Reasonable Possibility the Project Will Result in Substantial Levee Damage and Potential Levee Failure The "relevant information and reasonable inferences from th[at] information" (Guidelines, § 15384, subd. (a)) that supports such a reasonable possibility includes the above described and referenced information enclosed herewith regarding the "seepage" phenomenon that occurs throughout the Delta and, hence, throughout the areas where the proposed geotechnical activities will take place, as well as the above referenced declaration and statement from Christopher H. Neudeck, R.C.E. As Mr. Neudeck explains in its statement: It is my opinion, for the reasons set forth herein, that DWR is incorrect and that its proposed project as modified may indeed result in a potentially substantial, adverse change to the environment. In particular, it is my opinion that there is a reasonable possibility that the proposed project as modified will substantially undermine the integrity of the levee systems which protect the Delta lands from flooding and substantially impair flood fighting capabilities, and, as a result, there is a reasonable possibility that the proposed project as modified will create substantial levee damage and cause potential levee failure. Additional mitigation measures are needed and should be adopted to minimize such undermining, impairment, damage and failure. (See Exhibit "D," p. 2.)	See Response to Comment 12, Response to Comment 38, and Response to Comment 39.

19	Central Delta Water Agency & South Delta Water Agency	b. There is a Reasonable Possibility the Project Will Result in Cumulatively Considerable Impacts on Multiple Aspects of the Environment. Guidelines section 15064, subdivision (h)(1), provides: When assessing whether a cumulative effect requires an EIR, the lead agency shall consider whether the cumulative impact is significant and whether the effects of the project are cumulatively considerable. An EIR must be prepared if the cumulative impact may be significant and the project's incremental effect, though individually limited, is cumulatively considerable. “Cumulatively considerable” means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. For starters, the IS/MND is deficient for failing to even identify all pertinent past, current and probably future projects. In terms of “past projects,” the IS/MND makes no attempt to describe, much less discuss, all of the Field Study activities that have already taken place in furtherance of the Tunnel Project, including all of the overwater and landside geotechnical activities, and other Field Study activities that have thus far taken place over the last several years. For example, the IS/MND should include a complete description of the location of all prior borings, test pits, reconnaissance surveys, etc., i.e., all prior Field Study activities that impact any aspect of the environment from vehicle or foot traffic across lands within the Delta to digging bore holes and test pits, etc. All of that information is readily available, and there is simply no excuse for DWR to omit it from the IS/MND. With respect to “current projects” the IS/MND should describe any other activities that are currently being conducted in furtherance of the Tunnel Project that impact the environment which it has, thus far, failed to do. With respect to “the effects of probable future projects,” the most glaring “probable future project” is the Tunnel Project, yet, remarkably, the Tunnel Project is not even mentioned in the IS/MND’s cumulative impact discussion. It is undisputed that construction and implementation, not to mention the mere planning and development, of the Tunnel Project will have potentially substantial adverse impacts on the environment (i.e., “significant effects,” see Guidelines, § 15382). That fact is evidenced by the fact that an EIR is currently being prepared for the Tunnel Project. If the Tunnel Project did not have the potential to result in such impacts, then an EIR would neither be required nor pursued. Therefore, the instant IS/MND must evaluate whether “the incremental effects of [the instant hundreds of borings and other activities] are significant when viewed in connection with . . . the effects of probable future projects [such as the Tunnel Project].” The IS/MND’s main justification for finding the project will not have cumulative considerable impacts on air quality, water quality, levee stability, fishery resources, etc., appears to be because geotechnical activities are “short-term and localized.” (See e.g., IS/MND, p. 207.) The only reason they are “short-term and localized” is because the geotechnical activities have been wrongfully separated from the rest of the Tunnel Project.	See Master Response 2 and Response to Comment 4. See also Response to Comment 9 and Response to Comment 10 for details on reconnaissance surveys. Section 3.21.2 of the IS/MND contains a seven-page discussion on cumulative effects, inclusive of twelve specific projects/activities and five general actions/issues. This focused discussion is in addition to other cumulative considerations included in Section 3.3 (Air Quality) and Section 3.8 (Greenhouse Gas Emissions). According to CEQA guidelines, a cumulative impacts refers to two or more individual effects which, when considered together at the same time and location, are considerable and which compound or increase environmental impacts on the same resource. Past projects have been suggested as needed for inclusion in the cumulative impacts, such as the prior geotechnical explorations conducted in preparation for the former BDCP/CA WaterFix Project; however, it is not necessary to include these geotechnical explorations, as there is no overlap in locations between these prior temporary impacts and the current proposed soil explorations (see Master Response 4 for a discussion on the lack of additivity of individual exploration activities and the applicability of categorical exemptions; see also State CEQA Guidelines, Section 15130, subdivision (b)(2)). The prior geotechnical activities referenced were originally approved by DWR in 2010 under a separate project authorization. As a result of delays due to accessibility and litigation, up to 11 borings and 2 CPTs remain to be completed in 2020 by court-ordered entry that currently expires on November 30, 2020. The spatial and scheduling disparity amongst these individual activities ensures there will be no additivity of environmental effects, with no potential for synergy or considerable contribution to a significant cumulative effect. The proposed, future DCP, although being contemplated, is not in a stage of regulatory review that would require it be listed as a “probable future project[];” it has not been approved as a project, and as such there is no foreseeable expectation of a project at this time (State CEQA Guidelines, Section 15130, subdivision (b)(1)(A) and Section 15355; see also *Gray v. County of Madera* (2008) 167 Cal.App.4th 1099, 1127 and *South of Market Community Action Network v. City and County of San Francisco* (2019) 33 Cal.App.5th 321, 337; see also Master Response 2). Each project considered in Section 3.21.2 as part of the cumulative setting was in some stage of such formal regulatory review or being implemented at the time the IS/MND’s NOI was released. However, even if the DCP were fully realized and included in the IS/MND as a cumulative project, because of the nature and design of the Proposed Project, the

		However, in terms of evaluating the cumulative impacts, the Tunnel Project's impacts will be anything but "short term and localized" and the instant geotechnical activities are but one phase of the long term, region-wide, if not state-wide, impacts of the Tunnel Project. If, for example, all of the impairment to levee stability, interference with fishery resources, impacts on air quality, destruction of agricultural land and habitat that will result from the mere construction of the Tunnel Project's isolated conveyance facilities, not to mention the implementation of the Tunnel Project, are taken into consideration, it can be easily seen that the instant geotechnical activities are indeed cumulative considerable when viewed in connection with all of those other impacts. The instant project's cumulative impacts in connection with the Tunnel Project would be entirely and properly taken into consideration if the instant project was not wrongfully piecemealed from the EIR that is currently underway for the Tunnel Project. But assuming arguendo that the piecemealing can be excused, the IS/MND's failure to meaningfully address the cumulative impacts of the instant project in light of the anticipated, reasonably foreseeable impacts from the Tunnel Project cannot be tolerated	contribution of its exploratory activities would be less than cumulatively considerable when viewed in concurrence. Importantly, it is physically impossible that a new Delta conveyance facility will be constructed and up and running during the time frame of the Proposed Project. Not only does DWR face a lengthy environmental review process and a lengthy permitting process before construction could begin on a new one-tunnel conveyance project; but, the construction period for such a project would itself will consume multiple years.

20	Central Delta Water Agency & South Delta Water Agency	10. The IS/MND Fails to Demonstrate Why There is No Reasonable Possibility that the Proposed Borings Will Result in Potentially Substantial Groundwater Contamination. The study entitled, “The Use of Ground Water Tracer During Well Installation,” attached hereto as Exhibit “H,” explains how drilling fluid during the digging of a well can contaminate the groundwater. The IS/MND should thoroughly explain why there is no reasonable possibility that the underlying groundwater will be contaminated by the drilling fluid from any one of the hundreds of proposed borings. Will the drilling fluid be analyzed for all possible contaminants? If so, how can the public verify that the fluid is contaminant free? Also, since the borings will remain unsealed for many days, the IS/MND should thoroughly explain why various layers of groundwater will not be contaminated by other layers prior to being “sealed.” And how will DWR know if such contamination is taking place? Will DWR sample the water quality at regular intervals as it digs the bores? If so, will it cease the digging if it encounters contaminated water or will it keep on drilling and potentially transport those contaminants to uncontaminated layers of groundwater? And what precautions will DWR be taking to ensure that the landside borings will not be constructed in a manner that allows surface contaminants to enter into the bore from rainfall, surface spills, etc., and, thereafter potentially contaminate the groundwater? With regard to the “sealing” of the bores after the drilling and sampling is complete, what assurance does DWR have that the landside and waterside bores will indeed be sealed strong enough and fully enough to prevent any Artesian or other water force to preferentially pass through the “seal”? In particular, what assurance, evidence, etc. does it have that the proposed seals will actually seal the portions of the holes that pass through peat soils and other highly permeable soils? What evidence does DWR have that the seals will not be undermined, crack, shift, etc. by seismic forces, especially the portions of the seals that go through peat and other highly permeable soils? Finally, DWR has access to tremendous amounts of information, including detailed mapping, regarding the locations of existing and abandoned wells within the scope of the instant soil investigations. That information was largely generated in connection with DWR and the USBR’s petition to add new points of diversion for the so-called BDCP/WaterFix Tunnel Project. DWR has a CEQA duty to include such information, and meaningfully analyze it, in the instant IS/MND. Its failure to do so “‘subverts the purposes of CEQA [because] it omits material necessary to informed decisionmaking and informed public participation.’ [Citation.]” (Lighthouse Field Beach Rescue v. City of Santa Cruz, supra, 131 Cal.App.4th 1170, 1202.)	All explorations will be backfilled/sealed in accordance with State of California Water Well Standards (Bulletins 74-81 & 74-90) which requires the use of cement and bentonite sealing materials. The study attached to this comment (“Attachment H”) presents a discussion of how a water well, drilled at a super-fund site using water-based rotary drilling methods and conventional bailing techniques, introduced limited volumes of drilling fluid into a fractured shale “aquifer” and how the use of a tracer allowed the drillers to determine when they had adequately developed the well to allow for representative water quality sampling. The use of pressurized water for drilling and flushing of cuttings, as described in this study, would be expected to result in dispersal of borehole fluids into the formation, as the drillers in the study experienced. However, the proposed boreholes addressed in this IS/MND utilize “drilling mud,” containing bentonite clay, to stabilize the boreholes and transport the cuttings to the surface, and therefore will not experience the same dispersal of borehole fluids described in the Appendix H study. This is because the drilling mud coats the borehole walls and prevents losses of drilling mud into the formation. At the completion of drilling, cement-bentonite grout is injected at the base of the boring, displacing the drilling mud from the borehole and sealing the hole. As a result, there will be no contamination that would result in substantial degradation of groundwater quality (see IS/MND, Section 3.10.2(a)). See also Response to Comment 14. Precautions being taken to ensure that no contaminants enter the boreholes while open include: no work being conducted within 24 hours of rain events (Final IS/MND section 3.4.2.1: MM BIO-2), implementation of a spill contamination plan/protocols (Final IS/MND section 3.9.2: MM HAZ-1), and covering of holes overnight (Final IS/MND section 3.4.2.1: MM BIO-1). All of these precautions are discussed in, the IS/MND. Seals will not be undermined by seismic forces because cement and bentonite sealing material required in Bulletins 74-81 & 74-90 provide strength and flexibility, respectively. A review of available, public and confidential, information within areas and depths of interest was conducted that included the extent of DWR’s geotechnical data and solicited data from other public agencies. The locations for the Proposed Project were based upon data gaps identified during that review. There is no CEQA duty to include every piece of information about every aspect of the study area (see Master Response 3). Despite assumptions made in this comment, DWR does not possess an exhaustive list of existing and abandoned wells in the study area. The IS/MND accounts for a variety of scenarios and is conservatively designed, and mitigates, for a full range of possibilities, including the discovery of wells (see Draft IS/MND, pp. 4, 14). Further, any oil or gas wells would be located below the depth of any drilling conducted for the Proposed Project. DWR will coordinate with land owners, through

			the process for acquisition of temporary entry permissions (see Response to Comment 29), to acquire additional information to support avoidance of unrecorded hazards, such as wells. See also Master Response 4.
21	Central Delta Water Agency & South Delta Water Agency	a. Boring Standards. Presumably all on-land boring holes, and presumably all CPT holes [though the IS/MND needs to make that clear], “will be sealed using cement-bentonite grout in accordance with California regulations and industry standards (Water Well Standards, DWR 74-81 and 74-90).” (See e.g., IS/MND, p. 11.) While consultation with local reclamation districts, the Counties, as well as the USACE and CVFPB, must be performed in order to determine the most appropriate method to seal any borings or CPT holes on or near levees, or in locations that could affect levees, in order to avoid impairing the integrity of those levees the IS/MND must explain how compliance with the ultimate sealing method will be inspected and verified. Typically the Counties would inspect such work. Will DWR be obtaining permits from the Counties and be inspected by the Counties? If not, who will inspect DWR’s work? Will DWR even be notifying the Counties of the ultimate locations of all of the borings and CPT sites? If not, why not?	See Master Response 5 and Master Response 6. Please see Response to Comment 12 regarding the development of a Drilling Program Plan, and Response to Comment 20 regarding sealing of boring holes.
22	Central Delta Water Agency & South Delta Water Agency	11. Impacts to Nearby Levees and Drainage Systems. The IS/MND is deficient in that it fails to even mention, much less demonstrate that an adequate investigation and analysis has taken place regarding, the above-described seepage phenomenon and the potential for the instant project to exacerbate that phenomenon and to otherwise adversely impact the reclamation works of reclamation districts and other entities in charge of operating and maintaining reclamation works.	Please see Response to Comment 12 regarding the development of a Drilling Program Plan.

23	Central Delta Water Agency & South Delta Water Agency	12. Mitigation Monitoring Program. Public Resources Code section 21081.6 provides: (a) When . . . adopting a mitigated negative declaration pursuant to paragraph (2) of subdivision (c) of Section 21080, the following requirements shall apply: (1) The public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment. The reporting or monitoring program shall be designed to ensure compliance during project implementation. For the instant project DWR should fully explain the details of that program and how the public can verify that all of the various mitigation measures are being duly complied with, and enforce such compliance. Additionally, in the revised IS/MND, as well as in the ultimate reporting or monitoring program, DWR must make it clear which mitigation measures apply to which activities. This is especially true when it comes to the so-called “pre-construction” surveys. What surveys and other mitigation measures apply to overwater borings versus landside borings, and which apply to the rest of the authorized activities, should be clearly laid out in a table, checklist or otherwise, so that the public can, once again, meaningfully verify that the measures are being duly complied with. Finally, as touched upon above, the precise nature of the so-called “pre-construction” surveys must be fully laid out, not only to evaluate whether such activities might themselves have the potential to individually or cumulatively result in potentially substantial adverse impacts, but also, to simply verify that all the required surveys have been duly performed prior to the performance of the various activities. As it stands, those surveys are far too vaguely defined.	See Master Response 4. Pre-construction(pre-ground disturbing activity) surveys often are site and species specific and are detailed in the mitigation measures. These surveys generally follow protocols that have been established by agencies including the California Department of Fish and Wildlife, the United States Fish and Wildlife Service, and other scientific organizations with specific expertise with the noted species. See also Response to Comment 8.

24	Central Delta Water Agency & South Delta Water Agency	13. Federal Permitting Requirements. a. USACE Section 404 Permit. Section 404 of the Clean Water Act (CWA) establishes a program to regulate the discharge of dredged or fill material into "waters of the United States," including "wetlands." The IS/MND presumably intends to comply with section 404 with respect to the "over-water" sites, but with regard to the "on-land" sites, the IS/MND states, at page v: "All on-land soil investigation Impact Areas will be located outside of wetlands as defined in the Corps of Engineers Wetlands Delineation Manual (USACE 1987)." (See also, IS/MND, p. 131 ["The Proposed Project . . . would fully avoid any wetland resources"].) Pursuant to the U.S. Fish and Wildlife Service's on-line "Wetlands Mapper," substantial areas where DWR intends to perform on-land soil investigations are designated as wetlands, mostly as classification code "Pf" ("Palustrine Farmed"). (See https://www.fws.gov/wetlands/data/Mapper.html) According to the USFWS: Farmed wetlands occur where the soil surface has been mechanically or physically altered for production of crops, but where hydrophytes would become reestablished if the farming were discontinued. Farmed wetlands should be classified as Palustrine-Farmed. Cultivated cranberry bogs may be classified Palustrine-Farmed or Palustrine Scrub-Shrub Wetland-Farmed. (Ibid.) In light of this designation of wetlands within the proposed on-land investigation sites, the IS/MND must correct its statement that "[a]ll on-land soil investigation Impact Areas will be located outside of wetlands as defined in the Corps of Engineers Wetlands Delineation Manual (USACE 1987)." Moreover, because DWR's on-land soil investigations include extracting and filling-in hundreds of holes, as well as injecting drilling fluids into those holes, compliance with section 404 for the on-land investigations within these designated wetlands appears required. The IS/MND should therefore thoroughly explain the extent designated wetlands will be impacted and how DWR intends to avoid impacts to those wetlands and otherwise comply with section 404.	The USFWS wetland mapper is not intended for the scale of determining wetlands from a 404 standpoint, and as such the presence of Palustrine Farmed land does not preclude the determination that wetlands can and will be avoided. Per the Data Limitations, Exclusions and Precautions cited by the USFWS's National Wetlands Inventory Wetlands Mapper, "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 and/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." It also notes that "The wetlands displayed on the Wetlands Mapper show wetland type and extent using a biological definition of a wetland. 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." Reconnaissance-level surveys will ensure no impacts to wetlands by avoiding them when choosing site locations. See Response to Comment 9 and Response to Comment 10 for more detail on these surveys. Section 2.0, Proposed Project Description, of the Final IS/MND has been revised to include clarification on these surveys, specifically stating that Impact Areas will be located outside of wetlands as defined by the USACE and as determined by a qualified wetland delineator. As a result of project design, implementation of MM BIO-1(b) is not necessary to ensure that no impacts to wetlands occur. See Master Response 4 for more information on the adequacy of mitigation measures and the MMRP. As stated in the Draft IS/MND, the Proposed Project will require a Section 404, Clean Water Act, Nationwide Permit, which DWR is in the process of obtaining (see p. 2). This permit requires the USACE to comply with Section 106 of the National Historic Preservation Act and Section 7 of the Endangered Species Act.

25	Central Delta Water Agency & South Delta Water Agency	b. USACE Section 408 Permit. Even on the IS/MND's high-altitude depictions of the locations of the proposed on-land and overwater borings, it can be readily seen that many of those investigation sites are on or near numerous "project levees" under the USACE's jurisdiction. Strangely, in the IS/MND there appears to be no mention of section 408 permits and no discussion or maps of levees under the USACE's jurisdiction. Nor is there any mention of how DWR intends to comply with section 408, and, more importantly, how DWR will ensure that matters such as the integrity of those levees are not adversely impacted by those investigations. Among other requirements, the USACE has detailed policies and requirements for drilling into its levees that DWR must comply with, including the preparation of a detailed "Drilling Program Plan" that must be approved by the USACE before any drilling takes place. (See e.g., ER 1110-1-1807, entitled "Engineering and Design, Drilling in Earth Embankment Dams and Levees," attached here to as Exhibit "G.") Moreover, as explained on page 1 of ER 1110-1-1807: Drilling into, in close proximity to, or through embankment dams and levees and their foundations may pose significant risk to the structures. The USACE goes on to list the numerous ways such drilling can pose significant risks to the integrity of its levees including the following: – "While using water and drilling mud as the circulating medium [which DWR intends to do via the IS/MND], there have been similar reports of erosion and/or hydraulic fracturing of the embankment or foundation materials." – "Conversely, there have been cases where heave, borehole collapse and significant disturbance have occurred while drilling in granular materials below the groundwater level. This typically has been the result of not using a proper drilling fluid to balance the water pressures in the soil or using high energy systems that induce heave in order to evacuate the cuttings. There is a delicate balance between too much induced fluid pressure that will cause hydraulic fracture and not enough fluid pressure that will result in borehole instability, heave, or significant sample disturbance." – "Other potential damaging effects include: creating preferential seepage paths due to improper backfilling, inadequate protection of embankment from drilling fluids during foundation rock coring, erosion and widening of cracks, and inadvertently clogging filters or drains with drilling fluid or grout." – "All drilling and associated activities that use fluid or other circulation or stabilization media need to be evaluated for the potential to hydraulically fracture the embankment or foundation. These activities include but are not limited to the use of drilling fluids, backfilling borings after completion, backfill grouting of instrumentation, backfill grouting of casings, water testing for permeability, piezometer rehabilitation, etc. The risk will vary with the	Section 14 of the Rivers and Harbors Appropriation Act of 1899, as amended, and codified in 33 USC 408 (Section 408), provides that the Secretary of the Army may, upon the recommendation of the Chief of Engineers, grant permission to other entities for the permanent or temporary alteration or use of any U.S. Army Corps of Engineers (USACE) Civil Works project. An alteration refers to any action by any entity other than the Corp that builds upon, alters, improves, moves, occupies, or otherwise affects the usefulness, or the structural or ecological integrity of a USACE project. Through the Central Valley Flood Protection Board (CVFPB), the non-federal sponsor of the Proposed Project, the USACE will be consulted regarding locations within Section 408 jurisdiction as part of the Proposed Project. See Response to Comment 12 for more details on Section 408 and a DPP. Furthermore, all explorations within levees will be backfilled/sealed in accordance with State of California Water Well Standards (Bulletins 74-81 & 74-90). Section 1.2 of the IS/MND, Regulatory Requirements, Permits, and Approvals, has been updated with this information on Section 408 permission.

		selected methods and the site conditions. Every drilling operation must be well thought out and must have benefits of successful completion that confidently outweigh the risk of potential negative impacts. The following paragraphs describe the general concerns associated with each type of potential damage." (Id., pp. 1-2.) Notwithstanding this common and well-established recognition of impacts to levee integrity, the IS/MND does not even mention the possibility that its soil investigations may adversely impact the integrity of the levees DWR intends to bore through, or bore in the immediate vicinity of, much less does the IS/MND provide any discussion or analysis of how DWR intends to reduce those potential impacts to a level of insignificance. Needless to say, this is completely unacceptable from a public safety and public responsibility perspective, not to mention completely inadequate under CEQA.	
26	Central Delta Water Agency & South Delta Water Agency	14. State Permitting Requirements and/or Consultations. a. Central Valley Flood Protection Board. Because of the obvious concerns over potential impacts to levee integrity, DWR must also duly consult with, and obtain formal encroachment permits if required, with the CVFPB, which is responsible for overseeing activities potentially impacting the levees under its jurisdiction, including numerous levees impacted by the instant soil investigations.	Various encroachment permits may be required for the Proposed Project (see Draft IS/MND, p. 2). Any encroachment permits that might be necessary would be ministerial and constrained by the language in the relevant authorizing statute(s). Coordination with the CVFPB as a non-federal sponsor for the Section 408 process is required for projects located within 30 feet of any Regulated Stream or Designated Floodway (DF) that has been adopted by the CVFPB and may be required for any work within 300 feet of those features. A list of CVFPB Regulated Steams and Designated Floodways can be found in CCR, Title 23, Section 112, Table 8.1. DWR will obtain the appropriate approvals from the CVFPB prior to implementation of Proposed Project activities within CVFPB's jurisdiction. Section 1.2 of the Final IS/MND, Regulatory Requirements, Permits, and Approvals, has been updated with this information for this and other specific encroachment permits that may be required, including encroachment permits from CalTrans for working within or near their right-of-ways and any encroachment permits or permissions that may be required by reclamation districts pursuant to limitations presented in 23 CCR Section 108.

27	Central Delta Water Agency & South Delta Water Agency	b. The California Water Commission. "There is in the Department of Water Resources the California Water Commission [hereinafter "Water Commission"]." (Wat. Code, § 150.) The Water Commission "consists of nine members who are appointed by the Governor subject to the confirmation of the Senate . . . ," and the membership is intended "to afford representation on the commission of all parts of the state so far as it is practicable." (Wat. Code, § 152.) The Water Commission plays a critical role in the workings of DWR, and its broad representation provides essential oversight for the decisions and actions of the director of DWR. (See Wat. Code, §120.) Section 161 mandates that the Water Commission "shall confer with, advise, and make recommendations to the director with respect to any matters and subjects under his jurisdiction." (Emphasis added.) The CDWA is informed and believes that DWR has circumvented that mandatory oversight in connection with the underlying development and implementation of the Tunnel Project, as well as with all of the activities and phases associated therewith, including the instant geotechnical activities. In the absence of such consultation and oversight, the instant geotechnical activities are unauthorized and cannot proceed. If such consultation has occurred, the IS/MND should fully disclose and meaningfully describe the nature of that consultation and the Water Commission's recommendations.	See Master Response 2 regarding why the Proposed Project is independent from the Delta Conveyance Project. The Soil Investigation for Data Collection in the Delta Project itself is not subject to any specific review or approval by the California Water Commission.
28	Central Delta Water Agency & South Delta Water Agency	12. The IS/MND Fails to Address Potential Environmental Impacts from the Discovery of Hazardous Contaminants at a Soil Investigation Site. The IS/MND must adequately describe the various environmental and other tests that it intends to perform at the soil investigation site, including a detailed list of all chemicals and other substances it is testing for. The IS/MND must also discuss the potential ramifications to the landowners current and prospective uses of its property should any tests indicate hazardous or other contaminates are found on the property, either on the surface of the property on with the boring or CPT holes. Such ramifications could have widespread impacts on the environment as a result of the cessation of current activities on the land to the designation of the land as a hazardous clean-up site, and everything in between. Thus far, the IS/MND fails to give any consideration to such potentially significant impacts.	Environmental testing as described in the Draft IS/MND (pp. 11, 201) is conducted to obtain a profile of the soil removed during drilling operations to determine proper transport and disposal. This information may be made available to the landowner upon request. The purpose of the Proposed Project is not to test for environmental contaminants in soil but to determine "geotechnical properties of soil materials" (Draft IS/MND, p. 1). Testing for such contaminants is incidental to the primary work and would be conducted to ensure that proper disposal of the extracted soil occurs. All impacts associated with the Proposed Project are evaluated in Section 3.0 of the IS/MND, where it was determined that there would be either no impacts, less-than-significant impacts, or less-than-significant impacts with mitigation as a result of hazards and hazardous materials (see id., pp. 154-161). See also Master Response 3.

29	Central Delta Water Agency & South Delta Water Agency	13. The IS/MND Fails to Address Potential Environmental Impacts on Lands used for Waterfowl Propagation. As DWR is fully aware, there are widespread areas within the Delta used for the Propagation of wildlife and waterfowl for hunting purposes. The proposed soil investigations, have the potential to substantially interfere with that Propagation due to the presence of large and noisy drilling and CPT equipment, as well as the numerous passenger vehicles traveling to and from sites including the vehicles and site visits pursuant to the various reconnaissance surveys. Attached here to as Exhibit "I," is a declaration from Thomas M. Zuckerman attesting to the potential impacts to such Propagation. Thus far the IS/MND makes no mention of impacts to lands that are used to propagate wildlife and waterfowl for hunting purposes, much less adopt mitigate measures such as work windows that avoid interference with such Propagation and hunting, that will reduce those impacts to a level of insignificance.	DWR will work with individual landowners to obtain temporary entry permissions prior to accessing properties for reconnaissance surveys and soil investigation work. These temporary entry permissions can include negotiated terms and conditions that relate to specific land uses, including access restrictions to avoid disruptive activities on hunt days to avoid impacts to hunting on both public and private lands. These terms and conditions may also include compensation to landowners for accessing their properties to perform the soil investigation, including any potential minor disturbance to vegetation, and would require DWR to disclose to landowners any unknown hazards or hazardous materials found during geotechnical work, such as any abandoned, unpermitted wells. Section 3.16.2 (a), on page 183-184 of the Draft IS/MND, states, " ...Proposed Project impacts are minor in scope and short term in duration so soil investigation activities will not significantly impair public access to these waterways or recreation facilities." The limited duration of activities within each discrete impact area ensures that activities can be scheduled in such a way as to avoid impacts to hunting activities. Further, all impacts to sensitive habitat or special-status species will be mitigated to a less-than-significant level (id., pp. 40-41).
30	Central Delta Water Agency & South Delta Water Agency	15. Miscellaneous Comments. The following are additional miscellaneous comments on the IS/MND: – IS/MND, p. 11: "Drums would be stored on site at designated staging areas outside of environmentally sensitive areas at any given soil investigation site for up to 4 weeks for environmental testing prior to landfill disposal." Why are these stored on site for up to 4 weeks? Why not remove them after promptly after the soil investigations are complete? Also, precisely what type of "environmental testing" will be performed, and where will it be performed, on site or off-site in a lab or other off-site facility?	As stated in the Final IS/MND in Section 2.1.1, drilling waste will be confined to parcels on which the work is being conducted. Additionally, in Section 3.9.2 (a), MM HAZ-1 addresses the proper storage, usage, transportation, disposal, and labeling of all hazardous materials and waste. Drilling waste will be confined to parcels on which the work is being conducted in coordination with landowners according to access agreements. All hazardous materials would be stored and used in accordance with applicable federal, state, and local regulations, and disposed of at a properly licensed disposal facility. The duration of storage of up to 4 weeks is a time frame that allows for minimization of the number of trips that would need to be made from the work areas to the ultimate disposal area by allowing for drums from multiple sites to be transported in a single day. See also Response to Comment 28 for more information on this testing. Drums containing material will be stored for up to four weeks to allow for the minimization of trips to pick up and dispose of these materials over the life of the project.
31	Central Delta Water Agency & South Delta Water Agency	– IS/MND, p. 11: "[U]p to 15 support passenger vehicles may be present" at on-land CPT sites. Is that a typo? Please explain why 15 passenger vehicles may be present at any one time. That seems extremely excessive, to say the least.	This is the maximum needed from the beginning of reconnaissance surveys until the end of drilling activities, if drilling was on a roadway or location that would require personnel such as flaggers. More often the average number of vehicles would be 3 to 5. When preparing the project description and conducting environmental analysis, DWR took a conservative approach by presenting the maximum amount of activity that could occur at any one investigation site, even though the probability of such maximum activity was low. See Master Response 3 for more detail.

32	Central Delta Water Agency & South Delta Water Agency	– IS/MND, p. 21: “Disturbance to the riverbank or levee banks [for overwater investigations] will be limited to the minimum necessary to complete the work.” What type of disturbance is anticipated, and why is any such disturbance necessary? Also, what does DWR define as the “minimum necessary to complete the work” and how will compliance with that minimum be enforced?	The location for soil investigation sites were estimated, and will be eventually chosen, to avoid riverbanks and levee banks but this language was included to consider any possibility that the riverbank or levee bank may need to be accessed either for project activities such as identification of hazards or resource surveys. This inference that riverbank or levee bank disturbance might occur was part of the worst-case-scenario assumptions that were made in accordance with DWR’s conservative approach. See Mater Response 3 for more detail.
33	Central Delta Water Agency & South Delta Water Agency	– IS/MND, p. 2: “Various encroachment permits, as needed.” Please explain the nature and extent of any such reasonably foreseeable permits.	See Master Response 3 and Response to Comment 26.
34	Central Delta Water Agency & South Delta Water Agency	– IS/MND, p. 166: “[Is the Project within a] flood hazard, tsunami, or seiche zones, risk release of pollutants due to Proposed Project inundation?” The IS/MND incorrectly answers “No impact” to this question. To the contrary, nearly all of the proposed on-land soil investigation sites are located within food hazard zones, and flooding of those sites would indeed potentially release pollutants into the environment. Among other things, materials at the sites must be collect in drums and transported to special landfills due to their hazardous natures.	As stated in the Draft IS/MND, the Proposed Project “would not affect the existing risk of flood hazard…” (see p. 166). While much of the Delta does indeed lie within flood prone areas, this project will not result in an increase, from the baseline conditions, in the potential for release of pollutants because it presents no factors that would exacerbate existing flood risks, and as such the determination of “no impact” is correct (id., p. 165). Further, the incorporation of mitigation measures HAZ 1 and HAZ-2 and associated plans, including but not limited to the Spill Prevention and Response Plan, would ensure that all hazardous materials handled onsite would not result in any significant environmental effects.
35	Central Delta Water Agency & South Delta Water Agency	16. NEPA Compliance is Required. The IS/MND seemingly makes no reference to NEPA compliance for this project, yet the federal government is a major player in terms of providing various permits for the soil investigations. As such, compliance with NEPA will be required for those investigations.	It is the responsibility of federal regulatory agencies to ensure NEPA compliance in the issuance of any federal permits. CEQA does not require reference to NEPA compliance. They are different regulatory processes that are regularly conducted separate and apart from one another.
36	Central Delta Water Agency & South Delta Water Agency	17. The South Delta Water Agency’s Joinder in these Comments. Please be informed that the South Delta Water Agency joins in these comments and they are hereby also being submitted on its behalf.	See Master Response 1.
37	Central Delta Water Agency & South Delta Water Agency	[ATT 1: Bay Delta Conservation Plan/California WaterFix Final EIR/EIS, Chapter 3 excerpts (2016)]	See Master Response 2 and Response to Comment 4.
38	Central Delta Water Agency & South Delta Water Agency	[ATT 2: California Water Fix Parcel Maps (Case No. JCCP 4594)]	See Master Response 2 and Response to Comment 4.
39	Central Delta Water Agency & South Delta Water Agency	[ATT 3: Declaration of Reclamation District No. 2117 Engineer, Christopher H. Neudeck (May 1, 2009)]	See Response to Comment 4.
40	Central Delta Water Agency & South Delta Water Agency	[ATT 4: STATEMENT OF CHRISTOPHER H. NEUDECK. R.C.E. (August 2, 2010)]	See Response to Comment 4.

41	Central Delta Water Agency & South Delta Water Agency	[ATT 5: ANALYTICAL STUDY ON FLOOD INDUCED SEEPAGE UNDER RIVER LEVEES (Senda Ozkan, May 2003)]	See Master Response 1.
42	Central Delta Water Agency & South Delta Water Agency	[ATT 6: Performance of Levee Underseepage Controls: A Critical Review (US Army Corps of Engineers, September 2002)]	See Master Response 1.
43	Central Delta Water Agency & South Delta Water Agency	[ATT 7: DRILLING IN EARTH EMBANKMENT DAMS AND LEVEES (US Army Corps of Engineers, December 31, 2014)]	See Master Response 1.
44	Central Delta Water Agency & South Delta Water Agency	[ATT 8: The Use of Ground Water Tracer During Well Installation (US Environmental Protection Agency)]	See Master Response 1.
45	Central Delta Water Agency & South Delta Water Agency	[ATT 9: Judicial Council Coordination Proceeding No. 4594 - Declaration of Thomas M. Zuckerman in Support of Respondents' Memorandum in Opposition to DWR's Master Amended Petition (December 16-17, 2010)]	See Response to Comment 4.
46	Central Delta Water Agency & South Delta Water Agency	[ATT 10: R.D. No. 3 - Grand Island - Site Review of Boil Near Sacramento River Levee (January 4, 1997)]	See Master Response 1.

47	Citizens Coalition for a Safe Community	IS/MND is totally devoid of quantitative descriptions, impact assessments, and mitigation comparisons (e.g., no miles nor acres even for dimensioning of Project Areas or Sites with 46 mile N-S X 12 mi E-W = 500sqm = 30,000ac). The draft IS/MND is not CEQA compliant and is incomplete and inadequate with many references documents not specifically available to the public for reviewing and consideration in relationship to statements. The document is generalized: as indicated by use of “discussions” of impacts and mitigations rather than numerical comparisons of a typical “assessment”.	See Master Response 3. There is no CEQA requirement that a negative declaration, or even an EIR, provide “quantitative descriptions” within their project descriptions (see State CEQA Guidelines, Section 15071 and Section 15124). Nevertheless, the IS/MND project description contains several quantitative measurements, such as boring diameter and depth, and includes map scales that contain clear measurement parameters for the study area size. The environmental analysis presented in Section 3.0 contains scientific and factual data presented in both quantitative and qualitative manners for environmental analysis, which is both commonplace and allowable under CEQA (see State CEQA Guidelines, Section 15064, subdivision (b) and Section 15064.7, subdivision (a)). To clarify the document, additional metric units of measurement have been added throughout the Final IS/MND and some additional information has been included in the project description to quantitatively discuss staging areas. All references included in the IS/MND have been maintained at DWR offices, located at 1416 Ninth Street, Sacramento, California (see Draft IS/MND, p. i), and were made available for review during the public comment period (with the exception of certain references which are confidential and cannot be fully disclosed), pursuant to State CEQA Guidelines Section 15150, subdivision (b). Although not required by CEQA, web links were included in the IS/MND reference section for references available on the internet, and pdfs of those references as they existed on the date of access were saved to ensure that they are not lost should the link become unusable in the future. All of this information was/is available as indicated above or by contacting DWR’s designated contact person for the Proposed Project, as indicated in the IS/MND and on the NOI. Notably, the CEQA Guidelines require only that documents formally incorporated by reference be available upon request by members of the public. (See CEQA Guidelines Section 15072[g][4].)
48	Citizens Coalition for a Safe Community	The entire document is a small piece of the over Delta Conveyance Project and seeks to avoid addressing how the findings of this Project works with and reflects the current planning and design for the overall Project, Delta Conveyance. This MND represents: Piecemealing and requires to be incorporated into a Programmatic EIR/EIS, as the Project includes federal funding and use of/passage under/connection to federal jurisdictions and lands.	See Master Response 2.

49	Citizens Coalition for a Safe Community	The MND “discussions” border on technically juvenile for soils, geotechnical, geological, and geophysical perspectives. No indication is shown as to the preparers having any experience with soft-ground tunneling or deep excavations (shafts) and the geological context and conditions for tunneling through “muck”, soft ground and wet. Many documents are not publicly available/accessible information either in appendices, internet, or specific files. References to Personal communications are totally inadequate and incomplete. References to unidentified “DWR Engineers consider” is totally inadequate and incomplete; such considerations must be quantitative and developed and can be “considered” for public review or acceptance. Providing “Web Accessed on xx/yy/zz” references does not provide information which is publicly access and specific to the referenced matter in the MND text. References must be provided in appendices by screen coping and with specific addresses with section/page/paragraph.	The project analyzed in this IS/MND does not include any tunneling or deep (shaft) excavation work, and as such the comment regarding experience with these processes is not relevant. See Response to Comment 29 for information on references and Response to Comment 128 for information on personal communications.
50	Citizens Coalition for a Safe Community	There are no listings or mention of MND preparers, their employers, and their qualifications.	The IS/MND was prepared by DWR, as the lead agency, as indicated on page I of the Draft IS/MND. CEQA neither requires that an IS/MND include a list of preparers nor staff qualifications (see Master Response 3). However, to promote transparency, a more detailed list of preparers has been added to the Final IS/MND that provides the name of individual DWR staff members who worked on the document.
51	Citizens Coalition for a Safe Community	MND does not define, compare, nor distinguish the titled “Soil”, Geotechnical, and Geological Investigations Soil vs Alluvium vs Rock, although their importance is real, especially as the investigations can go to 200ft in soil.	Sections 2.1 and 2.2 of the IS/MND describe the depth to which boring could occur, which is up to a maximum of 200 feet as indicated in the comment. Section 3.7 discusses geology and soils and differentiates between soil, quaternary deposits, and rock within the existing setting of the study area and fully analyzes any related impacts of that maximum boring depth. This level of detail satisfies CEQA requirements. See also Master Response 3. Further, the comment neither gives a reason why including more detail is required nor provides substantial evidence that a significant impact could occur to geology and soils as a result of boring. The intent of CEQA is for disclosure to the general public regardless of scientific background and as such should use plain language (see State CEQA Guidelines, Section 15140). Information and discussion were presented in the IS/MND with this directive in mind.
52	Citizens Coalition for a Safe Community	Geology and Mineral Resources Minerals includes more than sand and gravel but such is not indicated by the preparers total lack of knowledge, training, and experience regarding oil and gas. No specific references are provided to issues regarding active and abandoned production fields and active, idled, and abandoned wells and bore holes (e.g., uncompleted wells). Same with the soil “Investigation Scope” with limited geophysics surveying background and competence.	Any oil or gas wells would be located below the depth of the drilling. DWR will coordinate with land owners, through the process for acquisition of temporary entry permissions, to acquire additional information to support avoidance of unrecorded hazards. See also Response to Comment 20 for more detail on wells.

53	Citizens Coalition for a Safe Community	Specific Comments with page/paragraph notation, both numerical 1/ix for those pages out of report numbering. IS/MND fails to identify Reclamation Districts and/or Flood Control Districts who have jurisdiction for construction (drilling and exploration) activities on and near levees. …failed to identify the necessary encroachment permits from CalTrans for exploration activities on State highway right-of-ways. Other Public Agencies whose Approvals are Required and MND 1.2 Regulatory Requirements, Permits and Approvals. Provide all Local, State, and Federal Jurisdictions. Provide listing and current status for all jurisdictions with 500ft of any proposed boring locations.	See Response to Comment 26 for information on encroachment permits. See also Master Response 5 for information on local agency jurisdiction.
54	Citizens Coalition for a Safe Community	The IS failed to identify that drilling permits are required from each county in which borings are proposed. Provide listing and current status of all prospective permits required for access, equipment/setups, operations, and remediation/closure of site. Likewise, if DWR has been unable to reach an agreement with a specific county or counties regarding the need for drilling permits, this should be noted to inform the public since DWR is not exempt from securing drilling permits from each county's environmental health department.	See Master Response 5 and Master Response 6.
55	Citizens Coalition for a Safe Community	MM CUL-1 a and b.: Are "soil investigation locations" the same as "Impact Area"? Please clarify.	The terms "soil investigation locations" and "Impact Area" are equivalent in this cultural resources context. Language has been standardized in the Final IS/MND to improve clarity.
56	Citizens Coalition for a Safe Community	MM TRANS-1: The IS/MND fails to acknowledge that trees grow on the banks of sections of the levees and often overhang the levee road. Drill rigs cannot raise their towers and become entangled in trees. Had this IS/MND provided better maps so that the drilling locations and Impact Area could be easily identified, this review could have offered recommendations for those Delta roadways with trees which impact the safety of drill rig operations.	See Response to Comment 8 for information on maps presented in the IS/MND and Response to Comment 9 / Response to Comment 10 for information on reconnaissance surveys to be used to site final activity locations. Mitigation measure MM AES-1 ensures that "[n]o trees or vines will be removed during exploration activities; and only minor disturbances to vegetation would occur during mobilization of equipment."
57	Citizens Coalition for a Safe Community	2.0 Proposed Project Description: This section is written so torturously as to be almost incomprehensible. Regarding Figures 2a, 2b and 2c – CEQA (15124 (a)) recommends that the project location be shown on a detailed map, preferably a topographic map. Typically project maps are shown on USGS 7.5 minute quadrangles (1:24000). USGS quadrangles typically provide enough detail for a reviewer to understand the project's location and potential environmental impacts. Unfortunately, DWR has chosen to provide maps with no topography and at such a large scale that very little detail project detail is available to the reviewer.	State CEQA Guidelines, Section 15124, includes project description requirements for an EIR, not a negative declaration, and, nevertheless, specifies that the use of a "topographical" map is a preference only, and not a mandate. See Master Response 3 for more detail on applicable CEQA requirements for a negative declaration. See Response to Comment 8 for information on maps presented in the IS/MND.

58	Citizens Coalition for a Safe Community	2.1.4 On-Land Geophysical Survey Equipment: This section title implies that geophysical methods may be used in other locations than on land. Is this correct? Most seismic data acquisition programs can be safety conducted with 4 or 5 technicians. Why is it necessary for up to 14 support passenger vehicles to be present? This seems extreme and environmentally damaging. Will each vehicle carry only one person? Are these 8 to 10 person vans? Under what conditions would 14 support passenger vehicles be necessary? This section fails to describe geophysical equipment necessary used for TDEM, CVTFM or, ERT data acquisition. The last sentence in this section is confusing – if not an EnviroVibe Minibuggy, what? "EnviroVibe" is a trademark of Industrial Vehicles International. Has DWR made the decision that this is the only acceptable vibroseis equipment? This should be clarified because different seismic data acquisition equipment will have different operational and "foot print" characteristics.	The project includes both on-land and over-water locations. The locations that are not over-water were titled as over-land to ensure clarity. The number of vehicles identified in the text of the IS/MND represents the maximum needed if drilling was on a roadway or location that would require additional personnel such as flaggers. More often the average number of vehicles would be 3 to 5. See Master Response 3 for more information on this conservative approach to analysis. Section 2.1.4 describes large equipment, typically vehicles, utilized for geophysical surveys, not handheld devices. Section 2.1.5 describes the methodology for the geophysical surveys and includes a description of all of the geophysical surveys proposed and devices, such as transmitters. Section 2.1.4 has been revised in the Final IS/MND to clarify the different equipment that could be used with various geophysical techniques. Any mention of the EnviroVibe Minibuggy, which is the brand name for a rubber-tired truck with a low impact seismic vibrator system, does not preclude the use of other seismic equipment or brands.
59	Citizens Coalition for a Safe Community	2.1.5 On-Land Geophysical Surveys Methods: Another tortuously written section. As shown in Figure 2b, there are 3 Impact Areas on Bouldin Island, not 5 as stated in this section; unless there are 5 Impact Areas, but map is at such a scale that it makes it impossible for an informed review. The last sentence of this section is confusing – is it a total of 21-days or a total of 105-days?	As discussed in Section 2.1.5 of the IS/MND, there are "five Impact Areas" that "are comprised of three arrays [linear survey sites] approximately 2,300 feet long and 100 feet wide and two area grids (each approximately 1,000 feet by 1,000 feet; although surveys will only be conducted within a portion of the full grid measuring 500 feet by 500 feet)." Figure 2b shows the areas considered for geophysical surveys. Three are arrays and two are gridded survey sites. A map labeled with the geophysical survey locations is provided in Appendix C to further clarify this. See Response to Comment 8 for more detail on maps in the IS/MND and Response to Comment 47 for detail on the inclusion of metric units of measurement in the Final IS/MND. Two geophysical surveys will be conducted at each geophysical survey Impact Area for a total of ten geophysical surveys. Electrical Resistivity Tomography (ERT) and Seismic Refraction/Reflection (Seismic) techniques will be used at each of the three linear survey sites. Time Domain Electromagnetic (TDEM) and Cesium Vaper Total Field Magnetometer (CVTFM) techniques will be used at each of the two gridded survey sites. It will take approximately 2.5 weeks to complete each geophysical survey technique. This time includes conducting the survey at each of three linear survey sites or two gridded survey sites. Separate geophysical survey techniques may be employed simultaneously, but not at the same site. As such, the total duration to complete all geophysical survey techniques at all geophysical survey Impact Areas would be 10 weeks, or 2.5 months, as stated in Table 1 of the Draft IS/MND. Section 2.1.5 of the Final IS/MND has been revised to include the above detail to better clarify the information presented in Table 1.

60	Citizens Coalition for a Safe Community	Time Domain Electromagnetic (TDEM) [Includes all geophysical methodologies]: This section is written as rudimentary primer, not to fully inform the reviewer of the proposed project objective. It would be helpful to understand the specific purpose of the TDEM survey. It can be assumed, but not stated, that the TDEM is used to identify subsurface geologic and ground water conditions to depths below the tunnel horizon. It can also be assumed that TDEM may provide data related to saline and freshwater aquifers. Likewise, the objective of using a CVTFM is not explained. It can be assumed that the objective is to identify buried metallic objects, including abandoned wells. However, the effectiveness of a CVTFM would be reduced by overhead powerlines and railroad tracks. The objective of using ERT may be to identify subsurface geologic and stratigraphic characteristics to be used in conjunction with other geophysical methods. For seismic surveys, please check the diameter of the geophones, “0.5 inches in diameter” seems extremely small, since most small geophones are about 1.25 inches in diameter. It is not clear from the project description if the seismic senor lines are 2,300 feet long, or if the entire seismic data acquisition line is 2,300 long. That is, typically the EnviroVibe unit would begin collecting data several hundred feet off the end of the sensor line (called walking or rolling on) and then would extend beyond the last sensor (called rolling or walking off). An informed reviewer will benefit from this project description. However, unless the IS/MND fully explains the project’s objectives and how the four geophysical exploration methods are integrated, it is only possible for the reviewer to infer DWR’s intent. One observation becomes clear however, this proposed drilling and geophysical program has a specific objective - to inform the design of the Governor’s single tunnel. As such, this project skirts the intent of CEQA to fully disclose all impacts associated with a project, i.e. the Delta Conveyance Tunnel, and blurs the reviewer’s ability to fully evaluate all aspects of the project description and project objective. At best, this IS/MND is nothing more than a shallow, incomplete description of a much larger project; at worst it is another ham fisted attempt by DWR to mollify the public and conceal DWR’s intent to share these data with DCDCA and assist water contractors in their effort to construct a new through Delta conveyance.	As stated in Section 2.0 on page 4 of the Draft IS/MND, the purpose of geophysical studies are to provide a more robust preliminary interpretation of regional subsurface conditions and identify anomalous features such as abandoned oil and gas wells or unmarked utilities. The planned geophysical surveys will be used as a test program to determine if these noninvasive surveys are appropriate for future use in other regions of the Delta, thereby reducing the potential need for soil borings or CPTs in certain areas. The portion of the geophone that would be inserted into the ground would be 0.5 inches in diameter not the entire geophone itself. See Response to Comment 59 for clarifications made to Section 2.1.5. See also Master Response 2, Master Response 3, and Response to Comment 4.

61	Citizens Coalition for a Safe Community	More Specific Comments 3-i/Table The primary objective[S} of the proposed project is to determine the composition, location, and geotechnical properties of soil materials commonly found in the Delta which would inform the design environmental analysis, and the development of alternatives for a potential Delta conveyance project and contribute to DWR's overall understanding of Delta geology. Provide/Add depths and water content. (Provide in a revised and recirculated Programmatic EIR/EIS with quantitative assessments, mitigations, and comparisons of alternatives (x10 geophysical remote sensing surveys). Define all primary and secondary objectives and basis for singularity for knowledge. As these conditions and their engineering uses must be project focus, provide the project for which these characterizations are being done for and their costs being charged against.	See Master Response 2. Section 1.1 of the IS/MND clearly describes the Project's primary objectives—"to determine the composition, location, and geotechnical properties of soil materials commonly found in the Delta." This objective supports the overall purpose of the project, which is "to inform the design, environmental analysis, and development of alternatives for a potential Delta conveyance project and contribute to DWR's overall understanding of Delta geology," inclusive of "location of the groundwater table" to obtain such understanding (Draft IS/MND, pp. ii, 1). This level of detail is more than sufficient for a negative declaration, which requires a far less detailed project description than that of an EIR (see State CEQA Guidelines, Section 15124, subdivision (b), compared to Section 15071, subdivision (a)). Indeed, nothing in CEQA or the CEQA Guidelines require lead agencies, in preparing NDs or MNDs, to identify any purpose or objectives behind their proposed projects. See also Master Response 3. The commenter demands that DWR provide certain information, as though responses to comments were required for proposed projects requiring mitigated negative declaration. The commenter is mistaken. DWR is providing responses to comments in the interest of transparency, not because they are required. Even with respect to comments on EIRs, courts recognize that the process of public comments and responses should not be just a series of "go fetch" demands by project opponents. (*City of Irvine v. County of Orange* (2015) 38 Cal.App.4th 526, 558 ["the comment-and-response process can also be abused. At its worst, it could become an end in itself, simply a means by which project opponents can subject a lead agency's staff to an onerous series of busywork requests and 'go fetch' demands"].)

62	Citizens Coalition for a Safe Community	4-ii/4 PROPOSED PROJECT DESCRIPTION: The Department of Water Resources (DWR) plans to conduct soil investigations for the purposes of measuring physical properties of the soils, location of the groundwater table, and other typical geologic and geotechnical parameters that will be used to inform and evaluate alternatives, consistent with Executive Order N-10-19, for a proposed single tunnel Delta conveyance (requiring a separate CEQA process) consistent with Governor Newsom's new approach to modernize Delta water conveyance. Define and differentiate "objective(s)" and "purposes" As a purpose of the Soil Investigation includes location of the groundwater table, the proposed investigation has virtually no investigations proposed to locate, defined, delineate, and assess current values for the Study Areas. Furthermore, the Delta is known to have several layered groundwater "tables" (aquifers) down to and beyond mentioned investigation depth of 200ft, and reference to a singular groundwater table clearly indicates the lack of technical competence on the part of the preparers. No investigative groundwater elements are mentioned, and no testing methods are included in the boreholes, even to measure the groundwater surface depths, which may be above the boring casing heights (no mention is made regarding artesian flows). Provide details regarding the proposed "soils" program in the three-plus Priority Basins (FINA).	See Response to Comment 61 for information on the Project's purpose and objective and for a discussion as to why DWR need not provide information on demand to this commenter. The information collected during the proposed Soil Investigations for Data Collection in the Delta project would be used to support the understanding of groundwater in the Study Area. Cone Penetration Tests (CPTs) will provide direct measurements of water pressure which will be used to calculate the water table levels (see Draft IS/MND, pp. 4 and 13-14, for information on the use of CPTs). All explorations will be backfilled/sealed in accordance with State of California Water Well Standards (Bulletins 74-81 & 74-90). Section 3.10, Hydrology and Water Quality, presents data and information on the applicable groundwater basins, sub-basins, and aquifers within the proposed Impact Areas. These include the Sacramento and San Joaquin River Basins and 63 groundwater sub-basins in the Sacramento watershed area and 39 groundwater sub-basins in the San Joaquin watershed area, identified in DWR Bulletin 118-80. All basins are comprised of layers of aquifers. There are additional areas not identified in the DWR Bulletin with groundwaters that have beneficial uses in the Sacramento and San Joaquin watershed areas. As cited in Section 3.10, the map of the groundwater locations and corresponding level data (available at: http://wdl.water.ca.gov/waterdatalibrary/) shows that groundwater levels vary from 20 feet at Grand Island to 200 feet at Hood near Merritt Island.
63	Citizens Coalition for a Safe Community	https://water.ca.gov/Programs/State-Water-Project/Delta-Conveyance/Environmental-Planning Initial Study/proposed Mitigated Negative Declaration (IS/MND) for soil investigations in the Delta…this process will help DWR…and provide analysis to support the environmental review process and inform potential project locations. GIS and Google Earth (kmz) files of the proposed soil investigations locations may be requested by emailing Delta_Soil_ISMND@water.ca.gov. Provide relevant and appropriate GIS/Google Earth files in appendices to the revised MND for direct public access, review, and comments.	See Response to Comment 8 for information on IS/MND maps. See also Master Response 3. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

64	Citizens Coalition for a Safe Community	4-ii/5 The primary objective of the proposed soil investigation is to determine the composition, location, and geotechnical properties of soil materials, which are anticipated to be sand, silt Provide definitions and differences between purpose(s) and objective(s). Define “primary” and all others, secondary, tertiary, quaternary… and provide selection and ranking process and criteria. Provide all objectives for “Groundwater” as part of the soil investigation as mentioned under Purposes but not objective. Provide listing of all “geotechnical properties” of soils. Provide a separate CEQA(/NEPA) process including purposes/needs and goals/objectives for DWC and for soils, geological/geotechnical, and seismological investigations. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	Specialized terms, such as “Impact Area,” have been defined as needed to ensure that the document is accessible for review; terms that are used in the standard accepted way, such as “purpose” and “feasible,” are not further defined unless their context requires it. See Response to Comment 61 for information on the Project’s purpose and objective. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
65	Citizens Coalition for a Safe Community	Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references, including: http://onlinepubs.trb.org/Onlinepubs/hrbbulletin/28/28.pdf Soil and Exploration Mapping, Highway Res. Brd. 1950 p.73-99 Development of Geophysical Methods of Subsurface Exploration…of Highway Construction	See Master Response 3 and Master Response 4. See also Response to Comment 47 for information on references. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
66	Citizens Coalition for a Safe Community	One objective for the overall project is levee/water supply safety, risk, and reliability which is not included in this “Soils” project and must be included in a geotechnical project is: Seismicity Delta Earthquake Simulation https://www.youtube.com/watch?v=8BsSqGpy5jY	See Response to Comment 61 for information on the Project’s purpose and objective. The data collected by the Proposed Project can be utilized for various future design considerations, including levee stability. See also Master Response 2 for potential future uses of the data collected. Seismicity is discussed in detail in Section 3.7.2 of the Final IS/MND. See Response to Comment 88 for additional discussions regarding seismicity.

67	Citizens Coalition for a Safe Community	5-iii/Table ENVIRONMENTAL CHECKLIST Aesthetics Agricultural and Forestry Air Quality X Biological Resources X Cultural Resources X Greenhouse Gas Emissions X Hazards & Hazardous Materials (Spills and Encounters) X Tribal Cultural Resources X Wildfire X Mandatory Findings of Significance Geology Soils Hydrology/ Water Quality [Groundwater] Mineral Resources [natural thermogenic gases] Energy Land Use/ Planning Noise Population/ Housing Public Services Recreation Transportation Utilities/ Service Systems The proposed project directly involves the geology and soils, the groundwater under hydrology and surface water quality, and mineral resources (gas fields, wells, and subsurface debris and thereby these must be indicated as impacted with an X. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references	See Master Response 3 and Master Response 4.
68	Citizens Coalition for a Safe Community	5-iii DETERMINATION: On the basis of the following initial evaluation, I find that although the Proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made that mitigate the potential impacts to a level that is less than significant. A MITIGATED NEGATIVE DECLARATION will be prepared. No qualification or responsibilities and authority are provided for the signatory as an individual involved in the discretionary decision inferred by the “statement”. Provide all state certifications, registrations, and licensing for the individual, authority for CEQA compliance, and other materials (resumes, org-chart, etc.) demonstrating the authority of the “I”. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to comment 50 for information on document preparers. The level of detail requested in the comment is not required by CEQA or warranted for inclusion in the IS/MND. See also Master Response 3 and Master Response 4.

69	Citizens Coalition for a Safe Community	6-Iv/1 MM AES-1: a. Each Impact Area will be returned to as close to pre-activity conditions as possible… As a proper noun, define and delineate each “impact area(s)”. Define “as close…as possible” for each IA, not as “feasible” nor as “practical”, and provide positive enforcement for such in the MMRP. Provide pre-construction recorded video of site and provide for improvements to compensate for any impacts based on video records. As AES-1 and AGR-1 are used as mitigation measures, by reference, for all other sectors, such references are not objective as other sectors have very difference impacts and require specific measures, rather than unjustified reference of mitigation for totally different impacts. (24/1 example: While there would be a less than significant impact to scenic resources, implementation of Mitigation Measure MM AES-1 would further avoid, minimize and/or reduce the potential for impacts.) Review, revise, and remove such duplicative and repetitive insertions (>27 times) without justification and any basis for other environmental sectors and recirculate as a DEIR. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	While the aesthetic impacts discussed in Section 3.1.2 will be less than significant, MM AES-1 ensures that Impact Areas will be returned to as close to pre-activity conditions as possible, inclusive of landscaping and other features. This mitigation measures has been enhanced in the Final IS/MND to include documentation by way of pre- and post-activity still photos, so as to fully demonstrate effectuation of the performance standard. While mitigation measures were developed for specific resource areas, they often provide additional support for avoidance and minimization of other resources and not just the resource area for which they were developed. References to specific mitigation measures associated with other resource areas are regularly provided to reduce redundancy and to provide additional support for significance determinations. This practice is perfectly acceptable under CEQA, where the primary concern is to “prevent…damage to the environment” through feasible mitigation measures, and not to constrain mitigation measures to one narrow use where there exists an “essential nexus” between a mitigation measure initially prepared for one impact and a subsequent impact (State CEQA Guidelines, Section 15005, subdivision (a)(3); see also Section 15021, subdivision (a)(1) and Section 15126.4, subdivision(a)(4)(A)). See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
70	Citizens Coalition for a Safe Community	6-iv/1 a. Each Impact Area will be returned to as close to pre-activity conditions as possible. Provide additions to mitigation by record/provide video recording of pre-operations conditions of all sites, provide copy to owner/resident and received written concordance.	See Response to Comment 69. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
71	Citizens Coalition for a Safe Community	6-iv/1 b. No building structures will be removed or disturbed. Soil investigation activities will occur at a distance greater than 100 feet from residences and small business operations. If fencing needs to be removed for access, it would be replaced in kind after the work is completed. Provide protection for all improved surfaces, parking/storage pads or graveled area. Provide map/sat-images of each site and Impact area. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	As stated in Section 2.0 of the final IS/MND, there will not be any improvements to surfaces or creation of parking/storage pads or graveled areas for this project. See Response to Comment 8 for information on IS/MND maps. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

72	Citizens Coalition for a Safe Community	6-iv/1 c. No trees or vines will be removed during exploration activities; and only minor disturbances to vegetation would occur during mobilization of equipment…., if access requires removal of any vegetation, the landowner would be consulted first to minimize the impact to both vegetation and the landowner. Provide definitions of all bolded items. Provide landowner approved compensatory landscaping based on pre-impact video recording of sites. Provide 160ft separation from sensitive uses, same as later referenced to “50 meters”. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions. See Response to Comment 29 for details on entry permissions and terms and conditions to be negotiated with landowners, including potential compensation. See also Response to Comment 69, for information on visual impact mitigation measures, and Response to Comment 47 for the availability of IS/MND references See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
73	Citizens Coalition for a Safe Community	6-iv/6 MM AGR-1: Any proposed soil investigation activities that occur on agricultural lands will be grouted in accordance with ASTM standards [=100% cementing from BOH] to five feet below the surface. The final five feet of topsoil will be replaced to return the Impact Area to as close to pre-activity conditions as possible. Revise for grouting on surface disturbance. Provide grouting from bottom-of-hole to -5ft. Provide restoration based on video recording of site before impacts. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	Mitigation Measure AGR-1 has been revised in the Final IS/MND to clarify the exact grouting procedure for soil investigation activities that will occur on agricultural lands. See Response to Comment 69 for information on applicable revisions to the visual impact mitigation measure. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
74	Citizens Coalition for a Safe Community	7-v/2 b. All on-land soil investigation Impact Areas will be located outside of wetlands as defined in the Corps of Engineers Wetlands Delineation Manual (USACE 1987). Since there are no maps and no delineations are provided for formal Impact Area(s), provide clear delineation of such wetlands in the Areas on all maps and located as to TS/Rg/Sec when mentioned in text. Provide specific pages/paragraphs within the 147 pgs. of the reference.	See Response to Comment 24 for information on wetlands.

75	Citizens Coalition for a Safe Community	References to GIS and Google Earth requires a request and therefore does not meet the publicly accessible and available for CEQA documents. Withdraw, revise, and include details 1/1000 scale images, maps, or drawings showing Areas and/or site. Provide more direct references and delineations to all wetlands in the Study Area, perhaps as an appendix. As indicated by the use of “will”, the MND has not located wetlands within the Study Area and thereby cannot assessed as to whether wetlands shall be impacted or not. Provide revised investigation maps for all designated and delineated wetlands. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 8 for information on IS/MND maps. See also Response to Comment 24 for information on wetlands mapping and Response to Comment 9 on wetlands avoidance. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
76	Citizens Coalition for a Safe Community	14-xii/1-3 a. When feasible, project activities shall be sited at least 50 meters from elderberry shrubs with stem diameter greater than 1-inch. b. If activities must be conducted within 50 meters [165 ft] of an elderberry shrub, the following measures will apply: i. activities will be conducted outside of VELB flight season (March 1-July 31); ii. a biological monitor will be present to monitor all project activities at the site; iii. all ground disturbing activities (boring, CPT, or vegetation removal) will be located at least 6 meters [20 feet] from the dripline of the elderberry shrub; and high visibility fencing or flagging will be installed to delineate the 6-meter avoidance buffer. Define feasible – specify at all times. Do not mix metric and FPG units in the report without stating the equivalent. Revise and recirculate. Define and differentiate use of must, shall, and will; replace “will” & “shall” with “must” throughout the document. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	The IS/MND has been revised for the Final IS/MND to include metric units of measurement (see Response to Comment 47). Also, see Response to Comment 64 for an explanation on the use of terms and their definitions and Response to Comment 76 for use of conditional versus committal language. This mitigation measure includes acceptable performance standards such that if it is not feasible to maintain the buffer identified in part (a) then part (b) would apply. Feasibility would be based on the ability to move the site without resulting in potentially increased impacts to other sensitive resources. The use of the terms “must,” “shall,” and “will” are often specifically prescribed by CEQA statutes and Guidelines, or used in accordance with their contextual meaning. For example, will” and “shall” are used in proposed mitigation measures that, once adopted, must be implemented. All commitments made in mitigation measures presented in the IS/MND will be made fully enforceable through an MMRP. Other conditional future tenses of these words are utilized in description of project activities because those actions are conditional upon project approval. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

77	Citizens Coalition for a Safe Community	16-xiv/3 b. A qualified botanist will conduct a habitat assessment to determine whether the habitat is appropriate for special-status plants…..When feasible based on scheduling and property access, the surveys will be conducted at proper times of year…, ensuring that all plants…are identified to a level sufficient for determining rarity, and will be conducted using systematic field techniques in all habitats of the site…. Provide definition and consistent usage throughout for “qualified, “feasible”, “sufficient”, “level…determining”, “rarity”, and “systematic”. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
78	Citizens Coalition for a Safe Community	16-xiv/4 c. Any special-status plant species present within 10 meters of an Impact Area will be flagged, or mapped using a GPS, for avoidance. A qualified botanist will establish an appropriate buffer. During field activities avoidance of the buffered area will be enforced by an environmental monitor to ensure that special-status plants are avoided to the maximum extent practicable. Provide all measurements in standard US units, FPG. Change wills to musts. Define enforce, maximum, and feasible and practical and use throughout the document. Provide define/delineate Impact Areas, qualified environmental monitor. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	The IS/MND has been revised for the Final IS/MND to include metric units of measurement (see Response to Comment 47). Also, see Response to Comment 64 for an explanation on the use of terms and their definitions. Impact Areas are discussed and defined in Section 2.0 of the Final IS/MND. A qualified environmental monitor is one who meets the qualification criteria of DWR and other regulatory agencies as applicable. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
79	Citizens Coalition for a Safe Community	18-xvi/5 MM GHG-1 a. Evaluate project characteristics,…performance requirements, to determine whether specifications of the use of equipment…are appropriate and feasible for the project or specific elements of the project. Provide definitions and consistent usage throughout document for characteristics, performance, specifications, separable “elements”, appropriate, and feasible. Include all aspects of the “Project” as mentioned in Figures 2 and 2a-2c: Delta Conveyance. Provide revised Programmatic EIR for Delta Conveyance with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions. As stated in Section 3.8.1 of the IS/MND, GHG emissions from activities of the Proposed Project will be analyzed for and reduction strategies incorporated to ensure that they are kept to a less than significant level of impact. This encompasses the entirety of the Proposed Project. See also Response to Comment 8 for information on IS/MND maps and Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

80	Citizens Coalition for a Safe Community	19-xvii/1 e. Encourage carpools or shuttle vans for worker commutes as feasible. Define “encourage” and “as feasible”. Provide requirements and restrictions for shuttles for all impact areas. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions. Shuttles are commonly understood as multi-person passenger vehicles. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
81	Citizens Coalition for a Safe Community	19-xvii MM HYD-1: a. All fueling and maintenance of vehicles or other equipment for on-land soil investigation activities shall occur on established roads, or in designated staging areas at least 50 feet away from any on-site water feature. Secondary containment for fuel and gas tanks will be used to prevent spills from entering any water features. Provide definitions and consistent use throughout for All, Established, Designated, and Secondary. Provide map of all fueling/maintenance areas and staging areas for all Area/project activities. Provide secondary containment of all elements of such sites for 110% of total storage and impermeable to 10\-15 cm/sec Provide definition and consistent use throughout MND of “must”, replace all “will”s and “shall”s. Provide Impervious Containment be extended to include fueling-designated staging area(s). Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions and Response to Comment 76 for a discussion on the use of conditional versus committal language. See also Master Response 3 and Master Response 4. The Code of Federal Regulations (CFR), requires specific containment for tanks containing hazardous materials in order to prevent the release of hazardous waste or hazardous constituents to the environment (see 40 CFR Section 264.175). These containment measures are mandatory and will be adhered to by the DWR when using portable tanks of hazardous materials, as indicated in MM HYD-1.MM HAZ-2 has been revised, for clarification, to include specific mention of these regulatory requirements. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

82	Citizens Coalition for a Safe Community	21-xix [HYD] b. Absorbent materials will be available on-site. Any accidental leaks or spills will be immediately cleaned up per the procedures identified in the contractors Spill Prevention and Response Plan, and the equipment will not be able to return to the project area until it has been repaired sufficiently to prevent further leaks or spills. c. For overwater soil investigations positive barriers consisting of hay waddles and/or other suitable type of spill-stoppage materials will be placed around the work area on the barge and ship decks. d. Discarded soil samples, cuttings, and excess drilling fluids will be kept in a closed system, to prevent spillage of the drilling fluid and will be disposed of off-site at an appropriate landfill. e. All over-water work will include the use of conductor casings to confine the drill fluid and cuttings to the drill hole and the operating deck of the barge or drill ship and prevent any inadvertent spillage into the water. Soil samples will be collected from within the conductor casing. The casing will remain in place until the bore hole is complete and has been filled in, to minimize sediment disturbance of the slough or river bottom. f. During overwater soil investigations a qualified environmental monitor will watch for colored plumes (an indication that drilling fluid or other material is entering the water and may affect water quality). If found, activities will cease until appropriate corrective measures have been completed or it has been determined that the environment will not be harmed. Provide required contents and example of Spill Prevention and Response Plan. Provide water boom barrier for operations when moored/anchored. Provide Secondary Containment with permeability of 10\-15 cm/sec must be required “on-board”. Define: will, shall, or must and revise all wills and shalls to MUST throughout document. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	As stated in MM HAZ-2 in Section 3.9.2 (a) of the IS/MND, the Spill Prevention and Response Plan will be prepared by the contractor; details of what will be included in the plan can be found within Section 3.9.2 (a). See Response to Comment 76 for information on containment of hazardous materials, Response to Comment 64 for an explanation on the use of terms and their definitions, and Response to Comment 76 for a discussion on the use of conditional versus committal language. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
83	Citizens Coalition for a Safe Community	MM NOI-1: All equipment will be properly tuned and shall utilize appropriate mufflers. Define and use consistently: Will, Shall, & Would, and replace all with Must. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions and Response to Comment 76 for a discussion on the use of conditional versus committal language. See also Master Response 3 and Master Response 4.

84	Citizens Coalition for a Safe Community	21-xix/3 i. If a significant spill has occurred, and results determine that project activities have adversely affected surface water or groundwater quality, a detailed analysis will be performed to the specifications of DTSC to identify the likely cause of contamination. This analysis will include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this analysis, the DWR or contractors will select and implement measures to control contamination, with a performance standard that surface, and groundwater quality must be returned to baseline conditions. These measures will be subject to approval by the DWR, DTSC, and the Regional Board. Provide definition of “detailed”, performed, and recommendations, and use throughout. Define & consistently use in MND: eliminate Will and Shall Use Only MUST…conditional vs certainty. Provide required “baseline conditions” with quantified parameters. Provide required approval as part of the CEQA process. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions and Response to Comment 76 for a discussion on the use of conditional versus committal language. An environmental setting (baseline conditions) provided for all resource areas was analyzed, per CEQA guidelines, and does not need to include specific quantifications (see State CEQA Guidelines, Section 15125, subdivision (a) [applicable to EIRs]). See also Response to Comment 47 on the use of quantitative data. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
85	Citizens Coalition for a Safe Community	21-xix/5 MM HAZ-4: a. The contractor would develop and submit a fire protection and prevention plan…. b. The plan would ensure that fire suppression equipment is onsite and that all employees…training. xix/6 MM HYD-1: a. All fueling and maintenance of vehicles or other equipment for on-land soil investigation activities shall occur on established roads,…Secondary containment for fuel and gas tanks will be used… Define and provide definition and consistent usage of “would”, “shall”, and “will”. Remove all conditionals: would, could, should etc. and provide required definitions and consistent use. Require “secondary containment” with numerical definition of permeability 10\-15 cm/sec. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions and Response to Comment 76 for information on containment of hazardous materials and on the use of conditional versus committal language. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

86	Citizens Coalition for a Safe Community	22-xx/8 MM PUB-1: a. A Plan(s) (often Contractor's safety plan) with a section on Fire Protection and Prevention will be submitted to DWR for review and approval which incorporates fire safety measures on all equipment with the potential to create a fire hazard. b. The contractor will prepare a Safety Plan in accordance with the DWR protocols. As used in other mitigation measures add: The contractor must develop and provide to DWR…". Define Safety Plan and include all materials encountered during the operations, e.g., biogenic and thermogenic gases. Provide publicly accessible and defined pg/par/sec for references for DWR protocols. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions. The Safety Plan will include all the elements and protocols described in the measure, MM PUB-1, and will be prepared by the contractor and provided to DWR for review. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
87	Citizens Coalition for a Safe Community	23-xxi Carrie Buckman Date California Department of Water Resources, Delta Conveyance, Environmental Program Manager Provide a date in order to make the document public and with authority. Given, the authority of the Delta Conveyance Project stated here and elsewhere, the current document must be considered as a direct plan within the Conveyance Program and therefore requires a Programmatic EIR, not a Project-Specific MND. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Master Response 2. See also Master Response 3 and Master Response 4.

88	Citizens Coalition for a Safe Community	1/1 1.0 BACKGROUND The picturesque Sacramento-San Joaquin Delta (Delta)…There is clear evidence of the vulnerabilities in the Delta posed by climate change and earthquake risk. As sea levels continue to rise… will dramatically alter and harm water quality and supply both, locally, and for 27 million Californians across the state. Immediate action is needed to upgrade Delta infrastructure, ensuring…is climate resilient and able to respond to these risks. Provide definitions/differentiations for “clear”, “immediate”, “respond”, and “vulnerabilities” vs “risks” and provide quantitative bases. Provide Seismic/Earthquakes risks for Study Area. No mention of earthquake risk and timeliness, No mention of collapse of levees by seismic shaking rather than overtopping and groundwater percolation. Provide complete and adequate setting and assessments of geological responses to seismic shaking. Provide complete, adequate, and thorough seismic/earthquake risk assessment for the Delta facilities including surface levees and tunnel corridors. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions. As stated in Response to Comment 66, seismicity is discussed in Section 3.7.2 of the Final IS/MND. The Final IS/MND states that the study area is not within a designated earthquake fault zone but is within a known area at risk for earth shaking. It notes that major active faults in the region that could cause ground shaking include the Antioch, Calaveras, Cleveland Hills, Concord, Greenville-Marsh Creek, Hayward, San Andreas, San Joaquin and Sierra Nevada Faults. The closest active fault is the Greenville-Marsh Creek Fault, which is located 9 miles southwest of the most southern Impact Area. The Final IS/MND further states that there would be a less-than-significant impact from any strong seismic ground shaking as a result of the Proposed Project because of the lack of recent earthquakes in the vicinity and the small and temporary nature of the work, which includes project work on levees. As stated in Response to Comment 20, seals will not be undermined by seismic forces because all explorations will be backfilled/sealed in accordance with State of California Water Well Standards (Bulletins 74-81 & 74-90). The cement and bentonite sealing material required in Bulletins 74-81 & 74-90 provide strength and flexibility, respectively. Regarding the potential for levee failure, see Response to Comment 109. There has been no substantial evidence presented to contest this finding. See Master Response 2 for why DCP tunnel corridors need not be consider in this document. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
89	Citizens Coalition for a Safe Community	1/2 On February 12, 2019, Governor Newsom introduced a new approach to modernize Delta water conveyance, one which included the consideration of a new, single-tunnel project alternative (…N-10-19). Define modernize and conveyance and relate to current proposed “Project”, soils. Provide listing and scopes of Alternatives and their relationship to this Proposed Project for Soil Investigations. Figures show Delta Conveyance as proper noun and an established Project in DWR, provide technical and regulatory context for this Project and Conveyance. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions. See Master Response 2. CEQA does not required that an IS/MND include project alternatives; see Master Response 3. See also Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

90	Citizens Coalition for a Safe Community	1/3 Following…Order N-10-19, the Department of Water Resources (DWR) is pursuing a new environmental review and planning process for a single tunnel solution to modernize water infrastructure in the Delta. To inform this future process, DWR is proposing soil investigations to gather data on the physical properties of the soils and other typical geologic and geotechnical parameters that will be used to inform and evaluate future alternatives for a…Delta conveyance (requiring a separate California Environmental Quality Act (CEQA). Define “inform”, “future process” and “new….process” (not connected to current process), “modernize” other than increase total flows to Clifton Forebay, and “other typical geologic and geotechnical parameters” in this soils investigation. Define “Delta Conveyance" and “single tunnel solution” Provide chemical and dynamic parameters for all investigations. Define and differentiate between “future alternatives” and “solution”. The “Process” is now not in the distant “future”, and the “Soil Investigation” is the technical basis for the alignment, depths, and physical designs of any tunnel alternative or the Project. This “Soil Investigation” represents one of the typical steps in such a project and thereby forms only one piece in the pursuit through a typical engineering process. The entire Soil Investigation and current CEQA process is “piece-mealing” and requires merging with the other investigations for such a process and CEQA consideration through a typical “Programmatic EIR”. Define “Inform” and “evaluation” processes for future “alternatives”. Define alternatives of the Proposed Project. Define “soil” vs geological, geotechnical, especially with regard to probable investigation depths of 200ft. Proposed Project or Alternative requires consistency of project, objectives, assessments, and mitigations which are not provided. Provide comparisons for single tunnel of 40+ft diam, compared to multiple tunnels of 25±ft diameters and of 40+miles compared to multiple tunnels of 20+ mi. As a “soil” investigation for a proposed project, the MND must consider the entire Project and all of the mitigation/compensation required of the entire Project effort. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible	See Response to Comment 64 for an explanation on the use of terms and their definitions. See also Master Response 2, Master Response 3, and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

		appendices, glossaries, and references.	
91	Citizens Coalition for a Safe Community	1/4 1.1 Purpose The primary objective of the proposed project is to determine the composition, location, and geotechnical properties of soil materials commonly found in the Delta which would inform the design, environmental analysis, and development of alternatives for a potential Delta conveyance project and contribute to DWR's overall understanding of Delta geology. …inform DWR on how to construct a project …avoiding, minimizing, or mitigating impacts to the surrounding residents and environment. …help to determine project features, potential alignment options and environmental impacts for analysis… …to modernize Delta water conveyance. Define the CEQA use of "purpose" and "objective" and provide the basis for only "singularity" of purpose and objective. Provide definition and differentiation between and "primary" and secondary objectives. Provide differentiation for understanding the Delta's soils and geology and how each relates to the proposed project and future Delta Conveyance/Single Tunnel alternative. Provide earthquake and shaking risk referral. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions, Response to Comment 61 for information on purpose and objectives, and Response to Comment 88 for information on seismicity. See also Master Response 2, Master Response 3, and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

92	Citizens Coalition for a Safe Community	3/Figure 1 Delta Conveyance Geotechnical Investigations [not Soil Investigations] in the Delta 5/Fig. 2 Study Area, less than total “Legal Delta” 6/Fig. 2A, 7/Fig. 2B, 8/Fig.2C Define and differentiate between Geotechnical and Soils investigation and provide schedule for each along with relationship to the Delta Conveyance, single tunnel alternative. Some borings and some CPT are within the “Right-Of-Way” and some are outside of the “ROW” for an unknown project, the Conveyance perhaps. Define ROW for what project or current Geophysical surface surveys are sited only on central Bouldin Island with two general sites with three sets. Provide basis of this limited placement and lack of use elsewhere. Geophysical surveys for “soils” have been used for >50 years in California and elsewhere. Provide review and listing of all geophysical soil surveys conducted in California 2000-2020. Figure clearly show that the Proposed Project is a PART of the Delta Conveyance Project involving a corridor for a single tunnel from somewhere on the western side of the Forebay and without a northern limit other than Clarksburg road excepting for two out-of-ROW CPT sites between Jefferson and Clarksburg. Provide clear visual locations of current single tunnel right(s)-of-way and current sites for tunneling/relief/etc. shafts connected to the tunnel. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	The use of the term “soil investigation” was to provide the general public with an easily interpreted context whereas geotechnical is the technical term for studies related to subsurface and geologic conditions. The figures have been revised to use consistent naming. Right-of-way (ROW) referred to in the IS/MND do not refer to any other projects, but rather public right of ways. This distinction is not necessary for the IS/MND and so the figures have been revised to remove that labeling. See Response to Comment 59 for clarification on survey area. As stated in the project description in Section 2.0 of the IS/MND, the purpose of the geophysical surveys is to study different geophysical survey techniques and determine which are best for use in the specific conditions of Delta soil. Thus, the surveys are being proposed in one specific area for comparison of the proposed techniques. CEQA does not require that this IS/MND include a comprehensive list of all geophysical surveys that have been conducted in the state of California. Nor would it be relevant data for the Proposed Project. The Proposed Project is not a part of the proposed, future DCP. However, as indicated in the Section 1.1 of the Final IS/MND, the primary objective of the proposed Project is to determine the composition, location, and geotechnical properties of soil materials commonly found in the Delta, which would inform the design, environmental analysis, and development of alternatives for a potential Delta conveyance project and contribute to DWR’s overall understanding of Delta geology. Thus, potential Delta conveyance corridors were considered in siting of the proposed soil investigation locations. See also Master Response 2, Master Response 3, and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

93	Citizens Coalition for a Safe Community	Project Description 4/3 2.0 The distribution of the various types of on-land soil investigations was determined to provide appropriate coverage to gain a preliminary understanding of the geological and geotechnical conditions in the Study Area. An effort was made to distribute soil borings at varying depths evenly throughout the Study Area; the location of CPTs was determined to provide supplementary subsurface information to complement the soil borings. Geophysical surveys can collect data to provide a more robust preliminary interpretation of regional subsurface conditions and identify anomalous features such as abandoned oil and gas wells or unmarked utilities. The planned geophysical surveys will be used as a test program to determine if these noninvasive surveys are appropriate for future use in other regions of the Delta, thereby reducing the potential need for soil borings or CPTs in certain areas. No mention of subaquatic efforts, provide same level of discussion for subaquatic as subsurface. What does “An effort was made…” mean [?], and especially when setting the “varying depths” boring “evenly” in the Study Area(s). Why use “can”, provide basis for and differentiation of use of “can” rather than “will” or “shall”. Subsurface must include groundwater and seismicity. Define appropriate and gain and quantify Define “An Effort” Define “evenly” and quantify. Review indicates not evenly placed. Provide gridded Study Area and distribution per gridded cell. Define “anomalous features”, as utilities, and DOGGR and CPUC have information regarding existing facilities in the Delta. No mention is made as to review of existing well information (e.g., DOGGR, Well Finder). Provide info base and process for development of this Proposed Project, e.g., selection of borings, CPT site, and geophysical survey. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	Section 2.2 of the project description of the IS/MND describes overwater borings. See Response to Comment 64 for an explanation on the use of terms and their definitions and Response to Comment 76 for a discussion on the use of conditional versus committal language. Geological and geotechnical conditions include consideration of groundwater and soils-related aspects of seismicity. Within the Department of Conservation, the division formerly known as the Division of Oil, Gas, and Geothermal Resources (DOGGR) has been renamed. It is now the California Geologic Energy Management Division (Cal GEM). While Cal GEM and the California Public Utilities Commission (CPUC) have information regarding existing facilities, the specific location references within those records, can sometimes be inaccurate, especially with older records, additionally unrecorded facilities such as gas and water wells are not uncommon in the Delta. Therefore, for more thorough data, a search using WellSTAR, the Geologic Energy Management Division’s Well Statewide Tracking and Reporting System for the California Department of Conservation, which includes Cal Gem data, was utilized in identification of proposed soil investigation sites for avoidance of existing facilities. This language has been added to Section 2.0 of the Final IS/MND for clarification. See also Response to Comment 20 for information on wells in the study area. For information on site location selection and the reconnaissance survey process, see Response to Comment 9 and Response to Comment 10. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

94	Citizens Coalition for a Safe Community	11/3 The duration of investigation activities for the 167 borings will be up to: • 5 work days for each of 22 borings up to 50 feet deep, and [110 d] • 13 work days for each of 145 borings 50 to 200 feet deep. [1885 d] Provide schedule and typical durations of tasks including abandonment and restoration of site and relocation of equipment and setup. Provide assumed number of drilling/CPT rigs and maxima. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	Table 1 in Section 2.0 of the Proposed Project Description of the IS/MND shows estimated duration of each task: 6 months for Soil Borings and CPTs, 3 months for Overwater Borings, and 2.5 months for Geophysical Surveys. Duration for each Impact Area includes the entire exploration process from setup to restoration of the site. The IS/MND assumes a maximum amount of equipment would be used at any location site for a more conservative analysis—the exact account of equipment will not be known until a future time. See Response to Comment 8. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

95	Citizens Coalition for a Safe Community	14/2-3 2.1.5 On-Land Geophysical Surveys Methods Geophysical surveys consist of noninvasive (i.e.,, does not require a soil boring) techniques that can be used to provide information on subsurface conditions and anomalies, such as buried casings or abandoned wells. Geophysical surveys will be conducted on up to five Impact Areas within a location on Bouldin Island (see Figure 2b). The five Impact Areas are comprised of three arrays approximately 2,300 feet long and 100 feet wide and two area grids (each approximately 1,000 feet by 1,000 feet; although surveys will only be conducted within a portion of the full grid measuring 500 feet by 500 feet). The geophysical surveys will be used as a test program to determine if these noninvasive surveys are appropriate for future use in other regions of the Delta, thereby reducing the potential need for soil borings or CPTs in certain areas. [see 4/3] Testing of geophysical surveys has been going on for >50 years and have proven track records including in the Delta. Statement clearly shows lack of experience by the preparers of this document. Provide names and experience records for all preparers of this MND and specifically for those involved with geophysical surveys. Provide all DOGGR records for geophysical surveys related to the Delta's >20 gas fields. One or more of the following geophysical survey techniques will be used at an Impact Area: TDE, Cesium Vaper [check] Total Field Magnetometer (CVTFM), …(ERT), and Seismic Refraction/Reflection (Seismic). Each of these methods is described in detail below. Geophysical surveys have been conducted for both geological and soils studies throughout the US and in California and perhaps the Delta. No further demonstrations as to their value needs to be established. Restricting their application to 2-3 small areas in fact guarantees their low creditability and demonstrates the DWR proponents lack of expertise in their technologies. Provide equal contract values for borings, CPT/SPT, and Geophysical surveys. Provide references at first use for "Cesium Vaper" rather than Cesium Vapor", misspelling?. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	As stated in Response to Comment 50, a list of preparers has been added. Techniques for geophysical surveys have varying success rates based on specific soil conditions, data needs, and depth of interest. The geophysical study proposed will support identification of the best method to use for Delta soils and for the detection of buried objects. See also Master Response 3 and Master Response 4. See Response to Comment 92 regarding selection of geophysical survey locations. As noted in Response to Comment 93, specific location references within Cal GEM and CPUC can sometimes be inaccurate, especially with older records, additionally unrecorded facilities such as underground storage tanks are not uncommon in the Delta. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter. Vapor - misspelled

96	Citizens Coalition for a Safe Community	16/ *Source: Rogers et al. 2005 Figure 8. Cesium Vaper Total Field Magnetometer (CVTFM). 214/Project Description Rogers, B.M., J.R. Cassidy, M.I. Dragila. 2005. Ground-Based Magnetic Surveys as a New Technique to Locate Subsurface Drainage Pipes: A Case Study. Applied Engineering in Agriculture Vol. 21(3) 421-426. “Seismic” includes a very wide array of systems and methods. Provide system discussion for those suited for the limited depths (<250ft) and anticipated soft ground and high water tables of the Delta and directly related references, including pages. Provide 12 micro-seismic monitoring stations for -3 - +1 seismic within 25 miles, and at depths <4 miles. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 88 for information on seismicity. See Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter. The proposed Seismic Refraction/Reflection techniques are described in full in Sections 2.1.4 and 2.1.5 of the IS/MND and utilize a rubber-tired truck with a low impact seismic vibrator system (referred to as the EnviroVibe Minibuggy) to induce source vibrations, EnviroVibe source vehicle and shallow surface monitors.
97	Citizens Coalition for a Safe Community	23/2 “Discussions vs Assessments” Under CEQA evaluations of environmental impacts is usually called: Assessments and require quantitative assessments. This MND does neither. General discussion provide are totally incomplete and inadequate. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	Methodology for impact assessment is resource specific and does not always have to include quantification; see Response to Comment 47. The commenter has provided no legal authority for its broad claim about the need for quantification. See also Master Response 3 and Master Response 4.
98	Citizens Coalition for a Safe Community	23/2 3.1.2 Discussion a) Would the project have a substantial adverse effect…? Less than Significant Impact. The Proposed Project is not expected to have a substantial adverse effect…there would be a less than significant impact to scenic vistas, implementation of the following Mitigation Measure would further avoid, minimize and/or reduce potential impacts: Provide definitions and differentiations between Discussions and Assessments, substantial, “not expected”, scenic vista, further. Provide Quantitative Assessments. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions. Methodology for impact assessment is resource specific and does not always have to include quantification; see Response to Comment 47. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

99	Citizens Coalition for a Safe Community	26/1 …Evaluation and Site Assessment Model…as an optional model to use in assessing impacts on agriculture and farmland…. In determining whether impacts to forest resources,…, are significant environmental effects,… 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… Define and differentiate and use consistently: Assessment, assessing, determining, and measurement methodology. Provide quantitative discussions/assessments. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions. Methodology for impact assessment is resource specific and does not always have to include quantification; see Response to Comment 47. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
100	Citizens Coalition for a Safe Community	35/2 3.3.2.3 Impact Assessment Approach The Proposed Project's impacts to air quality were assessed using methods and assumptions recommended by the Air Districts. The Proposed Project is a soil investigation and it does not involve building any permanent structures or facilities that would generate air pollutants. When the Proposed Project is complete, all activities will cease, and no further emissions will be generated. Because potential impacts to air quality would only occur during the period when soil investigations are being performed, this impact analysis will focus on air pollutant emissions from Proposed Project activities only. Identify methods and "assumptions" and provide citations for the relevant Air Districts (more than one) and provide copies of their recommendations for this project. Provide schedule for this and all related "projects" and current planning and design efforts. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	Methods and assumptions for each Air District referred to within the IS/MND are available in the guidelines published for modeling air quality for each district. These guideline documents are all included in the references for the IS/MND and are readily available to the public. See Response to Comment 47 for information on references. Potential cumulative effects for reasonably foreseeable projects are discussed in Section 3.21.2 of the IS/MND. See Response to Comment 19 for information on cumulative impact assessment; see also Master Response 2. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

101	Citizens Coalition for a Safe Community	The Model 25/1 Evaluation and Site Assessment Model (1997, as updated) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources… Provide specific publicly accessible reference/linkage to the Model and its Updates and current uses. Define base case and optional “models”. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	The reference to the model is available in the introduction to Section 3.2 of the IS/MND. See also Response to Comment 47 for information on references. The California Department of Conservation’s Land Evaluation and Site Assessment (LESA) Model is a commonly used method by which lead agencies can quantitatively determine impacts to agricultural land. Details on the LESA model can be found online at: https://www.conservation.ca.gov/dlrp/Pages/qh_lesa.aspx. LESA was not run in the evaluation of this project due to the lack of conversion of land use as part of the project. However, a variety of databases were accessed to assess the existing conditions within the project area for the purposes of determining potential impacts, including the California Department of Conservations Important Farmland Data, California Department of Forestry and Fire Protections Assessment of Forests and Rangelands, and the County self-reported Williamson Act Data. All of these sources are referenced in Section 3.2 of the Final IS/MND and are available as part of the administrative record. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
102	Citizens Coalition for a Safe Community	34/4 Bay Area Air Quality Management District…If all of the control measures indicated in Table 2…(as appropriate, depending on the size of the project area) will be implemented, then PM10 emissions…would be considered a less than significant impact (BAAQMD 2017). Define and differentiate between all and less than ”all”, appropriate, and considered. No references to Sacramento Metro AQMD nor the San Joaquin Valley Unified AQMD, provide appropriate control measures from the regional air agency for the Study Areas and Delta. Define “appropriate” and “considered” and quantitative processes used to make such determination. Clarify “If all” will they or won’t they be implemented; provide clear commitment for such measures. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	References for all of the Air Districts included in the IS/MND are included in Section 3.3.1. As noted previously in Response to Comment 100, methods and assumptions for each Air District referred to within the IS/MND are available in the guidelines published for modeling air quality for each district. These guideline documents are all included in the references for the IS/MND and are readily available to the public. See also Response to Comment 47 for information on references and the use of quantitative data. See Response to Comment 64 for an explanation on the use of terms and their definitions. The methods for Air Quality analysis are described in Section 3.3 of the IS/MND. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

103	Citizens Coalition for a Safe Community	42/3 The Study Area for evaluating the Proposed Project's potential impacts on sensitive plants was established as a 100-meter buffer around each soil investigation site…for potential site relocation and vegetation map resolution. Use only US measurement unit and provide metric equivalents after and in (--). Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 47 for detail on the inclusion of metric units of measurement in the Final IS/MND. See also Master Response 3 and Master Response 4.
104	Citizens Coalition for a Safe Community	44/2 A total of 100 special-status wildlife species and 97 special-status plant species were identified in the quadrangle search…. Of those identified, 70 special-status wildlife species and 79 special-status plant species have at least some potential to occur within the respective sensitive wildlife or sensitive plant Study Areas Define and differentiate between "at least" and "some potential". Define and delineate "Study Area(s)" and their respective Impact Areas. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	The methods for determining which species have some potential to occur with the Study Area or Impact Area are described in Section 3.4.1.1 of the IS/MND. Impact Area is defined in Section 1.3 "Proposed Project Location" of the IS/MND. Study Areas are defined with regards to each specific resource. The Study Area for biological resources, sensitive wildlife species and plants can be found in Section 3.4.1.1 of the IS/MND. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
105	Citizens Coalition for a Safe Community	49/4 Breeding coincides with the rainy season…, in temporary pools and drainages,…Adults remain in underground burrows for most of the year and will travel up to several meters on rainy nights (CDFW 2000a)….On land movement is generally thought to be…able to dig burrows up to eight inches deep…). 52/5 b. If Western pond turtles are observed on land during the pre-activity surveys, the area within 100 meters of the boundary of the aquatic habitat will be flagged and avoided if feasible. Provide only US standard measurement units (FPG) with metric units in ()s. Define Avoid, Feasible, Practical, and Required, also will, shall, and must. Provide capitalizations for "proper nouns". Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 47 for detail on the inclusion of metric units of measurement in the Final IS/MND. See Response to Comment 64 for an explanation on the use of terms and their definitions. Capitalization for species common and scientific names follow professional standards for those species (i.e., guidance from American Fisheries Society, Society for the Study of Reptiles and Amphibians, etc.). See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

106	Citizens Coalition for a Safe Community	50/1 The subspecies range includes…; the population that occurs in the Study area breeds in western Canada, Washington, and Oregon, with a small number breeding in northeastern California, and migrates to the Central Valley of California to overwinter (CDFW 1994)….Portions of the study area are used regularly and by large numbers of greater sandhill cranes (Ivey et al. 2016)…., and is sensitive to human disturbance Greater sandhill cranes are winter residents in the study area, arriving during early September, reaching maximum densities during December and January and departing during early March. 102/1 Mt. Diablo fairy-lantern has a CRPR of 1B.2, but it is not listed under FESA or CESA….Suitable habitat for Mt. Diablo fairy lantern is present within the study area. However, this species has low potential to occur within the Study Area because the Study Area is located on the edge of its known range…. Edge dwellers are more susceptible to impacts than central core dwellers. Define and differentiate between study areas, Study areas, and Study Areas and Impact Areas. Provide references and quantitative assessments for “low potential” for impacts in “edge range” versus central core ranges. Usually those animals at the edges of the known ranges are more sensitive to impacts and disturbances than in their central core. Provide the qualifications for the zoologist and zoogeographer who prepared the sections and such statements. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	As stated in Response to Comment 104, Impact Area and Study Areas are defined in the IS/MND. An explanation of the rank assessments for each species evaluated is provided in section 3.4.1.1 on page 45 of the IS/MND. See also Response to Comment 47 for information on the use of quantitative data. Habitat types are discussed in the IS/MND in Section 3.4.1.1. Furthermore, Section 3.4.2.1 discusses individual special-status wildlife and their habitat in the area. As stated in Response to Comment 50, a list of preparers has been added. It is well understood that vulnerability to extinction varies across a species’ range due to multiple factors, including the local environmental conditions and factors such as location within a given range. Often a species’ natural range is limited by environmental factors that may make these edge of range areas less suitable, and therefore more challenging to persist within. While this sort of local variation is acknowledged, these range edge effects do not change the determination for these species, due to the project’s short duration, the small footprint of each distinct drilling location, and the incorporation of mitigation measures designed to protect and avoid any species with the potential to occur at a potential drilling site. Additionally, there will be no alteration to the quality or quantity of available habitat, or connectivity across habitats as a result of this project, as each drilling location will be returned to pre-project conditions upon completion of the active work. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

107	Citizens Coalition for a Safe Community	72/1/4 The first is that no levee restoration program in the Delta can guarantee safety from flooding. The instability of Delta soils, the effect of winds, tides, and flood flows, and the unique problems of erosion, seepage, and subsidence all present uncertainties for levee restoration projects in the Delta. Total deficiency of risk assessment to seismic conditions warrant incompleteness. Provide at least a five-area assignment of seismic risks based on current knowledge. Provide seismic monitoring systems as part of the Project to be integrated with existing seismic monitoring systems for the area; monitoring must be capable of locating seisms within 10 miles of each station and to depths of > 4miles and with intensity of -3 - +9 RM. Provide locating/assigning of all seismic events to known, suspected, or possible fault planes within the Study Area boundaries and for 5mi beyond, the Seismic Model. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	As stated in Response to Comment 66, seismicity is discussed in Section 3.7.2 if the IS/MND. The primary objective of the proposed Project is to determine the composition, location, and geotechnical properties of soil materials commonly found in the Delta which would inform the design environmental analysis, and the development of alternatives for a potential Delta conveyance project and contribute to DWR's overall understanding of Delta geology. However, the project itself does not include construction of any facilities, and will be limited in footprint and duration, so the potential for seismic risk is less than significant. See Master Response 2. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

108	Citizens Coalition for a Safe Community	79/4 a. When feasible, project activities shall be sited at least 50 meters from elderberry shrubs with stem diameter greater than 1-inch. b. If activities must be conducted within 50 meters of an elderberry shrub, the following measures will apply: i. activities will be conducted outside of VELB flight season (March 1July 31); ii. a biological monitor will be present to monitor all project activities at the site; iii. all ground disturbing activities (boring, CPT, or vegetation removal) will be located at least 6 meters… 80/1 and high visibility fencing or flagging will be installed to delineate the 6-meter avoidance buffer. 83/1 Length measurements estimate juveniles…(24 to 34 millimeters [0.95 to 1.34 inch] fork length) ….Growth…reach up to 30 centimeters (11.8 inches) the first year and over 60 centimeters (24 inches). 87/1 …size of fry migrants at approximately 40 millimeters between December and April in Mill, Butte, and Deer Creeks reflects a prolonged emergence of fry from the gravel (Lindley et al. 2004). Provide all measurements in US standard units (FPG) and if desired metric units in ()s. Revise all measurements to Feet/Inches only. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 47 for detail on the inclusion of metric units of measurement in the Final IS/MND. See also Master Response 3 and Master Response 4.

109	Citizens Coalition for a Safe Community	89/3 CDFW surveys…In the eastern Delta, the floodplain along the lower Cosumnes River…observed in areas flooded by levee breaches, turbid water, and flooded terrestrial vegetation. Provide map showing eastern, western, southern, northern and central Delta areas. No references or documentation regarding the levee breaches, their causes, and soil/geotechnical background. Provide related documentations, references, and DWR records regarding levee breaches, their root causes and relationships to soils and geotechnical factors. Provide root cause analyses for any levee breaches related to seismic events and probable acceleration/shaking required to cause the collapse/breech of the levee. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 8 for the use of maps in the IS/MND. See Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter. According to the United States Geological Survey (USGS 1999), only approximately 100 levee failures have occurred in the Delta since the early 1890s. Most of the failures were caused by overtopping during periods of spring flooding, which is not necessarily relevant background information for the proposed Project but is included here in response to the commenter's request. As clarified in Section 3.7.2 of the Final IS/MND, although no historic examples of seismically-induced levee failure in the Delta have been documented, the USGS notes that the levees have not been subjected to strong shaking. According to the USGS, "Levees were either smaller or nonexistent in 1906 when the region was strongly shaken by the great San Francisco earthquake." See also Response to Comment 88.
110	Citizens Coalition for a Safe Community	96/2 c. Any special-status plant species present within 10 meters of an Impact Area will be flagged, or mapped using a GPS, for avoidance….will establish an appropriate buffer. During field activities avoidance of the buffered area will be enforced by an environmental monitor to ensure that special-status plants are avoided to the maximum extent practicable. Revise metrics to US-FPG. Revise all will's to MUST's. Define and differentiate "will establish" "appropriate", and "buffer"/"buffered area", avoided, avoidance, and appropriate, practical, and feasible. Provide listing and authority of "enforced" and "ensure" for monitor. Provide that all restrictions are included in all contract documents for contractors, operators, and consultants. Revise all statements regarding endangered species and mitigation from "will" to "must" and include all such conditions within the MMRP and all mitigation listings. Define "appropriate" compared to and included "required". Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 47 for detail on the inclusion of metric units of measurement in the Final IS/MND. See Response to Comment 64 for an explanation on the use of terms and their definitions and Response to Comment 76 for a discussion on the use of conditional versus committal language. Project permits, MMRP, and all other pertinent documents will be referenced in contract documents and kept on site, as standard practice. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

111	Citizens Coalition for a Safe Community	134/1 …human burials and occupation features that can be found subsurface as deep as 3.5 meters depending on the age, soil deposition pattern, and length of occupation…as mounds were densely located along major waterways according to early-twentieth century documentation (one mound every 2-3 miles)… Use only US standard FPG/miles/tons units of measurements with metric units in ()s. Provide specific references for public accessibility for early 20th Century documentation and specific citation for 1 mound-2-3 miles, one or both sides of river with SE or NE exposures. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	This reference to “one mound located every 2-3 miles” comes from the following source cited in the IS/MND: Schenck, W.E. and E. J. Dawson. 1929. Archaeology of the Northern San Joaquin Valley. *University of California Publications in Archaeology and Ethnology* 25: 289-413. Berkeley, CA, University of California Press. The publication is available online for free as a PDF: https://digitalassets.lib.berkeley.edu/anthpubs/ucb/text/ucp025-005.pdf. In archaeology, meters and centimeters are used when referring to prehistoric sites/resources, while inches, feet, and miles are used when discussing historical archaeological sites and historic resources. However, to ensure accessibility for reviewers, the IS/MND has been revised so that units are standardized. See Response to Comment 47 for detail on the inclusion of metric units of measurement in the Final IS/MND. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter
112	Citizens Coalition for a Safe Community	135/3 For the purposes of the Cultural Resources Review, each individual Impact Area was assessed with a 60-foot radius buffer (i.e. 120-foot diameter buffer)…. Geophysical Lines were assessed using a 20-foot buffer…. Previous studies and recorded cultural resources within a 0.25-mile radius buffer [1320 feet]… Provide equivalent footage rather than mixing feet and miles. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 111. See also Master Response 3 and Master Response 4.

113	Citizens Coalition for a Safe Community	140/2 Most overwater boring locations have not been previously surveyed (only two of 57 have been subject to underwater remote sensing survey;…. As the boring locations are underwater, a pedestrian survey of the Area of Potential Effect (APE) is unfeasible, but pre-activity site visits as discussed in MM-CUL-1 will still be conducted near the water on land to evaluate possibilities…. This, along with underwater hazard surveys planned as part of the project description, will provide sufficient field coverage for cultural resources avoidance for overwater areas that have not been previously examined. Provide references for the TWO locations and their survey methods and results. Define specifically what the "UW hazard surveys" are and how they will assessment the sites. Change "will"s to "must"s. Provide the part of the Project description not yet included. Define and differentiate between remote sensing, hazard, and geophysical sensing surveys. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	The two overwater boring locations that have been previously surveyed using underwater remote sensing are at the intersection of the Sacramento River and Steamboat Slough just north of Rio Vista, and the overwater location just northeast of this intersection in Steamboat Slough. Remote sensing survey methods included the use of a magnetometer and sidescan sonar survey interfaced with Differential Global Positioning System (DGPS). The survey was conducted using transects no wider than 50 feet to ensure 100% coverage. These transects were guided by pre-plotted track lines displayed on a computer in combination with real-time locational data provided by the GPS. The survey vessel was an open-bow skiff and it was maintained at a speed of 3-4 knots to ensure uniform acquisition of data along each transect (ICF 2012; Panamerican Consultants 2010). Remote sensing did not result in the identification of any resources at these two overwater boring locations. The underwater hazard survey will be performed by a small boat towing bathymetric and geophysical instruments to confirm mudline depths and confirm that there are no obstructions or utilities that could endanger or be impacted by the drilling operations (this would include any shipwrecks and other underwater cultural resources). For more information on the underwater hazard survey methods and project description, refer to Section 2.2.1 of the Final IS/MND (specifically pages 23-24). See Response to Comment 76 for a discussion on the use of conditional versus committal language. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

114	Citizens Coalition for a Safe Community	142/1 3.6.1 Environmental Setting Energy systems in California include electricity from renewable and non-renewable sources, natural gas, petroleum, and other fuels. The production of electricity requires the consumption or conversion of energy resources, including natural gas, …and renewable sources…biomass/ cogeneration, into energy. Energy production and energy use both result in the depletion of nonrenewable resources (e.g., oil, mineral natural gas, coal, etc.) and emission of pollutants. Methane is both sourced from thermogenic and biogenic sources, and biogenic sources are considered renewable (e.g., digesters of sewage treatment facilities). Provide corrected copy. Provide maps and descriptions of all gas producing and storage facilities, wells, and fields within the overall study area, “The Delta”. Provide well descriptions (including Tops-/Bottoms- of-Holes) for all wells within one-mile of any Impact Area. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	While there are many renewable sources of energy, not all are specifically applicable to use for the current proposed Project. Methane is not one of the potential renewable energy sources that is planned for use. Therefore, this change is not relevant to the current IS/MND. Section 3.6 of the IS/MND is specific to potential environmental effects of the proposed Project on energy, specifically in regard to the use or consumption of energy. The request for maps of storage facilities, well, etc. is not relevant. See also Response to Comment 20 for information on wells. See Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
115	Citizens Coalition for a Safe Community	144/Table - Issues Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map…for the area or based on other substantial evidence of a known fault? (Refer to Cal.Geo.Surv. Spec. Publ.42.) Add references, including CDC 2010a (https://maps.conservation.ca.gov/cgs/fam/) and page/paragraph/figure for CGS Spec.Pap.42. Provide maps of all faults, recorded seismic (-3 to +9 RM) centers on known and unknown faults, and all fault ruptures within the Project area(s) and surrounding 5.0 miles of the Project boundaries. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	As stated in Response to Comment 66, seismicity is addressed in section 3.7.2 of the IS/MND. Additionally, maps of faults can be found at https://www.conservation.ca.gov/cgs/earthquake-data. See also Response to Comment 88. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

116	Citizens Coalition for a Safe Community	145/1 Initial Study/Proposed Mitigated Negative Declaration ENVIRONMENTAL ISSUES Potentially Significant Impact Less Than Significant with Mitigation Incorporated Less Than Significant Impact No Impact c) Would the project be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the Proposed Project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse? Depends on what is defined as “Project”, Piece-mealing. As indicated by the central objective for this and related projects, provide safe reliable water conveyance is directly related to seismic events provide all known seismic issues within the “Project Study Area” and their related fault traces and planes. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Master Response 2. See also Master Response 3 and Master Response 4.

117	Citizens Coalition for a Safe Community	145/1 3.7.1 Environmental Setting The Study Area consists of on-land and overwater Impact Areas distributed across six counties:…. The California Geologic Survey of California Department of Conservation has determined the Impact Areas…to be mostly composed of quaternary deposits of alluvium, lake,….146/1 …playa and terrace deposits that are both consolidated and semi-consolidated throughout the Central Valley. In Alameda County, we can expect the soil to both have characteristics of quaternary deposits listed above and Mesozoic sedimentary and metasedimentary rocks, specifically, upper cretaceous sandstone, shale and conglomerate rock material (CDC 2010a). CDC 2010a Midland Fault Zone Fault Activity Map of California (2010) CDC/CGS http://maps.conservation.ca.gov/cgs/fam/ Ref. California Department of Conservation and the California Geologic Survey (CDC). 2010a. Fault Activity Map of California. Available at: http://maps.conservation.ca.gov/cgs/fam/ (accessed August 23, 2019) Provide DOC reference for “has determined” and define “determine”. Provide definitions and differentiation for “alluvium” compared to lake, playa, terrace deposits. Define “can expect” rather than is “known” with appropriate references. Provide definitions and differentiation for consolidated and “semi-“consolidated “deposits”. CDC2010a is a fault map without designations for geology, deposits, or soils. Provide correct references for geology rather than fault maps. Provide definitions and differentiation of “Mesozoic…rocks” compared to “upper cretaceous “rock material”. Provide list of preparers for all geological discussions, their qualifications and their state registrations/licenses/certifications. Provide references for geological use of quaternary and upper cretaceous. Provide numerical definitions of consolidated, semi-consolidated, soil, deposits, and rocks Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references. Include complete and thorough review/revision of all things soil and geology by experienced staff/consultations with State registrations, certifications, and license numbers.	As stated in Response to Comment 66, seismicity is addressed in section 3.7.2 of the IS/MND (see https://www.conservation.ca.gov/cgs/earthquake-data). CDC 2010b is a Geologic Map of California (available at: http://maps.conservation.ca.gov/cgs/gmc/). The citation reference has been corrected in Section 3.7.1 of the Final IS/MND. Section 3.7.1 of the IS/MND states, “Based on available web soil surveys and the vast distribution of the Impact Areas we can generalize that the surface soils will likely consist of alternating layers of silts, clays, loams and sand with some gravels which are underlain by either sedimentary rock or quaternary deposits (USDA 2019).” See Response to Comment 64 for an explanation on the use of terms and their definitions. As stated in Response to Comment 50, a list of preparers has been added. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

118	Citizens Coalition for a Safe Community	145/6 Less than Significant Impact. As with the entire San Francisco Bay Area, the southern Impact Areas are subject to strong ground motion resulting from earthquakes on nearby faults…Additionally, the footprint of each Impact Area is small and temporary. Additionally, the limited nature of the Proposed Project minimizes potential adverse impacts related to ruptures of known earthquake faults. While there would be a less than significant impact, implementation of Mitigation Measures MM AES-1 and MM AGR-1 would further avoid, minimize and/or reduce the potential for impacts. Provide maps and names of all known earthquake faults, with and without ruptures within 5 miles of the Project area and by Southern, Northern, Eastern, western and central Impact Areas. These AES-1 & AGR-1 mitigations do not relate to seismicity nor shaking nor rupture nor geology or geotechnical issues, eliminate throughout MND. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	As stated in Response to Comment 66, seismicity is discussed in Section 3.7.2 of the IS/MND. Specifically, the IS/MND states, " Major active faults in the region that could cause ground shaking at the Impact Areas include Antioch, Calaveras, Cleveland Hills, Concord, Greenville-Marsh Creek, Hayward, San Andreas, San Joaquin and Sierra Nevada Faults. The closest active fault is the Greenville-Marsh Creek Fault, which is located 9 miles southwest of the most southern Impact Area." See also Response to Comment 88. A link to an internet website that contains a map of faults is included in Response to Comment 115. See Response to Comment 69 for information on the use of mitigation measures. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

119	Citizens Coalition for a Safe Community	146/2 Based on available web soil surveys and the vast distribution of the Impact Areas…surface soils will likely consist of alternating layers of silts, clays, loams and sand with some gravels which are underlain by either sedimentary rock or quaternary deposits (USDA 2019). Provide definitions and comparisons of differences between rock and deposits, and those of Quaternary rocks and deposits. Review/revise/recirculate document to assure consistent usage. Provide example of any gravel deposits without sand, silts without sands, or clays without silts. Provide basis for borings and CPT of less than 200ft, with typical industry “rules of thumb” tunnel depth of x3 diameter (120 ft) plus one tunnel diameter (=total 4 x 40 - 160ft) with some provision to go deeper. Add “or to refusal” and XYZ pressures. Provide definition of “surface soils” and for intermediate and deep soils used in this Soil Investigation going to 200ft. Define loam compared to clays, silts, and sands. Define Vast, Likely, . Revise proper nouns correctly. USDA 2019 is a map without direct access to soil characterization, requires subscription and logins, provide such with specific papers/section/page/paragraphs. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions. As stated in Response to Comment 117, CDC 2010b is a Geologic Map of California; it is available at: http://maps.conservation.ca.gov/cgs/gmc/. See also Master Response 3 and Master Response 4. Soil investigation depths vary because they are associated with gathering information to use in the consideration of alternatives or potential facilities and structures including but not limited to tunnels. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

120	Citizens Coalition for a Safe Community	146/3 An “active” fault…is considered more likely to generate a future earthquake…. The California Geologic Survey has mapped various active and inactive faults in the region [Reference]. …several active faults located within or surrounding all six counties overlapping the Study Area: Antioch, Calaveras, Cleveland Hills, Concord, Greenville-Marsh Creek, Hayward, San Andreas, San Joaquin and Sierra Nevada Faults. There is a generally low to moderate liquefaction potential at and around several Impact Areas. Define and delineate “region” and same with Impact Areas. Provide numeric/quantitative parameters (e.g., 5, 15, 25, or 50 miles of the Delta boundary line) Provide and clarify Counties or Fault names with maps or references. Provide map to show “various…faults” and “liquefaction potential” zones within the Impact Areas and overall Project Area. Provide names/designation/delineation of “several Impact Areas”. Provide reference for Midland Fault Zone and suspected faults (dashed five line on Tyler and southern Grand Islands). Provide references and page citation for CDC 2010a: Calif.Dept.Conserv. & Calif.Geol.Survey (CDC). 2010a. Fault Activity Map of California. Available at: http://maps.conservation.ca.gov/cgs/fam/ (accessed 11/29/19). Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions. See also Response to Comment 88 on seismicity. See Response to Comment 8 for information on IS/MND maps. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

121	Citizens Coalition for a Safe Community	146/4 3.7.2 Discussion a) Would the project directly or indirectly cause potential substantial adverse effects,…: 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?.... Less than Significant Impact. As with the entire San Francisco Bay Area, the southern Impact Areas are subject to strong ground motion resulting from earthquakes on nearby faults. …., the limited nature of the Proposed Project minimizes potential adverse impacts related to ruptures of known earthquake faults Define cause. Provide delineation of any A-P Fault Zone in the Project study area. Provide clear delineation the Project study area and the SFB Area. Define “strong” (e.g., 0.1, 0.5, or 1.0 G). Define “ground motion”, vertical, horizontal, and likely direction of movement (from>towards). Define “nearby” (e.g., 3.5 miles) Simplify the assessment, provide clear assessment as to whether the “Project” will cause a rupture or earthquake on any A-P Fault zone.	See Response to Comment 64 for an explanation on the use of terms and their definitions. The Project Study Area is demonstrated in Sections 1.3 and 2.0 of the IS/MND, and the San Francisco Bay Area Basin is delineated on page 33 of the Draft IS/MND. See also Response to Comment 8 for information on IS/MND maps. Table in section 3.7 “Geology and Soils” on page 147 of IS/MND shows a simple and clear assessment that project activities will have a less-than-significant Impact on ruptures of a known earthquake fault on any A-P Fault Zone. Furthermore, Section 3.7.2 of the IS/MND provides more information on how this assessment was determined. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

122	Citizens Coalition for a Safe Community	146/5 ii) Strong seismic ground shaking? Less than Significant Impact….seismically active region that has historically been affected by strong seismic ground shaking….resulting from an earthquake and is normally the major cause of damage in…147/1…seismic events….Major active faults in the region that could cause ground shaking at the Impact Areas include Antioch, Calaveras, Cleveland Hills, Concord, Greenville-Marsh Creek, Hayward, San Andreas, San Joaquin and Sierra Nevada Faults. The closest active fault is the Greenville-Marsh Creek Fault, which is located 9 miles southwest of the most southern Impact Area. The most recent seismic event occurred in January of 1980 when two earthquakes of Richter magnitude 5.5 and 5.8 occurred along this fault (McJunkin and Ragsdale 1980). The Impact Areas are small,…, and not anticipated to cause enough ground disturbance to result in strong seismic shaking. While there would be a less than significant impact, implementation of Mitigation Measures MM AES-1 and AGR-1 would further avoid, minimize and/or reduce the potential for impacts.. Provide examples of any projects in California which have “caused” “strong ground shaking”. Provide listing of historic and expected (100years) earthquakes, probable locations, and expected ground movements within the Project area. Include Midland Fault in all listings. Provide page/paragraph citations for McJunkin & Ragsdale, and provide direct internet link thereto. Define “enough” and “strong”. Provide magnitude of seismic shaking assessed for all “Project” activities. Remove or clarify how MM/AES-1 and MM/AGR-1 would mitigate anything to do with seismicity and ground movement. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions. Listings of all potential earthquakes is not relevant to the scope of this IS/MND, as the focus of this document is the potential effects the Proposed Project would have, and this would not be altered with the inclusion of this information, beyond what is already discussed in detail in Section 3.7 of the IS/MND. See also Response to Comment 88. Midland Fault is a poorly defined fault that is generally included with several other poorly defined faults in the San Joaquin Fault zone (Earthquake Country Alliance 2020; available at https://www.shakeout.org/california/centraldelta/). Therefore, this fault is assumed as a party of the San Joaquin fault that is referenced in the IS/MND and does not warrant further discussion. See Response to Comment 47 for information on references in the IS/MND. The McJunkin & Ragsdale citation is included in Section 4.0 of the Draft IS/MND. The entire document referenced is about earthquakes, so there is not one specific passage to reference that is more relevant than any other. MMs AES-1 and AGR-1 would ensure that Impact Areas are returned to pre-project conditions, thereby not adding to seismic instability via substantial changes to the land. See also Response to Comment 69. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

123	Citizens Coalition for a Safe Community	147/2 iii) Seismic-related ground failure, including liquefaction? No Impact….According to the USGS Susceptibility Map of the San Francisco Bay Area, the proposed activities are in regions designated as a low to moderate risk of liquefaction (ABAG 2018, CDC 2010b). However, due to recent earthquake activity in 1980 on the Greenville-Marsh Creek Fault which resulted in no liquefaction, and the limited footprint of each soil exploration, ground failure including liquefaction is not expected to occur. While there would be a less than significant impact, implementation of Mitigation Measures MM AES-1 and AGR-1 would further avoid, minimize and/or reduce the potential for impacts. Provide map of any reported liquefaction or subsidence (e.g., within 10 miles of the Project boundary) related to any and all earthquakes. As the proposed Project purposes include risk management and mitigation for levee collapse/damages due to earthquakes, provide review and assessment of seismic, geologic, and soils conditions which eliminates issues for the Project, without affecting the bases for risk mitigation for the entire Delta Conveyance Program. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	As stated in the Response to Comment 7, the scope of this IS/MND is limited to the Soil Investigations described in the project description. No additional actions are considered within this environmental review. Therefore, it is not within the purview of this IS/MND to evaluate risk mitigation for other proposed projects or programs for Delta Conveyance. See Response to Comment 88 regarding seismicity. According to the California Department of Conservation (DOC) Seismic Hazards Reports available via the CDOC website (https://maps.conservation.ca.gov/cgs/informationwarehouse/regulatorymaps/), there have not been any reported liquefaction incidents within the vicinity of the Project Boundary in areas identified as landslide or liquefaction zones. Section 3.7.2 of the Final IS/MND has been updated to include this information. See Master Response 2. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

124	Citizens Coalition for a Safe Community	148/2 c) Would the project 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…, subsidence, liquefaction, or collapse? No Impact. DWR geologists considered the suitability of the geologic units for soil investigation in their siting of proposed Impact Areas. If the soil is deemed unstable by a geologist during the reconnaissance site visits required as part of the Proposed Project,…, the Impact Area will be moved to decrease potential of on- or off-site…, subsidence, liquefaction, or collapse. Because the Proposed Project requires avoidance of these types of risks/impacts, no impact is anticipated as a result of the Proposed Project. Undefined and unreferenced (even as personal communications) attribution to “DWR Geologists” are totally inadequate; provide references, qualifications, and summaries from more than one (-gistS). As geologist and geotechnical/geological investigations are different from those by soil specialists for soil investigations and conditions, reference to DWR geologists rather than DWR soil specialist (pedologists) is erroneous (e.g., “No Impact”), incomplete, and inadequate. Define “considered” and provide factual, quantified statements and assessments. Provide completely revised Project element in a PEIR with adequate and complete setting, assessments, and mitigations specifically for soils and groundwater resources related to subsidence, blowouts/boils, and liquefaction during a seismic event or drilling into an artesian aquifer. As subsidence and liquefaction are directly related to groundwater and as only groundwater level is mentioned for the Investigation in soils down to -200ft, the entire setting/assessment/mitigation issues for ground stability even during the Investigation, much less future activities based on such, are totally incomplete and inadequate for this MND and related future CEQA documents. Provide a thorough and complete groundwater investigation, setting, assessment, and mitigation for the Study Area and to depths of at least 200 feet.	As soil studies overlap the concerns of pedologists and stratigraphy geologists, it is not inappropriate to have the input provided for this project be that of a geologist. See Response to Comment 64 for an explanation on the use of terms and their definitions. The primary objective for using land-based soil borings, cone penetration tests, and geophysical surveys is to determine the composition, location, and geotechnical properties of soil materials commonly found in the Delta, and as such, while it will support our understanding of groundwater, it will not be a specific groundwater study. The limited scope and footprint of the Impact Areas is such that the assessment and mitigation described in the IS/MND are appropriate to the project at hand. See Master Response 2. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

125	Citizens Coalition for a Safe Community	151/4 DWR as the lead agency has determined that the Proposed Project's incremental contribution to the cumulative impact of increasing atmospheric levels of GHGs is less than cumulatively considerable. Provide the person, group, committee or other specific designations for this "determination". Provide a numerical/quantitative objective basis for such "determination". Provide concurrence of responsible state agencies for such matters, California Air Resources Board. Define numerical/quantitative cumulative criterion level of "considerable" GHGs. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions. Section 3.8 of the IS/MND discusses the impact "determination" and measures taken to stay consistent with GHG emission reductions under the Greenhouse Gas Emission Reduction Plan (GGERP). Refer to Appendix B for specifics on defining GHG values of the project. See Response to Comment 47 for information on the use of quantitative data and Response to Comment 19 regarding cumulative assessment. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
126	Citizens Coalition for a Safe Community	152/3 Pre-construction and Final Design BMPs from the GGERP [Need reference and appendix] are designed to ensure that individual projects are evaluated, and their unique characteristics taken into consideration when determining if specific equipment, procedures, or material requirements are feasible and efficacious for reducing GHG emissions from the project. By incorporating the Pre-construction and Final Design BMPs, the Proposed Project conforms to, and would not conflict with, applicable plans, policies, or regulations adopted for the purpose of reducing GHG emissions; therefore, there would be no impact. All variances from the GGERP were approved by the DWR CEQA Climate Change Committee (Appendix B). Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	The GGERP is a publicly available document, available online at https://water.ca.gov/LegacyFiles/climatechange/docs/Final-DWR-ClimateActionPlan.pdf, and is referenced in the Draft IS/MND in Section 4.0. See also Response to Comment 47 for information on references. See Master Response 3 and Master Response 4.

127	Citizens Coalition for a Safe Community	156/3 b. The contractor shall contact the local fire agency and the local CUPA for any site-specific requirements regarding hazardous materials or hazardous waste containment or handling. …. d. Contact of chemicals with precipitation shall be minimized by storing chemicals in…containers or in a storage shed…, with appropriate secondary containment to prevent any spillage or leakage 157/1 e. Quantities of toxic materials, such as equipment fuels and lubricants, shall be stored with secondary containment that is capable of containing . Define “appropriate”, “minimize”, and xxxxxx and include quantitative measures for “secondary containment” permeability, e.g., 10\-15 cm/sec. Revise “110%” to “110% of the volumes of the primary container(s).” Compare and justify consistent use of “shall” compared to use of “will” in other such similar sections. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions and Response to Comment 76 for a discussion on the use of conditional versus committal language. See Response to Comment 81 for information on containment of hazardous materials in tanks. As stated in the MM HAZ-1(e), secondary containment will have the capacity to contain 110% of the primary container. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

128	Citizens Coalition for a Safe Community	163/2 There are additional areas not identified in the DWR Bulletin with groundwaters that have beneficial uses in the Sacramento and San Joaquin watershed areas. Groundwater levels vary from 20 feet at Grand Island to 200 feet at Hood near Merritt Island (DWR 2019). 240/?? Janes, Margaret, Geologist DWR. 2019. Personal communication with Torianne Cahoon. September 23, 2019. 240//?? California Department of Water Resources (DWR). 2019a. Map of the Groundwater locations and corresponding level data. Water Data Library. Available at: http://wdl.water.ca.gov/waterdatalibrary/ (accessed August 15, 2019). 241/?? Prince-Buitenhuys, J. R., M. Nolte, M. Mitchell, and J. Wait. 2019. Department of Water Resources Cultural Resources Survey Report:…River Levee near Freeport. Environmental Compliance and Evaluation Branch, Division of Environmental Services, California Department of Water Resources,…. Provide clear reference(s) to 2019 documents and provide page/paragraph references. Provide technical basis and discharge/flow/recharge model for groundwater levels at 200ft depth at Hood, presumed to be the top of the Hood groundwater levels. Provide copy of accessed text/figures as appendices. Provide written summaries and verified by all relevant involved in personal communications. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	Page numbers related to Levee Unit 115's eligibility status as listed in Table 6 of the IS/MND, and cited in Buitenhuys et al. 2019, include pages 24-25. The page numbers have been added to the citation in Section 4.0 of the Final IS/MND for convenience, although such information is not required under CEQA. The cultural resources report itself is confidential but is part of the Administrative Record for the IS/ MND. See Response to Comment 47 for information on availability of references. All references including those from 2019 documents can be found in section 4.0 "References" of the IS/MND starting on page 217. Accessed tables and figures are collected as part of the Administrative record and are available upon request. See also Master Response 3 and Master Response 4. Technical information regarding the groundwater levels at Hood are available on the Water Data Library accessible at http://wdl.water.ca.gov/ waterdatalibrary/ Personal communications with subject matter experts are not unusual in the preparation of CEQA documents. Often, individuals have information that is pertinent and not easily accessible or available in written form. Personal communication summaries were collected for inclusion in the administrative record and are currently available for review upon request; see Response to Comment 47. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

129	Citizens Coalition for a Safe Community	164/1 …no impact regarding violation of water quality standards or waste discharge requirements or degrading surface or groundwater quality, implementation of Mitigation Measures MM HYD-1, MM BIO-2, MM AES-1, and MM AGR-1 would further avoid, minimize and/or reduce the potential for impacts… Provide and expand the entire array of “groundwater quality and presence” within the “Soils Project”. Implementation of other mitigations are not specifically applicable to groundwater and hydrology assessments and mitigation. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	Mitigation measures referenced within this section are done so because they do support avoidance or mitigation of potential impacts in regards to hydrology and water quality. See Response to Comment 69 for more information the use of mitigation measures. As discussed in Response to Comment 124, the primary objective for using land-based soil borings, cone penetration tests, and geophysical surveys is to determine the composition, location, and geotechnical properties of soil materials commonly found in the Delta, and as such, while it will support our understanding of groundwater, it will not be a specific groundwater study. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
130	Citizens Coalition for a Safe Community	164/2 MM HYD-1: a. All fueling and maintenance of vehicles or other equipment for on-land soil investigation activities shall occur on established roads, or in designated staging areas at least 50 feet away from any on-site water feature. Secondary containment for fuel and gas tanks will be used to prevent spills from entering any water features. Provide that containment shall be impervious with numeric 10\-15 cm/s permeability for the secondarily contained liquids and sufficient capacity of 110% of total tank capacities. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 81 for information on containment of hazardous materials in tanks. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

131	Citizens Coalition for a Safe Community	168/2 The …County General Plans indicate no known mineral resource deposits within Proposed Project Impact Areas of the three counties; however, there is potential overlap with natural gas fields. The proposed soil investigation locations may also overlap with mineral deposits in Solano County; however, limited available data makes the mineral resource significance unknown. Review of the Contra Costa and Alameda County General Plans indicates that locations [Impact Areas] of proposed soil investigations would be outside areas of known mineral resource deposits or natural gas fields in these counties. This statement is totally in error, as many locations overlie gas fields and are near active, idled, and abandoned gas wells. Withdraw document, revised, and recirculate. Provide review of wells in DOGGR's "Well Finder" for the Proposed Project are(s). Mineral resources includes more than sand and gravel, as indicated by the current California Geologic Energy Management Division (CalGEM) of DOC. Provide a listing of all "Impact Areas" within the surface area of gas fields and relevant wells. Define and compare mineral resources deposits compared to mineral deposits. Revise and incorporate DOGGR sources as "mineral deposits", including pages/paragraphs. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	As described in Section 3.12.2 of the ISMND, there is potential for significant mineral deposits in Solano County, but this is uncertain due to lack of historical investigations in the area. Additionally, there are known natural gas regions in Yolo, Sacramento and San Joaquin County that have the potential to overlap with the Impact Areas for the Proposed Project. However, any overlapping oil or gas wells would be located below the depth of the drilling. For instance, the RIO Vista Gas Field, which is the largest field in California is located between 3,700 and 5,300 feet below the surface, which is far deeper than the maximum 200-foot depth of project drilling (Burroughs et al 1968; in Natural Gases of North America, Vol 1 & 2; see also IS/MND, Section 2.0). As stated in Response to Comment 52, wells would be located below the depth of the drilling. DWR will coordinate with land owners through the process for acquisition of temporary entry permissions. During that process land owners may provide additional information to support avoidance of unrecorded hazards. See also Response to Comment 20 for information on wells and Response to Comment 93 for information on the use of well databases. See also Master Response 3 and Master Response 4. Mineral deposits and mineral resource deposits are equivalent terms. The term has been standardized in the Final IS/MND for clarity. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

132	Citizens Coalition for a Safe Community	169/1 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? Less Than Significant. According to the California Department of Conservation Division of Mines; no mining operations are known to be present within the project area. However, …in Solano County, there is potential for the Impact Areas of the project footprint to be located over significant mineral resource deposits. Natural gas is also a potential occurrence under Impact Areas located in regions of Yolo, Sacramento and San Joaquin County. No mention of DOGGR, nor gas fields and wells. Soil investigations are the best way to gain complete understanding of subsurface geology and mineral resource deposits; the geotechnical studies for the Proposed Project will provide incidental benefits in the form of increased data collection and geological understanding. Due to there being no interruptions of existing mining operations or potential future mining opportunities in the Impact Areas, the Proposed Project will not result in loss of available known significant mineral resources. Focus on DOC-DOMines presumes only sand/gravel mining without inclusion of DOGGR and oil and gas wells and fields. Provide CalGEM supervisor comments for gas wells and reservoirs. Provide all “well operations” within the Project area. No mention of current active and idled wells and their production. Define “availability/available”, “complete”, “understanding”, “mining”, “potential occurrence”, Define “subsurface geology” within the context of this “Soils Investigation”, retitle as geotechnical investigations, from surface to -200ft depths. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 131 for information on minerals in Solano County. See Response to Comment 20 and Response to Comment 52 for information on wells. See Response to Comment 64 for an explanation on the use of terms and their definitions. See also Master Response 1, Master Response 3, and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

133	Citizens Coalition for a Safe Community	169/2 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? Less Than Significant. As explained in the environmental setting and answer (a) above there is potential for significant mineral deposits in…. Additionally, there are known natural gas regions in Yolo, Sacramento and San Joaquin County that have the potential to overlap with the Impact Areas. However, the activities of the Proposed Project consist of soil investigations that would result in a minimal disturbance area for each soil investigation site and site would be returned to as close to pre-activity conditions as possible. Therefore, no impact to locally important mineral resources are anticipated due to the Proposed Project. Classic piece-mealing issue, proposed activities will establish basis for construction of a 40+mi x 40ft tunnel at 150ft depth, and thereby tunnel route will remove a 300ft wide x 211,000ft long = 63.3M sqft corridor from well drilling. Provide DOC-DOGGR Well Finder data base and any gas development plans by DOGGR and the operators. Study will be basis for proposed project – single tunnels + shafts and alternative Dual Tunnels plus Shafts Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 20 and Response to Comment 52 for information on wells. See also Master Response 2, Master Response 3, and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
134	Citizens Coalition for a Safe Community	173/6 Vibrations…The Pitcher Barrel samples drills into the ground using rotary techniques (soil coring) producing no more vibrations than boring drilling. Therefore, potential impacts from the generation of ground borne vibration or noise levels would be less than significant. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Master Response 1, Master Response 3, and Master Response 4.

135	Citizens Coalition for a Safe Community	181/1 3.15.2 Discussion a) Would the project 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: Define and provide numerical factors for “substantial”, “need”, “altered”, “acceptable”, “service ratios”, “response times”, Modernization of the State Water Project and “Delta Conveyance”. Tunneling impacts from the design of the tunnel and construction methods/systems made possible by this “Soil Investigation” could include subsidence of surface and shallower infrastructure during Restrictions on future infrastructure above and within 150+ft either side of the tunnel and shafts. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions. See also Master Response 2, Master Response 3, and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
136	Citizens Coalition for a Safe Community	187/2 f. Parking on public roads and thoroughfares by crew vehicles will be avoided to the maximum extent practicable to allow for the flow of traffic to continue. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Master Response 1, Master Response 3, and Master Response 4.

137	Citizens Coalition for a Safe Community	200/2 3.19.2 Discussion a) Require or result in the relocation or construction of new…water,…facilities, the construction or relocation of which could cause significant environmental effects? No Impact. Proposed Project activities are minor and short in duration (up to 15 days per site), and do not require a change in utility or service systems…. “Project” will provide the technical basis for locating and engineering designs for the Single Tunnel Project from downstream of Sacramento to Clifton Forebay which could restrict future infrastructure, bridges, levees, pipelines, railroad, highways, etc.. Therefore induced development of the water tunnel will directly inhibit future development above the tunnel. Classic piece-mealing issue, proposed activities will establish basis for construction of a 40+mi x 40ft tunnel at 150ft depth, and thereby tunnel route will remove a 300ft wide x 211,000ft long = 63.3M sqft corridor from well drilling. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See also Master Response 2, Master Response 3, and Master Response 4.
138	Citizens Coalition for a Safe Community	209/3 Department of Water Resources - Prospect Island Tidal Habitat Restoration Project This project proposes to restore tidal action…to improve productivity for Delta Smelt and salmonid species…..located in Solano County. Project activities include…; dredging of the spur channel between Miner Slough and the southern portion of the site…; and excavation of two levee breaches to establish tidal connectivity…. 209/4 The EIR for this project was filed on March 1, 2019. A NOD was filed on August 19, 2019. “This project” is unclear and inadequate as to The Project and their relationships. No reference or OPR/SCH number cited. No basis provided for this MND vs related EIR. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 19 for information on cumulative assessment. See also Master Response 2, Master Response 3, and Master Response 4. SCH numbers have not been provided for any of the projects identified in the IS/MND, and are not needed for this analysis.

139	Citizens Coalition for a Safe Community	320- /x BMP 1. Evaluate project characteristics,….are appropriate and feasible for the project or specific elements of the project. BMP 2. Evaluate the feasibility and efficacy of performing on-site material hauling with trucks… Variance requested: Material hauling is not required for the proposed soil investigations; therefore, this BMP does not apply. Cementing/ Define appropriate, feasible, feasibility, efficacy, and Material. Differentiate between Project and project in this report. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions. The terms “project” and “proposed project,” and any variation in capitalization, are used interchangeably throughout the Draft IS/MND to refer to the Project as proposed in Section 2.0. The Final IS/MND has been updated to ensure consistency in capitalization. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
140	Citizens Coalition for a Safe Community	BMP 3. Ensure that all feasible avenues have been explored for providing an electrical service drop to the construction site for temporary construction power. When generators must be used, use alternative fuels, such as propane or solar, to power generators to the maximum extent feasible. Variance requested: Electrical service drops are not feasible for this project… as work will be conducted at each site for no more than 15 days; therefore, this BMP does not apply. Define/differentiate/compare all, feasible, avenues, maximum extent feasible, and not feasible	See Response to Comment 64 for an explanation on the use of terms and their definitions. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
141	Citizens Coalition for a Safe Community	BMP 4. Evaluate the feasibility and efficacy of producing concrete on-site and specify that batch plants be set up on-site or as close to the site as possible. Define, enumerate, and quantify feasibility and efficacy , appropriate, close to the site as possible (3 in, 3 ft, 3 yards, 3 miles),	See Response to Comment 64 for an explanation on the use of terms and their definitions. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
142	Citizens Coalition for a Safe Community	321-/5 BMP 10. Develop a project specific ride share program to encourage carpools, shuttle vans, transit passes and/or secure bicycle parking for construction worker commutes. Variance requested: The proposed project locations are remote…; therefore, providing…and bicycle parking would not be beneficial. Use of carpools and shuttle vans will be encouraged to the extent feasible. Define will vs shall or must, and extent feasible and encourage.	See Response to Comment 64 for an explanation on the use of terms and their definitions and Response to Comment 76 for the use of conditional versus committal language.

143	Citizens Coalition for a Safe Community	322-X/5 BMP 15. Evaluate the feasibility of restricting all material hauling on public roadways to off-peak traffic congestion hours. During construction scheduling and execution minimize, to the extent possible,…. Variance requested: The proposed project will not require substantial material hauling and as the project location will change frequently, impacts to a particular public roadway will be insignificant and unlikely to increase traffic congestion; therefore, this BMP does not apply. Define evaluate, feasibility, and its assessment process and “extent possible”. Define “substantial material hauling”. Define which project vs “Project” and proposed project vs “Proposed Project”. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions. See Response to Comment 139 for information on consistency in capitalization. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
144	Citizens Coalition for a Safe Community	Project vs project 442/339 Study Area vs study area 13 time e.g., 103/1 Suitable habitat…is present within the study area. However, this species has low potential to occur within the Study Area because the Study Area is located on the edge of its known range so potential impacts would be less than significant. Edge impacts can be more significant in range than central 135/2 137/2 194/4-195/1 Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	The terms “study area” and “Study Area” are used interchangeably throughout the Draft IS/MND to refer to the Study Area as discussed in Section 2.0. The Final IS/MND has been updated to ensure consistency in capitalization. See also Response to Comment 139. See Response to Comment 106 for a discussion of edge-effects. The IS/MND has been updated to ensure consistency in capitalization. See also Master Response 3 and Master Response 4.
145	Citizens Coalition for a Safe Community	214/ 4.0 REFERENCES Either merge all “sections” into one clearly organized list of references or clearly separate sections in alphic or numeric order for public accessibility. … California Energy Commission (CEC). 2017. 2017 Integrated Energy Policy Report. California Energy Commission. Publication Number: CEC-100-2017-001-CMF. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	References are listed in alphabetical order within their section classification: author/agency, then by title. This style of reference organization is commonly used in CEQA documents. See also Master Response 3 and Master Response 4.

146	Citizens Coalition for a Safe Community	Geology and Soils Association of Bay Area Governments (ABAG). 2018. Earthquake and Hazards Program, Liquefaction Susceptibility Map. Available at: http://resilience.abag.ca.gov/earthquakes/ (accessed August 2019). California Department of Conservation and the California Geologic Survey (CDC). 2010a. Fault Activity Map of California. Available at: http://maps.conservation.ca.gov/cgs/fam/ (accessed August 23, 2019) 214/- Project Description Central Mine Equipment Company. 2019. Image of…Truck Mounted Auger Drill. http://cmeco.com/drills/truck-mounted-drills/cme-55-truck-mounted-auger-drill/ (accessed November 13, 2019). Accessed is not generally available/accessible for the General Public, Provide an appendix for “accessed” documents. 241 Geology and Soils Association of Bay Area Governments (ABAG). 2018. Earthquake and Hazards Program, Liquefaction Susceptibility Map. Available at: http://resilience.abag.ca.gov/earthquakes/ (accessed August 2019). If access dates are important to the content of the reference, provide a screen copy of such in appendices for the document as the public cannot be expected to reach the same document and cannot verify the relevance of the document to this assessment. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 47 for information on references. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
147	Citizens Coalition for a Safe Community	Personal Communications must be documented, acknowledged by person, and summarized 100/2 Occurrences of this species in Alameda County are thought to be misidentifications of A. coronata var. coronata (R. Preston, pers. comm.). 239/ Personal Communications Preston, R. E. Botanist, Jones & Stokes. Memorandum to Roxanne Bittman, Botanist, CNDDB, regarding miscellaneous notes on occurrence records. December 8, 2000. Provide memorandum as appendix. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 128 for information on personal communication references. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.

148	Citizens Coalition for a Safe Community	149/1 …can be referenced to confirm the presence or absence of unique paleontological resources or sites or unique geologic features,…, including that these rigs are typically deployed on existing anthropological features (roads, levees, barges, etc), no impact is anticipated (Pers Comm. Margaret Janes 2019). Therefore, no impact is anticipated as a result of the Proposed Project. 242 Janes, Margaret, Geologist DWR. 2019. Personal communication with Torianne Cahoon. September 23, 2019. Personal communications are not accessible to the public for review and comment and are of unverified technical value. Provide relevant summaries in appendices or delete and revise texts. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 128 for information on personal communication references. See also Master Response 3 and Master Response 4.
149	Citizens Coalition for a Safe Community	242 McJunkin, R. D. and J. T. Ragsdale. 1980. Strong-Motion Records from the Livermore Earthquake of 24 and 26 January 1980. Preliminary Report 28. California Division of Mines and Geology. Sacramento, California Not available/accessible to public. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 47 for information on references. See also Master Response 3 and Master Response 4.
150	Citizens Coalition for a Safe Community	Appendices - Appendix A: Wildlife and Plant Species Lists Capitalized, Derived-Latinized names as used as proper nouns and registered in texts, documents, and recognized Federal and State lists: e.g., California tiger salamander >> California Tiger Salamander Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	Capitalization for species common and scientific names follow professional standards for those species (i.e. guidance from American Fisheries Society, Society for the Study of Reptiles and Amphibians, etc.). See also Master Response 3 and Master Response 4.

151	Citizens Coalition for a Safe Community	316 Project Name: Soil Investigations for Data Collection in the Delta Envir…Document Type: IS/MND Manager's Name: Carolyn Buckman Manager's E-mail: Carolyn.Buckman@water.ca.gov Division: Executive Office, Branch, or Field Division: Delta Conveyance Short Project Description: The proposed project consists of…soil investigations,…soil borings from 50 to 200 feet below ground surface,…cone-penetration tests from 50 to 200 feet below ground surface, and up to 5 geophysical survey investigation arrays. Soil investigation locations are spread throughout the area…the potential study area for the Delta Conveyance. No ongoing operation or maintenance or emissions will be required post-project. Define and differentiate from locations and Impact Areas, use consistent terminology and hopefully meanings. Provide map for current “Delta Conveyance” project study area and comparisons with this “Project”. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	The term” Impact Area” is defined in Section 1.3 of the IS/MND as **“**The Impact Area for any given soil location is considered the soil investigation site itself and the area required for parking for various field personnel.” See also Master Response 2, Master Response 3, and Master Response 4. See Response to Comment 8 for information on IS/MND maps. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
152	Citizens Coalition for a Safe Community	320-/1 BMP 3. Ensure that all feasible avenues have been explored for providing an electrical service drop to the construction site for temporary construction power. When generators must be used, use alternative fuels, such as propane or solar, to power generators to the maximum extent feasible. Define terms [: all feasible avenues, maximum extant feasible] and differentiate from uses elsewhere. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	See Response to Comment 64 for an explanation on the use of terms and their definitions. See also Master Response 3 and Master Response 4. See Response to Comment 61 for a discussion as to why DWR need not provide information on demand to this commenter.
153	Citizens Coalition for a Safe Community	322-/1 BMP 12. For deliveries to project sites where the haul distance exceeds 100 miles and a heavy duty class 7 or class 8 semi-truck or 53-foot or longer box type trailer is used for hauling, a SmartWay 27 certified truck will be used to the maximum extent feasible. Provide a tonnage criterion as distance may be irrelevant. Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references.	Section 3.8 Greenhouse Gas Emissions of the IS/MND discusses the impact “determination” and measures taken to stay consistent with GHG emission reductions under the Greenhouse Gas Emission Reduction Plan (GGERP). Refer to Appendix B for specifics on defining GHG values, equipment lists, estimated hauls, and GGERP- BMPS of the project. Refer also to Response to Comment 47 for information on the use of quantitative data. See also State CEQA Guidelines Section 15126.4, subdivision (c) for requirements of mitigation measures related to GHGs. See also Master Response 3 and Master Response 4.

154	Citizens Coalition for a Safe Community	The entire document relates to anticipated “soft ground conditions” or soils, but only mentions “soft ground” once p.9/par.1 in relations to tracking on soft ground surfaces. As the MND/Project is the basis for a “tunnel” and its various shaft. The MND is inadequate by not relating the Project activities to the eventual need for thorough understanding and focus on subsurface soft ground conditions Provide revised Programmatic EIR with stringent MMRP, including reporting to all local agencies, circulate, and receive public comments with appropriate, publicly accessible appendices, glossaries, and references. Include descriptions and criteria as used in the examples of such studies for other project: • Microsoft Word - C-26-2015 1) This section presents soft ground tunnel design criteria only. ... requested by the jurisdictional authority. f. Soft Ground Tunneling Methods. 1) Bore and jack. ... 0 Tunnel Diameter 2R https://www.wsscwater.com/files/live/sites/wssc/files/pipeline%20design/C-26-2015.pdf Last modified: June 09, 2015, 07:14 PM Size: 210.12 KB • PIPELINE DESIGN MANUAL Added general provisions for locating existing utilities ... Soil Investigation for Soft Ground Tunnel Projects ... WATER DESIGN GUIDELINES 17. Tunnels or Casing Pipes. a. Requirements. https://www.wsscwater.com/files/live/sites/wssc/files/pipeline%20design/2019%20Pipeline%20design%20manual.pdf Last modified: June 28, 2019, 06:20 PM Size: 11.29 MB • Microsoft Word - Appendix F 2008-web.doc For soil borings for railway tunnels, SPT tests are to be performed and samples are to be taken continuously from the ground ... at i on For Soft Ground Tunnel cially Available Well Box https://www.wsscwater.com/files/live/sites/wssc/files/PDFs%206/AppendixF2008_66659.pdf Last modified: January 23, 2015, 09:44 PM Size: 65.1 KB • WSSC CONTRACT NO 3. Overview and Public Comment Chronology P 4-5 ... Soil Investigation for Soft Ground Tunnel Projects ... f. Labeling Structures on the Drawings. 17. Tunnels or Casing Pipes. a. Requirements. https://www.wsscwater.com/files/live/sites/wssc/files/Commission%20Agendas/2017agendas/april/Commission%20Package%202017%20Pipeline%20Design%20Manual%20Final.pdf Last modified: April 13, 2017, 08:01 PM Size: 7.49 MB • Microsoft Word - C-20-2008.doc Appendix "F", (Soil Investigation Required for Soft Ground Tunnel Projects) for the depth	See Master Response 2, Master Response 3, and Master Response 4. See also Master Response 1.

		and number of soil borings required for tunnel/casing crossings. ... 3) Corrosion Survey Checklist. https://www.wsscwater.com/files/live/sites/wssc/files/Design%20Manuals/C-20-2008_96976.pdf Last modified: January 23, 2015, 09:48 PM Size: 94.7 KB • Microsoft Word - Appendix E 2008-web.doc WSSC. ... and subsurface tunnel investigations are specified in Part Three, Section 26 (Tunnel Design Criteria) and Appendix "F" (Soil Investigation Required for Soft Ground Tunnel Projects). https://www.wsscwater.com/files/live/sites/wssc/files/PDFs%206/AppendixE2008_30499.pdf Last modified: January 23, 2015, 09:44 PM Size: 29.78 KB • STANDARD SPECIFICATIONS e. Backstop. ... 2. Support ground continuously to prevent loss of ground and keep perimeters stable. ... 2. Maintain face of cutting head to preclude free flow of soft or poor soils material. https://www.wsscwater.com/files/live/sites/wssc/files/SR3/02445%20Boring-Jacking%20-%202011.pdf Last modified: January 23, 2015, 09:45 PM Size: 39.41 KB	

155	Citizens Coalition for a Safe Community	Third Uniform California Earthquake Rupture Forecast (UCERF3) ... Angeles) (213) 740-5843 scecinfo@usc.edu Sacramento Don Drysdale Public Information Officer California Geological Survey (Sacramento) (916) 445-0633 ddrysdale@consrv.ca.gov Greater . https://www.scec.org/publication/8330 Shallow fault mapping in the Sacramento-San Joaquin Delta Shannon A. Klotsko, Jillian M. Maloney, & Janet Watt Submitted August 8, 2018, SCEC Contribution #8330, 2018 SCEC Annual Meeting Poster #246 In fall 2017, a chirp and sidescan survey was conducted in the Sacramento-San Joaquin Delta (Delta) to map and characterize shallow fault locations and geometries. The most prominent fault observed in the data is the Kirby Hills Fault, located at the western extent of the Delta. The new chirp coupled with legacy, lower frequency USGS data reveal the fault's deep structure as well as the shallow deformation. The fault offsets the Delta floor, suggesting relatively recent activity. The Midland Fault is the main fault that traverses the central Delta. Only one crossing of the Midland Fault images near-surface deformation, with acoustic reflectors dipping down into the fault on the west side and flat-lying reflectors on the eastern side. This same stratigraphic pattern is observed in a deep penetration, onshore seismic line from the region. Very slight deformation is also observed along minor faults that were first described from well data in the Rio Vista and River Island gas fields. Well data indicate that there has not been any recent activity on these faults, so the shallow deformation observed may be solely from fluvial processes. Citation Klotsko, S. A., Maloney, J. M., & Watt, J. (2018, 08). Shallow fault mapping in the Sacramento-San Joaquin Delta. Poster Presentation at 2018 SCEC Annual Meeting.	This is a continuation of comment 154; see Response to Comment 154.

156	California State Lands Commission	Commission Jurisdiction The Commission has jurisdiction and management authority over all ungranted tidelands, submerged lands, and beds of navigable lakes and waterways. The Commission also has certain residual and review authority for tidelands and submerged lands legislatively granted in trust to local jurisdictions (Pub. Resource Code §§ 6301 and 6306). All tidelands and submerged lands granted or ungranted, as well as navigable lakes and waterways, are subject to the protections of the common law Public Trust. As general background, the State of California acquired sovereign ownership of all tidelands and submerged lands and beds of navigable lakes and waterways upon its admission to the United States in 1850. The State holds these lands for the benefit of all people of the State for statewide Public Trust purposes, which include but are not limited to waterborne commerce, navigation, fisheries, water-related recreation, habitat preservation, and open space. On tidal waterways, the State's sovereign fee ownership extends landward to the ordinary high-water mark as generally shown by the mean high tide line, except for areas of fill or artificial accretion or where the boundary has been fixed by agreement or a court decision. On navigable non-tidal waterways, including lakes, the State holds fee ownership of the bed of the waterway landward to the ordinary low water mark and a Public Trust easement landward to the ordinary high-water mark, except where the boundary has been fixed by agreement or a court decision. Such boundaries may not be readily apparent from present day site inspections.	See Master Response 1.
157	California State Lands Commission	After review of the information contained in the IS/MND, and of our in-house records, Commission staff has determined that the proposed Project will involve lands along tributaries and sloughs that include State-owned sovereign lands under the jurisdiction of the Commission. However, more detailed mapping will be required in order to determine the extent or location of any sovereign ownership interests of the State within the Project area. The IS/MND identifies proposed locations of soil sampling and geophysical surveys on Figures 2a, 2b, and 2c. All tide and submerged lands and certain upland parcels that are under jurisdiction of the California State Lands Commission will require data collection permits including, but not limited to the following: • General Geologic Sampling Permit for Tide and Submerged Lands • General Geologic Sampling Permit for upland parcels	Section 1.2 of the IS/MND acknowledges that multiple Proposed Project locations fall under jurisdiction of the State Land Commission (SLC). DWR believes that the Proposed Project is covered under the 1979 Memorandum of Understanding between DWR and SLC providing for the utilization by DWR of State-owned sovereign lands under the jurisdiction of the SLC for the Central Valley Project and the State Water Resources development system. DWR will work with the SLC to ensure the protection of the State's sovereign interests under SLC jurisdiction. DWR will ensure that any permits that are needed will be attained. See also Response to Comment 8 for information on IS/MND maps.
158	California State Lands Commission	As the Project proceeds, Commission staff requests that DWR contact our office to determine whether the project or any components of the project will require a lease or permit and formal authorization from the Commission for the use of State-owned sovereign land. Page 2 of the IS/MND notes that the 1979 Memorandum of Understanding (MOU) between the State Lands Commission and the Department of Water Resources for the Use of State Lands for Facilities of the Central Valley Project and the State Water Resources Development System would apply to this Project. From the project description, it is unclear how the Project falls within the activities contemplated in the MOU. Please contact Commission staff and provide additional information about how the MOU applies here. We additionally request to be placed on any future distribution mailing list for the Project.	As noted in Response to Comment 157, DWR will work with the SLC to ensure the protection of the State's sovereign interests under SLC jurisdiction. In order to be placed on future distribution mailing lists for the proposed Project, the SLC will need to identify a specific contact(s) to be added. This can be done by email at Delta_Soil_ISMND@water.ca.gov or by subscribing for updates online at https://water.ca.gov/deltaconveyance.

159	California State Lands Commission	In addition, please be advised that the waterways involved in the Project area, are subject to a public right of navigation. This public right provides that members of the public have the right to navigate and exercise the incidences of navigation in a lawful manner on State waters that are capable of being physically navigated by oar or motor-propelled small craft. Such uses may include, but are not be limited to, boating, rafting, sailing, rowing, fishing, fowling, bathing, skiing, and other water-related public uses (People ex rel. Baker v. Mack (1971) 19 Cal. App.3d 1040). The proposed Project must not unduly restrict or impede the navigation and recreational rights of the public (Civil Code,§ 3479).	As discussed in Section 3.16.2 of the IS/MND, the Proposed Project does not unduly restrict or impede navigation and recreational rights of the public.
160	California State Lands Commission	Project Description The Applicant proposes to conduct both on-land and overwater soil investigations as well as several on-land geophysical studies located within the Study Area (Figures 2a, 2b, and 2c of the IS/MND). The soil investigations will consist of the following: • 67 soil borings from 50 feet to 200 feet below ground surface; • 103 cone penetration tests (CPTs) from approximately 50 feet and 200 feet below ground surface; and • Up to 5 noninvasive geophysical survey investigation arrays on up to five Impact Areas within a location on Bouldin Island as provided in Figure 2b of the IS/MND. The Project objectives stated in the IS/MND are as follows: • Determine the composition, location, and geotechnical properties of soil materials commonly found in the Delta which would inform the design, environmental analysis, and development of alternatives for a potential Delta conveyance project and contribute to DWR's overall understanding of Delta geology. • This work will further inform DWR on how to construct a project while avoiding, minimizing, or mitigating impacts to the surrounding residents and environment. • Ultimately, this work will help to determine project features, potential alignment options and environmental impacts for analysis of a future single tunnel project consistent with Governor Newsom's new approach to modernize Delta water conveyance.	See Master Response 1.

161	California State Lands Commission	Environmental Review Commission staff requests that DWR consider the following comments on the Project's IS/MND. Project Description 1. A thorough and complete Project Description identifying the specific areas of investigation should be included in the IS/MND in order to facilitate meaningful environmental review of potential impacts and mitigation measures. The Project Description should be as precise as possible in describing the details of all allowable activities (e.g., types of equipment or methods that may be used, seasonal work windows, locations for material disposal, staging areas, as well as timing and length of activities, etc.). In addition, the IS/MND should include the maximum area of impact, including any temporary and permanent impacts from vegetation removal or disturbance.	See Response to Comment 104 and Response to Comment 191 for information on Impact Areas. Additional text has been added to the project description (see Section 2.0 of the Final IS/MND) to quantitatively describe the proposed Impact Area, although such description is not required under CEQA. See also Master Response 3 for more detail on the adequacy of the IS/MND's project description.
162	California State Lands Commission	Environmental Review Commission staff requests that DWR consider the following comments on the Project's IS/MND. Water Quality 2. Mercury/Methylmercury: Commission staff requests the IS/MND include avoidance and minimization measures to reduce potential release from Project activities of mercury and other toxins into waterways and onto State lands underlying those waterways. On April 22, 2010, the Central Valley Regional Water Quality Control Board (CVRWQCB) identified the Commission as both a state agency that manages open water areas in the Sacramento-San Joaquin Delta Estuary and a nonpoint source discharger of methylmercury (Resolution No. R5-2010-0043), because subsurface lands under the Commission's jurisdiction are impacted by mercury from legacy mining activities dating back to California's Gold Rush. Pursuant to a CVRWQCB Total Maximum Daily Load (TMDL), the CVRWQCB is requiring the Commission to fund studies to identify potential methylmercury control methods in the Delta, and to participate in an Exposure Reduction Program. The goal of the studies is to evaluate existing control methods and evaluate options to reduce methylmercury in open waters under the jurisdiction of the Commission. Any action taken that may result in mercury or methylmercury suspension within the Sacramento-San Joaquin Delta Estuary may affect the Commission's efforts to comply with the CVRWQCB TMDL.	As described in section 3.10.2 of the IS/MND, overwater boring activities will occur within a casing and will not violate water quality standards, including those for mercury/methylmercury, or result in the substantial degradation of surface water quality. Additionally, overwater investigations will require permits from the State Water Board, thus providing additional review and oversight to ensure compliance with water quality standards. As detailed in Section 2.2.1 of the Final IS/MND, DWR, in conducting overwater drilling, will employ the use of casing, will flush drilling mud from the casing once drilling is complete, prior to removal, and will stop the backfilling of the boring 10 to 15 feet below the surface, thereby allowing sediments to fill the cavity as the casing is removed, so that no toxins or other substances will come into contact with the water. Because these steps will avoid any contamination of the water, overwater drilling will not result in any substantially degradation of surface water quality. (See IS/MND, Section 3.1.0 (a).)

163	California State Lands Commission	Environmental Review Commission staff requests that DWR consider the following comments on the Project's IS/MND. Environmental Justice 3. The IS/MND does not state whether DWR intends to discuss and analyze potential environmental justice related issues, including an assessment of public access and equity implications and who would bear the burdens or benefits from the proposed Project. Commission staff believes the IS/MND, as an informational public document, is an appropriate vehicle to disclose and discuss how the proposed Project would attain or be consistent with DWR's equity goals and statewide policy direction.	Environmental Justice analysis is not required per CEQA or the CEQA Guidelines. However, as discussed in Section 3.16.2 of the IS/MND, there would be some temporary impacts to public access. With incorporation of the proposed mitigation measures (MM TRANS-1) all potential impacts identified in the IS/MND will be reduced to less than significant for all environmental resources. As such, there are no significant impacts that would be considered disproportionately applied to environmental justice communities.
164	Contra Costa County Water Agency	Contra Costa County appreciates this opportunity to review the Department of Water Resources' ("DWR") Initial Study Proposed Mitigated Negative Declaration for Soil Investigations in the Delta ("MND") and the notice of intent to adopt the MND pursuant to the California Environmental Quality Act (Pub. Resources Code, § 21000, et seq. ("CEQA")). The County provides the following comments on the MND and to help provide clarity on the requirements for conducting the proposed work within our jurisdiction. Contra Costa County covers a large area within the Delta. The County borders on Old River to the east and Suisun and San Pablo Bays in the north. The County is the ninth most populous county in California, with more than one million residents. Many of our residents rely on the Delta for their municipal, industrial and irrigation water supplies, for their livelihood, and recreation. The quality of Delta water (surface and ground), health of the Delta ecosystem, Delta recreation and water supply are, therefore, of major importance to the County and its residents.	See Master Response 1.
165	Contra Costa County Water Agency	The area proposed to be studied in Contra Costa County, Figure 2c of the MND, overlies a medium priority groundwater basin, East Contra Costa, 5-22.19, for which Contra Costa County is preparing a Groundwater Sustainability Plan. Figure 2c does not clearly indicate the total number of soil investigations proposed, see image excerpt below, and fails to provide a specific location. It is impossible to determine the potential impacts based on the published information and more specificity is required to obtain well drilling permits from the County. The MND fails to clearly indicate at a parcel level, the number, type and location of proposed investigation wells.	See Response to Comment 8 for more information on IS/MND maps. See also Master Response 3.

166	Contra Costa County Water Agency	The proposed work includes conducting on-land drilling work and investigations 50 to 200 feet deep below ground surface and may require clearing of lands to allow access for the drilling rigs and other equipment. Such work must be completed compliant with drilling, grading, and other permit requirements of Contra Costa County where the subsurface work would be conducted. The MND fails to disclose local permitting requirements. The MND does not give any indication that local permits will be obtained or even that local permitting agencies will be notified prior to drilling. This failure is relevant both to the impacts of drilling on water quality and groundwater, as well as local autonomy and land use impacts. Contra Costa County regulates wells and soil investigations. As stated in the County's letter to Mr. Gary Lippner, DWR, attached, be advised that in Contra Costa County, no person shall drill a water well whether for domestic use, irrigation, agricultural or other purposes, without first applying for and receiving a valid, unrevoked, unsuspended permit to do so from the health officer, §414-4.1001(b). As of today, the County has no evidence and cannot confirm that DWR has obtained requisite drilling permits.	See Master Response 5 and Master Response 6. See also Response to Comment 26 on encroachment permits and Response to Comment 29 on landowner permissions.
167	Contra Costa County Water Agency	The County agrees with the Delta Counties Coalition letter, attached. The MND claims that the proposed project would not violate water quality standards, waste discharge requirements, or degrade subsurface and groundwater quality since the proposed work will be conducted under DWR's water well standards, DWR Bulletins 74-81 and 74-90. (MND, p. 163-164.) Bulletin 74-81 defines test wells and includes standards for well destruction. (DWR Bulletin 74-81, pp. 25, 52-53.) Bulletin 74-90, in turn, confirms that Bulletin 74-81 constitutes the minimum requirements for construction, alteration, maintenance and destructions of monitoring wells and expands the definition of monitoring wells to include exploration holes. (Bulletin 74-90, pp. 3,11.) Bulletin 74-90 also includes fill, sealing, and destruction standards for exploratory borings. (Bulletin 74-90, p. 52.) Water Code section 13801, subdivision (c), however, directed counties to adopt water well, cathodic protection well, and monitoring well drilling and abandonment ordinances that meet or exceed Bulletin 74-81's standards. Thus, the Legislature and DWR's own standards envision a regulatory scheme in which local agencies regulate drilling of monitoring wells and exploration holes. DWR relies on compliance with Bulletins 74-81 and 74-90 to claim the drilling will have "no impact" on water quality standards or groundwater, and yet ignores the local ordinances expressly developed to meet the Bulletins' standards. These local county ordinances include additional requirements to ensure protection of groundwater and land-use resources within the counties' respective jurisdictions.	See Master Response 5 and Master Response 6. DWR does not "ignore[]" any local ordinances in regards to well permitting. In fact, DWR has considered these ordinances at great length, including as part of legal action taken against DWR (see Master Response 6). However, in this instance, DWR is not required to obtain well permits for any drilling conducted as part of the Proposed Project, as explained in Master Response 6. All explorations will be backfilled/sealed in accordance with State of California Water Well Standards (Bulletins 74-81 & 74-90). Section 3.10 of the Draft IS/MND discusses potential impacts to groundwater quality and finds that none exist (pp. 163-164). See also Response to Comment 14.

168	Contra Costa County Water Agency	Conducting drilling without acquiring a County permit is a violation of local land-use policies and ordinances and a violation of DWR's own water well standards. The MND's Land Use and Planning section also fails to disclose applicable local ordinances developed pursuant to Water Code section 13801. The MND purports to evaluate whether the proposed drilling would "[c]ause 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[,]" and concludes there would be no impact. (MND, p. 167.) This conclusion cannot be reconciled with the failure to disclose or comply with the County's well drilling ordinances. Failure to comply with the County's ordinances would cause potentially significant environmental impacts. For instance, permitting and onsite inspections are required by lead enforcing and permitting agencies to ensure that subsurface borings are properly sealed to minimize detrimental effects. Improperly sealed borings may contribute to soil heaving, piping, or caving which could undermine subsurface utilities or impact nearby foundations and levees. Processes to reduce potential settlements in collapsible soils and eliminate sinkhole potential should also be incorporated. Furthermore, CPT and other boring techniques that produce large vibrations may also cause uneven settlement in the immediate areas near the borings. A plan to protect vibration sensitive facilities should be prepared and include adequate setbacks or modification of the drilling techniques in order to minimize potential detrimental effects. Drilling waste must be confined to the parcel on which the work is being drilled and may not be discharged to create conditions which violate federal and state laws and regulations or local ordinances. Waste material generated that is proposed to be placed in drums and kept on site until offsite hauling and disposal shall be properly labeled and managed until hauled offsite and disposed at a licensed facility that accepts the waste. In order to ensure that the proposed work will not pose health and safety issues, DWR and its contractors must adhere to Contra Costa County's ordinances, codes, and policies.	See Master Response 6. Section 2.0 of the Final IS/MND addresses properly sealed borings on-land: "Following completion of soil investigation, holes will be sealed using cement-bentonite grout in accordance with California regulations and industry standards (Water Well Standards, DWR 74-81 and 74-90)," and over-water: "Following completion of a soil investigation, the boring will be grouted from the bottom of the borehole to within approximately 10 to 15 feet (3 to 5 meters) of the top with 5 percent (by weight) bentonite and 95 percent (by weight) cement grout... At the completion of the grouting, the conductor casing will then be pulled out of the channel bottom to complete the overwater boring operation." Section 3.7.2 of the Final IS/MND addresses settlements in collapsible soils: "DWR geologists considered the suitability of the geologic units for soil investigation in their siting of proposed Impact Areas. If the soil is deemed unstable by a geologist during the reconnaissance site visits required as part of the proposed Project, or at any time thereafter, the Impact Area will be moved to decrease potential of on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. Because the proposed Project requires avoidance of these types of risks/impacts, no impact is anticipated as a result of the proposed Project." Section 2.0 of the Final IS/MND addresses vibrations created by proposed Project activities: "Vibrations induced are relatively small, while mild vibrations can typically be felt by people within approximately 50 feet (15 meters) of the EnviroVibe Minibuggy; at 100 feet (30 meters), vibrations are typically not detectible by people. The levels of vibration are much smaller than vibrations required to induce damage in buildings and infrastructure." See Response to Comment 30 for a discussion of drilling waste storage and disposal. As demonstrated above and in the Final IS/MND, all potentially significant impacts related to proposed Project activities can be mitigated to a less-than-significant level; the comment does not offer any substantial evidence to the contrary.
169	Contra Costa County Water Agency	The County's ordinances regulating DWR's proposed geotechnical activities possess the requisite expertise and familiarity with local groundwater aquifers, and their input is paramount to ensuring the drilling will not have adverse effects. The County and local water agencies will also be responsible for understanding future ramifications of drilling. The MND does not identify any reporting or record keeping of boring results that would be transmitted to the counties and other local agencies. Such reporting is necessary for local agencies' exercise of future permitting authority over unrelated projects. Failing to provide records or reports to local agencies could result in unidentified water quality, groundwater or hazards impacts.	See Master Response 5 and Master Response 6. DWR is not required to report to its findings to local agencies or share its records. However, DWR will be communicating with local elected officials to notify them of the commencement of soil investigation field activities, as well as coordinating with the counties for property access within their rights-of-way. See also Response to Comment 26 for information on encroachment permits and Response to Comment 29 for details on landowner permissions and information sharing.

170	Contra Costa County Water Agency	With the Notice Preparation published today, the drilling activities proposed in the MND are evaluated outside of the larger context of a single tunnel Delta conveyance project. (MND, p. ii.) The area in Contra Costa County, Figure 2c of the MND, appears to be a massive new forebay for the single tunnel project and failure to include it, under CEQA does not evaluate “the whole of an action” that may impact the environment. (14 Cal. Code Regs., § 15378.) Treating the drilling as a separate endeavor from the single tunnel Delta conveyance project amounts to impermissible piecemealing. (East Sacramento Partnership for a Livable City v. City of Sacramento (2016) 5 Cal.App.5th 281, 293.) DWR should reevaluate the impacts of its soil investigations within the context of the larger project it is intended to inform.	See Master Response 2.
171	Contra Costa County Water Agency	[ATT 1: Contra Costa County Letter dated June 20, 2019 to Mr. Gary Lippner, DWR] Dear Mr. Lippner: Contra Costa County is aware of the State Department of Water Resources' (DWR) imminent or ongoing effort to conduct drilling work on multiple properties within the legal Delta and this includes property within Contra Costa County. The drilling work is in connection with a revised delta conveyance project. Based on the June 16, 2017, Order of the San Joaquin Superior Court in Coordinated Action JCCP 4594,.there is at least one property located in Contra Costa County that could be subject to "land explorations" and "geotechnical investigations". Contra Costa County also knows that the Counties of Sacramento and San Joaquin sent letters dated June 14, 2019 and June 7, 2019, respectively, making DWR cognizant oflocal permitting requirements related soil sampling. Be advised that in Contra Costa County, no person shall drill a water well whether for domestic use, irrigation, agricultural or other purposes, without first applying for and receiving a valid, unrevoked, unsuspended permit to do so from the health officer, §414-4.l00l(b). As of today, the County has no evidence and cannot confirm that DWR has obtained requisite drilling permits. Please have your staff contact the Contra Costa County Environmental Health (925-692-2500) prior to any drilling activity that requires issuance of a permit. Additional well permitting information, including applicable applications, may be found at: https://cchealth.org/eh/land use/#simpleContained6	See Master Response 5 and Master Response 6.
172	Contra Costa County Water Agency	[ATT 2: Delta Counties Coalition Letter dated January 14, 2020]	Responses to the letter are included below in Responses to Comments 182 to 186.

173	Central Valley Flood Protection Board	Thank you for the opportunity to comment on the Soil Investigations for Data Collection Initial Study/Mitigated Negative Declaration (IS/MND). The IS/MND was prepared to determine the composition, location, and geotechnical properties of soil materials commonly found in the Delta to inform the design, analysis, and development of alternatives for the Delta Conveyance Project. The proposed project involves 275 onland soil investigations and 57 on-water borings (332 sites total) that appear to include sites within the Central Valley Flood Control Board's (Board) permitting authority, thereby requiring Board approval. [Footnote 1: Under authorities granted by California Water Code and Public Resources Code statutes, the Board enforces its Title 23, California Code of Regulations (Title 23) for the construction, maintenance, encroachment or works of any kind, and protection of adopted plans of flood control, including the federal-State facilities of the State Plan of Flood Control, regulated streams, and designated floodways.] The Board, as a Responsible Agency under the California Environmental Quality Act (CEQA), will review and consider the environmental effects of the proposed project identified in the IS/MND, and reach its own conclusions on whether and how to approve the project involved (14 CCR 15096, subd. (a)). Accordingly, the comments herein are intended to assist in the development of a robust CEQA document capable of supporting the Board's permitting process.	See Master Response 1. See also Master Response 5.
174	Central Valley Flood Protection Board	1.0 Project Description The proposed project is described as a plan to conduct soil investigations to inform and evaluate alternatives, consistent with Executive Order N-10-19, for a proposed single tunnel Delta conveyance. The study area spans a portion of the Sacramento-San Joaquin River Delta over six counties. The locations of the 332 soil investigation sites are noted to be approximate. The IS/MND does not disclose the precise location of the sites, the types of tests to be conducted at each individual site (soil borings, cone penetration tests, or noninvasive geophysical survey investigations), the intended depth below ground surface for each site, the staging locations, or the number and type of equipment for each site. Figures 2a through 2c illustrate the study area and the approximate locations and types of tests at each site; however, the figures are small and hard to discern the details.	See Response to Comment 8 for information on IS/MND maps. Section 2.0, Proposed Project Description, of the ISMND lists specific project details such as the intended depths of boring activities. In this section, Table 1 provides the number and type of equipment that will be present at each type of activity site. See also Master Response 3 for information on the adequacy of the IS/MND’s project description.

175	Central Valley Flood Protection Board	At a minimum, the project description should be sufficiently detailed to allow fact-based explanations of the environmental findings included in the IS/MND. As written, the project description does not provide sufficient information; therefore, the environmental analysis is not substantiated. The Board recommends including the details discussed above in the project description and additional figures depicting the precise soil investigation site locations. It is further recommended to include logical groupings and names of sites/groupings to reference throughout the document when discussing impacts. [Footnote 2: As currently written, it is unclear what impacts are occurring at what drilling sites. Further detail is necessary to provide context within an environmental impact analysis for each section.] In order for the Board to consider the environmental effects of the proposed project, the types of tests, the depth of the drilling for each site, the staging locations, and the type/number of vehicles and equipment for each site located within the Board's jurisdiction should be disclosed. To view federal and private levees, designated floodways, and regulated streams under the Board's jurisdiction, please visit http://gis.bam.water.ca.gov/bam/. If you need assistance with determining the Board's jurisdiction, please contact the staff person identified below.	See Response to Comment 8 for information on IS/MND maps. See also Response to Comment 174 and Master Response 3 for information on the adequacy of the IS/MND.

176	Central Valley Flood Protection Board	2.0 Deferral of Impact Studies and Mitigation The IS/MND notes that reconnaissance level site visits by engineers, geologists, environmental scientists, and the cultural resource team will not be conducted until several days to several weeks prior to implementation of the proposed project. The reconnaissance level surveys are required by mitigation measures throughout the IS/MND, and include additional requirements to adjust the location of the sites if the survey results indicate that potential impacts may occur (e.g. mitigation measures BI0- 1, BI0-18, CUL-1). This approach appears to be deferring impact studies that are necessary to determine whether adverse effects would occur, and if so, what the mitigation might be. Deferring essential environmental studies, such as biological and cultural resources, undermines the intent of CEQA's goals of full disclosure and informed decision making and is impermissible when preparing an IS/MND. (Communities for a Better Environment v. City of Richmond (2010) 184 Cal.App.4th 70, 92.) The Board recommends that the CEQA Lead Agency conduct the appropriate reconnaissance level site visits prior to adopting the environmental document to ensure that proper environmental analysis and mitigation has been considered. A robust CEQA document that properly analyzes potential impacts is necessary for the Board to make findings as a Responsible Agency, if needed for a discretionary action.	As stated in Response to Comment 10, each impact area was initially selected based upon the best available information regarding impact avoidance and potential value of information gained by the action. DWR currently has limited access to the proposed soil investigation sites and would seek to acquire access upon project approval. See Response to Comment 29 for information on landowner permissions. General reconnaissance surveys are proposed as part of the Project, not as mitigation measures; therefore, they are not deferred mitigation. See Response to Comment 9 for more details. Mitigation measures were designed to account for unanticipated impacts, which might not have been perceived in the initial reconnaissance surveys and include site visits before any soil investigations to make sure that biological or cultural resources are not present immediately before activities would begin (see MM BIO-2 through BIO-11, BIO-15 through BIO-18, and CUL-1) . These site visits may occur simultaneously with the reconnaissance surveys, or shortly thereafter, and will function to further ensure no resources are impacted by Project activity. These mitigation measures include specific performance standards; the measures outline the required actions if biological or cultural resources are found at a potential soil investigation site. These measures would protect against impacts to unanticipated resources that may occur within the area of investigation sites and will be adopted and fully enforceable as part of an MMRP. This type of pre-activity site visit mitigation is commonplace in CEQA documents and does not constitute improper deferral because it does not defer formulation “until some future time” (*Save Panoche Valley v. San Benito County* (2013) 217 Cal.App.4th 503, 524-526). It is specifically formulated to include timing of work, type of work, and qualifications of persons to conduct the work. See also Master Response 3 and Master Response 4.

177	Central Valley Flood Protection Board	3.0 Environmental Setting Because the reconnaissance level surveys have been deferred, the environmental setting provided within each subsequent section of the IS/MND are general and lack site specific information. For example, the environmental setting provided in the biological resources section does not disclose the type of vegetation or habitat types that are present at each drilling site and/or grouping. Rather, the environmental setting includes information obtained from a desktop search. The environmental setting should be capable of supporting an analysis of the environmental effects of the proposed project (14 CCR 15125). The Board recommends including information obtained from the reconnaissance level surveys into the environmental setting for each section. This would provide the context for the related impact analysis.	As discussed in Response to Comment 176, there is a difference between reconnaissance surveys, which are a component of the project description, and pre-activity site-specific visits, which are included as mitigation measures (see Response to Comment 9). Access to locations proposed for actions is currently limited (see Response to Comment 29 for information on landowner permissions). Existing conditions were described based on available imaging and databases for biological, historical, geological, cultural and other information. This information provides an adequate depiction of the environmental setting for review in an initial study, and mitigation measures were designed to account for unanticipated impacts and include specific performance standards to ensure protection against impacts to unanticipated resources that may occur within the area of investigation sites. Note that State CEQA Guidelines Section 15125 applies to EIRs, not initial studies and negative declarations. Nevertheless, Section 15125 mandates that the environmental setting “be no longer than is necessary to provide an understanding of the significant effects of the proposed project” (subdivision (a)). The IS/MND meets this standard (see Master Response 3).
178	Central Valley Flood Protection Board	4.0 Geology and Soils (Section 3.7 in the IS/MND) 4.1 Reconnaissance Site Visit Section 3.7.2(c) in the IS/MND states that a reconnaissance site visit will determine if the soil is unstable. Further, if the results of the reconnaissance site visit are not favorable and the soil is deemed unstable, the site will be relocated to decrease potential of on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. This appears to be deferring impact studies and potential resulting mitigation (see Section 2.0, above). The Board recommends conducting the reconnaissance surveys prior to finalizing the IS/MND to evaluate and disclose the potential environmental impacts.	See Response to Comment 176 and Response to Comment 177.

179	Central Valley Flood Protection Board	4.2 Findings Discussion When evaluating the potential environmental impacts, the IS/MND concludes that there is either no impact or the impacts are less than significant. However, within each evaluation the IS/MND notes that implementation of mitigation measures would further avoid, minimize and/or reduce the potential for impacts. It is not clear whether the findings would still be no impact or less than significant absent the recommended mitigation. The Board recommends clarifying whether the mitigation measures recommended are necessary for each impact analysis and updating the findings where appropriate. It is further recommended that the CEQA Lead Agency review the document in its entirety as this same issue was noted throughout and in some cases, mitigation was introduced for the first time with a no impact/less than significant finding.	Measures called “mitigation measures” are sometimes included after a “no impact” significance conclusion to demonstrate how potential impacts to that *general resource area* can be avoided, minimized, or reduced. However, these measures do not offer direct mitigation for those specific CEQA checklist issues where “no impact” will occur. In other words, these “mitigation measures” are not needed to avoid the occurrence of what would otherwise be a potentially significant effect. In this sense, these mitigation measures, where aimed at a “no impact” conclusion, are not true “mitigation measures,” as the quoted term of art is ordinarily understood under CEQA. Even so, these measures represent an additional layer of environmental protection that DWR believes is desirable. Likewise for impacts deemed to be less than significant without mitigation—additional measures are sometimes included to indicate how already less-than-significant impacts can be even further reduced, minimized, or avoided altogether. Analyses within the CEQA checklist discussions are sufficiently clear, and straightforward impact conclusions are presented throughout Section 3.0, so as to avoid any confusion that readers might have based on the labeling and inclusion of these “mitigation measures.” In contrast to these instances, ordinarily “mitigation measures,” as that term is used in the IS/MND, are proposed where there is the potential for significant impacts without mitigation. See also Response to Comment 69 for information on the use of mitigation measures.

180	Central Valley Flood Protection Board	5.0 Hydrology and Water Quality (Section 3.10 in the IS/MND) The IS/MND includes findings of no impact for flood impacts (Sections 3.10.2(c)(b) and 3.10.2(d)). Based on the lack of information provided in the project description, it is not clear how this conclusion is supported. It is currently unknown which soil investigation sites are located on the levee, the type of drilling on the levee, the equipment and staging areas that will be present on the levees, and if any vegetation will be removed as a result of the proposed project. This level of detail is likely necessary in order to determine whether or not the proposed project may result in on- or off-site flooding and/or a flood hazard. The Board recommends updating the project description as described under Section 1.0, above, and revising the discussion and conclusions within the hydrology and water quality section where appropriate. This level of detail is necessary for the Board to complete its permitting process and to make findings related to potential flood impacts as a Responsible Agency, if required.	Discussions for both Section 3.10.2, issue (c), sub-issue (b), and issue (d) are clear on the reasoning behind the no-impact conclusions—because fundamental project design and or study area location precludes an impact. Knowing the exact final siting of soil investigation sites would not change analysis or conclusions. According to a Technical Memorandum for Delta Risk Management Strategy Phase 1: Topical Area Levee Vulnerability Draft 2, (URS and J R Benjamin and Associates 2007), flooding of Delta Islands during “sunny day events (occurring in the time period between June and October), occur at an approximate rate of 0.107 per year and are historically caused by a combination of high tide and foundational weaknesses as well as activities such as dredging at the toe of the levee. The proposed Project will not be conducting potentially destructive activities such as dredging, will be avoiding rodent burrows as part of the strategy to avoid species that make use of those burrows, and will be backfilling bore holes following the completion of each site, thereby not contributing to gaps in the levee that may contribute to damage or flooding. Furthermore, soil borings are one of the main methods for gathering data to analyze the vulnerability of levees to potential risks. See also Response to Comment 8 for information on IS/MND mapping and site locations, Response to Comment 9 and Response to Comment 10 for information on reconnaissance surveys, Response to Comment 12 for details on the requisite Section 408 process for project activity on levees, and Master Response 3 for details on the adequacy of the project description.

181	Central Valley Flood Protection Board	6.0 Transportation (Section 3.17 in the IS/MND) According to Section 3.17 in the IS/MND, implementation of the proposed project may result in traffic delays or congestion due to the drilling equipment. Impacts to levees from excessive load, dynamic impacts, or traffic can include deformation and crest depression due to non-uniform settlement, and damage to levee slopes due to use of levee hinge points for vehicle turn-outs. These impacts could result in the loss of levee integrity, leading to levee failures. As previously noted, the IS/MND should disclose which sites are located on or near a levee. The Board recommends implementing mitigation measures whenever haul routes or construction zones include travel on and/or over levee roads (including pre-project inspections and levee geometry surveys) with the elevations of levee crests and waterside and landside hinge points, and continuous monitoring during construction for evidence of levee deformation. Traffic control measures should include reducing truck speed limits and limiting the number of trucks on the levee during flood seasons. Levee deformation (either vertical or lateral) should be mitigated and be restored in accordance with project levee designs pursuant to the Board and the United States Army Corps of Engineers.	See Response to Comment 8 for information on mapping and site locations, Response to Comment 9 for information on pre-activity reconnaissance surveys, Response to Comment 12 for information on Section 408 permissions as it relates to activity on levees, and Response to Comment 176 for details on pre-activity surveys. Traffic impacts to existing roadways, some of which are located on levees, are discussed in section 3.17.1 of the IS/MND and state that “during operation of the drilling equipment there will be multiple vehicles on site which may delay traffic or cause traffic congestion. However, temporary congestion and/or lane closures would not conflict with any applicable plans, programs, ordinances, or policies.” In addition to reconnaissance surveys and pre-activity surveys eliminating as many potential impact risk factors as possible, potential impacts to levee roads will be mitigated by measures included in the IS/MND, such as: MM TRANS-1, which includes traffic controls (e.g. flaggers) and closure of lanes to ensure the flow of traffic continues while maintaining safety measures by which members of DWR’s crews will avoid parking their vehicles on public roads and thoroughfares to the maximum extent practicable. These measures will allow the flow of traffic to continue and will avoid any closure of public roads or lost access to land. MM GHG-1, which encourages carpools or shuttle vans for worker commutes. MM AIR-1, which limits speed of vehicles on unpaved roads to 15 mph. Additionally, as stated in Section 3.17.2 (d) of the IS/MND, “In case of emergency, or if an emergency vehicle needs to pass, easily moved equipment will be moved immediately to maintain emergency vehicle access. On major roads, one full lane will be available at all times for emergency vehicles. Emergency service providers will be notified of soil investigation activities along roads that may cause delays. The Proposed Project would not close access to any access roads and would not result in the redesign or alteration of any public roadways, nor would emergency access be blocked.” While great care will be taken to review relevant data and conditions prior to conducting project activity on or near levees (see Response to Comment 12), collecting an extensive amount of geometry data is infeasible and unnecessary considering the limited local impacts for any given levee; and such data collection would not mitigate for any impacts in a way that exceeds the mitigation provided by the existing mitigation measures (see above) or that would be avoided through implementation of the project description. See also Response to Comment 180 for a discussion of levee risk.

182	Delta Counties Coalition	This letter is written on behalf of the Delta Counties Coalition ("DCC") [Footnote 1: These comments are also submitted in each county's individual capacity for purposes of exhaustion of administrative remedies. Certain DCC counties may also submit separate comments.] regarding the Department of Water Resources' ("DWR") Initial Study Proposed Mitigated Negative Declaration for Soil Investigations in the Delta ("MND") and the notice of intent to adopt the MND pursuant to the California Environmental Quality Act (Pub. Resources Code, § 21000, et seq. ("CEQA")). The DCC provides the following comments on the MND and to help provide clarity on the requirements for conducting the proposed work within the various Delta County jurisdictions. Based on the MND, the proposed project areas include completing subsurface and geophysical investigations in the Delta portions of Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties. Each of the counties where the work is proposed has its own local county codes, ordinances, and land use policies. The proposed work includes conducting on-land drilling work and investigations 50 to 200 feet deep below ground surface and may require clearing of lands to allow access for the drilling rigs and other equipment. Such work must be completed compliant with drilling, grading, and other permit requirements of each local jurisdiction where the subsurface work would be conducted. The MND entirely fails to disclose local permitting requirements. The MND does not give any indication that local permits will be obtained or even that local permitting agencies will be notified prior to drilling. This failure is relevant both to the impacts of drilling on water quality and groundwater, as well as local autonomy and land use impacts.	See Master Response 6. To increase the clarity of the process, additional language specific to permitting requirements has been added to Section 1.2 of the IS/MND. All required permits will be obtained. See also Response to Comment 26 for information on encroachment permits and Response to Comment 29 for information on landowner permissions.
183	Delta Counties Coalition	The MND claims that the proposed project would not violate water quality standards, waste discharge requirements, or degrade subsurface and groundwater quality since the proposed work will be conducted under DWR's water well standards, DWR Bulletins 74-81 and 74-90. (MND, p. 163-164.) Bulletin 74-81 defines test wells and includes standards for well destruction. (DWR Bulletin 74-81, pp. 25, 52-53.) Bulletin 74-90, in turn, confirms that Bulletin 74-81 constitutes the minimum requirements for construction, alteration, maintenance and destructions of monitoring wells and expands the definition of monitoring wells to include exploration holes. (Bulletin 74-90, pp. 3, 11.) Bulletin 74-90 also includes fill, sealing, and destruction standards for exploratory borings. (Bulletin 74-90, p. 52.) Water Code section 13801, subdivision (c), however, directed counties to adopt water well, cathodic protection well, and monitoring well drilling and abandonment ordinances that meet or exceed Bulletin 74-81's standards. Thus, the Legislature and DWR's own standards envision a regulatory scheme in which local agencies regulate drilling of monitoring wells and exploration holes. DWR relies on compliance with Bulletins 74-81 and 74-90 to claim the drilling will have "no impact" on water quality standards or groundwater, and yet ignores the local ordinances expressly developed to meet the Bulletins' standards. These local county ordinances include additional requirements to ensure protection of groundwater and land-use resources within the counties' respective jurisdictions.	See Response to Comment 167.

184	Delta Counties Coalition	Conducting drilling without acquiring local permits is a violation of local land-use policies and ordinances and a violation of DWR's own water well standards. The MND's Land Use and Planning section also fails to disclose applicable local ordinances developed pursuant to Water Code section 13801. The MND purports to evaluate whether the proposed drilling would "[c]ause 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[,]" and concludes there would be no impact. (MND, p. 167.) This conclusion cannot be reconciled with the total failure to disclose or comply with local drilling ordinances. Failure to comply with local ordinances would cause potentially significant environmental impacts. For instance, permitting and onsite inspections are required by lead enforcing and permitting agencies to ensure that subsurface borings are properly sealed to minimize detrimental effects. Improperly sealed borings may contribute to soil heaving, piping, or caving which could undermine subsurface utilities or impact nearby foundations and levees. Processes to reduce potential settlements in collapsible soils and eliminate sinkhole potential should also be incorporated. Furthermore, CPT and other boring techniques that produce large vibrations may also cause uneven settlement in the immediate areas near the borings. A plan to protect vibration sensitive facilities should be prepared and include adequate setbacks or modification of the drilling techniques in order to minimize potential detrimental effects. Drilling waste must be confined to the parcel on which the work is being drilled and may not be discharged to create conditions which violate federal and state laws and regulations or local ordinances. Waste material generated that is proposed to be placed in drums and kept on site until offsite hauling and disposal shall be properly labeled and managed until hauled offsite and disposed at a licensed facility that accepts the waste. In order to ensure that the proposed work will not pose health and safety issues, DWR and its contractors must adhere to local county ordinances, codes, and policies.	See Response to Comment 168. See Master Response 6. See Response to Comment 30 for a discussion of drilling waste storage and disposal.
185	Delta Counties Coalition	The local agencies that developed ordinances regulating DWR's proposed geotechnical activities possess the requisite expertise and familiarity with local groundwater aquifers, and their input is paramount to ensuring the drilling will not have adverse effects. The local agencies will also be responsible for understanding future ramifications of drilling. The MND does not identify any reporting or record keeping of boring results that would be transmitted to the counties and other local agencies. Such reporting is necessary for local agencies' exercise of future permitting authority over unrelated projects. Failing to provide records or reports to local agencies could result in unidentified water quality, groundwater or hazards impacts.	See Response to Comment 169. See Master Response 6.
186	Delta Counties Coalition	The DCC is also concerned that the drilling activities proposed in the MND are evaluated outside of the larger context of a soon-to-be-proposed single tunnel Delta conveyance project. (MND, p. ii.) A "project" under CEQA includes "the whole of an action" that may impact the environment. (14 Cal. Code Regs., § 15378.) Treating the drilling as a separate endeavor from the single tunnel Delta conveyance project amounts to impermissible piecemealing. (East Sacramento Partnership for a Livable City v. City of Sacramento (2016) 5 Cal.App.5th 281, 293.) DWR should reevaluate the impacts of its soil investigations within the context of the larger project it is intended to inform.	See Master Response 2.

187	Delta Protection Commission	Thank you for providing the Delta Protection Commission (Commission) the opportunity to review the IS/MND for the Soil Investigations for Data Collection in the Delta Project (Project). The Project consists of overwater and land-based soil borings, cone penetration tests, and geophysical surveys in various locations throughout portions of the Delta counties (Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo). The Project will be undertaken by the California Department of Water Resources (DWR) and the Delta Conveyance Design and Construction Authority (DCA). The Commission is a State agency charged with ensuring orderly, balanced conservation and development of Delta land resources and improved flood protection. Proposed local government projects within the Primary Zone of the Legal Delta must be consistent with the Commission's Land Use and Resource Management Plan (LURMP). Proposed DWR actions are not subject to consistency requirements with the LURMP since the Project is sponsored by a State agency. However, the Commission has reviewed the project for potential impacts on the resources of the Primary Zone and Secondary Zone. In addition, the Commission reviews projects within the framework of the Delta Reform Act of 2009, which declared that the State's basic goals for the Delta are to provide a more reliable water supply for California and protect, restore and enhance the Delta ecosystem "in a manner that protects and enhances the unique cultural, recreational, natural resource and agricultural values of the Delta as an evolving place" (Public Resources Code section 29702(a) and Water Code section 85054). This concept is often expressed as "Delta as Place" concerns. We offer some suggestions which we believe will help to reduce the potential for negative impacts on Delta as Place - on Delta transportation corridors, agriculture, communities and businesses during the time the soils investigations are conducted.	See Master Response 1.

188	Delta Protection Commission	Project Description: The proposed Project Study Area includes Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo counties, in addition to numerous islands, sloughs and other waterways including the Sacramento deepwater shipping channel, with a heavy emphasis on boring locations in or adjacent to communities including West Sacramento, Clarksburg, Hood, Courtland and Walnut Grove. The IS/MND describes the on-land and over-water portions of the Project as follows: • 167 soil borings from 50 feet to 200 feet below ground surface; • 103 cone penetration tests (CPTs) from approximately 50 feet and 200 feet below ground surface; and • Up to 5 noninvasive geophysical survey investigation arrays on up to five Impact Areas within a location on Bouldin Island. • Over-water soil investigations will consist of 57 soil borings up to 200 feet below the slough or river bottom (measured at the mudline). The duration of Project activities ranges from 3 months for over-water borings to 6 months for on-land borings; geophysical surveys are expected to take 2.5 months. Individual site investigation activities will last up to 13 work days for the deeper (SO - 200 feet) borings and up to 5 work days for the shallower (>50 feet) borings.	See Master Response 1.

189	Delta Protection Commission	General Comment: We appreciate that the IS/MND unambiguously states the Project purpose, which is to inform "the future process of a single tunnel solution to modernize water infrastructure in the Delta." (IS/MND Sect. 1 Background, p. 1). For this reason, we suggest that the Project offers a critical opportunity to build a foundation for consideration of Delta as Place and land use issues in a future certification of consistency with the Delta Plan. We have noted in the past that the CEQA process and the Delta Plan consistency processes are different and separate. We believe that initiation of this Project without an explicit concurrent process of reaching out to local governments, communities, and Delta organizations would compromise the ability to demonstrate meaningful engagement on Delta as Place issues. Respecting local land use, for example, would include complying with local regulatory requirements when conducting the soil investigations to determine the potential siting for a single tunnel. The draft IS/MND is virtually silent on local permit requirements for soil investigations.	Data collected through soil investigations may be used as part of planning for a future, proposed DCP or as information for other planning efforts within the Delta. See Master Response 2. The soil investigations do not meet the criteria to be a covered action under the Delta Plan. Under Water Code section 85057.5(a), a “covered action” subject to the Delta Plan is defined as “a plan, program, or project as defined pursuant to Section 21065 of the Public Resources Code that meets *all* of the following conditions: (1) Will occur, in whole or in part, within the boundaries of the Delta or Suisun Marsh. (2) Will be carried out, approved, or funded by the state or a local public agency. (3) Is covered by one or more provisions of the Delta Plan. (4) Will have a significant impact on achievement of one or both of the coequal goals or the implementation of government-sponsored flood control programs to reduce risks to people, property, and state interests in the Delta.” The proposed Project is *not* a “covered action” because, due to its very limited impacts, it will *not* “have a significant impact on achievement of one or both of the coequal goals or the implementation of government-sponsored flood control programs to reduce risks to people, property, and state interests in the Delta.” If the DCP continues to move forward, DWR will need to document consistency with the Delta Plan as part of that separate environmental planning and permitting effort. Refer to the preamble to these response to comments for public engagement efforts taken by DWR for the Proposed Project and IS/MND. See Master Response 5 and Master Response 6. See also Response to Comment 26 for information on encroachment permits.

190	Delta Protection Commission	Specific Mitigation Comments- Congestion/Public Safety, Scheduling and Public Notice: Traffic: We believe the traffic impacts are underestimated and based on incorrect assumptions about the temporary nature of the project. The mitigation for traffic impacts should be strengthened. Mitigation Measure Trans-1 (MM TRANS-1} states: a. Where it is necessary, traffic controls (e.g. flaggers} will be put in place. Lanes may be closed off by traffic cones with flaggers posted to ensure the flow of traffic continues while maintaining safety measures for the crew. Traffic controls and lane closures will consider access for emergency services and be coordinated through the encroachment permit processes implemented by Caltrans and counties, with CHP coordination as required. b. Parking on public roads and thoroughfares by crew vehicles will be avoided to the maximum extent practicable to allow for the flow of traffic to continue. c. No public roads, waterways or land access will be closed. d. For overwater sites, the project area shall be a no-wake zone, with boats not exceeding 5 mph within 500 feet of the work area. The main highways traversing the Delta (State Routes 84, 12, 160 and 4) all experience heavy commute and freight traffic. Bridge operations are currently a major concern, and traffic can become impacted very quickly by malfunction, maintenance and repairs, or even normal operation of a bridge depending on shipping traffic. Frequent accidents occur as a result of vehicles passing other vehicles, and often vehicles parked on the side of the road within the Right-of-Way are at risk of collision from vehicles passing at high speeds, cutting off curves and driving outside the designated lanes. Rather than requiring traffic controls "where it is necessary," traffic controls should be mandatory unless it can be positively demonstrated there is no public or worker safety risk at each site. In addition, a system of public notifications that is coordinated with all three Caltrans Districts, with County Roads Departments, with California Highway Patrol and local law enforcement, bridge tenders, and other entities should be outlined as a mitigation measure (see also Scheduling comment below}.	Proposed Project activity would be temporary and finite at any given site location. Land borings will take between five (5) and 13 days per site (Section 2.1.1 of the Final IS/MND) over a period of approximately six (6) months throughout the study area, thus the proposed Project is temporary in nature. Work crews traveling daily to and from each boring site will be small (typically six (6) individuals) and will enter and leave at the beginning and end of the work day. Equipment will be transported to and remain on-site for the duration of the boring period (5 to 13 days), thus the proposed Project has the potential for only temporary, short-term impacts to traffic. In general, the metric used to determine the need for a flagger is a potential for risks to worker or public safety as a result of the specific needs of the impact area, such as a temporary constriction in the roadway or temporary reduction in access to a lane of traffic (CalTrans Manual on uniform Traffic Control Devices, 2020. available at https://dot.ca.gov/programs/traffic-operations/camutcd/camutcd-rev5). By adhering to the standards set by CalTrans, as DWR is required to do, it can be positively demonstrated that public or worker safety is not at risk because these standards are set to preserve safety. Because of the small scope of work at any given site location, and the low amount and traffic to and from a site, safety risks to the public and workers are minimal, and, therefore, traffic controls may not be necessary. However, Mitigation Measure Trans-1 (a) has been revised in the Final IS/MND to clarify and enhance when traffic controls will be implemented: MM Trans-1: a. Appropriate traffic controls will be implemented, based on the conditions at each soil investigation site, according to standards set by Caltrans and counties. Flaggers may be used during ingress and egress of boring equipment and work crews to allow flow of traffic while maintaining safety measures for the crew, especially if these activities occur in areas of heavy traffic or reduced visibility. Lane closures will be implemented when soil investigation sites are within or immediately adjacent to public roadways and will employ safety measures such as advance warning areas and flaggers, as prescribed by Caltrans and county regulations. Public notifications will be made in coordination with Caltrans, counties, CHP, and other entities. Traffic controls and lane closures will consider access for emergency services and be coordinated through the encroachment permit processes implemented by Caltrans and counties, with CHP coordination as required. The use of mandatory traffic controls, such as temporary constrictions or reduction of lanes, when there is no impediment to the roadway, would not mitigate for potential impacts better than the existing mitigation measure because there would be no potentially significant impact for which to mitigate. Further, such superfluous mandatory controls would create an unnecessary restriction on the flow of regular traffic, which could create a needless inconvenience to the public. For these reasons, enforcing mandatory traffic controls is not a reasonable or warranted use of agency resources.

191	Delta Protection Commission	Staging Areas and Storage of Drill Cuttings and Fluids: The IS/MND states in several different sections (eg, Section 2.1, On-Land Soil Boring Equipment, p. 9): The Impact Area for any given soil location is considered the soil investigation site itself and the area required for parking various field personnel. In addition, Greenhouse Gas Mitigation Measure MM GHG-1 states: e. Encourage carpools or shuttle vans for worker commutes as feasible. We suggest clarifying that an Impact Area may consist of the soil investigation site and an offsite parking area for worker vehicles, or the soil investigation site and an onsite multi-vehicle parking area. With respect to staging areas, the extensive detail provided on types of equipment and methods of investigation, including photographs and graphics such as Figure 7 of the Time Domain Electromagnetic {TDEM) System Schematic or Figure 9 Electrical Resistivity Tomography {ERT) are helpful to the public in grasping the nature of the Project. However, if there is staging of drums with drill cuttings and fluids, the actual staging areas needed will be more extensive. If it is not possible to estimate the size of the staging areas because each will be different, the MND should at least clarify this.	Per Section 2.0 of the IS/MND, the Impact Area for each soil investigation site will range from approximately 0.5 to 0.22 acres, including space for vehicle parking, equipment staging, and use of drums for storage of drill cuttings. Any additional areas that may be used for personnel vehicle parking would be in established, disturbed areas, including parking lots or along the established right-of-way of public or private roads. The Impact Area is defined in Section 1.3 “Proposed Project Location” of the Draft IS/MND. Section 2.0 has been revised in the Final IS/MND to clarify certain details about the Impact Area (see also Response to Comment 9).
192	Delta Protection Commission	Scheduling and Advance Public Notice: Although construction schedules are difficult to predict, it should be possible to provide a calendar that shows the biological resource and other constraints to illustrate when activities may be taking place; this would be extremely helpful to public safety agencies, agricultural operations, and Delta communities. This could be included in the MND as an estimate, and as the Project gets closer to construction and mobilization could be updated and distributed via typical channels for traffic and other notifications within the Delta.	A table has been added, as Appendix D, to the Final IS/MND that outlines the estimated timing of mitigation measures that place constraints and restrictions on the project schedule for specific resources analyzed in the CEQA Appendix G checklist.

193	East Bay Municipal Utility District	The East Bay Municipal Utility District (EBMUD) appreciates this opportunity to review and provide comments on the Department of Water Resources' (DWR) proposed Mitigated Negative Declaration (MND) for the "Soil Investigations for Data Collection in the Delta" (Project). The proposed Project is one piece of a much larger future DWR project to construct new water conveyance facilities in and through the Delta. The soil investigation Project for which the MND was prepared would involve drilling and other investigative work in the Delta to measure physical properties of the soils, location of the groundwater table, and other typical geologic and geotechnical parameters. Information gleaned from this soil investigation will be used by DWR and the Delta Conveyance Design & Construction Authority (DCA) "to inform and evaluate alternatives, consistent with Executive Order N-10-19, for a proposed single tunnel Delta conveyance…" In essence, the Project is the start of the next round of DWR efforts to build new Delta conveyance facilities. As such, it is critical that DWR thoroughly understand the potential conflicts any such conveyance project could have on EBMUD's existing and proposed Delta infrastructure: EBMUD's existing Mokelumne Aqueducts are a vital link in EBMUD's water supply system, providing the main source of EBMUD' s water supply to its East Bay service area and its 1.4 million inhabitants. The Aqueducts traverse a distance of approximately 90 miles from Pardee Reservoir in the east to Walnut Creek in the west, and they cross directly through the Delta. In their east-west crossing of the Delta, the Mokelumne Aqueducts pass over Lower Roberts Island, Upper Jones Tract, Woodward Island, and Palm-Orwood Tract. Any DWR Delta conveyance project will likely run north to south, bringing water from the Northern Delta to the State Water Project and Central Valley Project export pumps in the South Delta. Thus, a new Delta conveyance project will necessarily intersect with the Mokelumne Aqueducts as they cross the Delta. This intersection leads to likely conflicts with EBMUD's Mokelumne Aqueducts and EBMUD's planned tunnel, which is expected to follow the current EBMUD Mokelumne Aqueduct alignment.	See Master Response 2. This geotechnical study will not conflict with any future conveyance or other projects that EBMUD may be developing, but conversely may be of use in that it will add to the body of knowledge regarding soils that will be useful to EBMUD in their own project development.

194	East Bay Municipal Utility District	During the California Environmental Quality Act (CEQA) process on an earlier iteration of a DWR Delta conveyance project, the BDCP/WaterFix Project, EBMUD provided DWR with extensive comments regarding that project's potential impacts on EBMUD's existing Mokelumne Aqueducts as well as EBMUD's proposed tunnel. (That BDCP/WaterFix Project included twin tunnels that would have crossed directly underneath the Mokelumne Aqueducts.) DWR's prior efforts to advance the BDCP/WaterFix did not adequately assess its Project's impacts on the Mokelumne Aqueducts. Chapter 13.1.5 of the BDCP Conceptual Engineering Report erroneously concluded that "no conflicts are anticipated" with regard to the Mokelumne Aqueduct crossing, and Chapter 13.2.5 indicated that the crossings "will be evaluated at the preliminary design level in conjunction with EBMUD. " Analysis of potentially significant environmental effects cannot be deferred to a future date. Such analysis must instead be completed during the earliest stages of planning and alternatives analysis.	See Response to Comment 4 and Master Response 2.
195	East Bay Municipal Utility District	A potential DWR Delta conveyance tunnel threatens to expose the Mokelumne Aqueducts and their deep foundations to substantial adverse effects resulting from soil settlement/subsidence, undermining, lateral earth movement, construction vibrations and vibration induced settlement. In addition, a Delta conveyance tunnel would also pose a significant risk of indirect environmental impacts resulting from the potential suspension of water service that could occur if impacts on EBMUD's facilities are not appropriately mitigated. DWR must also address a likely conflict between its future Delta conveyance tunnel and EBMUD's future cross-Delta tunnel. EBMUD owns the land and subsurface rights along the alignment of the Mokelumne Aqueducts (the EBMUD ROW) and has begun planning for a cross-Delta tunnel to replace its existing above-ground aqueducts. EBMUD's design for its cross-Delta tunnel places the EBMUD tunnel within an elevation range of -80 ft msl to -130 ft msl (NAVD88 vertical datum). Any Delta conveyance tunnel proposed by DWR must address this reasonably foreseeable conflict. EBMUD expects the DWR Delta Conveyance Project to avoid tunneling within this elevation range at the site of the DWR tunnel's intersection with the EBMUD ROW and to also provide an appropriate additional clearance between the two facilities. Finally, the Project will be taking place in the general vicinity of EBMUD's Mokelumne Aqueduct ROW which EBMUD holds in fee. Any projects being planned within or immediately adjacent to EBMUD property will need to follow EBMUD's Procedure 718-Raw Water Aqueduct Right-of-Way Non-Aqueduct Uses. A copy of the procedure is enclosed for your reference.	See Master Response 2. Should any of the impact areas within the scope of the Proposed Project cross EBMUD right of way , DWR will pursue all pertinent encroachment permits (see Response to Comment 26).

196	East Bay Municipal Utility District	Information Recently Submitted by EBMUD Related to Soil Investigations EBMUD has already provided extensive geotechnical information to DCA. On September 3, 2019, DCA's Engineering Manager wrote EBMUD requesting deep subsurface data from EBMUD's work along the Mokelumne Aqueduct alignment. The information was requested as part of DCA's geotechnical investigations within the Delta. In response, on September 18, 2019, EBMUD provided DCA with its 2019 Geotechnical Data Report from EBMUD's Phase 1 Geotechnical Exploration Program for its Delta Tunnel Project. Thus, EBMUD has shared its recent geotechnical report concerning the Delta crossing of the Mokelumne Aqueducts. We would like DWR to share with EBMUD the results of its work, including the Geotechnical Data Report, associated gINT files, and Geotechnical Interpretive Report.	If DWR proceeds with the soil investigations, they are proposed on both public and private property. DWR would be able to share information obtained on public property. DWR would seek to negotiate temporary landowner entry permissions onto private property, and the terms of entry typically include provisions that the data will not become public (see also Response to Comment 29). DWR would be able to share information with EBMUD that is interpreted and aggregated with other information, but not specific data from individual sites on private property.
197	East Bay Municipal Utility District	Meeting In DCA's September 3, 2019 letter to EBMUD, DCA offered to meet with EBMUD staff to discuss the current geotechnical exploration plans. In response to this offer, EBMUD's September 18, 2019 response requested such a meeting, but we have not yet received a follow-up communication to actually set the meeting. We would like to meet with DCA and DWR soon to understand both the immediate soil investigation Project and DWR's broader, overall Delta conveyance project. It is our hope that DWR engages with EBMUD to fully explore the potential impacts of its proposed single tunnel Delta conveyance project on EBMUD's Mokelumne Aqueducts and on EBMUD's proposed tunnel in the EBMUD ROW. In this way DWR's Delta conveyance project can be designed in a way to avoid such impacts so that EBMUD can continue to convey its vital Mokelumne River water supply to its East Bay service area.	DWR has forwarded EBMUD’s request to the DCA, and future meetings will be scheduled. Note that the Proposed Project is not a part of the future, proposed DCP (see Master Response 2).
198	East Bay Municipal Utility District	[ATT 1: Procedure 718-Raw Water Aqueduct Right-of-Way Non-Aqueduct Uses]	See Response to Comment 195.

199	Leland Frayseth	The request for comment on this "Soil Investigations for Data Collection" just came out today and comment closes 20 December 2019. Please reference the following section: MM BIO-14: General Fish Over-water activities will be limited to only being conducted during the fish work window (August 1 – October 31) to avoid impacts to sensitive fish species that have the potential to occur in the Study Area. I do not who approved the reference fish work window dates, I doubt they have a fishing license and fish for Sacramento or Mokelumne Chinook salmon because the dates of that window are the peak of the fall run Chinook salmon migration and the over water boring locations in red would be very disruptive to migrating salmon and fishermen and women who target them. Please see redlined attached pages of your document and the 2019-2020 Supplemental Sport Fishing Regulations. Please watch this video to view what Department of Water Resources DWR's neglected maintenance and subsequent Oroville spillway failure did to fall run Chinook at the Feather River Hatchery. Are you trying to finish the species off with over water boring for the scary tunnel during the peak of their migration? https://youtu.be/rvm7r4hYcWs	The fish work window specified in the Final IS/MND Section 3.4.2 (MM BIO-14) was selected to avoid impacts to sensitive fish species by targeting a time period that avoids the primary migration and rearing seasons of juvenile salmonids and the primary migration seasons of adults in the Delta. This window (August 1 – October 31) does overlap with a portion of the migration period for fall-run Chinook salmon (July – December) and steelhead (August - October); however, it avoids the primary migration period for the late fall-run Chinook (mid-Oct - December), federally threatened spring-run Chinook (March – September) and federally endangered winter-run Chinook (December – August), as well as the peak upstream migration period for adult green sturgeon (February – May). Additionally, the water boring equipment will be deployed for limited duration and the in-water portions are limited in size, thus leaving the water way minimally obstructed for fish migration and movement, resulting in a less-than -significant impact to these fish populations (Final IS/MND, Section 3.4.2). Because of the limited size and duration of the boring, this activity should not be a significant impediment to anglers (Final IS/MND Section 3.16.2). Boring voids will be backfilled and capped upon completion of the work.
200	Leland Frayseth	[ATT 1: Soil Investigations for Data Collection in the Delta Initial Study/Proposed Mitigated Negative Declaration Excerpts (with Redline)]	See Master Response 1 and Response to Comment 199.
201	Leland Frayseth	[ATT 2: 2019-2020 Supplemental Sport Fishing Regulations (with Redline)]	See Master Response 1 and Response to Comment 199.
202	Leland Frayseth	[ATT 3: November 20, 2019 DWR E-mail Blast - Soil Investigations for Data Collection in the Delta (November 20, 2019)]	See Master Response 1 and Response to Comment 199.

203	Friends of Stone Lakes	Friends of Stone Lakes National Wildlife Refuge (Friends) herein offers the following comments concerning the proposed Mitigated Negative Declaration (MND) for the Soil Investigations for Data Collection in the Delta being prepared by the Department of Water Resources. A complete Draft Environmental Impact Report is required to analyze the full extent of the impacts on terrestrial species from this project. The Friends are a citizen volunteer nonprofit organization dedicated to conservation, enhancement, promotion and protection of the Stone Lakes National Wildlife Refuge (Stone Lakes NWR), which is in the general proximity of the project. The Stone Lakes NWR is the single largest complex of natural wetlands, lakes and riparian areas remaining in the Sacramento-San Joaquin Delta, and provides critical habitat for waterfowl and other migratory birds of international concern, as well as a number of endangered plant and animal species. Its location at the south end of a large urban area increases the Refuge's importance as a stop on the Pacific Flyway migratory route. Stone Lakes NWR and its surrounding agricultural areas are home to several special status species, including the tri-colored blackbird, greater sandhill crane, white-face ibis, long-billed curlew, Swainson's hawk, burrowing owl, giant garter snake and valley elderberry longhorn beetle. The Friends requested that I review and prepare expert comments on terrestrial species impacts on their behalf. Attached as Exhibit A is a copy of my Statement of Qualifications. Among other qualifications as a wildlife expert in the project area, I am founding member of Save our Sandhill Cranes, an advocacy group for greater sandhill crane, as well as an executive member of Environmental Council of Sacramento and the Mother Lode Chapter of the Sierra Club. I also served as an expert witness at the State Water Resources Control Board's hearings on the California WaterFix water rights change petition, providing testimony on that project's impacts to biological resources.	While the study area for the proposed Project is geographically large, project activity is limited to relatively small individual location sites where any potential impacts are constrained to Impact Areas, which are chosen to avoid environmental resources based on reconnaissance's surveys. See Response to Comment 9 and Response to Comment 10 for information on reconnaissance surveys. See also Response to Comment 104 and 191 for information about the Impact Areas and Study Area. See Master Response 4.

204	Friends of Stone Lakes	Inadequate Survey Approach This project proposes an enormous number of coring sites over a wide area. This project does not have a constrained number of areas implicated for impacts, but rather includes an extensive and far ranging number of sites for subsurface soil exploration. The number of sites and the scope of the geography involved make habitat assessment coupled with very limited reconnaissance field surveys inadequate to detect the presence of species throughout this extensive area. Habitat assessment coupled with reconnaissance field surveys is one of the appropriate tools for determining if listed and special status species are in a particular area, but they are far from the only one, and can be insufficient to capture the presence of all listed species and species of special concern, especially if the surveys are limited. The California Natural Diversity Database has useful occurrence data (but the lack of occurrence data in no way can be used to assume the absence of a species), as does the California Native Plant Society, the United States Fish and Wildlife Service, the Stone Lakes National Wildlife Refuge, the Cosumnes River Preserve, eBird, and the Audubon Christmas counts, to list a few. The utilization of all of these sources, as well as other appropriate sources like literature review, AND comprehensive field surveys would be necessary to begin to assess the impact of an activity on listed and special concern species. But in the end, relying on a single field survey, or limited field surveys, to verify the presence of species that are expected to occur two weeks before the coring is started has the potential to miss various species. Weather conditions and dormancy, for instance, may hinder detection. The sheer number of sites and the variability of the terrain mathematically increases the possibilities for errors in detecting the presence of species, and this compounded with the apparent tight timeline for the field surveys (one survey two weeks prior to impacts), which suggests that they would be conducted no matter what the climactic conditions, increases the likelihood that species will be missed and impacts will occur. Basing a Mitigated Negative Declaration that relies on Mitigation Measures dependent on single or limited field surveys proximal to disturbance to verify the presence of species is fundamentally flawed and indicative of the need for a robust Environmental Impact Report. Species need to be assumed to be present unless they can be definitively determined to be absent, which the MND ignores. And, there are potential impacts to species that can be determined to be present that are not considered, like flushing avian species on foggy days and birds strikes on power lines and/or other obstructions from project noise.	See Response to Comment 9 and Response to Comment 10 on reconnaissance surveys and limited site access and Response to Comment 176 on mitigation requiring pre-activity site surveys. In the preparation of the Initial Study for this IS/MND, multiple sources were searched for the entire project area (Final IS/MND Section 3.4.1.1). Absence is never assumed based upon the lack of CNDDB occurrences. CNDDB occurrences and citizen sciences sites, such as iNaturalist and eBIRD, as well as other sources and literature searches are included in the background analysis to determine potential for occurrence. If a species is identified as having a potential to occur in the project area, the next step is to confirm that the specific impact sites are within the range of the species, and to identify whether there is potentially suitable habitat, including habitat that may be poor or marginal for the species. The reconnaissance level surveys are meant to ground truth the presence of potentially suitable habitat as well as document any species that are present and observed during the survey. These surveys are not expected to confirm presence of all potentially occurring species and are only used to determine absence in the very specific case when no potentially suitable habitat is identified on or adjacent to a site. Even in those cases, additional pre-activity surveys will be performed by the on-site biological monitor immediately prior to ground disturbance and all soil investigation activities will be monitored to ensure no significant impacts to special status species. The number of sites and variability in terrain is precisely why there will be multiple site surveys that will be timed in such a way as to ensure maximum potential for identification of species that could occur concurrently with any soil investigation activities. Additionally, to further protect species from harm, suitable habitat is treated as potentially occupied so that cryptic species, or species that are not observed during the surveys, are still protected by the measures put in place. This conservative approach to species protection is designed to counter the complexities of a project with multiple sites, habitat variability, climactic variability and a timeline of multiple months. With respect to the risk of flushing birds and power line strikes, it is standard during a pre-activity survey for the on-site biological monitor to survey for presence of birds from a safe location and assess the risk based on local conditions, including weather and nearby hazards prior to entering the site. The monitor then communicates any site-specific restrictions to work to the field crew based on the pre-activity survey to prevent take of migratory birds or their nests. This, in addition to adhering to speed limits, will allow birds ample time to depart the site from approaching vehicles and equipment, and avoid a rapid flush, as indicated in the comment. Once vehicles and equipment arrive on site, the project will have a very small footprint with little movement and will be unlikely to cause any birds that may be present to flush. Further, given the small footprint of project work, the number of birds, if any, that might depart the site would be minimal and not give rise to the potential for a substantial adverse impact on a population, class, or species of bird (see IS/MND, Section 3.4.2(a)). It is standard for the on-site biological monitor to continue to observe birds for signs of disturbed behavior and communicate any

			measures that must be implemented to prevent take of migratory birds or their nests. Furthermore, the Draft IS/MND proposed species-specific mitigation measures for some special-status species that would be implemented based on the potential for that species to be present. These species-specific measures include such protections as full avoidance of the habitat (MM BIO-2,MM-BIO-4, MM BIO-12 through MM BIO-13, MM BIO-20), weather related restrictions (MM BIO-2), timing related restrictions (MM BIO-4, MM BIO-9, MM BIO-14), establishment of a buffer that is appropriate to the species (MM BIO-3 through MM BIO-8, MM BIO-10 through MM BIO-11, MM BIO-15 through MM BIO-18), and the requirement that species-specific surveys be conducted appropriate for the identification of those species (BIO-3, BIO-5 through BIO-11, BIO-18). Additionally, a biological monitor will be present during soil investigation activities to ensure implementation of all applicable mitigation measures and to ensure that any wildlife that enter the site are protected from harm. MMs BIO-1 through BIO-20 would be implemented to reduce any impacts to special status species to a less-than-significant level. The existence of the mitigation measures, in and of themselves, presumes that species will be present onsite, although this exact presumption is not required by CEQA. As a result of Project design and applicable mitigation measures, potential impacts to species and habitat will clearly be less than significant and not result in any substantially adverse impacts (see Final IS/MND, Section 3.4.2; see also Public Resources Code, Section 21080, subdivision (c)(2)). See also Master Response 4.
205	Friends of Stone Lakes	Field Surveys on Refuge and Preserve Lands There were no indications in any of the proposed mitigations that field surveys would be conducted in collaboration with the land managers for Refuge and Preserve lands. This is quite surprising given the obvious expertise and local knowledge available from these sources, but it is consistent with the flawed reliance on using a single or limited field surveys to determine the presence of species, and as such it also indicates the fundamentally flawed nature of this MND. A full Environmental Impact Report should be prepared and the land managers for Refuge and Preserve lands should be consulted as part of that process.	Prior to any individual site location being physically accessed for evaluation, the appropriate landowners/entities would be contacted, and permission formally sought (see Response to Comment 29). Should any of these sites be on refuge or preserve lands, the local knowledge would not only be sought, but welcomed at that time so as to ensure that the resources are appropriately identified. See Response to Comment 9 and Response to Comment 10 on reconnaissance surveys and limited site access and Response to Comment 176 on mitigation requiring pre-activity site surveys. See also Master Response 4.

206	Friends of Stone Lakes	Inadequate Analysis of Potentially Significant Invasive Species Impacts The MND makes no mention of protocols for equipment and invasive species. Seeds from invasive species can easily be transported on equipment and vehicles from one work site to another unless rigid protocols are in place to remove any invasive seeds that become attached. The MND does not address this potentially significant impact or include any mitigation measures to avoid this serious problem. As such, even the field surveys could very well lead to invasive plant seeds being transported from one area to another. And, the same is true for the coring rigs and any other vehicles being used in multiple location for this project. Other flaws in the MND requiring preparation of a full Environmental Impact Report are discussed below.	Section 3.4.1.2 of the Final IS/MND was revised to address the pervasive presence of invasive species throughout the Delta: In the Delta, unfarmed uplands are dominated by non-native species. Areas with minimal disturbance are usually dominated by European annual grassland species, and areas that are frequently disturbed are dominated by agricultural weeds. The land-based soil investigation sites consist of disturbed habitats including agricultural fields and roads. Section 3.4.2 (b) of the Final IS/MND was revised to address invasive species: Due to the pervasive presence of invasive species throughout the Delta and the disturbed nature of the proposed Project location sites, the project is not likely to result in spread of invasive species between locations. Furthermore, all vehicles and equipment related to the project will remain on existing public and private roadways until entering disturbed soil investigation sites. As indicated in the above revision, the proposed soil investigation sites are located in previously disturbed areas that have already been exposed to many of the invasive plant species that are already ubiquitous in the disturbed and developed areas of the Delta. Thus, the proposed Project would not significantly increase the potential for spread of invasive species above baseline conditions. Additionally, emergent wetland, and vernal pool habitats will be avoided, as detailed in Section 2.0, Proposed Project Description. Furthermore, all vehicles and equipment related to the project will remain on existing public and private roadways until entering previously disturbed soil investigation sites, so as to minimize the movement of any remnant of invasive plant species. As a result, the project would not result in any spread of invasive species between locations. But even if some number of invasive plant species were to be inadvertently brought to a project location, this transfer would be limited and occur on areas already inundated with invasive plant species. Therefore, the proposed Project would not result in a “spread” of, or substantially adverse effect on, any special-status plant species or natural community given (see IS/MND, Sections 3.4.2(a), (b)). See also Master Response 4.
207	Friends of Stone Lakes	MMBio-1: Having qualified biologists conduct habitat assessment and reconnaissance level surveys approximately two weeks prior to the onset of ground disturbing soil investigation activities would not detect annual listed plants unless there were multiple surveys throughout the year to avoid a situation where a single survey was done when the subject plants were dormant. As well, field surveys could only be considered definitive if species are affirmed to be present. The absence of a species sighting for many species is far from conclusive that they are not actually present. This reinforces the disappointment that land managers for local Refuges and Preserves are not planned to be consulted because their local knowledge could prove invaluable in verifying the presence of species on those lands.	See Response to Comment 204 and Response to Comment 205.

208	Friends of Stone Lakes	MM Bio-3: Western Pond Turtle: This mitigation measure further explicates the flawed approach of relying on limited field surveys for determining presence. If the weather happens to be cold and or overcast when the survey is done 48 hours before the activity begins, it is quite unlikely that California Pond turtles would be detected. And yet, it might be very clear from the available data from other sources that California Pond Turtles are indeed present. Starting the activity with an assessment that no turtles are present, when they are in fact known to be present, dramatically increases the chance of "take," and once again demonstrates the need for a fully researched and analyzed Environmental Impact Report, rather relying on this flawed mitigation measure and MND. Protocols for field surveys must be appropriately timed to be effective.	See Response to Comment 204. See also Master Response 4.
209	Friends of Stone Lakes	MM Bio-4: Giant Garter Snakes have been recorded using hibernacula up to 800 feet from their wetland habitats. Surveying for appropriate cracks and rodent holes within 200 feet would not necessarily detect all of the snakes. And here again, reliance on habitat assessment and reconnaissance surveys are flawed if they are a one-time effort and they are not properly balanced with all the other data that is available, as discussed above. The MND's inadequate approach could result in take of giant garter snake, which would be a significant impact. Presence needs to be assumed for the Giant Garter Snake unless it can be conclusively determined that none are present.	See Response to Comment 204. See also Master Response 4. "Hibernacula", in the form of burrows, are used by giant garter snakes primarily during the winter brumation period from approximately October until approximately April. In areas with potential giant garter snake habitat, including presence of burrows, no work will be conducted during this time period when the snakes are underground and therefore more vulnerable. Work in these areas would be conducted during the snakes' active season, May 1 to Oct 1. While the snakes make use of burrows during the active season, those burrows are located nearer to the aquatic habitat, which makes the USFWS-recommended 200-foot survey area appropriate (see USFWS, 1997; Available as Appendix C of the Programmatic Formal Consultation for U.S. Army Corps of Engineers 404 Permitted Projects with Relatively Small Effects on the Giant Garter Snake within Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo Counties, California at https://www.fws.gov/sacramento/es/Survey-Protocols-Guidelines/Documents/ggs%20appendix%20c.pdf). Additionally, any suitable upland habitat within 200 feet will be avoided (see MM BIO-4). The avoidance of suitable habitat is functionally equivalent to assuming that the species could be present and protecting it, with the result that no substantially adverse impact to the species will occur (see IS/MND, Section 3.4.2(a)).
210	Friends of Stone Lakes	MM Bio 5 and 6: Both of these mitigations are focused on the impact to nesting birds and no consideration is given to foraging birds beyond letting them leave the area. If project activities are undertaken during very foggy conditions, birds that are flushed have the potential to hit power lines, including special status species like the White-tailed Kite, which is a fully protected species, and the Swainson's hawk which is a state listed species, as well as the Sandhill Crane, which has been conclusively demonstrated to be at risk from power line strikes.	See Response to Comment 204.

211	Friends of Stone Lakes	MM Bio-7: Disturbing roosting Tri-colored Blackbirds has the potential to expose them to predators, like the Black Crowned Night Heron, that are found near Tri-colored Blackbirds roosting/nesting areas such as large blackberry patches. Birds leaving the blackberry patches are more vulnerable to predators, such as Black Crowned Night Herons, than ones that remain inside the blackberry out of reach of the much larger predators that cannot squeeze into the patch. Disturbances that cause the blackbirds to flush out of the blackberry patch have the potential to result in take of Tri-colored Blackbirds due to predation. The 1,300 foot buffer around nesting blackbirds to avoid nest abandonment should also be applied to Tri Colored Blackbirds that use blackberry patch roost sites that experience routine predation by predators like Black Crowned Night Herons. And here again, just relying on habitat assessment and reconnaissance field surveys would not necessarily capture the whole picture and Tri Colored Blackbirds could be taken by the activities contemplated in this flawed MND.	Section 3.4.2 (a), MM BIO-7 includes a buffer of up to 1,300 feet for Tricolored Blackbird breeding colonies and roost sites to be established by a qualified biologist. A pre-activity survey conducted by a qualified biologist is a standard measure and will ensure that Tricolored Blackbird nest or roost sites will have the appropriate buffer applied. The Project involves a very small footprint and little movement once equipment and support vehicles arrive/depart from the site (see Response to Comment 191 and Response to Comment 203). Speed limits will be adhered to. Work will take place during daylight hours, and thus are not likely to affect night roosts or increase risk of predation by nighttime predators such as Black Crowned Night Herons. See also Response to Comment 204 and Master Response 3.
212	Friends of Stone Lakes	MM Bio-8: It can be very difficult to identify all bird nests in a single reconnaissance field survey, especially given the profusion and density of leaves during the nesting season for the tree nesters. Cavity nesting birds also can prove challenging to detect depending on how much visual obstruction there is in front of their nests. Similarly, ground nests that are immediately over the coring sight would be relatively easy to spot, but in order to protect all ground nesters protected by the Migratory Bird Act, the entire pathway of every possible vehicle driving in and through a work activity sight would need to be thoroughly scanned for ground nests. This level of detail is missing in this mitigation measure, and reliance on just the habitat assessment and reconnaissance field survey is inadequate to avoid impacts on nesting birds and their nests. The unprotected nesting killdeer found on one of DWR's other drilling sites in 2019 is a good example of the inadequacy of MM Bio-8.	The standard method used by the qualified biological monitor, which would be employed for the Proposed Project, involves thoroughly searching for bird nests within the project footprint and includes surveys of all access routes. Qualified biological monitors are trained to spot both cavity and ground nests during their surveying. While most access routes would be on established paved or dirt roads that are less likely to support nesting birds, these routes will be surveyed thoroughly for the presence of opportunistic ground nesting birds such as killdeer, as will access routes that contain any habitats that may support nesting birds, and nests will be avoided (see Response to Comment 9 and Response to Comment 10). For the Proposed Project, a biological monitor will be on site during all Project activities and has the authority to stop work if new nests are found or nesting birds appear disturbed by the Project (MM BIO-1). See also Response to Comment 204. This level of professional surveying, monitoring, and avoidance would ensure a less-than-significant impact to all nesting habitat, including cavity and ground nests. The killdeer nest mentioned in the comment was identified on an access road during a June 10, 2019, pre-activity survey that was being conducted related to a court-ordered entry dating back to a separate project approved on September 23, 2010 (SCH# 2010062041). The killdeer nest remained in its original undisturbed and unencumbered state and location while drilling occurred on June 17, 2019 a significant distance away. The mitigation worked as intended, in that the pre-activity site visit identified a nest which was then subsequently completely avoided.

213	Friends of Stone Lakes	MM Bio-9: The focus of this mitigation measure is on roosting cranes with no consideration given to foraging cranes. The disturbance from the vehicles associated with the work activities contemplated in this MND have the potential to flush foraging Sandhill Cranes and if this occurs during foggy conditions they are at risk of collisions with power lines. There was no analysis of where nearby power lines are located in relation to where work activities would occur, and there was no discussion of work restrictions to address weather risks. A full analysis in an Environmental Impact Report would be appropriate given these lapses in identifying potential impacts in this MND. As for Burrowing Owls in the Mitigation Measure, it is stated that: “During the nonbreeding season (September 1 – January 31) the owls and the burrows they are using should be avoided, if possible. “ There is no discussion of what would constitute a situation where it was not possible to avoid the owls or their burrows, nor was there any discussion about mitigations for those situations. Here again, is another example of where a DEIR is needed to adequately consider the potential impacts and the appropriate avoidance and minimization measures needed to avoid and minimize impacts, and the mitigation measures for when those measures do not result in an impact that is less than significant. This MND appears to be recast what are really avoidance and minimization measures as mitigation expected to reduce the impacts to less than significant levels. Potentially significant impacts from flushing birds hitting powerlines also needs to be analyzed for many other avian species such as black rail, white tailed kite, and northern harrier.	See Master Response 204. Wetland habitat used by black rail will be avoided so the project is not likely to cause the species to flush (see Response to Comment 9 and Response to Comment 10). MM BIO-10 has been revised to enhance its effectiveness by removing “if possible” and instead stating “During the nonbreeding season (September 1 – January 31) the owls and the burrows they are using will be avoided.” See also Master Response 3.
214	Friends of Stone Lakes	In conclusion, this MND does not explicate and analyze all of the project’s likely significant impacts, and the approach of conducting very limited field surveys to detect the presence of species is inadequate to accurately determine if species are indeed present. For these reasons, a full Environmental Impact Report must be prepared before this project is undertaken	See Responses to Comments 203 to 213. See also Master Response 4.
215	Friends of Stone Lakes	[ATT 1: Statement of Qualifications – Sean Wirth]	See Master Response 1.
216	Local Agencies of North Delta	These comments are submitted on behalf of Local Agencies of North Delta (“LAND”) regarding the Department of Water Resources’ (“DWR”) Initial Study/Proposed Mitigated Negative Declaration (“MND”) for Soil Investigations for Data Collection in the Delta (“Project”). LAND is a coalition of reclamation, levee and water districts in the northern Delta. Many of the proposed boring sites (and major components of a tunnel project), would be within LAND member district areas.	See Master Response 1.
217	Local Agencies of North Delta	I. AN EIR IS REQUIRED UNDER CEQA FOR THIS PROJECT As further explained below, the MND is deficient as an informational document in a number of fundamental respects and the Project entails potentially significant impacts for which adequate mitigation measures are not provided. An MND is only appropriate when all potentially significant impacts of a project are mitigated to less than significant levels. (Cal. Code Regs., tit. 14 (“CEQA Guidelines”), § 15070, subd. (d); Pub. Resources Code, § 21064.5.) As a result, DWR must prepare a full environmental impact report (“EIR”) prior to undertaking the project.	See Master Response 3 and Master Response 4. This comment does not offer any specific deficiencies in the IS/MND.

218	Local Agencies of North Delta	A. Piecemeal Review of Drilling in Furtherance of a Tunnel Evades Review It is troubling that the drilling activities proposed in the MND are evaluated outside of the larger context of the proposed single tunnel Delta conveyance project. (MND, p. ii [drilling is to "inform and evaluate alternatives . . . for a proposed single tunnel Delta conveyance"].) A "project" under CEQA includes "the whole of an action" that may impact the environment. (CEQA Guidelines, § 15378.) "[I]f projects are various steps which taken together obtain an objective, they are a single project for the purposes of CEQA." (Aptos Council v. County of Santa Cruz (2017) 10 Cal.App.5th 266, 283.) Here, the Project is a part of single tunnel Delta conveyance, and the single tunnel Delta conveyance is reasonably foreseeable. (See Notice of Preparation for Delta Conveyance Project, attached as Exhibit 1.) A project description encompasses the entire activity that is proposed for approval; on the other hand reasonably foreseeable indirect changes to the environment that will result from that activity should be considered in cumulative impact analysis. (See City of Long Beach v. City of Los Angeles (2018) 19 Cal.App.5th 465, 477.) The Project should be analyzed in the eventual EIR for the single tunnel Delta conveyance, or the latter should be included in this Project's cumulative impact analysis. Either way, the environmental review of the Project should be conducted in an EIR. Keeping review of this Project and the single tunnel Delta conveyance separate is merely an attempt to avoid more rigorous review of this Project. Future actions related to the proposed project must be considered if those actions are a "reasonably foreseeable consequence of the initial project" and "the action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects." (Laurel Heights Improvement Assn. v. Regents of University of California (1988) 47 Cal.3d 376, 395 (Laurel Heights).) "Related projects currently under environmental review unequivocally qualify as probable future projects to be considered in a cumulative analysis." (Citizens Assn. for Sensible Development of Bishop Area v. County of Inyo (1985) 172 Cal.App.3d 151, 168 (Citizens Assn.).) The failure to consider such future actions renders a CEQA document inadequate. (See City of Santee v. County of San Diego (1989) 214 Cal.App.3d 1438, 1455 (Santee).) Treating the drilling as a separate endeavor from the single tunnel Delta conveyance project, which is the subject of a Notice of Preparation released today, is impermissible piecemealing. (East Sacramento Partnership for a Livable City v. City of Sacramento (2016) 5 Cal.App.5th 281, 293.) The MND makes it abundantly clear that the entire point of the drilling is to "inform and evaluate alternatives . . . for a proposed single tunnel Delta conveyance . . . ." (MND, p. ii; see also MND, p. 1.) Yet the single tunnel conveyance is not mentioned again throughout the MND, nor are its potential impacts considered. The single tunnel conveyance is reasonably foreseeable.	See Master Response 2.

219	Local Agencies of North Delta	The commitment of resources devoted to the single tunnel conveyance already could commit the agencies to carrying out the single tunnel project. The Delta Conveyance Authority's ("DCA") January 2020 update includes a summary of all of the contracts DCA has entered into with various vendors. (Exhibit 2, p. 8.) The DCA has entered into a minimum of $204 million of contracts with engineering and design firms. (Exhibit 2, pp. 8-9 [Jacobs, Fugro, and Parsons contracts].) A considerable amount of resources has been committed to a single tunnel Delta conveyance, and environmental review has commenced. (Exhibit 2, p. 15; see also Exhibit 1.) Previously, DWR analyzed geotechnical exploration drilling with the larger project it serves to inform in a full EIR. The now-decertified EIR for the California WaterFix conveyance included geotechnical exploration as a component of the project. (See Exhibit 3, pp. 3-164 to 3-167.) [Footnote 1: Exhibit 3 is comprised of excerpts from the 2016 California WaterFix Final EIR.] These geotechnical investigations would have included subsurface investigations to inform design and construction of the actual conveyance facilities. (Exhibit 3, p. 3-164.) The WaterFix EIR also evaluated the impacts of geotechnical investigations, even noting that "ground settlement as a result of geotechnical investigation and the tunneling operation could result in loss of property or personal injury during construction." (Exhibit 3, p. 9-308.) DWR's past actions demonstrate the Project is a part of the larger Delta conveyance project and that the significant impacts associated with drilling required preparation of an EIR. Preparing the MND separate from the single tunnel Delta conveyance is merely a ploy to evade meaningful review. The Project's potentially significant impacts must be evaluated in an EIR. If not necessarily the same project, environmental documents must consider "reasonably anticipated future projects in its cumulative analysis. (See Santee, supra, 214 Cal.App.3d at 1452; Laurel Heights, supra, 47 Cal.3d at 394; Citizens Assn., supra, 172 Cal.App.3d at 168.) Again, the DCA's irretrievable commitment of resources and the MND itself make clear that a single tunnel Delta conveyance project is reasonably anticipated as a future project. (See Exhibit 1.) DWR must either reevaluate this Project as a component of the larger single tunnel Delta conveyance, or include the latter in this Project's cumulative impact analysis. The failure to consider the single tunnel conveyance in the MND's impact analysis is an informational deficiency rendering the MND inadequate. (Santee, supra, 214 Cal.App.3d at 1455.)	See Master Response 2. See also Response to Comment 4 and Response to Comment 19.

220	Local Agencies of North Delta	B. The Project Would Result in Potentially Significant Impacts CEQA “requires the preparation of an EIR whenever it can be fairly argued on the basis of substantial evidence that the project may have significant environmental impact.” (No Oil, Inc. v. Los Angeles (1974) 13 Cal.3d 68, 75.) Here, there is substantial evidence of a fair argument that the Project has the potential to result in several potentially significant impacts. Potentially significant impacts overlooked by the MND include, but are not limited to, impacts associated with: noise, biological resources, hazardous materials, waste disposal, truck traffic, and cultural resources. Moreover, the mitigation provided for these impacts is inadequate. An MND is appropriate only when all potentially significant impacts of a project are mitigated to less than significant levels. (CEQA Guidelines, § 15070, subd. (d); Pub. Resources Code, § 21064.5.) A MND is not appropriate when the success of mitigation is uncertain, as that creates a fair argument that an impact will not be mitigated to less-than-significant levels. (See San Bernardino Valley Audubon Society v. Metropolitan Water District (1999) 71 Cal.App.4th 382, 392.)	See Master Response 4. This comment does not present evidence of any specific deficiency or inadequacy in the IS/MND.

221	Local Agencies of North Delta	1. The Project Involves Significant Impacts Associated with Noise As recognized by DWR itself and by other agencies with permitting responsibility over the Project, noises and vibrations are a part of the Project. (See, e.g., MND, pp. xx, 173, 174.) This means that loud sounds will occur within designated critical habitat for listed species. In fact, the MND itself suggests the potential for these noises to result in potentially significant impacts, as species such as Green sturgeon, Delta smelt, and winter-run chinook salmon have a “High” potential to occur at the Project locations. (MND, Appendix A.) However, the MND concluded that noise issues would result in a less than significant impact. (MND, p. 170.) To support its conclusion that noise impacts from the Project will result in a less than significant impact, the MND relies in part on Mitigation Measure NOI-1. This measure provides that equipment will be properly tuned and use appropriate mufflers. (See MND, p. xx.) Relying on this mitigation measure alone is inadequate to ensure that significant impacts will not occur from noise, because it does not address noise impacts specific to aquatic communities. Mitigation Measure BIO-14 is equally deficient to address noise impacts as it only provides a designated in-water work window to reduce exposure of sensitive fish species to in-water work activities. (See MND, pp. xii.) This fails to mitigate or account for the noise impacts during said exposure, and the timing window of August 1 – October 31 fails to avoid the presence of several listed fish species. Instead, the MND claims that for aquatic communities, activities of the Project would be “minor in scope,” “would not result in the degradation of aquatic habitat or water quality conditions,” and that “disturbance of the river bed would be negligible,” (see, e.g., MND, p. 83), while neglecting that noise impacts could be a potential significant impact on aquatic species.	Effects of underwater noise on fish and marine mammals vary depending upon whether they are impulsive sounds (pile driving), dB(decibel; peak), or continuous sounds (boat motor) dB(rms (root mean squared)). Soil investigations borings would be classified as continuous sounds, and as such, measured by root mean squared dB. Popper and Hawkins (2019), in their peer-reviewed paper providing an overview of the impacts of anthropogenic sounds on fishes, give criteria for fish experiencing pile driving (depending upon the type of hearing and involvement of swim bladder) to be: > 207 dB peak = mortality; >203 dB peak = recoverable injury; > 186 dB peak = temporary hearing loss and reduced ability to respond to biologically relevant sounds as well as behavioral changes dependent upon proximity to the source of the noise. The NMFS threshold for disturbance to all fish species is 206 dB for peak sound exposure level (SEL) and between 183 and 187 dB cumulative SEL depending upon fish size. For increased clarity, language regarding SEL levels for underwater noise has been added to the Final IS/MND Section 3.4.2.1(d). During similar overwater geotechnical explorations conducted in 2012, measurements were taken at 10 meters from the barge and were found to not exceed SEL of 146 dB with a maximum peak of sound pressure level (SPL) of 182 dB, which are below the NMFS threshold (Illingworth and Rodkin 2013). Further, this noise level at its highest point falls below any scientifically determined noise level, as included above, that would cause even a temporary change in fish behavior and does not come close to a level that would result in injury or mortality. All overwater drilling will make use of a rotary drill within a conductor casing, which dampens any sound made by the drill itself. Noise from other activities aboard the barge/vessel will not be dissimilar to many of the other anthropogenic noises found within the riverine environments of the Delta, such as motorized fishing boats, and, in any event, would not exceed the noise level presented by the underwater drilling. As the work window was selected to minimize the potential of listed species of fish to be moving though the work area, and the noise level of geotechnical drilling will be below any standard that would substantively impact fish species, the project design and mitigation measures currently in place adequately protect fish and ensure that there is a less than significant impact to species from noise-related effects as measured by the relevant thresholds of significance. Here, those thresholds ask whether the project would have a “substantial adverse effect” on a special-status species (see IS/MND Section 3.4, issue (a)) or whether the project would “interfere substantially” with the movement of any native or migratory fish species (see Section 3.4, issue (d)). As shown above, any noise-related effect on a fish species would fall well below any plausible interpretation of the “substantial adverse” threshold; in fact, it would not even meet the expert criteria for a temporary change in behavior. No evidence been put forth that shows noise from the Project would cause a substantial interference with fish movement. To the contrary, evidence above indicates that underwater noise generated by the Project

			would not result in any behavioral changes in fish species, at all, let alone substantial shifts that could interfere with movement or migratory patterns.
222	Local Agencies of North Delta	Sound impacts are much more acute and travel exceptional distances through water because water is significantly denser than air. (See Exhibit 4, BSK Technical Comments ["BSK Technical Comments"], ¶ 6.) [Footnote 2: Expert comments on the 2010 MND, dated August 2, 2010, are still applicable to current MND, as the issues raised are not addressed in the 2019 MND.] Additionally, behavioral alterations are likely in fish exposed to sound levels as low as 150 decibels; and at the 207 decibels level, tissue injury occurs. (See Exhibit 5, U.S. Army Corps of Engineers, Southwest Region, Nat'l Marine Fisheries Service, Nat'l Oceanic and Atmospheric Admin., U.S. Dept. of Commerce; Biological and Conference Opinion, Sacramento District Reinitiation of Formal Consultation for the South Delta Temporary Barriers Project; no. 151422SWR2007SA00142; (April 3, 2009); p. 67 ("TB Project BO"); BSK Technical Comments, ¶ 7.a.) NOAA Fisheries has also recognized the potential harmful effects of noise to fish species by causing flight from protective areas. (TB Project BO, p. 66; see Exhibit 6, U.S. Army Corps of Engineers, Southwest Region, Nat'l Marine Fisheries Service, Nat'l Oceanic and Atmospheric Admin., U.S. Dept. of Commerce; Biological and Conference Opinion, Stockton Deep Water Ship Channel Maintenance Dredging and Levee Stabilization Project; no. 151422SWR2004S A9121:JSS; (April 4, 2006), ("DWSC Project BO").) For the DWSC Project BO, NOAA Fisheries concluded that sturgeon would be "expected to experience elevated sound levels which could adversely affect their hearing and behavior" based on the general behavior of fish to noise and their likelihood of being present in the dredging action area. (DWSC Project BO, p. 75.) Moreover, studies document disorientation in fish resulting from increased noise, leading to displacement and death. (Id. at pp. 57-58; TB Project BO, p. 66.) In short, "hearing sensitivity" is known, and noise impacts are well documented for aquatic communities. Yet, the MND does not contain a mitigation measure or Project component that requires any monitoring of sound levels produced by the drilling activity. Even absent monitoring, noise modeling maybe conducted using the NMFS Underwater Noise Calculation Spreadsheet model to determine estimated project noise levels. (TB Project BO, p. 76.) Furthermore, the MND contains no evidence that any noise modeling or hydroacoustic monitoring was conducted to ensure that sound levels would be consistent with those described in the Noise discussion. (See MND, p. 173). Again, the MND claims that the noise levels will result in less than significant impact. (MND, p. 170.) However, studies indicate that sounds created from topside activities, in addition to machinery use, can be easily and efficiently transferred through the barge hull to the surrounding water column, particularly from metal to metal contact increasing the impact of noise. (DWSC Project BO, at p. 57.) Other noises besides the Standard Penetration Test ("SPT") are also associated with the Project and should be assessed. (BSK Technical Comments, ¶ 6.) Exacerbating the deficient noise analysis in the MND, the discussion lacks a description of the duration of sound generation from the SPT. Moreover, the MND states that the current Project would involve drilling at each site for up to 15 days, further heightening the potential for significant noise impacts to aquatic listed species. (MND, p. 21; BSK Technical Comments, ¶ 9.)	See Response to Comment 221.

223	Local Agencies of North Delta	MM NOI-1 is also inadequate to protect terrestrial sensitive receptors and the environment. There is no duration analysis of the noise levels and the decibel estimates are uncited. (See MND, p. 173.) The MND further lacks assessment of peak or average decibel levels and sensitive receptors, only listing noise sources and claiming that "while equipment is working, ambient noise levels will increase slightly." (MND, p. 173.) Without providing working sound thresholds or analysis of baseline sound levels, a claim of a slight increase lacks context and meaning. In this regard, failure to perform ambient noise measurements is thus a significant flaw in DWR's analysis, and renders the analysis of noise impacts incomplete. For a project of this scale, conducting no measurements fails to constitute an impact analysis, especially with aquatic noise-sensitive species present. A complete and appropriate evaluation of noise impacts for this Project would include relevant noise measurements, address the predicted ambient noise increases, and provide evidence to support the efficacy of a mitigation measure that would in-fact protect the aquatic communities present.	Continuous Standard Penetration Test (SPT) sampling is not planned for the investigation. Instead, periods of 30 to 60 minutes between driven samples are anticipated as borings proceed below the half-way point. For a 200-foot-deep boring, it is assumed that 20 SPT samples will be driven, one driven every 10 feet on average, and each sample will require approximately 30 blows on average. Thus, there will be approximately 600 blows over four days for each boring with breaks in between sampling. This text has been added to the Final IS/MND Section 2.1.1 for added clarity. The noise produced during SPT sampling would be approximately 79-84 dBA for the drill rig at 50 feet from the source; with intermittent noise between 80-90 dBA for SPT sampling drives at 50 feet from the source. These values for noise produced are from the United States Department of Transportation Federal Highway Administration Construction Noise Handbook (USDOT 2006; available at https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook00.cfm).As a reference, this sound level is equivalent to the range of the average dB for a gas lawnmower at 100 feet (70) dB to gas lawnmower at 3 feet (90 dB) (WADOT 2019; available at https://www.wsdot.wa.gov/environment/environment-technical/environment-disciplines/fish-wildlife/BA-preparation-manual). This level would represent a level of sound similar to many of the ambient sound producing elements of the project area, including motorized boats (limited to 88 dB to 90 dB in California; USCG available at https://www.uscgboating.org/regulations/state-boating-laws-details.php?id=19&title=[4.3]Motorboat%20Noise) along the river, agricultural vehicles (85 dB at idle to 100 dB when operating for a tractor (Smith 2011; available at http://agrilife.org/agsafety/files/2011/06/HEARING-LOSS-PROTECTION2.pdf)) and traffic noise on main roadways (59 dB to 79 dB depending upon number of cars travelling at 40- 55 mph) (WADOT 2019). Language addressing these issues has been added to the Final IS/MND Section 3.13.2 for added clarity. The project related SEL represents a less than significant increase over typical ambient sounds, as demonstrated in the Final IS/MND Section 3.13.2, within the project area and as such the analysis of potential impact in the IS/MND is adequate. See Response to Comment 221 regarding noise impacts on aquatic species. See also Master Response 3 and Master Response 4.

224	Local Agencies of North Delta	2. Potentially Significant Impacts to Biological Resources are Overlooked Expanding upon the idea that potentially significant impacts to aquatic communities are not adequately addressed, there are no mitigation measures specifically applicable to the Green sturgeon, Delta smelt or any other listed fish species. Only MM BIO-14 applies as a measure for "General Fish." (See MND, p. xii.) Also lacking are any mitigation measures for the protection of marine mammals, having separate legal protections, yet are at the same risk of harm from Project impacts. The California sea lion in particular has been documented occupying the project area and is a covered species under the Marine Mammal Protection Act. (16 U.S.C. §§ 1371-1375.) In contrast, numerous specific mitigation measures for other special status species were developed such as for the Swainson's Hawk and San Joaquin Kit Fox while special needs for aquatic species and marine mammals are virtually ignored. (See generally MND, pp. vii-xv.)	While MM-14 is the only mitigation measure to explicitly mention fish, there is overlap in multiple mitigation measures where the measure that protects one resource will also protect another (see Response to Comment 69). Fish species are protected in this way via mitigation measures specific to other biological resources, hydrology, and hazards (see MMs MM BIO-1, MM BIO-14, MM HAZ-1 , MM HAZ-2, and MM-HYD-1). For example, MM BIO-1 (c) specifies the parameters of where over-water sites will be located, which will mitigate for impacts to fish species by ensuring that sites will not be in near-shore areas frequented by juvenile fishes and will be located in areas that allow for fish to pass by freely, with no impediment. MM HAZ-1 and HAZ-2 will ensure the prevention of hazardous materials spills, which also further ensure that no impacts to fish species, of all kinds, will occur. HYD-1 includes measures and monitoring to ensure protection of water quality, also serving to protect fish species that benefit from that protected water quality. These measures, in conjunction with project design, would ensure that no substantially adverse impact would occur to fish species and marine mammals (see IS/MND, Section 3.4.2(a)). There is no requirement under CEQA that individual species must receive individualized mitigation measures, only that measures be feasible, effective, and enforceable, which occurs here (see State CEQA Guidelines, Section 15126.4, subdivision (a); see also Master Response 3 and Master Response 4 on the adequacy and enforceability of mitigation measures). No specific evidence has been presented in this comment that shows otherwise. As stated and shown in the IS/MND, existing mitigation measures coupled with project design would effectively reduce or avoid impacts to all fish species, inclusive of the green sturgeon and Delta smelt. Moreover, existence of a specialized mitigation measure for one species does not indicate the need for a similar measure for another species. Such individualized measures are often a product of common industry and agency practice as proven methods for mitigating impacts. Here, several species do, in fact, possess their own mitigation measures, which proves the efficacy of the IS/MND—that it well considered impacts to all species and tailored its mitigation accordingly—but does not do anything to prove that other measures are inadequate or that impact conclusions are invalid. See also response to Comment 221. Regarding marine mammals, while it is true that California sea lions are found throughout the Delta, the specific actions proposed to be undertaken in the project are very limited in size and duration and they do not require a mitigation measure above MM BIO-1. The SEL threshold for drilling for California sea lion is 219 dB, which is below the levels that will be generated by this Project (See Response to Comment 221; Section 3.4.2.1(d) of the Final IS/MND). Additionally, each boring will be limited in duration and will not cause any impedance of movement for marine mammals. As with the on-land activities, over water activities will be monitored and the qualified biologist will have the same stop-work authority during any soil investigation activities.

			See Response to Comment 9 and Response to Comment 10 for information on reconnaissance surveys to ensure avoidance of species. See also Response to Comment 176 for details on pre-activity site surveys.
225	Local Agencies of North Delta	To support its conclusion that biological resources impacts from overwater drilling will be less than significant with mitigation incorporated, the MND relies in part on Mitigation Measure BIO-1f. However, this measure is inadequate to detect and protect special status species and habitats from project impacts. MM BIO-1(f) provides in part: f. A qualified biologist will conduct an environmental awareness training session for all field personnel prior to the start of work. At a minimum, the training shall: i. include a description of each species with the potential to occur, including physical description, habitat needs, and life history as well as a discussion of the importance of avoiding impacts to special status wildlife. ii. explain the general measures that are being implemented to conserve these species as they relate to the project and project area, and procedures to follow should they encounter wildlife during work. iii. explain the stop work authority of biologists and/or cultural resource specialists. This mitigation measure lacks many important considerations, such as the need for mitigation provisions for new staff as personnel are rotated in-and-out, training and monitoring verification procedures, and providing a clearly defined period of "prior to the start of work." Conventionally, several specific mitigations measures should be required, including, but not limited to: (1) providing a checklist of species and their photographs in both English and Spanish languages; (2) training field personnel specifically for each project location due to local differences in special status species and their habitats; and (3) compiling and maintaining lists of trained field personnel and use of colored stickers on hard hats to readily identify personnel that need or have received appropriate training.	A running list of trained personnel is kept on site at all project location sites, as part of standard DWR practice, in the project permit binder and includes name, date of training, work site and their signature. MM BIO-1(f) has been updated in the IS/MND to clarify this protocol. DWR biologists have experience appropriate to the species and habitat found throughout the project area and will also be approved by the appropriate regulatory agencies, as applicable. MM BIO-1(f) is one of several effective mitigation measures that work in conjunction with one another, alongside agency requirements, to ensure less-than-significant impacts to biological resources. The specific mitigation recommendations included in this comment may also be effective, but no evidence is put forth here showing they would be any more effective than existing measures. In this IS/MND, DWR provides effective measures that have been successfully utilized on other similar projects (see State CEQA Guidelines, Section 15126.4, subdivision (a)(1)(B)).
226	Local Agencies of North Delta	Despite purporting to include adequate environmental awareness training (MM BIO-1f) and relying on habitat assessment and reconnaissance surveys (MM BIO-1d), it is another matter entirely if mitigation is actually conducted properly. The previously approved investigatory drilling included mitigation measures to prevent impacts to protect migratory bird species, such as the killdeer, yet DWR failed to adequately implement such mitigation measures. For instance, a killdeer nest with eggs in it was found in 2019 at one of the prior drilling sites. (See Exhibit 7, Documentation of Killdeer Presence at Drilling Site.) DWR's past performance indicates that mitigation measures are not being carried out and that, as a result, impacts will not be mitigated as claimed in the MND.	No evidence has been put forth in this comment that demonstrates an inability for DWR to properly implement mitigation measures and protective design features for the Proposed Project. To the contrary, by avoiding the killdeer nest during a previous and unrelated project, as DWR clearly did, DWR has demonstrated that its avoidance protocol is effective. See Response to Comment 212 for more detail on the killdeer nest issue.

227	Local Agencies of North Delta	Even with adequate awareness training and the presence of a qualified environmental monitor (MM HYD-1f), field observers and monitors are not effective for the protection of sensitive aquatic resources. Monitors of overwater soil investigations would have the ability to detect significant impacts (i.e. colored plumes or stunned fish) only after they occur, which does nothing to prevent the significant impacts in the first place. Given the currents and tidal action in the Delta, colored plumes or stunned fish could come to the surface at distances downstream of the drilling vessel, meaning beyond the vision of both field observers and the monitor. (BSK Technical Comments, ¶ 4.) Water conditions and water clarity in the Delta, or lack of, may also add to the ineffectiveness of a biological monitor's visual inspection by preventing the observation of any aquatic species that might be present. (BSK Technical Comments, Attachment 1 [Supplemental Declaration of Erik Ringelberg in Support of Application for Order to Show Cause and Temporary Restraining Order at 5, Reclamation District 999 v. Cal. Dept. of Water Resources (Sacramento County Super. Ct., 2009, Case No. 34-2009- 80000-343)].)	See Response to Comment 224 for information on mitigation measures protecting sensitive aquatic resources. These measures include implementation of plan(s) that address Hazardous Materials, Safety, and Spill Prevention and Response (Final IS/MND Section 3.9.2; MM HAZ-1), and implementation of preventative measures as outlined in MM HYD-1 (Final IS/MND Section 3.10.2), not just the presence of a biological monitor, and will ensure the Project results in less-than-significant impacts to species and the environment. These plan(s) will address how work is conducted and measures to prevent as well as control and clean up any accidental spills. In addition, the Proposed Project would not require extensive or on-going use of acutely hazardous materials or substances (Final IS/MND Section 3.9.1). See also Response to Comment 81 for information on MM HAZ-2. See Response to Comment 230 for a discussion of past spills and sediment plumes and preventative and proactive measures that have resulted. The experiential evidence presented about these prior plumes indicate that, should a plume occur, it would readily be identified by the on-site monitor, who will be trained to spot plumes in a variety of ways in all Delta conditions. Therefore, evidence shows that the supposition in this comment–that a plume would not be identifiable due to Delta conditions—is not correct. Furthermore, as detailed in Section 2.2.1 of the Final IS/MND, DWR, in undertaking overwater drilling, will employ the use of casing, will flush drilling mud from the casing once drilling is complete, prior to removal, and will stop the backfilling of the boring 10 to 15 feet below the surface, thereby allowing sediments to fill the cavity as the casing is removed, so that no toxins or other substances will come into contact with the water, thereby avoiding contamination of the water. See Response to Comment 162. Thus, as a result of project design and mitigation measures, which are built upon a foundation of experience and caution, the potential for a plume or spill to occur is less than significant. Subsequently, the potential for a substantial adverse impact to an aquatic species as a result of a plume is less than significant (see IS/MND, Section 3.1.2(a).)

228	Local Agencies of North Delta	3.Significant Impacts are Associated with Use of Hazardous Materials As mentioned above, special status fish species, occur within the Project area during the work window. (See MND, Appendix A.) Thus, various protected species would be impacted by the Project, including those listed by state and federal agencies due to threats of extinction or extirpation from acute and chronic habitat modifications and impacts from toxic chemicals. As the BSK Technical Comments explain in more detail, hazardous materials impacts on aquatic life from the Project are potentially significant. (BSK Technical Comments, ¶ 5.) These impacts may be caused by soils that are disturbed by drilling and spud anchoring as well as use of oils and toxics present in the cement and bentonite used during the drilling process. As described in literature, bioaccumulation of toxins is of particular concern for green sturgeon, because of their long lifespan. (Exhibit 8, Designation of Critical Habitat for the Southern Distinct Population Segment of North American Green Sturgeon, Final Biological Report (September 2009), National Marine Fisheries Service, Southwest Region Protected Resources Division, at pp. 11-12.) Moreover, "[r]esuspension of contaminated sediments may have adverse effects on salmonids or green sturgeon that encounter the sediment plume, even at low turbidity levels." (TB Project BO, p. 68).)	See Response to Comment 224 and Response to Comment 227 for information on mitigation measures that protect aquatic species and prevent impacts resulting from the use of hazardous materials. See also Response to Comment 81 for information on MM HAZ-2. The reference material cited in the comment only states that the resuspension of contaminated sediments "may have adverse effects." The comment presents no substantial evidence that any impacts related to any theoretically resuspended contaminants as a result of Project activity would present "a substantial, or potentially substantial, adverse change" on the species as a whole, on any particular fish or wildlife population, or on any plant or animal community. Rather, the concern is focused on possible temporary harm to individual members of species. Such minor effects generally do not rise to the level of potentially *significant* adverse effects. (See, e.g., State CEQA Guidelines, Sections 15065(a) and 15382 and Draft IS/MND, pp. 40–41; see also *Berkeley Hillside Preservation v. City of Berkeley* (2015) 60 Cal.4th 1086, 1100–1102 [by authorizing the creation of categorical exemptions, the Legislature intended to create classes of projects with impacts too minor to require formal environmental review]). The comment also does not provide substantial evidence that a significant level of sediment contamination exists such that its suspension would create a substantially adverse toxic environment for fish. Nor does the comment provide evidence that any such suspension and/or related toxicity resulting from Project activity could result, directly or indirectly, in bioaccumulation within a given species, or even within a regional sampling of the species, at such a level that could potentially be considered substantially adverse. In fact, any impacts that *might* occur would be temporary, finite, and incremental, and would only potentially, moderately effect a small number of fish that might be present at the drilling site during, and immediately after, active drilling (see Draft IS/MND, p. 83, discussing activities that are "minor in scope" with "negligible" disturbances to river beds). The comment itself admits as much when it concludes that an impact only "may be caused." This uncertain conclusion falls well below those reached in the IS/MND, which conservatively found that impacts to certain fish species, including the green sturgeon, could be potentially significant, which is why several mitigation measures were formulated and will be implemented to lessen or avoid any such impacts (see Draft IS/MND, p. 83; see also Response to Comment 69 on the use of mitigation measures). The uncertain, potential, incremental effects implied in this comment do not rise to a level of concern under CEQA that would require even

			additional mitigation, let alone the preparation of a full EIR. To reach such a conclusion, decisionmakers would need to undergo a level of 'worst-case-scenario' speculation not required, or encouraged, by CEQA (see State CEQA Guidelines, Section 15145; see also *Napa Citizens for Honest Government v. Napa County Bd. of Supervisors* (2001) 91 Cal.App.4th 342, 373). See also Master Response 4 for information on the relevancy of incremental impacts in CEQA analysis and Response to Comment 229 for clarifications made to the Final IS/MND regarding green sturgeon.
229	Local Agencies of North Delta	The threat posed by these potentially significant impacts is further amplified by the fact sturgeon are in the water at all times of the year—therefore work windows are not a feasible or effective mitigation strategy. (See Exhibit 9, p. 7793 [Email correspondence regarding ineffectiveness of work windows as mitigation for impacts to sturgeon].) [Footnote 3: Exhibits 9, 10, and 14 are all excerpts from the administrative record from litigation concerning DWR's 2010 Geotechnical Exploration MND, Central Delta Water Agency, South Delta Water Agency, RC Farms, Inc., and Reclamation District 999 v. Department of Water Resources (Sacramento County Super. Ct., 2011, Case No. 34-2010-80000698).] The MND's conclusion that work windows will be sufficient is not supported by substantial evidence. (MND, pp. 82-83.) In fact, the fish window in MMBIO- 14 overlaps with sturgeon spawning period in the Sacramento River. (See ibid. ["late summer and early fall spawning may also occur based on the presence of larvae in the fall"].)	Designated in-water work windows that are stated in MM BIO-14 would reduce exposure of sensitive fish species and life stages to in-water work activities and are typical for projects within this Study Area. Proposed Project activities are short-term, temporary and minor. Further, MM BIO-14 is not presented in isolation to prevent or minimize impacts to fish species; rather, it is accompanied by several other measures that will all be implemented under the same goal (see Response to Comment 224 and Response to Comment 227 for information on mitigation measures that protect aquatic species and prevent impacts). Additionally, green sturgeon spawn primarily in the upper mainstem of the Sacramento River (CDFW Green Sturgeon Species Account 2020; Available at https://wildlife.ca.gov/Conservation/Fishes/Sturgeon/Green-Sturgeon), much further upstream of the Proposed Project's Study Area; therefore Project work will not physically overlap with spawning sturgeon, even if there is a timing overlap with the spawning period. Section 3.4.2 (a) of the Final IS/MND has been revised to clarify the low likelihood of impacts to Green Sturgeon: Green sturgeon are known to spawn in the Yuba and Feather Rivers and in the upper reaches of the Sacramento River upstream of Hamilton City so the sensitive egg and larval life stages will be avoided. Juvenile green sturgeon would be present within the Study Area when in-water work will take place. Proposed Project activities are not likely to result in impingement because juvenile sturgeon can move away from boring equipment. The project will not reduce prey availability for juvenile sturgeon rearing in the Sacramento River. Finally, green sturgeon would not be adversely affected in the event an accidental sediment plume because the species is adapted to turbid conditions. See also Response to Comment 228 for details on the incremental impacts to green sturgeon and Master Response 4 for information on the relevancy of incremental impacts in CEQA analysis.

230	Local Agencies of North Delta	The MND does contain mitigation measures addressing potential spills (MM HAZ-1, MM HAZ-2, MM HYD-1) but the MND underestimates the potential for spills to occur. The MND claims that there is "a slight potential for accidentally spilling oil or fuel" but fails to identify the very real risk of spills caused by the actual drilling. This is a significant oversight given that numerous spill incidents occurred during the last round of drilling. (See Exhibit 10, pp. 18976, 18978, 18982 [Email correspondence regarding sediment plumes and spill incidents].) In October 2009, sediment plumes were observed due to presumed seal breaks. (Exhibit 10, p. 18978.) At least five different spills occurred in that month alone, discharging bentonite, guar gum, and drilling mud. (Exhibit 10, pp. 18976, 18978.) The MND fails to disclose the potential for spillage of actual drilling materials, let alone providing any information on how DWR intends to prevent future spills. MM HYD-1 is inadequate as mitigation, as it is merely a reactionary measure to a problem that DWR is already aware of. MM HYD-1f only applies after a spill occurs, and prescribes a nonspecific, meaningless remedy: "appropriate corrective measures[.]" Waiting for a problem to occur and then finding an ad hoc solution to prevent it from happening again is not effective mitigation. Furthermore, failing to actually describe any "appropriate corrective measures" makes it impossible to evaluate the mitigation measure's effectiveness.	MM HAZ-1 discusses measures to minimize, avoid, or reduce the chances of spills. A Spill Prevention Plan will also be implemented which will outline measures for preventions of leaks and spills and will be provided by the contractor. See also Response to Comment 81 on MM HAZ-2 and containment of hazardous materials. Regarding past spills—former spills or leaking of hazardous materials do not present substantial evidence that future such spills and leakage will occur, or that even if they were to occur, they would create a substantially adverse impact to the environment or aquatic species (see Response to Comment 228). If anything, corrective actions taken as a result of past spills provide evidence that such spills will not occur in the future as a result of preventative measures that will be taken. It is clear from the Exhibit in question that the five spills consisted of bentonite, guar and water (used as a drilling fluid) (Page 018978 and 018982 of Exhibit 10), that these spills were of short duration (less than 3 minutes), and that all of these substances are considered non-toxic. Following the identification of the cause of the incidental spills (seal breakage) possibly caused by the wakes of passing boats, corrective measures were, in fact, taken with the equipment, which rectified the problem and will prevent it from occurring in the future. Additionally, no evidence of harm to biological resources was found as a result of these incidental spills that could lead to the conclusion that any species or its individual members were substantially adversely impacted (Page 018523 of Exhibit 10). Further, such preventative and proactive measures are contemplated in the IS/MND's project design (Draft IS/MND, p. 21), which requires "a reliable seal" to "prevent significant spillage of the drilling fluid into the water," and MM HAZ-1, which requires field personnel ensure that hazardous materials are properly handled and natural resources protected and that routine inspections of the work site, including equipment, as part of pill prevention measures. Thus, the IS/MND does not rely solely on "reactionary" measures as the comment would lead one to believe. These issues, being known, will be addressed prior to drilling (i.e., ensuring the proper fit of conductor casing and use of rubber sleeves) as a part of project design and pursuant to mitigation measures to ensure that a similar issue does not result in future incidental spills, thereby assuring that no substantially adverse effects would occur. Nevertheless, even if some incremental amount of hazardous material were to leak or spill during overwater drilling, no evidence has been put forth to demonstrate that such spilling or leaking, were it to occur and be treated in a manner prescribed in IS/MND mitigation measures, would result in a substantially adverse impact to the environment, an entire

			species, any distinct fish or wildlife population, or any plant or animal community.
231	Local Agencies of North Delta	Furthermore, the MND acknowledges that the Project has the potential for significant adverse impacts to surface and groundwater quality from the accidental release of hazardous materials in MM HAZ-2. However, MM HAZ-2i outlines a response procedure once "a significant spill has occurred," without defining criteria to determine whether a spill is "significant." (See MND, p. xix.) Noticeably lacking from MM HAZ-2 is evidence that significant impacts from spills can be avoided or reduced to a less than significant level with mitigation incorporated as the MND claims. (See MND, pp. 154-59.)	See Response to Comment 14 for information on the "no impact" conclusion to groundwater and Section 3.10.2 of the IS/MND for analysis of impacts to surface and groundwater. Any mention in MM HAZ-2 of a theoretical adverse impact to surface or groundwater quality serves to demonstrate one type of remediation that would occur, but does not obviate the conclusions reached in the IS/MND that the Proposed Project would not "substantially degrade surface or groundwater quality" (pp. 162–164) or that it would create a less-than-significant impact to the environment, with implementation of mitigation, as a result of a release of hazardous materials (pp. 154, 159). The comment appears to conflate the use of the term "significant" within a mitigation measure with that term as it applies to CEQA impact conclusions. A "significant spill," as used in HAZ-2, would include any spill that was visually detectable, not necessarily one that would cause a substantial adverse impact. This low trigger for action ensures that resources are protected to the highest level possible. Several mitigation measures exist to ensure that a less-than-significant impact results from any release of hazardous materials, not just MM HAZ-2, including preventative measures (see Draft IS/MND, p. 159; see also Response to Comment 230 and Response to Comment 81). For example, MM HAZ-1 discusses measures to minimize, avoid, or reduce the chances of spills. A Spill Prevention Plan will also be implemented which will outline measures for prevention of leaks and spills and will be provided by the contractor. Any impacts that might result from a potential release of hazardous materials would be incremental, mitigated, and not substantially adverse to the environment. See also Master Response 4 for information on the relevancy of incremental impacts in CEQA analysis.

232	Local Agencies of North Delta	4. Significant Impacts Due to Truck Traffic The MND fails to consider the potentially significant impacts Project-related traffic will cause to Delta roadways. The MND does not purport to analyze road degradation as a project impact. (See MND, pp. 185-188.) A variety of trucks would be used for Project activities. (MND, Appendix B, pp. 3-4.) The MND does not disclose the weight of these trucks or the conditions of Delta roads. The Project would generate over 4,000 truck trips, and over 6 million vehicle miles travelled by workers. (Ibid.) This staggering amount of traffic, including numerous trips by trucks bearing boring equipment, would degrade Delta roads and cause a potentially significant impact. Increased traffic can also have a potentially significant impact on Delta agriculture. Traffic delays can harm agricultural production, causing significant losses for Delta farmers due to spoiled crops. (See Exhibit 11, Testimony of Steve Heringer at the State Water Resources Control Board Hearings on the California WaterFix Water Rights Change Petition, pp. 4-8.) This is yet another potentially significant impact that the MND fails to consider.	As discussed in Response to Comment 8, CEQA does not require certainty or an exhaustive evaluation but discussion of potential impacts and appropriate mitigation. As such the condition of every road in the Delta was not within the purview of evaluation for this IS/MND. See also Master Response 3. As stated in Section 3.17.1 of the IS/MND, Caltrans has jurisdiction over State highways and sets maximum load limits for trucks and safety requirements for oversized vehicles that operate on highways. Caltrans requires a traffic analysis be conducted depending on the number of trips conducted at different levels of service conditions. As clarified in the Final IS/MND Section 3.17.1 and MM TRANS-1 (a), DWR will coordinate with CalTrans to obtain all necessary encroachment permits and to complete any analyses that are required. See also Master Response 4 for information on the disparate nature of individual Project activities and their relative independence from one another. In addition, as stated in section 3.17.2 of the IS/MND, “Proposed Project activities equate to only a limited number of trips per day at any specific soil investigation location while field activities are occurring. ” With this limited number of trips, avoidance of crew vehicles parking on public roads and thoroughfares as stipulated in MM TRANS -1 (b), and use of traffic control as outlined in MM TRANS-1 (a), the Project will not result in any substantially adverse impacts to agricultural production.

233	Local Agencies of North Delta	5. Significant Impacts to Cultural Resources Under CEQA Guidelines section 15064.5, subdivision (a)(4), the fact that a resource is not listed or determined to be eligible for listing in the California Register of Historical Resources, not included in a local register, or identified in a historical resources survey, does not preclude a lead agency from making the determination itself. Here, DWR has failed to make its own determinations regarding historic and archeological resources in the Project area, and instead attempted to rely on volunteer organizations to do its work. (See Exhibit 12, DWR Letter to San Joaquin County Historical Society & Museum ("SJCHS"), September 13, 2019; Exhibit 13, SJCHS Letter to DWR, October 15, 2019.) As the SJCHS explained, there are "many historical resources potentially impacted by the [Project]" and SJCHS would not be able to "prepar[e] a useful report" without more upfront work by DWR. (Exhibit 13, p. 1.) The MND asserts that "[t]here are no known previously recorded archaeological resources within the Study Area." (MND, p. 140.) However, there are six shipwrecks, including three that have been nominated as California Points of Historic Interest, that the MND does not disclose or analyze whether they fit within the definition of archaeological resources under CEQA Guidelines section 15064.5 or Public Resources Code section 21083.2. (See Exhibit 14, p. 8373 [Email correspondence regarding shipwreck presence in Project area].) The MND is devoid of any evidence supporting its assertions or demonstrating that these shipwrecks are not archeological resources under CEQA.	Outreach to the SJCHS was but one of many steps that the cultural staff at DWR have taken to identify cultural resources within the Study Area. Other steps include: record searches at CHRIS Information Centers, Native American consultation, in-house research of previous cultural studies and previously recorded resources, and extensive archival research (Final IS/MND Section 3.5.1.2). The statement on page 140 of the Draft IS/MND that "[t]here are no known previously recorded archaeological resources within the Study Area" encompasses shipwrecks, as evidenced by the discussion on shipwrecks as part of the underwater archaeological record (pp. 134–135). As defined in the IS/MND, the "Study Area" for cultural resources encompasses a 120-foot diameter buffer around each Impact Area (the exact point where the impact would end up being), for all on-land and overwater boring locations. Geophysical lines were assessed using a 40-foot diameter buffer. Exhibit 14 is email correspondence for the Bay-Delta Conservation Project and contains information from the California State Lands Commission (CSLC) on six shipwrecks located within five rectangular "search areas" that corresponded to another project's area (see Response to Comment 4). The email does not provide information on the exact location of each shipwreck, rather that they fall within one of the five "search areas." Additionally, the CSLC representative states in the email that, "Our data was taken from books, old newspapers, and other contemporary accounts that do not contain precise locations. Our database reflects information from many published sources and does not reflect actual fieldwork unless stated otherwise." Additionally, the CSLC researcher states "You should note that not all shipwrecks are listed in our Shipwrecks Database and their listed locations may be inaccurate. Ships were often salvaged or re-floated." Preparers of the IS/MND obtained more accurate information than that contained in the Exhibit 14, which includes only informal email correspondence on shipwrecks. Both NOAA's Office of Coast Survey's Automatic Wreck and Obstruction Information System (AWOIS) and Electronic Navigational Charts (ENC) were consulted. These databases are continuously updated and maintained. Information was also obtained from previous underwater remote sensing surveys conducted by ICF in 2012 and PanAmerican Consultants in 2010. (Final IS/MND Section 3.5.1.2) Information on the location of specific shipwrecks is not available on the

			CSLC website; however, DWR did consult the following document: California State Lands Commission (CSLC). 1988. A Map and Record Investigation of Historical Sites and Shipwrecks along the Sacramento River Between Sacramento City and Sherman Island. California State Lands Commission. DWR has taken reasonable steps to ensure that its understanding of cultural resources in the Study Area is as complete as possible, per CEQA requirements for an IS/MND (see Master Response 3).
234	Local Agencies of North Delta	6. Significant Cumulative Impacts The MND's analysis of cumulative impacts is legally inadequate, lacking sufficient analysis in addition to ignoring the single tunnel conveyance project as a cumulative project. An MND must "assess[] whether a cumulative effect requires an EIR." (CEQA Guidelines, § 15064, subd. (h)(1).) A conclusory statement devoid of analysis is insufficient. (See Whitman v. Board of Supervisors (1979) 88 Cal.App.3d 397, 411.) Here, the discussion of cumulative impacts does not even meet that low bar, instead only giving a cursory description of types of impacts and minimal information on cumulative projects. (See MND, pp. 206-213.) There is no actual analysis in MND section 3.21.2b, only unrelated lists of type of impacts and cumulative projects. There is no connection between what the MND identifies as "reasonably certain to occur" cumulative impacts and the actual cumulative projects that would cause them. For example, point and non-point source pollution is briefly described as an adverse effect to designated critical habitat for protected fish species. (MND, p. 208.) Yet the MND does not associate this impact with any of the cumulative projects subsequently listed. (MND, pp. 209-212.) In addition, the single tunnel project is omitted as a cumulative project. The MND's approach to cumulative impact analysis is legally inadequate.	See Response to Comment 19 and Master Response 2.
235	Local Agencies of North Delta	II. THE MND FAILS TO ADEQUATELY DISCUSS RELATED REVIEW PROCESSES A CEQA document must disclose related environmental review and consultation requirements of other jurisdictions, and integrate these related requirements into CEQA review. (CEQA Guidelines, § 15124, subd. (d)(1)(C); see Banning Ranch Conservancy v. City of Newport Beach (2017) 2 Cal.5th 918, 936 [Banning Ranch].) Failing to discuss other regulatory and permitting regimes with authority over the project violates the information disclosure requirements of CEQA and is a prejudicial error depriving the public of a full understanding of a project. (Id. at 942.)	This IS/MND lists the required regulatory permits and approvals from federal, state, and local entities on Section 1.2. The Draft IS/MND was circulated to state regulatory agencies and will be submitted along with permit applications for review by regulatory agencies. The legal authority cited by the commenter – Guidelines section 15124(d)(1)(C) and *Banning Ranch v. City of Newport Beach*, (2017) 2 Cal.5th 918 – apply only to EIRs, and not MNDs. See also Master Response 5.

236	Local Agencies of North Delta	A. The Project Is a Covered Action Subject to Delta Plan Consistency The Delta Plan, created by the Delta Stewardship Council ("DSC") pursuant to the Delta Reform Act (Wat. Code, § 85000 et seq.), provides regulatory policies that support the coequal goals of providing a more reliable water supply for California and protecting, restoring, and enhancing the Delta ecosystem (Wat. Code, § 85054). All "covered actions" must be consistent with the Delta Plan. Covered actions are projects that: will occur within the Delta; be carried out or funded by a state or local agency; is covered by one or more provisions of the Delta Plan; and will have a significant impact on the achievement of one or both of the coequal goals, or the implementation of flood control programs. (Wat. Code, § 85057.5, subd. (a).) The Project is a covered action and DWR must make a consistency determination with the Delta Plan. The project will occur within the legal Delta. DWR is a state agency. Various provisions of the Delta Plan apply to the Project, such as Chapter 3 – A More Reliable Water Supply for California, and Chapter 4 – Protect, Restore, and Enhance the Delta Ecosystem. The Project would also impact the achievement of the coequal goals because it could cause potentially significant impacts to biological resources in the Delta, and any single-tunnel conveyance project this Project would serve would fundamentally reshape the Delta's hydrology and habitat. Despite the clear applicability of the Delta Plan to this Project, the MND fails to even discuss the Delta Plan, let alone analyze whether the Project is consistent with it. This is an informational deficiency under CEQA. (See Banning Ranch, supra, 2 Cal.5th at 942.)	The soil investigations do not meet the criteria to be considered a covered action under the Delta Plan. See Response to Comment 189. See also Master Response 2.

237	Local Agencies of North Delta	B. The MND Ignores Related Federal Processes The MND discloses that U.S. Army Corp of Engineers ("USACE"), US Fish and Wildlife Service ("USFWS"), and National Marine Fisheries Service ("NMFS") approvals will be necessary. (MND, p. ii.) USACE approvals require, at a minimum, an Environmental Assessment under the National Environmental Policy Act. (72 Fed. Reg. No. 47, p. 11095.) The MND fails to disclose this requirement, or reference any other requirements of NEPA review. The MND also acknowledges that to obtain a Nationwide Permit 6, compliance with USFWS and NMFS biological opinions or letters of concurrence are necessary. No more explanation is provided on how compliance would occur. The MND fails under CEQA for not adequately discussing the requirements of obtaining the Nationwide Permit or necessary NEPA review. (See Banning Ranch, supra, 2 Cal.5th at 942.)	As stated in Response to Comment 235, the IS/MND lists the federal regulations that apply to the proposed Project. The issuance of a Clean Water Act section 404 permit will include Biological Opinions from NMFS and/or USFWS, the terms of which must be complied with as a condition of the 404 permit (see Draft IS/MND, Section 1.2). The Final IS/MND was revised to includes further detail on Section 408 consultation (see Response to Comment 12 and Response to Comment 25 for more detail in Section 408). Specific terms of compliance are subject to those regulations and are not required under CEQA. As is standard, federal agencies will comply with NEPA requirements as necessary to complete the permitting process. The use of *Banning Ranch Conservancy v. City of Newport Beach*, (2017) 2 Cal.5th 918 in this comment is misplaced. First, *Banning Ranch* applies to EIRs only—not negative declarations. Second, the court in *Banning Ranch* did not hold that a CEQA document must discuss the the details of project-related federal requirements and review, only that an EIR must include enough information so as not to "substantially impair" its function such that the public is "deprived of a full understanding of the environmental issues raised by the [project]" (id., p. 942). The IS/MND includes mention of the relevant federal permit (and its statutory posture) that must be obtained in order to implement the Proposed Project, along with associated other federal processes. The court in *Banning Ranch* was contemplating the importance of including this exact type of information when it held that the EIR in that instance should have included the fact that its project must also comply with the Coastal Act (id.). The court did not conclude that the EIR needed to include exhaustive details on the federal action—only that it ought to be mentioned. Nor did the court mention NEPA at all, let alone hold that it should be discussed in a CEQA document, although the comment implies otherwise. Here, the IS/MND includes proper detail on related federal actions, in complete compliance with the *Banning Ranch* holding. Subsequent NEPA compliance is inherently understood to occur in connection with any such federal action. See also Response to Comment 35 for information on NEPA as it relates to the Proposed Project.
238	Local Agencies of North Delta	Numerous borings would be conducted directly on Delta levees. (See Exhibit 15 [Google Earth Pro images of boring sites].) However, the MND fails to disclose that this necessitates a Section 408 permit from USACE. Under 33 USC section 408, USACE permission is required for the permanent or temporary alteration of any USACE Civil Works project. The levees fall within USACE's Section 408 jurisdiction, and therefore a Section 408 permit is required. The failure to disclose this necessary approval violates CEQA. (See Banning Ranch, supra, 2 Cal.5th at 942.)	See Response to Comment 12 and Response to Comment 25 for discussion on Section 408. Section 1.2 of the Final IS/MND, Regulatory Requirements, Permits, and Approvals, has been updated with Section 408 this information.

239	Local Agencies of North Delta	III. CONCLUSION Substantial evidence supporting a fair argument of potentially significant impacts, in addition to this Project's relationship to the reasonably foreseeable single tunnel Delta conveyance, make an EIR the only appropriate method of evaluating the Project's impacts. Combining environmental review of this Project with the single tunnel Delta conveyance EIR would be the only way to ensure a complete discussion and analysis of the Project's environmental impacts within the context of the larger efforts it will support. In addition, the MND fails to adequately inform the public and decisionmakers about the potentially significant impacts of the project, along with means to mitigate those impacts to less than significant levels.	See Master Response 4 and Response to Comments 216 through 238.
240	Local Agencies of North Delta	[ATT 1: Notice of Preparation for Delta Conveyance Project, January 15, 2020]	See Master Response 1 and Master Response 2.
241	Local Agencies of North Delta	[ATT 2: Delta Conveyance Authority, January Update PowerPoint Presentation]	See Master Response 1.
242	Local Agencies of North Delta	[ATT 3: California WaterFix Final Environmental Impact Report Excerpts]	See Master Response 1 and Response to Comment 4.
243	Local Agencies of North Delta	[ATT 4: BSK Technical Comments, including 5 Attachments]	See Master Response 1. See also Response to Comment 222, Response to Comment 227, and Response to Comment 228.
244	Local Agencies of North Delta	[ATT 5: South Delta Temporary Barriers Project Biological Opinion]	See Master Response 1. This attachment contains a biological opinion for an unrelated project. See also Response to Comment 222.
245	Local Agencies of North Delta	[ATT 6: Deep Water Ship Channel Project Biological Opinion]	See Master Response 1. This attachment contains a biological opinion for an unrelated project. See also Response to Comment 222.
246	Local Agencies of North Delta	[ATT 7: Documentation of Killdeer Presence at Drilling Site]	See Master Response 1, Response to Comment 212, and Response to Comment 226.
247	Local Agencies of North Delta	[ATT 8: Designation of Critical Habitat for the Southern Distinct Population Segment of North American Green Sturgeon, Final Biological Report (October 2009), National Marine Fisheries Service, Southwest Region Protected Resources Division]	See Master Response 1. This attachment contains a biological report for an unrelated project.
248	Local Agencies of North Delta	[ATT 9: Central Delta Water Agency, South Delta Water Agency, RC Farms, Inc., and Reclamation District 999 v. Department of Water Resources (Sacramento County Super. Ct., 2011, Case No. 34-2010-80000698), Administrative Record, pp. 7792-7793]	See Master Response 1. This attachment relates to an unrelated legal action.
249	Local Agencies of North Delta	[ATT 10: Central Delta Water Agency, South Delta Water Agency, RC Farms, Inc., and Reclamation District 999 v. Department of Water Resources (Sacramento County Super. Ct., 2011, Case No. 34-2010-80000698), Administrative Record, pp. 18523, 18976-018978, 18982]	See Master Response 1. This attachment relates to an unrelated legal action.
250	Local Agencies of North Delta	[ATT 11: Testimony of Steve Heringer at the State Water Resources Control Board Hearings on the California WaterFix Water Rights Change Petition]	See Master Response 1. This attachment relates to an unrelated agency hearing. See also Response to Comment 4.
251	Local Agencies of North Delta	[ATT 12: DWR Letter to San Joaquin County Historical Society & Museum, September 13, 2019]	See Master Response 1. See also Response to Comment 233.
252	Local Agencies of North Delta	[ATT 13: San Joaquin County Historical Society & Museum, Letter to DWR, October 15, 2019]	See Master Response 1. See also Response to Comment 233.

253	Local Agencies of North Delta	[ATT 14: Central Delta Water Agency, South Delta Water Agency, RC Farms, Inc., and Reclamation District 999 v. Department of Water Resources (Sacramento County Super. Ct., 2011, Case No. 34-2010-80000698)]	See Master Response 1. See also Master Response 2.
254	Local Agencies of North Delta	[ATT 15: Google Earth Pro Images of Boring Sites on Levees]	See Master Response 1. These images present publicly accessible images of levees.
255	MBK Engineers	MBK Engineers is the District Engineer to 33 reclamation districts (RD's) in the Sacramento-San Joaquin Delta. As District Engineer, we assist RD's with all issues involving flood control and drainage, the 2 main responsibilities of RD's. We offer the comments below on behalf of our clients, within whose jurisdiction the DWR soils investigation will construct borings and cone penetration tests (CPT's). These RD's are Reclamation District No.'s 3, 150, 551,755, 756, 813, 830, 999, 2025, 2026, 2028, 2029, 2033, and 2110.	See Master Response 1.
256	MBK Engineers	Through our many years as District Engineer, we have experienced problems associated with borings and CPT's that have impacted the ability of RD·s to perform their responsibilities. These problems, mainly artesian flow and seepage, have led to increased drainage costs, lost farm income, and levee damage. Even if sealed, as described in the IS/MND we have found that, over time, these seals become compromised and result in seepage. Also, the weight of drill rigs compresses the farm ground which reduces its productivity.	See Response to Comment 12, Response to Comment 14, Response to Comment 20 and Response to Comment 180.
257	MBK Engineers	Therefore, we offer the following comments and suggested revisions to the IS/MND: • All borings and CPT's shall be reviewed and approved by the local RD's. The RD's require DWR to obtain right of entry agreements with private landowners upon whose property these investigations will take place or to provide access to the proposed sites. All data collected shall be provided to the RD's for their use.	Continuation of comment 256. Please see Response to Comment 256. Changes to the IS/MND per the request made in the comment are not warranted; see Master response 5 for information on the role of reclamation districts. However, see Response to Comment 26 for details on encroachment permits and Response to Comment 29 for information on landowner permission and information disclosures.

258	MBK Engineers	• All borings and CPT's within the rights-of-way of federal project levees for which the California Central Valley Flood Protection Board (CCVFPB) is the local sponsor, shall obtain permits from the CCVFPB and section 408 permits as required by the US Army Corps of Engineers.	See Response to Comment 12 and Response to Comment 25 for details on Section 408. See also response to Comment 26 for information on encroachment permits. DWR will obtain the appropriate approvals from the CVFPB prior to implementation of proposed project activities within CVFPB's jurisdiction.

259	MBK Engineers	• The IS/MND shall evaluate the impact and necessary preparations required to deal with artesian flow created due to pressurized aquifers through which the borings will penetrate.	As stated in Section 3.10.2(a) of the IS/MND, the small size of the casing of the drills to be used for the proposed Project would ensure that water flow, including any artesian flow, would not be impeded and therefore would not result in any impact to surface or groundwater quality or supplies. As clarified in section 2.1.1 of the IS/MND, per standard industry methods, if artesian flow is encountered near the surface during drilling, casing shall be advanced to a suitable sealing depth and/or completed above the ground surface. If artesian conditions are encountered at greater depths, other methods, such as increasing drilling fluid viscosity/weight, will be employed. See Response to Comment 168 for information on the sealing of borings, which will be properly sealed according to California regulations and industry standards (Water Well Standards, DWR 74-81 and 74-90).
260	MBK Engineers	• The IS/MND shall evaluate and describe how the borings and CPT's will be sealed. The current document is vague and does not indicate it will follow procedures dictated by the soil conditions and pressurized artesian flow. We also recommend that the sealing include completely filling the holes with a grout approved by the RD's.	See Response to Comment 168 for information on the sealing of borings, which will be properly sealed according to California regulations and industry standards (Water Well Standards, DWR 74-81 and 74-90). Response to Comment 168 also states that the IS/MND addresses settlements in collapsible soils.
261	North Delta CARES Action Committee	General Comments CEQA is clear, all phases of project planning, implementation, and operation must be considered in the Initial Study of the project (15063 (a)(1). However, the project description for the soil investigation project is so broadly defined, so poorly constructed and the fundamental project components - drilling and drilling technologies - so poorly and incorrectly explained that reviewers find it impossible to believe that DWR could have made any kind of independent judgement regarding the project's environmental impacts. The document could be interpreted as a generic geotechnical report since it provides no project specific locations which can be accurately field checked by reviewers, no project specific footprints, no estimate of total surface disturbance and a disturbing lack of institutional knowledge regarding Delta roads, bridges, utilities, local public entities with responsibilities for levees and flood control, and virtually no recognition of Delta communities.	See Master Response 3. See also Response to Comment 8, and Response to Comment 9, Response to Comment 26, and Response to Comment 29. Drilling technologies are thoroughly detailed in the Draft IS/MND, and include discussions on specific equipment to be used of on land borings (Section 2.1), CPTs (Section 2.1.2), geophysical surveys (Section 2.1.4) and over-water borings (Section 2.2). Additionally, methods for each of these endeavors is detailed in Sections 2.1.1, 2.1.3, 2.1.5, and 2.2.1 While the level of detail provided in the Draft IS/MND is sufficient for CEQA analysis, additional text has been added to the project description of the Final IS/MND to provide clarification of project details.
262	North Delta CARES Action Committee	DWR clearly states that this "data collection" project is directly linked to Executive Order N-10-19 which directs State agencies to evaluate a new single tunnel Delta conveyance. Since it is unlikely that geotechnical data to be collected in this project is being collected solely for the sake of data collection and because these data would not have much, if any, other utilitarian use, data from this project will be used solely by DCDCA to design the single tunnel project; a process which is already underway, but which lacks critical geotechnical and subsurface data. As much as DWR will opine in its objections, this IS/MND has piecemealed the CEQA process.	See Master Response 2.

263	North Delta CARES Action Committee	To further support DWR's CEQA piecemeal approach, DCDCA will use these geotechnical data, and the modeling which the data will inform (not mentioned in the IS/MND), to determine how much more subsurface data will be necessary for final tunnel design and project cost estimates. Typically, for tunnels in soft ground, tunnel engineers would like to have boring/geotechnical data every 300 linear feet along the tunnel route and to depths below the tunnel horizon. In the case of the Delta conveyance tunnels, borings will likely be more closely spaced based on stratigraphic facies changes which are common in estuary geology. Reviewers believe that the "data collection" described in this IS/MND is only the first round of extensive subsurface exploration program for tunnel design and construction, and not a simple data collection process to help DWR learn more about Delta geology.	See Master Response 2. See also Response to Comment 4.
264	North Delta CARES Action Committee	Comment 1, Proposed Project Title: The term "Soil Investigation ... " as used in the title of the IS/MND sets up misleading expectations for the informed reviewer. The term "soil" has a specific meaning in modern geotechnical and geologic engineering parlance. The word "soil" is generally known to mean the natural medium for the growth of plants. Although it can be applied in geotechnical investigations to identify unconsolidated material above a bedrock contact, professional geologists, geotechnical engineers, civil engineers and professional drilling companies would not characterize lithic material below the last soil horizon as "soil", particularly as it applies to the drilling depths proposed in this project. The IS/MND title should be changed to accurately describe the proposed project so that it does not mislead any reviewer. Indeed the entire IS/MND should be corrected to omit, or qualify, the term "soil investigation" since, as used in this IS/MND, it is. neither technically or environmentally accurate.	The IS/MND does not mislead by using the term “soil investigation” because it both corresponds with the common industry term “soil borings,” which is used throughout the document to describe the primary Project component, is more descriptive in relation to the goals of the project and is accurate. A sizable portion of the Proposed Project involves the investigation of soils, including collecting soil samples and navigating topsoil (see, e.g., Draft IS/MND, pp. 4, 11, 20, 21, 148, 201). The IS/MND also does not mislead “any reviewer” about the scope of the Project. Section 2.0 clearly states that the project involves the investigation of “geological and geotechnical conditions” up to depths of “200 feet below ground surface” (Draft IS/MND, p. 4). There is no CEQA requirement that a document’s title comprehensively must reflect every technical aspect of a project. To the contrary, CEQA documents should be written in plain language—a requirement that was considered by DWR when titling the IS/MND (State CEQA Guidelines, Section 15140). At its heart, CEQA is intended to inform the public and decisionmakers about potential environmental impacts of a project, not focus on using the terminology preferences of professional scientists and engineers (State CEQA Guidelines, Section 15002, subdivision (a)(1), and Section 15003, subdivision (c)). Using overly technical terms and complex titles in a CEQA document can defeat this purpose. See also Response to Comment 64 for information on defining terms.
265	North Delta CARES Action Committee	Comment 2, IS: The summary project description overlooks the subsurface intent and objective of the data collection.	See Master Response 2.

266	North Delta CARES Action Committee	Comment 3, IS, 10. Other Public Agencies Whose Approval is Required and· MND 1.2 Regulatory Requirements, Permits and Approvals: The IS and MND failed to identify Reclamation Districts and/or Flood Control Districts who have jurisdiction for construction (drilling and exploration) activities on and near levees. The IS failed to identify the necessary encroachment permits from Cal Trans for exploration activities on State highway right-of-ways. The IS failed to identify that drilling permits are required from each county in which borings are proposed. Even if, DWR has come to an agreement or understanding with a specific county that some aspects of the permit process can be circumvented - such as requiring C-57 drilling license - these arrangements should be noted to inform the public as part of the project description. Likewise, if DWR has been unable to reach an agreement with a specific county or counties regarding the need for drilling permits, this should be noted to inform the public since DWR is not exempt from securing drilling permits from each county's environmental health department.	See Master Response 5 and Master Response 6. See also Response to Comment 26 for information on encroachment permits.

267	North Delta CARES Action Committee	Comment 4, MM AES-1: The MND fails to describe how the towers (masts) of truck or track-mounted drills will affect visual landscapes. Although not stated in the MND, it is likely that the drill towers will be about 30-feet high and will be able to be seen from various travel ways, recreational areas, businesses .and residences in the Delta. According to MND Table 1, eight drills will be visible for up to 6 months. However, MND Section 2.2.1 states the "duration of investigation activities for the 167 borings will be up to" 1,995 working days, or 76.4 months or 6.4 years. It seems unreasonable to assume that regardless of the actual amount of time that the drills are visible, they will not impact what the MMD calls the " ... picturesque Sacramento-San Joaquin Delta. .. " and yet, there are no proposed mitigation measures for the impact of the drills on the picturesque Delta viewshed.	The IS/MND concludes that impacts to scenic resources, visual character, and public views would be less then significant because of "the temporary nature of the work, and lack of permanent structures" as well as the "small footprint" of project activities (Draft IS/MND, pp. 23–24). This conclusion was reached after considering all components of the Proposed Project, including the temporary use of trucks and equipment. The values provided in Section 2.1.1 of the IS/MND are the maximum number of working days for each location (5 work days for each of 22 borings up to 50 feet deep, and 15 work days for each of 145 borings 50 to 200 feet deep); the actual numbers would be far less. However, a maximum number was analyzed throughout Section 3.0 as a conservative measure (see Master Response 3). While the total number of days of project activity could be up to 1,995, simultaneous work at multiple locations would ensure a lesser total number of work days. The approximate duration for over-land soil explorations is closer to 6-12 months and, as stated above and in the IS/MND, work would only occur at any one site for a maximum of 15 days. The text has been revised in the Final IS/MND to clarify this. Depending upon the site, the trucks and any related equipment may or may not be visible. The drill towers can range between 20 and 30 feet, and so may not be visible in all instances as there are many trees in the Delta of equivalent height. But, if the drill towers are visible, their presence would be transient and at most create an incremental, temporary visual disturbance of no more than 15 days within the immediate vicinity or Project activity, but would not create any permanent alteration that could substantially adversely affect a scenic vista within the Delta or substantially degrade the visual character or public views of the Delta (*Eureka Citizens for Responsible Government v. City of Eureka* (2007) 147 Cal.App.4th 357, 375 ["a lead agency has the discretion to determine whether to classify an impact as 'significant,' depending on the nature of the area affected"]; see also Master Response 4 for information on incremental impacts). Thus, the Project would not diminish the "picturesque" nature of the region. This comment expresses a general concern about a significant aesthetic impact, but does not provide evidence to demonstrate that one actually may occur (*Porterville Citizens for Responsible Hillside Development v. City of Porterville* (2007) 157 Cal.App.4th 885, 903 ["vague complaints do not rise to the level of substantial evidence supporting a fair argument that [a project] may have a significant adverse aesthetic impact"]).

268	North Delta CARES Action Committee	Comment 5, MM AGR-1: The MND incorrectly identifies that an ASTM standard will be used to abandon the exploration borings .. The State of California Bulletin 74-81/74-90 provides guidance for abandoning borings and wells to prevent cross contamination of aquifers. Additionally, each county's environmental health department may issue its own boring/well abandonment procedures as long as they are at least as stringent as those in Bulletin 74-81/74-90. Therefore, referencing an ASTM standard is not a viable mitigation measure.	The two main constituents of the boring backfill medium, bentonite and Portland cement, will have material properties that conform to ANSI and ASTM specifications, respectively. The backfill procedure will be in accordance with State of California Bulletin 74-81/74-90. MM ARG-1 has been revised to reflect this. See also Master Response 6.
269	North Delta CARES Action Committee	Comment 6, MM AIR-1 b.: It is unclear to a reviewer why bulk material would be necessary for either drilling, or any of the other proposed exploration activities since all drilling supplies, including Portland cement, are delivered in bags, unless the bulk material is going to be used to construct roads or drilling pads. It would be helpful to a reviewer to know how bulk material is going to be used. If this mitigation measure is boilerplate for standard operating procedures and State of California requirements for covered loads on highways and streets, please specify.	Yes, while bulk material would not be necessary for this project, this mitigation measure is included as standard operating procedures, as are State of California vehicle code requirements for covered loads on highways and streets to prevent spilling of substances (see CVC 23114 (a)).
270	North Delta CARES Action Committee	Comment 7, MM BI0-1 f.: This mitigation measure should be expanded to make it clear that it will be necessary to conduct environmental awareness training each time new field personnel arrive on site. Drilling crews generally have a high turnover rate and each new driller or driller's helper must be trained. Therefore, DWR and its contractors should keep rosters of all field personnel, the dates of their training, their work location and the name of the qualified biologist.	See Response to Comment 225 for information on training field staff, including biologists, and MM BIO-1(f). See also Response to Comment 212 for information on the qualifications of DWR biologists.
271	North Delta CARES Action Committee	Comment 8, MM BI0-1 g.: Reporting the presence of a listed species, identified only because of the proposed project, may have a detrimental impact on a private landowner's ability to manage her land. Therefore, we recommend that either the landowner be financially compensated for DWR actions or if compensation cannot be arranged, then DWR should treat the listed species reporting protocols in the same manner that DWR has proposed to address county drilling permits and ignore the process.	Landowners have a responsibility to comply with the Endangered Species Act and California Endangered Species Act regardless of whether an observation of a listed species has been reported. Mere reporting of the existence or identification of a listed species does not give rise to a valid compensation claim because the act of reporting is not included as part of the act of “taking of property” as defined by law. DWR is subject to any state and federal reporting requirements for listed species, as specified in any permits that may be acquired for the Project. See also Master Response 6.
272	North Delta CARES Action Committee	Comment 9, MM BI0-1 h.: The mitigation measures states that "fill federally or state-listed species observed will be allowed to leave the Impact Area on their own." We would like to point out that federally or state listed plants cannot leave an Impact Area under their own mobility. Therefore, this mitigation measure should be modified to clearly state that federally or state-listed plants will be removed under a take permit issued by CDFW.	MM BIO-1 h is specific to wildlife. Special status plants will be avoided (MM BIO-18 and MM BIO-20); see Response to Comment 9 and Response to Comment 10.
273	North Delta CARES Action Committee	Comment 10, MM BIO-4 b.: The mitigation measure states that soil investigations will be conducted during the Giant garter snake's active season. Is this correct?	Yes, soil investigations will be conducted during the active season for giant garter snake, as this is the time when they are less likely to be in a burrow and vulnerable to harm from project activities on land. However, mitigation measures are in place to ensure a less-than-significant impact to the species or any individual member of the species (see MM BIO-4).

274	North Delta CARES Action Committee	Comment 11, MM BIO-9 b.: The mitigation measure contains an error - please revise to read " .. ; stop an hour before sunset .. "	This text has been corrected in the IS/MND. See also Master Response 3.
275	North Delta CARES Action Committee	Comment 12, MM BIO-18 c.: To be consistent throughout the IS/MND please use either feet or meters to describe distances. To be clear, this mitigation measure does not refer to federally or state-listed species.	See Response to Comment 47 for information on the inclusion of metric units of measurement.
276	North Delta CARES Action Committee	Comment 13, MM CUL-1 a and b.: Are "soil investigation locations" the same as "Impact Area"? Please clarify.	Yes , "soil investigation locations" are the same as "Impact Areas". Text in the IS/MND has been edited for clarity. See also Response to Comment 104 and Response to Comment 191 for more information on the Impact Area.
277	North Delta CARES Action Committee	Comment_14, MM CUL-4: Please clarify that cultural sensitivity training will be provided to all individuals conducting field activities but that most "geologic analysis" will be done in offices and laboratories which do not require sensitivity training. Additionally, please refer to Comment 7.	Geologic analyses are primarily conducted in offices and laboratories and will not require the training. However, for the few cases in the field where some of the initial geological analytical work involves an opportunity to view some of the soil in the core, cultural sensitivity training is required and provided (as these are a component of both geological analysis and field work) (see 3.18.1 of the Draft IS/MND). See also Response to Comment 270.
278	North Delta CARES Action Committee	Comment 15, MM GHG-1 b.: This mitigation measure implies that an environmental monitor will be assigned to each exploration unit. If true, it clearly demonstrates that DWR has not fully considered the field conditions under which drilling crews, CPT's and seismic data acquisition crews operate. There are numerous times during daily field activities when exploration equipment will idle for more than five minutes, particularly when starting diesel engines. However, since this is appears to be a codified mitigation measure, we recommend that this mitigation measure be emphasized in the contract language DWR or DCA will execute with drilling and CPT companies and the seismic data acquisition contractors and for all field vehicles and that environmental monitors, with proper training and accurate timing devices be present during all field activities including, operations on roads and highways and equipment mobilization between Impact Areas.	All mitigation measures are enforceable through an MMRP that will be prepared and adopted by DWR (see Master response 3 and Master Response 4). As agents of DWR, contractors must adhere to the MMRP, contractually, as a requirement of successfully completing the job.
279	North Delta CARES Action Committee	Comment 16, MM HAZ-1 f.: This mitigation measure seemingly contradicts other sections of the IS/MND. This IS/MND states that the "soil" boring investigations to depths of up to 200 feet will be conducted and that the soil borings will be abandoned in according with ASTM [sic] standards or State of California Bulletin 74-81/74-90. These standards require that borings be abandoned using a tremiepipe method which includes pumping a neat cement-bentonite slurry to seal the boring. Therefore, in contravention of this mitigation measure, cement will contact soil as it fills the boring. This mitigation measure should be revised to reflect an accurate description of the boring abandonment process and hazardous materials. Additionally, this mitigation measure should be revised to include language which prohibits the use of hydrocarbon-based lubricates for all down-hole equipment including augurs, drill pipe and CPT's. Typically, every connection between threaded auger sections (usually call "joints") are lubricated with hydrocarbon-based grease every time the auger is attached to the drill string. Therefore, for every 200-foot deep boring, there are forty 5-foot joints, each with a lubricated threaded connection. DWR should require that the driller, and CPT contractors use non-hydrocarbon-based lubricates for all down hole equipment during the subsurface exploration program.	The comment is correct in that cement will contact soil. MM HAZ-1 (f) has been corrected to clarify this issue. Additionally, MM HAZ-1 (f) was edited to clarify that all lubricants used downhole shall be non-petroleum based pursuant to common industry practice.

280	North Delta CARES Action Committee	Furthermore, the MND acknowledges that the Project has the potential for significant adverse impacts to surface and groundwater quality from the accidental release of hazardous materials in MM HAZ-2. However, MM HAZ-2i outlines a response procedure once “a significant spill has occurred,” without defining criteria to determine whether a spill is “significant.” (See MND, p. xix.) Noticeably lacking from MM HAZ-2 is evidence that significant impacts from spills can be avoided or reduced to a less than significant level with mitigation incorporated as the MND claims. (See MND, pp. 154-59.)	See Response to Comment 231, Response to Comment 168, and Response to Comment 81.
281	North Delta CARES Action Committee	Comment 18, MM HYD-1 a.: This mitigation measure states fueling and maintenance for on-land investigation contractors vehicles " ... shall occur on established roads ... " There is no definition of established roads. Additionally, it is extremely dangerous to perform maintenance or fueling on highways or county roads. This mitigation measure needs to be revised to omit any inference to unsafe operations on public thoroughfares or private roads. Throughout this IS/MND it would helpful if DWR acknowledged that levee roads in the Delta do not have shoulders wide enough for many of the activities proposed in this project.	The text MM HYD-1 in the IS/MND has been revised to clarify that any refueling, or maintenance of vehicles will be conducted sufficiently away from public roadways to ensure safety of workers and the public. MM HYD-1 states that “fueling and maintenance of vehicles or other equipment for on-land soil investigation activities shall occur on established roads, or in designated staging areas”; therefore fueling and maintenance would not necessarily occur only on roadways. However, several other mitigation measures exist to ensure roadway safety, including MM PUB-1(b), requiring the preparation of a Safety Plan, and MM TRANS-1(a), establishing traffic controls and safety standards. When implemented together, as will be required by the MMRP (see Master Response 4), these measures would ensure that any refueling or maintenance of vehicles will be done in a safe manner. For a description of the different types of roadways within the Study Area, refer to Section 3.17.1 of the IS/MND. Further, Section 3.17.2, issue area (d), describes the how emergency access would not be significantly impacted by the Proposed Project.
282	North Delta CARES Action Committee	Comment 19, MM HYD-1 c.: This mitigation measure should remove the reference to "hay waddles" as a method to contain a hazardous materials spill. Hay waddles are used for erosion and sediment control.	Hay wattles are absorptive and are one of several types of “suitable [] spill-stoppage materials” commonly used by industry specialists that could be effectively used for potential spills associated with soil investigation activities, as stated in MM HYD-1(c).
283	North Delta CARES Action Committee	Comment 20, MM HYD-1 f.: This mitigation measure implies that corrective actions for over water hazardous spills may go untreated if there is no environmental harm. Does this mean that in the case of a spill an immediate determination of environmental harm can be made from the deck of the drilling barge? Typically, environmental harm resulting from hazardous materials, including hydrocarbons, cannot be determined without thorough analysis to ascertain short and long term effects. This mitigation measure should include language to state that all over water drilling will stop until the effects of the unauthorized release on the environment, including water quality, flora and fauna have been fully assessed and mitigated.	MM HYD-1 ensures that “activities will cease” and “corrective measures” will be taken if drilling fluid or other material enters the water, as indicated by a colored plume. If such a plume is determined to not be the result of any leaked or spilled fluid or material, then corrective measures may not be required. Any spill that occurs will be addressed as any spill could potentially cause environmental harm. Also refer to the remainder of MM HYD-1, which focuses on prevention of spills first, via placement of barriers, and the use of secondary containment, and MM HAZ-2 for the institution of a Spill Prevention and Response Plan. See also Response to Comment 81 and Response to Comment 231.

284	North Delta CARES Action Committee	Comment 21, MM NOl-1: Not all drilling noise can be mitigated with "appropriate mufflers". This IS/MND has stated that the purpose of the project is to collect "soil" samples using one of several sample collection techniques. Soil sampling techniques using a drill involving driving a sample collection device (split ·spoon sampler, etc.) into undisturbed medium. Although not disclosed by DWR, in the case of a split spoon, or Standard Penetration Test, a 140-pound hammer is dropped from a height of 30-inches onto a steel rod until the sampler has advanced 18-inches. This is a loud process, somewhat akin to pile driving. If soil samples are continuously collected through a 100-foot section of the boring, say through the tunnel horizon, there would be a minimum of 67 soil samples per boring and each sample could be driven by 5 to 20 blows, maybe more. This means that there could be between 335 and 1,340 audible loud noise generating metal-on-metal strikes per boring. This is a significant noise impact in the picturesque Delta. DWR must address this noise generating sample collection process as a significant impact.	This comment is a replica of comment 223. See Response to Comment 223.
285	North Delta CARES Action Committee	Comment 22, MM TRANS-1: The IS/MND fails to acknowledge that trees grow on the banks of sections of the levees and often overhang the levee road. Drill rigs cannot raise their towers and become entangled in trees. Had this IS/MND provided better maps so that the drilling locations and Impact Area could be easily identified, this review could have offered recommendations for those Delta roadways with trees which impact the safety of drill rig operations.	This comment is a replica of comment 56. See Response to Comment 56.
286	North Delta CARES Action Committee	Comment 23, MM UTI-1: Safe drilling practices as enforced by OSHA prohibit a drill from raising its tower in the vicinity of overhead high-voltage and utility lines. This IS/MND fails to acknowledge that many overhead electrical transmission lines follow Delta road right-of-ways and that the proximity of Impact Areas and the use of drills in those areas would pose a safety issue and prevent a drill from operating. Had this IS/MND provided better maps so that the drilling locations and Impact Area could be easily identified, this review could have offered recommendations to avoid Delta transmission lines which impact the safety of drill rig operations.	See Response to Comment 8 for information on the use of maps in the IS/MND. See also Master Response 3. The Draft IS/MND discusses the existence of aboveground electric transmission and distribution lines (see p. 199). As a common-sense practice, drill rigs will not be placed in locations that would cause a conflict between the set up and use of the rigs and any overhead high voltage or utility lines in the vicinity. Further, MM HAZ-4 and MM PUB-1 require the development and implementation of a fire protection and prevention plan that will include fire prevention measures, such as avoiding contact with utility lines.
287	North Delta CARES Action Committee	Comment 24, 2.0 Proposed Project Description: This section is written so torturously as to be almost incomprehensible. Regarding Figures 2a, 2b and 2c - CEQA (15124 (a)) recommends that the project location be shown on a detailed map, preferably a topographic map. Typically project maps are shown on USGS 7.5 minute quadrangles (1:24000). USGS quadrangles typically provide enough detail for a reviewer to understand the project's location and potential environmental impacts. Unfortunately, DWR has chosen to provide maps with no topography and at such a large scale that very little project detail is available to the reviewer.	This comment is a replica of comment 57. See Response to Comment 57.

288	North Delta CARES Action Committee	Comment 25, 2.1 On-Land Soil Boring Equipment: Typically, it is not difficult to calculate the amount of surface disturbance in an "Impact Area". For instance, drilling and CPT contractors know how much area is needed for safe operations. Typically, soil exploration drilling areas would not exceed 3,500 to 5,000 square feet and access would be restricted to only operational equipment. These types of dimensional data would be useful for a meaningful review to help determine the total project surface impact. The lack of specific data leads reviewers to conclude that the author(s) of the IS/MND have had very little exposure to drilling, geophysical or geotechnical data collection projects. Additionally, reviewers are confused by DWR's approach to delivering a track-mounted drill to a drilling location on "soft ground". Why would DWR recommend driving a tractor and lowboy trailer loaded with the drill rig on soft ground when the track-mounted drill is capable of "walking" significant distances, and would cause much less surface damage than a fully loaded tractor/trailer? DWR should explain this approach and why a fully loaded tractor/trailer is environmentally superior to walking the drill onto the soil investigation site?	See Response to Comment 47 for information on the use of quantifiable data in the project description. For clarification, additional quantitative information has been added to the project description (see Section 2.0 of the revised IS/MND). As described in Section 2.1 of the Draft IS/MND, if a soil investigation site is located on soft ground, a track mounted drill will be utilized. The track mounted drill will be hauled by a lowboy tractor-trailer rig as close to the site as possible while remaining on roads that are designed to withstand the load, after which the drill will be unloaded and moved to its proper location, as is common practice. This method is appropriate and will not result in significant damage to environmental resources.
289	North Delta CARES Action Committee	Comment 26, 2.1.1 On-Land Soil Boring Investigation Methods: The IS/MND states that, "Drilling activities will be conducted using a [one?] drill rig with auger, casing and mud rotary capabilities." Technically, all drills, except cable tool drill rigs, are classified as rotary rigs. However, DWR has described three different drilling techniques, each typically associated with three different types of drill rigs. The lack of clarity leaves the reviewer with the sense that DWR does not fully understand drill rigs or drilling technology. For instance, in IS/MND Figures 3 and 4, Track Mounted Rotary Drill Rig - these two drills are described in Central Mining Equipment Company (CME) catalog as auger drills. The CME catalog used by DWR to inform the IS/MND drilling process uses the term "rotary" or "rotary head" to describe the mechanism which turns, or rotates, the augers. Normally, among drilling contractors, drill rigs have specific purposes and even though an auger drill such as the CME 850XR shown in Figure 4 might be converted to drilling techniques other than auger, it would be very unusual, costly, and time consuming. It would be more efficient to mobilize a drill already equipped for mud rotary or to drill with a casing advancer. Additionally, it is not possible to collect in-situ "soil" samples using the techniques described in this section when drilling with mud. It is possible to obtain partial grab or chip samples while drilling with mud, but it is not possible to know the exact depth from which the samples originated. Downhole testing will be limited by the type of drilling and the type of testing. It would help inform the review if DWR could explain what types of downhole sampling will occur since this will help clarify all of the projects components and help determine how long each boring location will be occupied. The duration of the investigation activities shown in this section does not correlate with Table 1. Some further explanation would be useful to the review. Will "soil" cuttings and water from the auger drilling be pumped or hand shoveled into containers? Vacuum trucks do not want to accept sediment or soil. What is the purpose of a vacuum truck?	The term “rotary” in this document applies to multiple types of drilling techniques and does not always imply mud rotary drilling. To avoid potential confusion, the project description was modified to clarify this fact. Mud rotary drilling is the preferred technique for obtaining undisturbed soil samples below the groundwater table, according to the following publications/organizations. • ASTM International (D1586) • United States Army Corps of Engineers (2001) • Federal Highway Administration (2002, 2017) • United States Navy Facilities Engineering Command (NAVFAC)(1986) Identified downhole sampling methods include SPT, California Modified sampler, Pitcher Barrel sampler, 101 mm Geobarrel, 134 mm Geobarrel, and Shelby tubes. Planned downhole “testing” methods, which were not specifically identified in IS/MND text, include shear wave velocity measurements and pressuremeter tests. As described in Section 2.1.1 of the IS/MND, all cuttings and excess drilling fluid will be contained in drums, large containers, or vacuum trucks, and disposed of offsite at an appropriate landfill. Soil cuttings and water from the drilling would be either pumped or hand shoveled into containers. See also Response to Comment 30. See also Master Response 3 for information on the level of detail required in a negative declaration document.

290	North Delta CARES Action Committee	Comment 27, 2.1.2 On-Land CPT Equipment: This section title implies that CPT's may be used in other locations than on land. Is this correct? Most CPT's can be safety operated with 2 or 3 technicians. Why is it necessary for up to "15 support passenger vehicles" to be present? This seems extreme and environmentally damaging. Will each vehicle carry only one person? Are these 8 to 10 person vans? Did DWR intend to say "field trucks and support vehicles"? Under what conditions would 15 support passenger vehicles be necessary?	All CPTs will be conducted on land, as indicated by the section title. See Response to Comment 31 for an explanation on the maximum number of vehicles assumed in the project description versus the actual number that would be required. See also MM GHG-1 for information on carpooling.
291	North Delta CARES Action Committee	Comment 28, 2.1.3 On-Land CPT Investigation Methods: The duration of the CPT investigation, up to 412 days (1.1 years) does not correlate with Table 1. This needs to be corrected to provide an accurate project description so that a reviewer can understand the duration of the investigation.	As described in Section 2.1.3 of the IS/MND, the duration for CPT investigation activities is the maximum number of working days for each location (4 work days for each of 103 CPTs). While the total number of days could be up to 412 days, there will be up to three truck-mounted CPT rigs running simultaneously, and thus the work will not last for 412 days but will last approximately 6 months. Text has been clarified in Section 2.1.3 of the Final IS/MND to clear up any confusion.
292	North Delta CARES Action Committee	Comment 29, 2.1.4 On-Land Geophysical Survey Equipment: This section title implies that geophysical methods may be used in other locations than on land. Is this correct? Most seismic data acquisition programs can be safety conducted with 4 or 5 technicians. Why is it necessary for up to 14 support passenger vehicles to be present? This seems extreme and environmentally damaging. Will each vehicle carry only one person? Are these 8 to 10 person vans? Under what conditions would 14 support passenger vehicles be necessary? This section fails to describe geophysical equipment necessary used for TDEM, CVTFM or, ERT data acquisition. The last sentence in this section is confusing - if not an EnviroVibe Minibuggy, what? "EnviroVibe" is a trademark of Industrial Vehicles International. Has DWR made the decision that this is the only acceptable vibroseis equipment? This should be clarified because different seismic data acquisition equipment will have different operational and "foot print" characteristics.	This comment is a replica of comment 58. See Response to comment 58.
293	North Delta CARES Action Committee	Comment 30, 2.1.5 On-Land Geophysical Surveys Methods: Another tortuously written section. As shown in Figure 2b, there are 3 Impact Areas on Bouldin Island, not 5 as stated in this section; unless there are 5 Impact Areas, but map is at such a scale that it makes it impossible for an informed review. The last sentence of this section is confusing - is it a total of 21-days or a total of 105- days?	This comment is a replica of comment 59. See Response to Comment 59.

294	North Delta CARES Action Committee	Comment 31, Time Domain Electromagnetic (TDEM) [Includes all geophysical methodologies]: This section is written as rudimentary primer, not to fully inform the reviewer of the proposed project objective. It would be helpful to understand the specific purpose of the TDEM survey. It can be assumed, but not stated, that the TDEM is used to identify subsurface geologic and ground water conditions to depths below the tunnel horizon. It can also be assumed that TDEM may provide data related to saline and freshwater aquifers. Likewise, the objective of using a CVTFM is not explained. It can be assumed that the objective is to identify buried metallic objects, including abandoned wells. However, the effectiveness of a CVTFM would be reduced by overhead powerlines and railroad tracks. The objective of using ERT may be to identify subsurface geologic and stratigraphic characteristics to be used in conjunction with other geophysical methods. For seismic surveys, please check the diameter of the geophones, "0.5 inches in diameter" seems extremely small, since most small geophones are about 1.25 inches in diameter. It is not clear from the project description if the seismic senor lines are 2,300 feet long, or if the entire seismic data acquisition line is 2,300 feet long. That is, typically the EnviroVibe unit would begin collecting data several hundred feet off the end of the sensor line (called walking or rolling on) and then would extend beyond the last sensor (called rolling or walking off). An informed reviewer will benefit from this project description.	This comment is a replica of a portion of comment 60. See Response to Comment 60.
295	North Delta CARES Action Committee	However, unless the IS/MND fully explains the project's objectives and how the four geophysical exploration methods are integrated, it is only possible for the reviewer to infer DWR's intent. One observation becomes clear however, this proposed drilling and geophysical program has a specific objective - to inform the design of the Governor's single tunnel. As such, this project skirts the intent of CEQA to fully disclose all impacts associated with a project, i.e. the Delta Conveyance Tunnel, and blurs the reviewer's ability to fully evaluate all aspects of the project description and project objective. At best, this IS/MND is nothing more than a shallow, incomplete description of a much larger project; at worst it is another ham fisted attempt by DWR to mollify the public and conceal DWR's intent to share these data with DCDCA and assist water contractors in their effort to construct a new through Delta conveyance.	This comment is a replica of a portion of comment 60. See Response to Comment 60.
296	North Delta CARES Action Committee	Comment 32, 2.2.1 Over-Water Soil Boring Investigations Methods: There's almost so much incorrect about this project description that it is nearly impossible to allow a coherent review. However, a few comments - 1) A 3.5-inch drill hole is too small for mud; 2) Soil samples cannot be collected using a split spoon sampler when using a mud rotary because the drill steel through which the sampler would be dropped is plugged with mud and likely the sampler cannot be driven through the tri-cone bit used in mud drilling. Fundamentally, this section does not accurately describe the project and should be rewritten to describe the project.	Tricone bits used for mud rotary drilling are available in diameters as small as 2-3/8 inches. ASTM standard D1586 allows for use of bits as small as 2-1/4 inches. Per USACE (2001), a larger diameter borehole can allow for flexing of drill rods during sample driving. This results in potential inaccuracies in the blow counts obtained. As noted in Response to Comment 289, the mud rotary technique is preferred for obtaining soil samples below the groundwater table. The tricone bit and drill rods are removed from the borehole prior to sampling. See also Master Response 3 for information on the level of detail required in a negative declaration document.

297	North Delta CARES Action Committee	The following comments infill comments not noted in comment numbers 1-32. Comment 33, 3.1 b. Aesthetics: Note that the community of Locke is not located on Highway 160. It is located on County Road E13, commonly called River Road. FYI - Highway 160 is on the west levee of the Sacramento River at Locke. Highway 160 crosses the Sacramento River twice between the City of Sacramento and the Antioch Bridge - not several times.	Noted. Language in the Final IS/MND has been updated to remove Locke so as to avoid confusion. The town of Locke was used as an example because it is a commonly known regional “small historic town” that readily illustrates a type, not necessarily because of its specific location.
298	North Delta CARES Action Committee	Comment 34, 3.3.2.3 Air Quality: Impacts to air quality could occur after the soil investigations have been performed if surface soils are still exposed thus creating the opportunity for dust.	Potential for dust will be minimized by the process of returning the site to as close to pre-project as possible (see MM AES-1). Furthermore, the limited footprint of the Impact Areas, and the nature of the work should create minimal exposed loose soil. Any potential loose soil that might turn to airborne dust would be minor in scope and not rise to a level of significance where it would conflict or obstruct implementation of an applicable air quality plan or expose sensitive receptors to substantial pollutant concentrations (see Section 3.3.3 of the Draft IS/MND for details). See also MM AIR-1 for dust abatement measures.
299	County of Sacramento	This office represents the County of Sacramento ("County") and the Sacramento County Board of Supervisors ("the Board"). On behalf of the County and the Board, this letter responds to California Department of Water Resources' (DWR) Notice of Intent to Adopt a Mitigated Negative Declaration, dated November 20, 2019, regarding the project entitled "Soil Investigations for Data Collection in the Delta" ("the Project"). A significant portion of the Project would be located within Sacramento County. At least sixty-five (65) drill sites (borings, CPT's) would be located within Sacramento County. (See Project Initial Study/Mitigated Negative Declaration ("IS/MND"), Figures 2a & 2b.) Most of that area relies on groundwater supplies for drinking and domestic water use. The Project, at a minimum, will cause impacts to groundwater quality and, additionally, impact surface water due to the overwater borings proposed to take place in and along the Sacramento River and various sloughs within and adjacent to Sacramento County.	See Master Response 1. As stated in Section 3.10.1 of the IS/MND, DWR will obtain and comply with a 401 Water Quality Certification from the State Water Resources Control Board to ensure compliance with all applicable water quality standards, limitations, and restrictions. See also Response to Comment for information on precautions being taken to ensure that no contaminants enter the boreholes. See Response to Comment 279 on information about the use of non-petroleum based lubricants. Additionally, protection of water quality will be ensured during the project via the implementation of MM HYD-1, MM HAZ-1, MM HAZ-2. See also Response to Comment 14 and Response to Comment 231 for information on groundwater and Response to Comment 81 for information on the containment of hazardous materials.

300	County of Sacramento	The IS/MND Fails to List County Well Permit(s) Among the Required Approvals Pursuant to the CEQA Guidelines, an initial study is required to include "[a]n examination of whether the project would be consistent with existing zoning, planning and other applicable land use controls." (Cal. Code Regs., tit. 14, § 15063(d)(5) [italics added].) In this case, the Project's proposed drilling will require a well permit in accordance with Chapter 6.28 of the Sacramento County Code. The IS/MND fails to list this approval in its section on "regulatory requirements, permits, and approvals". (IS/MND, pp. 1-2.) The IS/MND's project description states that: "[DWR] plans to conduct soil investigations for the purposes of measuring physical properties of the soils, location of the groundwater table, and other typical geologic and geotechnical parameters that will be used to inform and evaluate alternatives, consistent with Executive Order N-10-19, for a proposed single tunnel Delta conveyance (requiring a separate CEQA process) consistent with Governor Newsom's new approach to modernized Delta water conveyance." (IS/MND, p. ii.) The IS/MND describes the "on land" Project work as including "167 soil borings from 50 feet to 200 feet below ground surface" and 103 cone penetration tests (CPTs) from approximately 50 feet and [sic] 200 feet below ground surface[.]" (IS/MND, p. 4.) In addition, the Project will include 57 overwater soil borings up to 200 feet below the slough or river floor. (see ibid.) Under the Sacramento County Code, "no person shall dig, bore, drill, deepen, modify, repair, inactivate, or destroy a well, or install, repair, or replace a well pump without first applying for and receiving a permit..." (Sac. County Code, § 6.28.030(A).) This requirement applies to "the state" as well as private entities and individuals. (See Sac. County Code,§ 6.28.010(L).) The term "well" means "any artificial excavation constructed by any method for the purpose of extracting water from, or injecting water into, the underground." (Sac. County Code, § 6.28.010(0).) In addition, "well" includes "exploratory holes (borings) ... monitoring wells [and] test wells." (Ibid.) "Exploratory hole (boring)" is defined as "an uncased temporary excavation or boring drilled to a depth within ten (10) feet of groundwater, or deeper, based on available groundwater data, whose purpose is the immediate determination of hydrologic or geological conditions at a site." (Sac. County Code,§ 6.28.010(0)(6).) The area proposed for drilling in the IS/MND is part of the SacramentoSan Joaquin River Delta and has a very high water table. Although the IS/MND concedes that the drilling "could" bore into the groundwater basin (IS/MND, p. 165), it is a near certainty that this will occur considering the proposed 200-foot depth of the drilling/boring. Prior geologic investigatory drilling that DWR conducted in 2019 in the Sacramento County portion of the Delta encountered groundwater at a depth of less than ten feet.	See Master Response 6.

		The Sacramento County Well Ordinance is authorized pursuant to State Law. (See Water Code, § 13801, subd. (c).) State law requires that "every person," including "the state", comply with such local well ordinances. (See Water Code,§§ 13050, subd. (c); 13755.) As such, the State Legislature has waived any sovereign immunity that might otherwise have applied to the local well permit requirement. The County Well Ordinance's regulation of "exploratory holes and test holes" is consistent with the scope of DWR's own Bulletin 7 4-81 (Water Well Standards), which expressly makes "test holes" and "exploration holes" subject to the Bulletin's Reporting and "Destruction" requirements. (See Bulletin 74-81, Sec. 1 (J) and Sec. 4.) Moreover, the applicable statue expressly references DWR Bulletin 74-81 as forming the basis for local well ordinances. (See Water Code,§ 13801, subd. (c).) Accordingly, the IS/MND should be revised to reflect the local well permit requirement. Further, Sacramento County expects that DWR will apply for such permit(s) prior to undertaking the planned drilling.	

301	County of Sacramento	The IS/MND Improperly Piecemeals Environmental Review The California Environmental Quality Act (CEQA) prohibits "piecemealing" or "segmenting" the environmental review for a project. In other words, a lead agency may not "[chop] a large project into many little ones" in order to avoid examining the full environmental impact of the project as a whole. (BurbankGlendale-Pasadena Airport Authority v. Hensler (1991) 233 Cal.App.3d 577, 592.) CEQA requires that a lead agency examine "the whole of an action which has a potential for resulting in a physical change in the environment, directly or ultimately, and includes the activity which is being approved and which may be subject to several discretionary approvals by governmental agencies." (Ibid.) As noted above, the IS/MND readily acknowledges that the proposed drilling work will be done in connection with DWR's proposal for a single tunnel delta water conveyance project. Thus, the preliminary engineering work proposed under the Project is inextricably intertwined with the upcoming tunnel project. Under the CEQA, the test for segmenting future phases of a project is as follows: "[An environmental document] must include an analysis of the environmental effects of future expansion or other action if: (1) it is a reasonably foreseeable consequence of the initial project; and (2) the future expansion, or action will be significant in that it will likely change the scope or nature of the initial project or its environmental effects." (Laurel Heights Improvement Assn. v. Regents of the Univ. of California (1988) 47 Cal.3d 376, 396.) In this case, the single tunnel project is reasonably foreseeable because DWR has expressly announced its relationship to the Project (see IS/MND, p. ii) and, further, because the Governor has expressly ordered DWR to "inventory and assess current planning to modernize conveyance through the Bay Delta with a new single tunnel project." (Exec. Order N-10-19.) In fact, DWR released a Notice Of Preparation ("NOP") for "the Delta Conveyance Project" (aka single tunnel) on the date of this letter that indicates a 6,000 cfs tunnel project with two intakes located in Sacramento County. This future action is undoubtedly significant and will change the scope and environmental effects of this initial drilling Project. Therefore, DWR is required under CEQA to consider the impacts of the Project and the single tunnel together in a single EIR.	See Master Response 2.

302	County of Sacramento	The IS/MND Fails to Acknowledge the Applicability of the South Sacramento Habitat Conservation Plan The Project Initial Study follows Appendix G of the CEQA Guidelines and, under the biological resources section, asks whether the Project would conflict with the provisions of an adopted Habitat Conservation Plan ("HCP"). (See IS/MND, p. 130.) The IS/MND states that the Project overlaps four HCP areas in San Joaquin, Yolo, Alameda and Contra Costa counties. (See ibid.) The IS/MND, however, fails to acknowledge that proposed drill sites are also located within the Plan Area of the South Sacramento HCP ("SSHCP"). (See enclosed SSHCP Plan Area map.) The SSHCP was adopted in 2018 by a multi-jurisdictional collaboration including the County of Sacramento, the Cities of Rancho Cordova and Galt, the Sacramento County Water Agency, the Sacramento County Regional Sanitation District, and the Capital Southeast Connector Joint Powers Authority. The SSHCP plan area encompasses 317,656 acres bordered by Highway 50 on the north, San Joaquin County on the south, El Dorado County and Amador County to the east, and the Sacramento River to the west. That area includes Sacramento County's portion of the Delta. The IS/MND needs to assess whether the Project will conflict with any of the provisions of the SSHCP. For more information, see: https://www.southsachcp.com/	Soil investigation sites on the east side of the Sacramento River are within the plan area of the South Sacramento County Habitat Conservation Plan (SSHCP). The Proposed Project does not conflict with applicable SSHCP avoidance and minimization measures, and therefore, the impact conclusion in IS/MND remains less than significance (see Draft IS/MND, p. 132). Specifically, project avoidance (see Response to Comment 9) and minimization measures are consistent with Section 5.4 of the SSHCP: Best Management Practices and Covered Species Take Avoidance and Minimization Measures, as shown below with some specific examples. Condition 3 of the SSHCP (Construction BMP's) are equivalent to MMs AES-1, AES-2, AIR-1, BIO-1, HYD-1 and HAZ-1 as well as specific actions outlined in the project description. Applicable species measures outlined in the SSHCP are equivalent to those outlined in the IS/MND, including for plants (BIO 18 through BIO-20), California tiger salamander and Western spadefoot (BIO-1 and BIO-2), giant garter snake (BIO-1, BIO-2 and BIO-4), western pond turtle (BIO-1, BIO-2 and BIO-3), tricolored blackbird (BIO-7), Swainson's hawk (BIO-11), sandhill crane (BIO-9), burrowing owl (BIO-10), other raptors (BIO-6), and bats (BIO-15). Section 3.4.2 (f) of the Final IS/MND has been revised to include the SSHCP as follows: The portion of the Study Area that overlaps the SSHCP would be the northeastern edge and includes Planning Unit 6 (County of Sacramento et al. 2018). The goal of the Plan is to provide streamlined, predictable federal and state permitting processes while creating a Preserve System to protect habitat, open space, and agricultural lands. Covered activities as defined by the SSHCP include urban development, mining, rural transportation projects, recycled water projects, covered activities in preserve setbacks, covered activities in stream setbacks, and covered activities in the Preserve System and Laguna Creek Wildlife Corridor. The Proposed Project would be a series of discreet soil investigations, would fully avoid any covered species and would not conflict with applicable avoidance and minimization measures as indicated above, therefore it would not conflict with the SSHCP. See also Master Response 4.
303	County of Sacramento	[ATT 1: South Sacramento Habitat Conservation Plan Map. Figure 2-1]	See Master Response 1 and Response to Comment 302

304	Sacramento County Farm Bureau	The Sacramento County Farm Bureau is a non-governmental, non-profit, grassroots organization. Our purpose is to protect and promote agricultural interests throughout Sacramento County and to find solutions to the problems of the farm, the farm home, and rural communities. Farm Bureau strives to protect and improve the ability of farmers and ranchers engaged in production agriculture to provide a reliable supply of food and fiber through responsible stewardship of California's resources. We appreciate the opportunity to comment on this proposal of an extensive soil analysis throughout regions of the Delta community. First and foremost, we are concerned with the lack of exact locations of proposed soil investigations. While the maps provide general outlines of proposed sites, it is difficult to determine locations, in order to adequately address potential impacts to agricultural operations and surrounding habitat. Further, it is imperative that the landowners be made aware now of proposed investigations on their property and not just when an intent to enter is initiated. With increased agricultural activity approaching in the Spring and Summer, it is crucial that any attempts to connect with landowners to access agricultural lands are made well in advance, as to not disrupt agricultural activities. The impact on local farmers and agricultural operations needs to be minimized as prolonged activity can be detrimental to their operations.	See Master Response 1. See also Response to Comment 8 for information on the use of maps in the IS/MND, Response to Comment 29 for information on landowner permissions, and Master Response 5. The Draft IS/MND acknowledges and discusses the prevalence and importance of farmland within the Study Area and concludes that no significant impact would occur (pp. 26, 27).
305	Sacramento County Farm Bureau	We are disappointed to see that little detail is given to the actual footprint of the project, including a lack of information of total surface disturbance, particularly in the agricultural areas. The amount of impact during the collection is very vaguely defined, which provides little information to potential landowners of how to anticipate disruptions to their agricultural operations.	Section 2.0 of the Final IS/MND has been revised to clarify that Proposed Project activities and associated staging areas could result in temporary ground disturbance up to approximately 50 acres, with ground disturbance limited to approximately 0.05 to 0.22 acres per site and lasting no more than 15 days per investigation and 21 days for geophysical work. See also Response to Comment 104 and Response to Comment 191.
306	Sacramento County Farm Bureau	While the title of this project seems to allude to soil investigations for 'data collection' purposes, it is clear based on the project description that this is in reference to Executive Order N-10-19, for a proposed single tunnel Delta conveyance. If this study were to truly be an objective data collection of soil samples in the Delta, additional alternatives would be considered as this data should be used to determine the best course of action for new conveyance systems, and not designed to direct the further action of only one option. Since this is in direct correlation with the single tunnel conveyance system, this seems to simply be phase one of tunnel design and construction and not simply a data collection as indicated.	See Master Response 2 and Response to Comment 4.
307	Sacramento County Farm Bureau	Additionally, regarding public agencies whose approval is required, we strongly urge that Reclamation and Flood Control Districts be included in this process, as they have local jurisdiction in these areas.	See Master Response 2 and Master Response 5. See also and Response to Comment 26 for information on encroachment permits and Response to Comment 29 for details on landowner permissions.

308	Sacramento County Farm Bureau	We strongly encourage that fire protection and prevention plans and spill prevention and response plans be shared with local fire and emergency personnel and their mutual aid districts, as they may be requested to respond should an emergency arise. This emergency planning would increase local personnel's ability to respond adequately to the scene and work cooperatively with state agencies should the need arise.	The Proposed Project and accompanying mitigation measures were designed to preclude the need for assistance from local emergency response departments by preventing emergencies through the proper use and handling of hazardous materials and equipment, as demonstrated in Sections 3.9.2 and 3.20.2 of the Draft IS/MND. It is common practice on large construction projects for the State to coordinate with and share relevant project information with local fire and emergency response departments. While this is not a large construction project, Mitigation Measures HAZ-1, HAZ-2 and HAZ-4 and HAZ-have been updated to include this sharing of plans. See also Master Response 4.
309	Sacramento County Farm Bureau	For transportation and traffic controls, please be aware of the agricultural season you are operating in. During the summer months, increased agriculture truck activity is active throughout the Delta and delays in their delivery cause financial impacts to surrounding farmers and agricultural operations. Traffic controls and restrictions should be kept to a minimum during heighted agricultural production.	See Response to Comment 190 for information on Proposed Project timelines as they relate to traffic and the revision and implementation of MM TRANS-1. See also Response to Comment 232 for details on traffic controls as they relate to agricultural production. Further, during the process of obtaining landowner permission (see Response to Comment 29), landowners may provide additional timing information regarding any crop harvesting or transport that will occur in the vicinity of the Impact Area and could be potentially impacted by traffic controls.
310	Sacramento Metropolitan Air Quality Management District	The Sacramento Metropolitan Air Quality Management District (Sac Metro Air District) is mandated by Health and Safety Code §40961 to represent the citizens of the Sacramento district in influencing the decisions of other agencies whose actions may have an adverse impact on air quality. In that context, Sac Metro Air District staff reviewed the Mitigated Negative Declaration (MND) for Soils Investigations for Data Collection in the Delta and offer the following comments for consideration. Provide full disclosure of the analysis by including the air emissions calculations in the MND. Appendix B includes greenhouse gas emissions calculations but does not include criteria pollutant emissions calculations. Including the calculations supports the emissions reported in Tables 4 and 5.	The calculations sheet has been added to Appendix B of the IS/MND for clarity. This information is included in the Final IS/MND upon request and does not constitute a "substantial revision" (see State CEQA Guidelines, Section 15073.5, subdivision (c)(2)). See also Master Response 4.
311	Sacramento Metropolitan Air Quality Management District	Tables 4 and 5 display emissions from activities "on land" and "over water" separately. If the emissions may occur concurrently, the emissions should be combined prior to comparing to the thresholds of significance.	As the specific emissions are different based upon the two different types of work (on-land vs over-water), they were displayed separately in the tables to avoid confusion. However, upon request, Table 5 of the Final IS/MND has been updated to include this information as a combined value.

312	Sacramento Metropolitan Air Quality Management District	Sac Metro Air District's Guide to Air Quality Assessment in Sacramento County [Footnote 1: http://www.airquality.org/Business/CEQA-Land-Use-Planning/CEQA-Guidance-Tools] (Guide) provides attainment status, health information, screening criteria, thresholds of significance, tools and mitigation measure to be used in environmental review of air quality and greenhouse gas emissions. Update the MND using the most current information from the Guide: • Add a discussion regarding non-attainment of the 8-hour ozone standard in the Sacramento Valley Air Basin section on page 33. See Chapter 1 of the Guide. • Update the Air Quality Management District Standards section on page 34 for Sac Metro Air District using information from Chapter 2 (sections 2.4 and 2.5) of the Guide. • Correct the reference to MM GHG-1 on page 35. This reference should be AIR-1. • Update Table 3 to reflect that Sac Metro Air District's particulate matter (PM10 and PM2.5) thresholds are zero, unless best management practices (BMPs) are included as project conditions of approval or mitigation measures. Since BMPs have been included, the non-zero thresholds can be used.	The Final IS/MND has been revised to include a discussion of non-attainment of the 8-hour ozone standard and to update District standards, pursuant to Chapters 1 and 2 of the recently updated (April 2020) District CEQA Guide; however, DWR will follow all current guidelines for ensuring that the project does not violate guidelines outlined by SMAQMD. Further, the mitigation measure reference in Section 3.3.1.2 has been corrected, and Table 3 has been updated to include the detail provided in the comment regarding PM10 and PM2.5 thresholds. The inclusion of this information does not change analysis or impact conclusions (see Master Response 4).
313	Sacramento Metropolitan Air Quality Management District	All projects are subject to Sac Metro Air District rules in effect at the time of construction. A complete listing of rules is available at www.airquality.org. Specific rules that may be applicable to construction activities is also available in the Rules & Regulations Statement. (Footnote 2: http://www.airquality.org/LandUseTransportation/Documents/Rules%20attachment_6-18Final.pdf]	See Master Response 1.
314	Sacramento Municipal Utility District	The Sacramento Municipal Utility District (SMUD) appreciates the opportunity to provide comments on the Mitigated Negative Declaration (MND) for the Soil Investigations for Data Collection in the Delta (Project, SCH 2019119073). SMUD is the primary energy provider for Sacramento County and the proposed Project area. SMUD's vision is to empower our customers with solutions and options that increase energy efficiency, protect the environment, reduce global warming, and lower the cost to serve our region. As a Responsible Agency, SMUD aims to ensure that the proposed Project limits the potential for significant environmental effects on SMUD facilities, employees, and customers. With the implementation of mitigation measure MM UTI-1: "A field reconnaissance, marking or staking the exploration site, and calling Underground Service Alert (USA) for utility clearance will be conducted by qualified personnel for each planned soil exploration location. Based upon the information gathered, sites will be adjusted to ensure no utilities are impacted." This should ensure that SMUD's infrastructure is adequately protected. We have no additional comments to offer at this time, but would appreciate if DWR would continue to keep SMUD facilities in mind as environmental review of the Project moves forward. Please reroute the Project analysis for SMUD's review if there are any changes to the scope of the Project.	See Master Response 1. No changes to the scope of the Project will occur that would warrant additional review from interested agencies. See Master Response 2 for additional information on the scope of the Proposed Project.

315	City of Stockton	The following comments on the Initial Study/Proposed Mitigated Negative Declaration for Soil Investigations for Data Collection in the Delta (IS/MND) are submitted on behalf of the City of Stockton ("City" or "Stockton"). The Department of Water Resources (DWR) proposes to conduct exploratory drilling activities in support of a new single tunnel Delta water conveyance project (Project). Drilling will occur both over land and over water. According to the IS/MND, overwater soil investigations will consist of 57 soil borings up to 200 feet below the slough or river bottom (measured at the mudline). The duration of investigation activities will be up to 15 days at each site. On-land soil investigations will consist of 167 soil borings from 50 feet to 200 feet below ground surface; and 103 cone penetration tests (CPTs) from approximately 50 feet and 200 feet below ground surface, with work lasting up to 13 days at each site, depending on the nature of the work. Due to deficiencies in the proposed mitigation measures, and choice of location for certain overwater drilling sites, the City is concerned about the Project's potential to result in unmitigated significant impacts to surface and ground water quality, as well as impacts to fish species protected under the California and federal endangered species acts.	As discussed in Response to Comment 199, designated in-water work windows would reduce exposure of sensitive fish species and life stages to in-water work activities and are typical for projects within this Study Area. Proposed Project activities are short-term, temporary and minor. Additionally, as stated in MM-BIO-1, over-water sites will be located within portions of navigable channels or sloughs that generally do not provide appropriate habitat for terrestrial plant or wildlife species, and will be authorized and permitted under the Clean Water Act sections 401 and 404, and Fish and Game Code section 1602 et seq (see Draft IS/MND, p. 2, and Response to Comment 237). Additional protections to water quality and fish species are provided by MM HAZ-1 through 4 and MM-HYD-1. These measures include implementation of plan(s) that address Hazardous Materials, Safety, and Spill Prevention and Response. See also Response to Comment 227 through Response to Comment 230 on the effectiveness of mitigation measures for aquatic species, Response to Comment 69 on the use of mitigation measures, and Response to Comment 231 on the lack of impact to groundwater quality. Specific concerns are addressed in the following responses. Also, See Master Response 2.
316	City of Stockton	I. Background Stockton's Municipal Utility Department (MUD) provides potable water treatment and distribution for municipal and industrial (M&I) purposes to approximately 58 percent of the Stockton Metropolitan Area. The Stockton water service area consists of more than 48,000 metered connections with a service population of 182,000. This accounts for approximately 55 percent (55%) of the M&I demand of the Stockton Metropolitan Area. A significant source of the current water supplies to the Stockton Metropolitan Area provided by the City is surface water diverted at the City's Delta Water Treatment Plant Intake and Pump Station (IPS), which is located at the southern tip of Empire Tract. (See Exhibit A.) The remainder of the City's M&I demand is met by a combination of contracted surface water and groundwater pumping.	See Master Response 1.

317	City of Stockton	II. The Project Has Potentially Significant Impacts to Water Quality that Are Not Clearly Mitigated Below a Level of Significance The IS/MND does not provide sufficient information or evidence to demonstrate that the Project will not result in significant impacts to surface and groundwater quality. Due to deficiencies in the proposed mitigation measures, the IS/MND fails to demonstrate that proposed overwater drilling, and in particular drilling directly at and upstream of Stockton's IPS drinking water intake, and over land drilling will not have potentially significant impacts to Stockton's drinking water quality.	Section 3.10 of the Draft IS/MND discusses the potential impacts to groundwater quality and finds that none exist (pp. 163-164). Along with this analysis, the section lists several mitigation measures that will be implemented to reduce potential impacts to water resources, generally, including MM HYD-1 which ensures specific protections for spill prevention. All activities will be conducted in accordance with all applicable water quality standards, limitations, and restrictions as stated on page 166 of the Draft IS/MND. See also Response to Comment 14 and Response to Comment 231 on the lack of impact to surface water and groundwater quality. Furthermore, the proposed site near Stockton's drinking water intake has been removed from the proposed Project. This is reflected in the Final IS/MND in Section 2.0. The IS/MND provides sufficient information (see Master Response 3) and effective mitigation measures (see Master Response 4) and was prepared by professional specialists and experts (see Response to Comment 50) using scientific references, studies, and other resources (see IS/MND Section 4.0) demonstrating ample evidence to support the analysis and conclusions presented therein.

318	City of Stockton	A. Surface Water Quality Impacts IS/MND Figure 2(b) shows proposed overwater drilling locations on the San Joaquin River at the south end of Empire Tract and on a slough at the north end of Empire Tract. The location at the south end of Empire Tract is directly across from the City's IPS drinking water intake. (Compare IS/MND Figure 2(b) with Exhibit A.) Water diverted at Stockton's intake includes San Joaquin River water, as well as water flowing south in the slough along the west side of Empire Tract, downstream of proposed overwater drilling location that is at the north end of Empire Tract. To support its conclusion that water quality impacts from overwater drilling will not be significant, the IS/MND relies in part on Mitigation Measure HYD-1. This measure is inadequate to ensure that significant impacts will not occur. Measure HYD-1 provides in part: (f) During overwater soil investigations a qualified environmental monitor will watch for colored plumes (an indication that drilling fluid or other material is entering the water and may affect water quality). If found, activities will cease until appropriate corrective measures have been completed or it has been determined that the environment will not be harmed. As indicated by the text of the measure itself, there is the potential for an unspecified amount of drilling fluid and unspecified "other material" to be discharged from drilling operations. If the City is diverting water at the time such a discharge occurs, the contaminants could adversely affect the City's drinking water supply diverted at the IPS. The mitigation measure does not specify what corrective measures will be completed, or what criteria DWR will apply in determining whether the environment has been or will be harmed. Thus, there is insufficient information to assess the effectiveness of Measure HYD-1. To clearly avoid these potentially significant surface water quality impacts to the City's drinking water supply, DWR should not conduct overwater drilling at sites where a release of drilling fluid or "other materials" could adversely affect water diverted at the City's intake, or limit exploratory drilling at those sites to times when the City is prohibited from diverting (currently, between March 15 and May 20).	See Response to Comment 317.

319	City of Stockton	Further, although not discussed in the section on water quality impacts, in the discussion of hazardous materials impacts, the IS/MND suggests the potential for significant impacts to surface and groundwater quality from spills of hazardous materials. Mitigation Measure HAZ-2 provides in part: i. If a significant spill has occurred, and results determine that project activities have adversely affected surface water or groundwater quality, a detailed analysis will be performed to the specifications of DTSC to identify the likely cause of contamination. This analysis will include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this analysis, the DWR or contractors will select and implement measures to control contamination, with a performance standard that surface, and groundwater quality must be returned to baseline conditions. These measures will be subject to approval by the DWR, DTSC, and the Regional Board. (Emphasis added.) Mitigation Measure HAZ-2 acknowledges the Project has the potential for significant adverse impacts to surface and groundwater quality, but does not clearly avoid significant impacts because it provides for response activities following a significant spill, with no evidence or analysis to demonstrate that significant impacts from the spill can be avoided or reduced to a less than significant level. The measure also contains no information about the criteria DWR will apply in judging whether a spill is "significant" or whether activities have "adversely affected" water quality. Simply returning the conditions to baseline does not ensure that significant impacts to groundwater quality from a spill will be avoided or fully mitigated. Degradation, even if temporary, already will have occurred. The resulting impact could be significant if contamination renders surface or groundwater unusable.	See Response to Comment 231 for information on HAZ-2(i) and Response to Comment 230 on other preventative mitigation measure. See also Response to Comment 317 and Response to Comment 81.
320	City of Stockton	III. Potentially Significant Impacts to Protected Fish Species Also Are Not Clearly Avoided or Mitigated The IS/MND acknowledges the potential for the Project to result in significant impacts to protected fish species, including Delta smelt and longfin smelt. To lessen such impacts, the IS/MND relies on mitigation measures HYD-1 and HAZ-2, among others. As discussed above, Mitigation Measures HYD-1 and HAZ-2 are not adequate to ensure significant water quality impacts will not occur. Because the IS/MND relies on HYD-1 and HAZ-2 for its conclusion that impacts to sensitive fish species will be less than significant, this conclusion also appears to be inappropriate.	See Response to Comment 315 and Response to Comment 69 for details on the use of mitigation measures.

321	City of Stockton	IV. Conclusion A mitigated negative declaration is appropriate only if all potentially significant effects of the project will clearly be avoided or reduced to insignificance. Where there is substantial evidence in the record that a project may have one or more significant impacts on the environment, despite modifications, a negative declaration is improper and an environmental impact report (EIR) must be prepared. As discussed in these comments, there is substantial evidence that the Project may have significant impacts to water quality, and also protected fish species. As such, it appears DWR also is incorrect in its conclusions with respect to the Mandatory Findings of Significance, where the IS/MND finds, without analysis, that the Project does not "have the potential to degrade the quality of the environment ... " or "reduce the number ... of a rare or endangered plant or animal." (IS/MND at p. 206.) For these reasons, a MND is not appropriate, and it appears DWR must prepare an EIR for the Project. At a minimum, DWR must correct the inadequacies in Mitigation Measures HYD-1 and HAZ-2 and should modify the Project to clearly avoid overwater drilling impacts to water quality at Stockton's intake, and recirculate the corrected IS/MND for public review before adopting it.	See Master Response 4 and Response to Comment 315 to Response to Comment 320.
322	City of Stockton	[ATT 1: Map of Stockton’s IPS Drinking Water Intake]	See Master Response 1. See also Response to Comment 317.
323	Snug Harbor Resorts, LLC	This comment letter is written to object to the proposed drilling of soils in the drinking water aquifer of the North Delta, and particularly within three miles of the public and private drinking water wells located along Steamboat Slough. Actions by DWR under BDCP and CalFed have already caused damage to the local drinking water aquifer most likely from previous soils investigations in this area, which caused increases in arsenic and manganese in the drinking water aquifer. That degradation of North Delta drinking water aquifer has resulted in over $130,000 in additional well filtration equipment and an added $20,000 in annual maintenance costs, for one public drinking water well alone along Steamboat Slough. It is safe to assume that the many public drinking water wells affected by DWR previous soils borings and other CALFED/BDCP projects has resulted in many millions of dollars in costs to those well owners that were affected by DWR investigative borings and other projects. My comments and proof of valid concern will focus on impacts to the drinking water aquifer along Steamboat Slough, but applies to the drinking water wells along the Sacramento River as well between Sacramento and Rio Vista. In between paragraphs and at the end of this comment letter, I include several screen prints of maps or other data to aid the reader, as links to referenced data can be changed by the manager of the various government websites. I have also saved many of the documents and maps I refer to, copies of which can be downloaded from one of the websites I manage: https://www.snugharbor.net/News2020.html	See Master Response 1. Specific concerns are addressed in the following responses. See also Master Response 2 and Response to Comment 4.

324	Snug Harbor Resorts, LLC	OBJECTION TO PROPOSED DRILLING LOCATIONS DUE CONCERN FOR DRINKING WATER AQUIFER IMPACTS, AND REQUEST FOR MITIGATION TERMS IF DRILLING IS PERMITTED: DWR's Delta Conveyance Office proposes to drill many bore holes in the North Delta area, including drilling in-water within 150 to 1400 feet of many private drinking water wells along Snug Harbor Drive, and within 1900 feet of a public drinking water well. The need for drilling on Steamboat Slough by Snug Harbor is vague, with DWR briefly referring to studies aimed and installing barriers in North Delta waterways including Steamboat Slough. If "Delta Conveyance" includes salmon migration studies, more details should have been provided describing the need for soils tests by Snug Harbor, Simpson Tract and Hidden Harbor, all communities along Steamboat Slough.	See Response to Comment 168 and Response to Comment 20 for details on the boring seals and precautions taken with boreholes. See page 4 of the Draft IS/MND for information on why potential site locations were chosen. See also Response to Comment 29 for information on landowner permissions. During that process land owners may provide additional information to support avoidance of unrecorded hazards or other sensitive resources, such as water wells. See also Response to Comment 93 for information on the review of CalGEM data.
325	Snug Harbor Resorts, LLC	According to Waterboards, the waterways of Sacramento River, Steamboat Slough, Sutter Slough, Miner Slough and the Islands of Ryer, Sutter and Grand are located within a Hydrogeologically Vulnerable area. Per Waterboards, "Hydrogeologically Vulnerable Areas are where published studies show geologic conditions are more likely to allow surface contaminants to move to groundwater through percolation; for example: areas without an aquitard. Vulnerable areas not mapped, due to their extensiveness, are fractured rock where contaminants can move directly to water." https://www.waterboards.ca.gov/gama/docs/hva_map_table.pdf The screen print below shows just a section of the Waterboards hydrogeologically vulnerable map with markers added to show the locations of DWR/MWD proposed in-water drill locations compared to the affected drinking water wells along Steamboat Slough at Snug Harbor. I am concerned that drilling into the drinking water aquifer nearby Snug Harbor will cause even more degradation of the drinking water aquifer in this area, which has already been degraded by DWR/MWD and other experiments conducted on or nearby Steamboat Slough, Ryer and Grand Islands between 2000 and 2019. During the CALFED/BDCP projects phase it can be demonstrated that arsenic and manganese levels have increased, based upon review of USGS groundwater monitoring reports, and water samples from local public drinking water wells. (see maps at end of letter) Both elements are natural in the soils and it is logical to assume simply the vibration from drilling actions along the banks into the drinking water aquifer caused the elements to be released, thereby degrading the drinking water aquifer.	See Response to Comment 176 for information on mitigation measures and reconnaissance surveys that are designed to avoid, prevent, and mitigate impacts to environmental resources, including drinking water sources. See also Response to Comment 20 for information on precautions being taken to ensure that no contaminants enter the boreholes and Response to Comment 168 for information on boring sealing. Groundwater quality is further discussed in Response to Comment 14 and Response to Comment 315. All explorations will be backfilled/sealed in accordance with State of California Water Well Standards (Bulletins 74-81 & 74-90). The methods outlined in this IS/MND include the use of bentonite clay to stabilize the boreholes and transport the cuttings to the surface. The drilling mud coats the borehole walls and prevents losses of drilling mud into the formation. At the completion of drilling, cement-bentonite grout is injected at the base of the boring, displacing the drilling mud from the borehole and sealing the hole. In this way, the project ensures that groundwater will not be contaminated by the borings. Therefore, there will be no potential for substantial degradation to groundwater, including groundwater used as drinking water—as specifically mentioned in the comment (see IS/MND, Section 3.10.20(a)).

326	Snug Harbor Resorts, LLC	DWR/USBR continuing violation of the Antidegradation Policy of California: The “Statement of Policy With Respect to Maintaining High Quality of Waters in California,” was adopted on October 28, 1968 in Resolution 68-16 (Antidegradation Policy), and was adopted to prevent degradation of surface water and groundwater in California. The Antidegradation Policy states, in part: 1. Whenever the existing quality of water is better than the quality established in policies as of the date on which such policies become effective, such existing high quality will be maintained until it has been demonstrated to the State that any change will be consistent with maximum benefit to the people of the State, will not unreasonably affect present and anticipated beneficial use of such water and will not result in water quality less than that prescribed in the policies. 2. Any activity which produces or may produce a waste or increased volume or concentration of waste and which discharges or purposes to discharge to existing high quality waters will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that (a) a pollution or nuisance will not occur and (b) the highest water quality consistent with maximum benefit to the people of the State will be maintained.” Proposed in-water borings adjacent to the Snug Harbor peninsula pose a risk to water quality of the public and residential drinking water wells nearby, as the vibrations and boring actions could activate natural mineral constituents in the soils associated with the drinking water aquifer. This is a violation of section (1) above. Due to DWR failure to even acknowledge the locations of the drinking water wells near boring holes, and the possibility of toxic discharges into the surface waters which could filter down through to the shallow drinking water aquifer	See Response to Comment 325. As demonstrated above, the Proposed Project would not result in substantially adverse impacts to water quality that would or could degrade the existing quality of groundwater in a manner that would conflict with Regional Water Quality Control Board Resolution 68-16.

327	Snug Harbor Resorts, LLC	As suggested mitigation for any future DWR actions that penetrate the Delta drinking water aquifer, I specifically request that as a requirement of permits to do any borings in the Delta under subject permit request, that DWR/MWD/JPA or Waterboards be required to test the water quality of all drinking water wells within three miles of each bore location in the mapped hydrologically vulnerable areas of the Delta, immediately prior to bringing in any boring equipment to each site. During boring activity, and after completion of the boring activity, any drinking water wells that show degradation from the borings or subsequent impacts from the borings studies shall be repaired to pre-boring water quality levels. Of course, private well owners would need to permit the testing of water quality prior to any borings or preparation work being conducted, and all water tests and remediation costs would be born by DWR/MWD/JPA. All water wells tested prior to boring shall be tested during the boring activity at least daily, and then tested immediately after conclusion of the boring activity, and then monthly for a minimum of six months after the boring has been completed. Changes to water quality in the wells will be assumed to be the result of DWR/MWD/JPA boring into the shallow drinking water aquifer of the nearby area of tested wells. All costs for well testing, retesting and any remediation to pre-boring status shall be paid for by DWR/JPA. All loss of income or loss of use caused by drilling activities or by degradation of the drinking water wells shall be promptly reimbursed by DWR/JPA upon written billing and claim by any such impacted well owner.	See Master Response 6. Mitigation is not required where there is no project-related impact or a less-than-significant impact (State CEQA Guidelines, Section 15126.4, subdivision (a)(3)). Here, the IS/MND found that the Proposed Project would have no impact on groundwater quality; thus, the measures suggested in this comment are not required by CEQA (see Draft IS/MND, pp. 163-164, see also Response to Comment 14). Further, Response to Comment 325 provides additional information on how this impact conclusion applies with equal force to groundwater that serves as part of the drinking water supply. Moreover, the proposed mitigation suggested in the comment is not feasible given the potential for great variability in water quality results due to non-project related conditions and activities such as frequency and duration of well use, connection to surface waters or proximity to pore water of degraded quality. Nor would the proposed measure produce improved environmental results above existing measures in the IS/MND and project design components because of the uncertain validity of the data in determination of cause and effect. Therefore, not only are the measures suggested in the comment not required, they are not warranted.

328	Snug Harbor Resorts, LLC	IN-WATER BORINGS ON STEAMBOAT SLOUGH ARE UNNECESSARY, AND THE RISK TO NEARBY DRINKING WATER WELLS OUTWEIGH THE BENEFITS DERRIVED FROM BORING INTO THE DRINKING WATER AQUIFER BY SNUG HARBOR OR BY ANY OTHER KNOWN DRINKING WATER WELLS WITHIN CLOSE PROXIMITY TO PROPOSED BORING SITES. By 2019, DWR/WATERBOARD/USGS had gathered all available records of public and domestic drinking water wells, and USGS published a map and study showing the wells of the Central Valley and Delta called “Delineation of Spatial Extent, Depth, thickness, and Potential Volume of Aquifers Used for Domestic and Public Water-Supply in the Central Valley, California. This study shows that through Waterboards and USGS records, adequate records of soils nearby proposed in-water borings is readily available to DWR planners, and therefore additional drilling is an unnecessary cost and risk to the nearby drinking water wells. In addition, since there is the possibility of oil or gasoline spills from the boring equipment located on vessels, any such spill could immediately impact the surface water quality and drinking water wells located within 150 to 500 feet of the spill, at a minimum. In the case of the proposed boring on Steamboat Slough by Snug Harbor, boring is clearly unnecessary because full records of two public drinking water wells and several domestic wells are easily located online, and there are many other private residential wells with installation data that should be available in DWR or Waterboards own archives. For example, here is a link to a search of the drinking water wells nearby SHR, that could be impacted by DWR unnecessary boring on Steamboat Slough: Bored wells around SHR https://geotracker.waterboards.ca.gov/gama/gamamap/public/boring_logs.asp?x=-121.61203097591857&y=38.19693030586439&xmin=-121.76566790829162&xmax=-121.45839404354552&ymin=38.13633188973691&ymax=38.25747833451188&rand=0.06990313236130385&_=1505228563090	See Response to Comment 315 for information on overwater Project work and related impacts and mitigation measures. Available well completion reports were reviewed during development of the proposed subsurface exploration program, which were instructive in identifying data gaps but do not provide the entirety of the subsurface data information desired. Locations were proposed in areas where data gaps at specific depths were identified. See also Response to Comment 20.
329	Snug Harbor Resorts, LLC	Well logs completed in 1986 and 2000 at SHR are within 580 meters of the proposed DWR boring by the Snug Harbor peninsula, are public records, and should suffice to provide DWR with the needed soil data for this location. One well is approximately 450 feet deep and the other is approximately 185 feet deep. These available reports should suffice for DWR soils investigation of this area of Steamboat Slough, one would assume. In addition, there is just one brief paragraph by DWR indicating the purpose of the in-water soils tests may be for possible fish barrier or migration studies, which are totally unrelated to the subject stated purpose of the current soils boring plan for water diversion and conveyance planning. Any requests for boring or soils investigations related to barriers or fish migration structures should be brought up in an independent CEQA process related exclusively to barrier or fish migration structures, if even necessary given previous boring records for the area. Map below provides a visual indication of the available well drilling records for the Central Valley. I am also providing below a graphic of the soil strata of wells nearby the proposed Steamboat Slough boring site, to show that there is already adequate data available regarding soil types in this area.	See Response to Comment 328 for an explanation on why soil borings are necessary to effectuate the Project’s purpose. See also Master Response 2 for the various ways in which information from the Proposed Project may be used. CEQA does not preclude an agency from utilizing information gathered from one project to inform another, subsequent endeavor. If an unrelated, potential future project requires independent CEQA review, DWR will ensure that such a review occurs. While the data may be utilized for various subsequent DWR projects, the IS/MND does not specifically reference subsequent fish studies. Any fish studies or barriers that may be planned would be separate projects that would undergo a separate CEQA process.

330	Snug Harbor Resorts, LLC	POSSIBLE NEGATIVE IMPACT TO BUSINESS OPERATIONS AND RESIDENTIAL USES IF BORINGS OR CONSTRUCTION TRAFFIC ON LAND OR WATER IS CONDUCTED DURING THE PRIME RECREATION MONTHS. The Delta is a fun and beautiful recreation area year-round. However, the prime recreation months are March through October, especially Thursdays through Sundays. Steamboat Slough is a prime recreation boating area, as reported by many Dept of Boating & Waterways reports, and other agency reports. 91% of recreation income in the Delta is earned during the spring, summer and fall months, so to limit impacts to local businesses, require that all in-water and on-land boring locations that are frequented by recreation boaters be done only during the winter months of December, January or February. This requirement would keep construction trucks off the roads during recreation traffic times, and would keep boring rigs off the waterways during prime boating season. I am concerned that allowing borings to be done during prime recreation season could negatively impact business operations, so if borings are allowed, worst case, it should be done before Memorial Day week end or after Labor Day week end, no work would be allowed on weekends any time of the year, and land side traffic can not be blocked or delayed even during non-summer dates. In other words, in-water drilling contractor would be required to do all work in-water and any soil removal would be by barge so that large trucks would not be needed to haul soils, which could negatively impact traffic on East Ryer Road. On land borings would have to be conducted in such a way that through traffic is not hindered at all. In addition, drilling contractor should not be allowed to hinder or limit through access on Steamboat Slough for boating traffic, but can post “NO WAKE SHORE TO SHORE” signs that extend the existing No Wake Shore to Shore area another 100 feet (if needed) north of estimated boring location. Those No Wake signs shall be made of permanent materials, shall be posted on the levees of both Grand and Ryer Island, (if permitted by the RD’s), shall be posted in the water via bouys with signs, and the No Wake signage shall remain after the boring has been completed, since the entire length of the Snug Harbor peninsula is a “No Wake” zone, shore to shore, on Steamboat Slough and updated signs are needed.	As stated in Response to Comment 159, this project does not unduly restrict or impede navigation and recreational rights of the public. Section 3.16.2 (a) of the IS/MND, states, “ ...Proposed Project impacts are minor in scope and short term in duration so soil investigation activities will not significantly impair public access to these waterways or recreation facilities.” Further, the potential impacts to recreation included in the comment are not required for consideration within this CEQA document, where the question is not whether a project would impact recreation, generally, but rather if it would increase the use of recreation facilities such that physical deterioration would occur or would include construction of new recreational facilities that may have an adverse effect on the environment. Neither of those scenarios would occur with the Proposed Project. Over-water sites will be located within portions of navigable channels or sloughs; however, the footprint of each site will be sufficiently small and the duration of up to 15 days per site sufficiently short such that recreational boaters will be able to easily navigate around them and will not be significantly affected. Additionally, with the inclusion of mitigation measure AES-2, navigational lighting will be employed in accordance with the standards required for waterway safety, and no work will be conducted during the nighttime, thereby further ensuring the safety of nearby recreational boaters. While vehicle use for over-water sites may be up to 8 passenger vehicles, it is understood that parking availability for recreation is also important, and as such, carpooling will be encouraged, as is stipulated in MM GHG-1. See also Response to Comment 190 for details on traffic controls to ensure a less-than-significant impact on roadways.

331	Snug Harbor Resorts, LLC	POSSIBLE NEGATIVE IMPACT TO BED OF STEAMBOAT SLOUGH: SINK HOLES. Sometime between 2009 and 2014, there were what appears to be man-made changes to the bed of Steamboat Slough at its northern confluence with Sacramento River. The modification included a subsurface flow barrier made of revertment rock and clay, and a shear wall of cement, running across Steamboat Slough, with a narrow channel cut into the flow modification barrier. Those changes have resulted in a deepening “sink hole” on Steamboat Slough underneith the bridge, which is swallowing the nearby sandy beach area. Historically there was a deep spot of perhaps 25 feet but now the hole has been measured at deeper than 40 feet. I am concerned that boring into Steamboat Slough by the Snug Harbor access road and a popular natural beach area could result in creating a similar sink hole. DWR has stated that there will be no residual impact from the borings, but just in case, if the boring is allowed, there should be stated mitigation measures such as DWR will be required to repair any damage to SHR access road, and replace the lost natural sandy beach area if impacted by a sink hole after boring is completed. (Note that Snug Harbor Drive is a private road, and will not be accessible for use by DWR contractors for construction or boring purposes. https://snugharbor.net/sacramento_river_barrrier.html	See Response to Comment 176 for information on mitigation measures and reconnaissance surveys that are designed to avoid, prevent, and mitigate impacts to environmental resources. The methods outlined in this IS/MND include the use of bentonite clay to stabilize the boreholes and transport the cuttings to the surface (see Sections 2.1.1 and 2.2.1 of the IS/MND). The drilling mud coats the borehole walls and prevents losses of drilling mud and prevents movement of soil into the borehole. At the completion of drilling, cement-bentonite grout is injected at the base of the boring, displacing the drilling mud from the borehole and sealing the hole. In this way, the project ensures that any voids encountered during soil investigations will be backfilled. All explorations will be backfilled/sealed in accordance with State of California Water Well Standards (Bulletins 74-81 & 74-90). The activities described in this comment as potentially contributing to an existing sinkhole are related to flow barriers, the data collection activities of the Proposed Project are short in duration and will not result in any significant changes to flow for the surrounding area (see Sections 2.2.1 and 3.10.2 of the IS/MND).
332	Snug Harbor Resorts, LLC	DWR has not described in adequate detail, or validated a reason to puncture into the nearby drinking water aquifer by boring into Steamboat Slough at the proposed location The proposed boring locations are for “conveyance” planning, per DWR documentation. If Fish migration barriers or emergency rock barriers are being planned, DWR be required to declare the purpose of the in-water borings on Steamboat Slough by Snug Harbor and Simpson Tract in particular. When insufficient information is provided to allow the reviewer to make informed decisions, one has to look at the function of the proposed borings. The function, that I can tell, is to hinder recreation uses of Steamboat Slough during the boring time, and possibly cause hinderances to recreation and residential traffic if the work is allowed to be done during prime recreation season. I request that DWR and its agents not be granted permits to conduct in-water or on-land borings for any areas not directly located within the proposed tunnel intakes and pathways, and that the request for such borings for any reason not be granted until such time as the draft latest and greatest Delta water diversion plan has actually been released.	See Response to Comment 325 and Response to Comment 329. See also Response to Comment 61 for information on the Project’s purpose and objectives. Refer also to Master Response 2 for information the Project’s independent utility and Master Response 5/Master Response 6 for discussion on DWR sovereignty and Project permitting. For information on encroachment permits, see Response to Comment 26. Federal actions and permitting is discussed in Response to Comment 237.

333	Snug Harbor Resorts, LLC	In summary, I oppose the planned drilling into Steamboat Slough nearby the public and private drinking water wells of Snug Harbor for the following reasons 1) I am concerned for negative impacts to our drinking water aquifer, which DWR or other state angency actions have degraded during past actions affecting Steamboat Slough, and continue to fail to consider short and long term impacts to our local drinking water aquifer. 2) I am concerned about the impacts to the Snug Harbor Drive access road if DWR drilling creates a sink hole on Steamboat Slough. 3) I am concerned that allowing borings to be done during prime recreation season could negatively impact business operations, and residential uses due to traffic impacts or hindered access to Ryer Island and the Snug Harbor peninsula. 4) DWR has not described in adequate detail, or validated a reason to puncture into the nearby drinking water aquifer by boring into Steamboat Slough at the proposed location. DWR should be required to initiate a separate CEQA process if the purpose for in-water soils testing on Steamboat Slough is for barriers plannig.	This comment is a summary of comments 329 to 332. Please refer to those comment responses.
334	Snug Harbor Resorts, LLC	The maps and screen prints below are provided as additional support for the concerns contained in this letter. There is much more data-proof of impacts to local drinking water aquifer during the CALFED/BDCP time frame which will be forwarded to Karla Nemeth, Director of DWR. Since the WATERFIX planning documents basically ommitted the existence of possible impacted drinking water wells in the Delta, I request that for any future DWR/MWD/JPA planning permits for the Delta region, that short and long term impacts to all the drinking water wells of the Delta be adequately recognized, analyzed, realistically mitigated and that the cost to remediate impacted drinking water wells be done at the expenset of the SWC/DWR or recepients of diverted water. I am also providing below a graphic of the wells nearby the proposed Steamboat Slough boring site, to show that there is already adequate data available regarding soil types in this area.	See Response to Comment 325 and Master Response 2.
335	Snug Harbor Resorts, LLC	[ATT 1: Maps and Screen Prints]	See Master Response 1. See also Response to Comment 323 and Response to Comment 334.
336	Snug Harbor Resorts, LLC	[ATT 2: Snug Harbor Resorts comment letter to Karla Nemeth, Director, California Department of Water Resources RE: DWR actions are causing the degradation of the North Delta drinking water aquifer (January 14, 2020)]	See Master Response 1. See also Response to Comment 325 and Response to Comment 326.

337	Jenn Umland	We have to be smarter about the decisions we make and the environmental impacts they create. The California Delta, along with the San Francisco, San Pablo, and Suisun bays, is the largest estuary on the Pacific Coast, and is home to over 750 plant and animal species. The Delta supports vibrant commercial and recreational fisheries. Eighty percent of the state's commercial fishery species either live in or migrate through the Delta, including four Chinook salmon runs, sturgeon, and striped bass. Ag can, and should, function utilizing water saving methods which are currently available. I see some switching to drip lines, but chants for more, more, more water mean they still aren't planting appropriate crops. Consideration for what crops can be reasonably grown in our ecosystem seems to be rarely considered. Grow smarter! CA has already lost Far Too Many wetlands ~ Rivers ~ and Habitats, which also means destroyed Riparian areas. Water levels are dropping at alarming rates which means we need to be smarter. Smarter does not include modifying the Delta. Humans love to think we are SO smart, but study after study shows this type of modification damages the fish, the birds, the plants, the wildlife. When we smarten up and let the rivers flow free again, the improvement to the areas is awe-worthy. How about we save time and money, my tax money most likely, and stop this non-sense before we have to spend money 5, 10, 20 years from now to reverse the damage. ABANDON THE SITES RESERVOIR AND THE DELTA TUNNEL (S) ~ IT IS ANOTHER WASTE OF MY TAXPAYER DOLLARS !	See Master Response 1 and Master Response 2.
338	Delta Legacy Communities	General Comments CEQA is clear, all phases of project planning, implementation, and operation must be considered in the Initial Study of the project (15063 (a)(1). However, the project description for the soil investigation project is so broadly defined, so poorly constructed and the fundamental project components – drilling and drilling technologies – so poorly and incorrectly explained that reviewers find it impossible to believe that DWR could have made any kind of independent judgement regarding the project's environmental impacts. The document could be interpreted as a generic geotechnical report since it provides no project specific locations which can be accurately field checked by reviewers, no project specific footprints, no estimate of total surface disturbance and a disturbing lack of institutional knowledge regarding Delta roads, bridges, utilities, local public entities with responsibilities for levees and flood control, and virtually no recognition of Delta communities.	This comment is a replica of comment 261. See Response to Comment 261.

339	Delta Legacy Communities	DWR clearly states that this “data collection” project is directly linked to Executive Order N-10-19 which directs State agencies to evaluate a new single tunnel Delta conveyance. Since it is unlikely that geotechnical data to be collected in this project is being collected solely for the sake of data collection and because these data would not have much, if any, other utilitarian use, data from this project will be used solely by DWR and DCDCA to design the single tunnel project; a process which is already underway, but which lacks critical geotechnical and subsurface data. As much as DWR will opine in its objections, this IS/MND has piecemealed the CEQA process.	This comment is a replica of comment 262. See Response to Comment 261.
340	Delta Legacy Communities	To further support DWR’s CEQA piecemeal approach, DCDCA will use these geotechnical data, and the modeling which the data will inform (not mentioned in the IS/MND) to determine how much more subsurface data will be necessary for final tunnel design, TBM design and project cost estimates. Typically, for tunnels in soft ground, tunnel engineers would like to have boring/geotechnical data every 300 linear feet along the tunnel route and to depths below the tunnel horizon. In the case of the Delta conveyance tunnels, borings will likely be more closely spaced based on stratigraphic facies changes which are common in estuary geology. Reviewers believe that the “data collection” described in this IS/MND is only the first round of extensive subsurface exploration program for tunnel design and construction and not a simple data collection process to help DWR learn more about Delta geology.	This comment is a replica of comment 263. See Response to Comment 263.
341	Delta Legacy Communities	Comment 1, Proposed Project Title: The term “Soil Investigation…” as used in the title of the IS/MND sets up misleading expectations for the informed reviewer. The term “soil” has a specific meaning in modern geotechnical and geologic engineering parlance. The word “soil” is generally known to mean the natural medium for the growth of plants. Although it can be applied in geotechnical investigations to identify unconsolidated material above a bedrock contact, professional geologists, geotechnical engineers, civil engineers and professional drilling companies would not characterize lithic material below the last soil horizon as “soil”, particularly as it applies to the drilling depths proposed in this project. The IS/MND title should be changed to accurately describe the proposed project so that it does not mislead any reviewer. Indeed the entire IS/MND should be corrected to omit, or qualify, the term “soil investigation” since, as used in this IS/MND, it is neither technically or environmentally accurate.	This comment is a replica of comment 264. See Response to Comment 264.
342	Delta Legacy Communities	Comment 2, IS: The summary project description overlooks the subsurface intent and objective of the data collection.	This comment is a replica of comment 265. See Response to Comment 265.

343	Delta Legacy Communities	Comment 3, IS, 10. Other Public Agencies Whose Approval is Required and MND 1.2 Regulatory Requirements, Permits and Approvals: The IS and MND failed to identify Reclamation Districts and/or Flood Control Districts who have jurisdiction for construction (drilling and exploration) activities on and near levees. The IS failed to identify the necessary encroachment permits from CalTrans for exploration activities on State highway right-of-ways. The IS failed to identify that drilling permits are required from each county in which borings are proposed. Even if, DWR has come to an agreement or understanding with a specific county that some aspects of the permit process can be circumvented – such as requiring C-57 drilling license – these arrangements should be noted to inform the public as part of the project description. Likewise, if DWR has been unable to reach an agreement with a specific county or counties regarding the need for drilling permits, this should be noted to inform the public since DWR is not exempt from securing drilling permits from each county's environmental health department.	This comment is a replica of comment 266. See Response to Comment 266.
344	Delta Legacy Communities	Comment 4, MM AES-1: The MND fails to describe how the towers (masts) of truck or track-mounted drills will affect visual landscapes. Although not stated in the MND, it is likely that the drill towers will be about 30-feet high and will be able to be seen from various travel ways, recreational areas, businesses and residences in the Delta. According to MND Table 1, eight drills will be visible for up to 6 months. However, MND Section 2.2.1 states the "duration of investigation activities for the 167 borings will be up to" 1,995 working days or 76.4 months or 6.4 years. It seems unreasonable to assume that regardless of the actual amount of time that the drills are visible, they will not impact what the MMD calls the "…picturesque Sacramento-San Joaquin Delta…" and yet, there are no proposed mitigation measures, or even a recognition that drills affect visual landscapes, for the impact of the drills on the picturesque Delta viewshed.	This comment is a replica of comment 267. See Response to Comment 267.
345	Delta Legacy Communities	Comment 5, MM AGR-1: The MND incorrectly identifies that an ASTM standard will be used to abandon the exploration borings. The State of California Bulletin 74-81/74-90 provides guidance for abandoning borings and wells to prevent cross contamination of aquifers. Additionally, each county's environmental health department may enforce its own boring/well abandonment procedures as long as they are at least as stringent as those in Bulletin 74-81/74-90. Therefore, referencing an ASTM standard is not a viable mitigation measure.	This comment is a replica of comment 268. See Response to Comment 268.
346	Delta Legacy Communities	Comment 6, MM AIR-1 b.: It is unclear to a reviewer why bulk material would be necessary for either drilling, or any of the other proposed exploration activities since all drilling supplies, including Portland cement, are delivered in bags, unless the bulk material is going to be used to construct roads or drilling pads. It would helpful to a reviewer to know how bulk material is going to be used. If this mitigation measure is boilerplate for standard operating procedures and State of California requirements for covered loads on highways and streets, please specify.	This comment is a replica of comment 269. See Response to Comment 269.
347	Delta Legacy Communities	Comment 7, MM BIO-1 f.: This mitigation measure should be expanded to make it clear that it will be necessary to conduct environmental awareness training each time new field personnel arrive on site. Drilling crews generally have a high turnover rate and each new driller or driller's helper must be trained. Therefore, DWR and its contractors should keep rosters of all field personnel, the dates of their training, their work location and the name of the qualified biologist.	This comment is a replica of comment 270. See Response to Comment 270.

348	Delta Legacy Communities	Comment 8, MM BIO-1 g.: Reporting the presence of a listed species, identified only because of the proposed project, may have a detrimental impact on a private landowner's ability to manage her land. Therefore, we recommend that either the land owner be financially compensated for DWR actions or if compensation cannot be arranged, then DWR should treat the listed species reporting protocols in the same manner that DWR has proposed to address county drilling permits and ignore the process.	This comment is a replica of comment 270. See Response to Comment 270.
349	Delta Legacy Communities	Comment 9, MM BIO-1 h.: The mitigation measures states that "all federally or state-listed species observed will be allowed to leave the Impact Area on their own." We would like to point out that federally or state listed plants cannot leave an Impact Area under their own mobility. Therefore, this mitigation measure should be modified to clearly state that federally or state-listed plants will be removed under a take permit issued by CDFW.	This comment is a replica of comment 272. See Response to Comment 272.
350	Delta Legacy Communities	Comment 10, MM BIO-4 b.: The mitigation measure states that soil investigations will be conducted during the Giant garter snake's active season. Is this correct?	This comment is a replica of comment 273. See Response to Comment 273.
351	Delta Legacy Communities	Comment 11, MM BIO-9 b.: The mitigation measure contains an error – please revise to read "… stop an hour before sunset…"	This comment is a replica of comment 274. See Response to Comment 274.
352	Delta Legacy Communities	Comment 12, MM BIO-18 c.: To be consistent throughout the IS/MND please use either feet or meters to describe distances. To be clear, this mitigation measure does not refer to federally or state-listed species.	This comment is a replica of comment 275. See Response to Comment 275.
353	Delta Legacy Communities	Comment 13, MM CUL-1 a and b.: Are "soil investigation locations" the same as "Impact Area"? Please clarify.	This comment is a replica of comment 276. See Response to Comment 276.
354	Delta Legacy Communities	Comment 14, MM CUL-4: Please clarify that cultural sensitivity training will be provided to all individuals conducting field activities but that most "geologic analysis" will be done in offices and laboratories which do not require sensitivity training. Additionally, please refer to Comment 7.	This comment is a replica of comment 277. See Response to Comment 277.
355	Delta Legacy Communities	Comment 15, MM GHG-1 b.: This mitigation measure implies that an environmental monitor will be assigned to each exploration unit. If true, it clearly demonstrates that DWR has not fully considered the field conditions under which drilling crews, CPT's and seismic data acquisition crews operate. There are numerous times during daily field activities when exploration equipment will idle for more than five minutes, particularly when starting diesel engines. However, since this appears to be a codified mitigation measure, we recommend that this mitigation measure be emphasized in the contract language DWR or DCDCA will execute with drilling and CPT companies and the seismic data acquisition contractors and for all field vehicles and that environmental monitors, with proper training and accurate timing devices be present during all field activities including, operations on roads and highways and equipment mobilization between Impact Areas.	This comment is a replica of comment 278. See Response to Comment 278.

356	Delta Legacy Communities	Comment 16, MM HAZ-1 f.: This mitigation measure seemingly contradicts other sections of the IS/MND. This IS/MND states that the “soil” boring investigations to depths of up to 200 feet will be conducted and that the soil borings will be abandoned in according with ASTM [sic] standards or State of California Bulletin 74-81/74-90. These standards require that borings be abandoned using a tremie-pipe method which includes pumping a neat cement-bentonite slurry to seal the boring. Therefore, in contravention of this mitigation measure, cement will contact soil as it fills the boring. This mitigation measure should be revised to reflect an accurate description of the boring abandonment process and hazards materials. Additionally, this mitigation measure should be revised to include language which prohibits the use of hydrocarbon-based lubricates for all down-hole equipment including augurs, drill pipe and CPT’s. Typically, every connection between threaded auger sections (usually call “joints”) are lubricated with hydrocarbon-based grease every time the auger is attached to the drill string. Therefore, for every 200-foot deep boring, there are forty 5-foot joints, each with a lubricated threaded connection. DWR should require that the driller, and CPT contractors use non-hydrocarbon-based lubricates for all down hole equipment during the subsurface exploration program.	This comment is a replica of comment 279. See Response to Comment 279.
357	Delta Legacy Communities	Comment 17, MM HAZ-3 a.: This mitigation measure proposes to stockpile hazardous materials “…adjacent to the drill or CPT rig…” This means that there are over 200 potential hazardous material stockpiles throughout the Delta. DWR, or DCDCA, should consider centralizing hazardous material stockpile locations to minimize the opportunity for multiple authorized releases.	The referenced mitigation measure (HAZ-3a) states that “Stockpiling materials, portable equipment, vehicles, and supplies, including chemicals, will be restricted to areas adjacent to the drill or CPT rig”, meaning that those items which are being used in the course of the project activities will be kept onsite in a limited area for a limited period of time, which is standard industry practice. This standard practice does not imply the stockpiling of “hazardous materials” that would then create a significant threat of hazardous releases. “Centralizing” the storage of materials and equipment, as suggested in this comment, is an unconventional practice that would require the daily transport of these items to designated central locations, which would then lead to the obviously undesirable result of unnecessarily increasing overall project-related vehicle trips.
358	Delta Legacy Communities	Comment 18, MM HYD-1 a.: This mitigation measure states fueling and maintenance for on-land investigation contractors vehicles “…shall occur on established roads…” There is no definition of established roads. Additionally, it is extremely dangerous to perform maintenance or fueling on highways or county roads. This mitigation measure needs to be revised to omit any inference to unsafe operations on public thoroughfares or private roads. Throughout this IS/MND it would helpful if DWR acknowledged that levee roads in the Delta do not have shoulders wide enough for many of the activities proposed in this project.	This comment is a replica of comment 281. See Response to Comment 281.
359	Delta Legacy Communities	Comment 19, MM HYD-1 c.: This mitigation measure should remove the reference to “hay waddles” as a method to contain a hazardous materials spill. Hay waddles are used for erosion and sediment control.	This comment is a replica of comment 282. See Response to Comment 282.

360	Delta Legacy Communities	Comment 20, MM HYD-1 f.: This mitigation measure implies that corrective actions for over water hazardous spills may go untreated if there is no environmental harm. Does this mean that in the case of a spill an immediate determination of environmental harm can be made from the deck of the drilling barge? Typically, environmental harm resulting from hazardous materials, including hydrocarbons, cannot be determined without thorough analysis to ascertain short and long term effects. This mitigation measure should include language to state that all over water drilling will stop until the effects of the unauthorized release on the environment, including water quality, flora and fauna have been fully assessed and mitigated.	This comment is a replica of comment 283. See Response to Comment 283.
361	Delta Legacy Communities	Comment 21, MM NOI-1: Not all drilling noise can be mitigated with “appropriate mufflers”. This IS/MND has stated that the purpose of the project is collect “soil” samples using one of several sample collect techniques. Soil sampling techniques using a drill involving driving a sample collection device (split spoon sampler, etc.) into undisturbed medium. Although not disclosed by DWR, in the case of a split spoon, or Standard Penetration Test, a 140-pound hammer is dropped from a height of 30-inches onto a steel rod until the sampler has advanced 18-inches. This is a loud process, somewhat akin to pile driving. If soil samples are continuously collected through a 100-foot section of the boring, say through the tunnel horizon, there would be a minimum of 67 soil samples per boring and each sample could be driven by 5 to 20 blows, maybe more. This means that there could be between 335 and 1,340 audible loud noise generating metal-on-metal strikes per boring. This is a significant noise impact in the picturesque Delta. DWR must address this noise generating sample collection process as a significant impact.	This comment is a replica of comment 284. See Response to Comment 284.
362	Delta Legacy Communities	Comment 22, MM TRANS-1: The IS/MND fails to acknowledge that trees grow on the banks of sections of the levees and often overhang the levee road. Drill rigs cannot raise their towers and become entangled in trees. Had this IS/MND provided better maps so that the drilling locations and Impact Area could be easily identified, this review could have offered recommendations for those Delta roadways with trees which impact the safety of drill rig operations.	This comment is a replica of comment 285. See Response to Comment 285.
363	Delta Legacy Communities	Comment 23, MM UTI-1: Safe drilling practices as enforced by OSHA prohibit a drill from raising its tower in the vicinity of overhead high-voltage and utility lines. This IS/MND fails to acknowledge that many overhead electrical transmission lines follow Delta road right-of-ways and that the proximity of Impact Areas and the use of drills in those areas would pose a safety issue and prevent a drill from operating. Had this IS/MND provided better maps so that the drilling locations and Impact Area could be easily identified, this review could have offered recommendations to avoid Delta transmission lines which impact the safety of drill rig operations.	This comment is a replica of comment 286. See Response to Comment 265.
364	Delta Legacy Communities	Comment 24, 2.0 Proposed Project Description: This section is written so torturously as to be almost incomprehensible. Regarding Figures 2a, 2b and 2c – CEQA (15124 (a)) recommends that the project location be shown on a detailed map, preferably a topographic map. Typically project maps are shown on USGS 7.5 minute quadrangles (1:24000). USGS quadrangles typically provide enough detail for a reviewer to understand the project’s location and potential environmental impacts. Unfortunately, DWR has chosen to provide maps with no topography and at such a scale that very little detail project detail is available to the reviewer.	This comment is a replica of comment 287. See Response to Comment 287.

365	Delta Legacy Communities	Comment 25, 2.1 On-Land Soil Boring Equipment: Typically, it is not difficult to calculate the amount of surface disturbance in an “Impact Area”. For instance, drilling and CPT contractors know how much area is needed for safe operations. Typically, soil exploration drilling areas would not exceed 3,500 to 5,000 square feet and access would be restricted to only operational equipment. These types of dimensional data would be useful for a meaningful review to help determine the total project surface impact. The lack of specific data leads reviewers to conclude that the author(s) of the IS/MND have had very little exposure to drilling, geophysical or geotechnical data collection projects. Additionally, reviewers are confused by DWR’s approach to delivering a track-mounted drill to a drilling location on “soft ground”. Why would DWR recommend driving a tractor and lowboy trailer loaded with the drill rig on soft ground when the track-mounted drill is designed and capable of “walking” significant distances, and would cause much less surface damage than a fully loaded tractor/trailer? DWR should explain this approach and why a fully loaded tractor/trailer is environmentally superior to walking the drill onto the soil investigation site?	This comment is a replica of comment 288. See Response to Comment 288.
366	Delta Legacy Communities	Comment 26, 2.1.1 On-Land Soil Boring Investigation Methods: The IS/MND states that, “Drilling activities will be conducted using a [one?] drill rig with auger, casing and mud rotary capabilities.” Technically, all drills, except cable tool drill rigs, are classified as rotary rigs. However, DWR has described three different drilling techniques, each typically associated with three different types of drill rigs. The lack of clarity leaves the reviewer with the sense that DWR does not fully understand drill rigs or drilling technology. For instance, in IS/MND Figures 3 and 4, Track Mounted Rotary Drill Rig - these two drills are described in Central Mining Equipment Company (CME) catalog as auger drills. The CME catalog used by DWR to inform the IS/MND drilling process uses the term “rotary” or “rotary head” to describe the mechanism which turns, or rotates, the augers. Normally, among drilling contractors, drill rigs have specific purposes and even though an auger drill such as the CME 850XR shown in Figure 4 might be converted to drilling techniques other than auger, it would be very unusual, costly, and time consuming. It would be more efficient to mobilize a drill already equipped for mud rotary or to drill with a casing advancer. Additionally, it is not possible to collect in-situ “soil” samples using the techniques described in this section when drilling with mud. It is possible to obtain partial grab or chip samples while drilling with mud, but it is not possible to know the exact depth from which the samples originated. Downhole testing will be limited by the type of drilling and the type of testing. It would help inform the review if DWR could explain what types of downhole sampling will occur since this will help clarify all of the projects components and help determine how long each boring location will be occupied. The duration of the investigation activities shown in this section does not correlate with IS/MND Table 1. Some further explanation would be useful to the review. Will “soil” cuttings and water from the auger drilling be pumped or hand shoveled into containers? Vacuum trucks do not want to accept sediment or soil. What is the purpose of a vacuum truck?	This comment is a replica of comment 289. See Response to Comment 289.

367	Delta Legacy Communities	Comment 27, 2.1.2 On-Land CPT Equipment: This section title implies that CPT's may be used in other locations than on land. Is this correct? Most CPT's can be safety operated with 2 or 3 technicians. Why is it necessary for up to "15 support passenger vehicles" to be present? This seems extreme and environmentally damaging. Will each vehicle carry only one person? Are these 8 to 10 person vans? Did DWR intend to say "field trucks and support vehicles"? Under what conditions would 15 support passenger vehicles be necessary?	This comment is a replica of comment 290. See Response to Comment 290.
368	Delta Legacy Communities	Comment 28, 2.1.3 On-Land CPT Investigation Methods: The duration of the CPT investigation, up to 412 days (1.1 years) does not correlate with IS/MND Table 1. This needs to be corrected to provide an accurate project description so that a reviewer can understand the duration of the investigation.	This comment is a replica of comment 291. See Response to Comment 291.
369	Delta Legacy Communities	Comment 29, 2.1.4 On-Land Geophysical Survey Equipment: This section title implies that geophysical methods may be used in other locations than on land. Is this correct? Most seismic data acquisition programs can be safety conducted with 4 or 5 technicians. Why is it necessary for up to 14 support passenger vehicles to be present? This seems extreme and environmentally damaging. Will each vehicle carry only one person? Are these 8 to 10 person vans? Under what conditions would 14 support passenger vehicles be necessary? This section fails to describe geophysical equipment necessary for TDEM, CVTFM or, ERT data acquisition. The last sentence in this section is confusing – if not an EnviroVibe Minibuggy, what? "EnviroVibe" is a trademark of Industrial Vehicles International. Has DWR made the decision that this is the only acceptable vibroseis equipment? This should be clarified because different seismic data acquisition equipment will have different operational and "foot print" characteristics.	This comment is a replica of comment 58 and comment 292. See Response to Comment 58 and Response to Comment 292.
370	Delta Legacy Communities	Comment 30, 2.1.5 On-Land Geophysical Surveys Methods: Another tortuously written section. As shown in Figure 2b, there are 3 Impact Areas on Bouldin Island, not 5 as stated in this section; unless there are 5 Impact Areas, but map is at such a scale that it makes it impossible for an informed review. The last sentence of this section is confusing – is it a total of 21-days or a total of 105-days?	This comment is a replica of comment 59 and comment 293. See Response to Comment 59 and Response to Comment 293.

371	Delta Legacy Communities	Comment 31, Time Domain Electromagnetic (TDEM) [Includes all geophysical methodologies]: This section is written as a rudimentary primer, not to fully inform the reviewer of the proposed project objective. It would be helpful to understand the specific purpose of the TDEM survey. It can be assumed, but not stated, that the TDEM is used to identify subsurface geologic and ground water conditions to depths below the tunnel horizon. It can also be assumed that TDEM may provide data related to saline and freshwater aquifers. Likewise, the objective of using a CVTFM is not explained. It can be assumed that the objective is to identify buried metallic objects, including abandoned wells. However, the effectiveness of a CVTFM would be reduced by overhead or buried powerlines and railroad tracks. The objective of using ERT may be to identify subsurface geologic and stratigraphic characteristics to be used in conjunction with other geophysical methods. For seismic surveys, please check the diameter of the geophones, “0.5 inches in diameter” seems extremely small, since most small geophones are about 1.25 inches in diameter. It is not clear from the project description if the seismic senor lines are 2,300 feet long, or if the entire seismic data acquisition line is 2,300 long. That is, typically the EnviroVibe unit would begin collecting data several hundred feet off the end of the sensor line (called walking or rolling on) and then would extend beyond the last sensor (called rolling or walking off). An informed reviewer will benefit from an accurate project description.	This comment is a replica of portion of comment 60 and comment 294. See Response to Comment 60 and Response to Comment 294.
372	Delta Legacy Communities	However, unless the IS/MND fully explains the project’s objectives and how the four geophysical exploration methods are integrated, it is only possible for the reviewer to infer DWR’s intent. One observation becomes clear however, this proposed drilling and geophysical program has a specific objective - to inform the design of the Governor’s single tunnel. As such, this project skirts the intent of CEQA to fully disclose all impacts associated with a project, i.e. the Delta Conveyance Tunnel, and blurs the reviewer’s ability to fully evaluate all aspects of the project description and project objective. At best, this IS/MND is nothing more than a shallow, incomplete description of a much larger project; at worst it is another ham fisted attempt by DWR to mollify the public and conceal DWR’s intent to share these data with DCDCA and assist water contractors in their effort to construct a new through Delta conveyance.	This comment is a replica of a portion of comment 60 and comment 295. See Response to Comment 60 and Response to Comment 295.
373	Delta Legacy Communities	Comment 32, 2.2.1 Over-Water Soil Boring Investigations Methods: There’s almost so much incorrect about this project description that it is nearly impossible to allow a coherent review. However, a few comments – 1) A 3.5-inch drill hole is too small for mud; 2) Soil samples cannot be collected using a split spoon sampler when using a mud rotary because the drill steel through which the sampler would be dropped is plugged with mud and likely the sampler cannot be driven through the tri-cone bit used in mud drilling. Fundamentally, this section does not accurately describe the project and should be rewritten by qualified preparers to describe the project.	This comment is a replica of comment 296. See Response to Comment 296.

374	Delta Legacy Communities	The following comments infill comments not noted in comment numbers 1-32. Comment 33, 3.1 b. Aesthetics: Note that the community of Locke is not located on Highway 160. It is located on County Road E13, commonly called River Road. FYI – Highway 160 is on the west levee of the Sacramento River at Locke. Highway 160 crosses the Sacramento River twice between the City of Sacramento and the Antioch Bridge – not several times.	This comment is a replica of comment 297. See Response to Comment 297.
375	Delta Legacy Communities	Comment 34, 3.3.2.3 Air Quality: Impacts to air quality could occur after the soil investigations have been performed if surface soils are still exposed thus creating the opportunity for dust.	This comment is a replica of comment 298. See Response to Comment 298.
376	Shingle Springs Rancheria	DWR received a comment letter from Shingle Springs Rancheria dated December 9, 2019.	While Shingle Springs did not formally request AB-52 consultation for this project, because of language used in their letter, DWR has chosen to engage with this tribe through DWR's tribal engagement policy, which involves a confidential process, and as such, this letter was responded to through the Tribal consultation process with the Tribe.
377	Wilton Rancheria	DWR received comments from Wilton Rancheria on January 15, 2020 via email	DWR is currently in AB-52 consultation with Wilton, which is a confidential process. Therefore, this letter was responded to through the Tribal consultation process with the Tribe.

378	Local Agencies of the North Delta Supplemental Questions (received after closing)	In addition to the potentially significant impacts raised in LAND's prior comments, the Project could have potentially significant impacts to Delta agriculture. The January 13, 2020 memorandum prepared by MBK Engineers identifies the need for DWR to evaluate the Project's impacts to farm fields. The MND fails as an informational document in this regard.	Although this comment letter, consisting of comments 378 to 383, was received after the closing of the comment period, DWR has chosen to respond to it here. For more detail, refer to the introductory text of this appendix. Potential effects to farm fields are discussed in the IS/MND in Section 3.2.2. Based upon the limited size and duration of each individual Impact Area, no significant changes will occur to farmland, and as such no significant effects to the use of or quality of farmland will result for the project activities. Moreover, there would be no conversion of farmland to non-agricultural uses, which is the concern of CEQA (see Appendix G checklist). MM AGR-1 is offered to ensure that agricultural lands will be returned, as closely as possible, to their pre-activity conditions by replacing the final five feet (1.5 m) of topsoil to reduce any potential impacts to future agricultural productivity. The backfill procedure used for this topsoil replacement will be in accordance with State of California Bulletin 74-81/74-90 and local county standards. See Response to Comment 69 for information on mitigation on restoring location sites to their pre-activity condition. See also Response to Comment 304 and Response to Comment 309 for information on the Proposed Project's sensitivity to, and lack of impact on, farmland and agricultural activity and the consideration given to agricultural landowners.
379	Local Agencies of the North Delta Supplemental Questions (received after closing)	The Project includes 270 combined borings and CPTs, with approximately 80 percent occurring on important farmland. (MND, pp. 4-5, 26.) Yet, the MND disregards any potential impacts to agriculture by limiting its analysis to conversion of farmland. (MND, pp. 26-28.) This approach discounts the Project's potentially significant impacts on agricultural operation and production.	See Response to Comment 378.

380	Local Agencies of the North Delta Supplemental Questions (received after closing)	Each boring would be grouted with a cement-bentonite mixture in accordance with DWR Bulletins 74-81 and 74-90. (MND, pp. 10-11.) Bulletin 74-90 requires casings must terminate above grade. (DWR Bulletin 74-90, § 9.C.) The grout sealant that fills the annular space between the casing the drilled hole sits above grade as well. (See i*d.* at §9.A. [Sealing Conditions].)1 The MND fails to analyze how the use of cement-bentonite grout in the borings would impact agricultural operations. The cement-bentonite mixture that would be used to backfill the borings could interfere with normal agricultural operations. Rigid seals could interfere with operations of agricultural equipment, damaging expensive machinery and causing significant agricultural losses. Prime farmland would be irrevocably destroyed as each seal would reduce the plantable area at and around each boring location. The use of heavy equipment to conduct the borings and CPT could also impact the use of the farmland. The MND fails to quantify what this loss of prime farmland. Even though the Project does not convert entire parcels of prime farmland, it would result in loss of usable farmland and interfere with farming operations. 1 The omission of this information from the MND is itself a violation of CEQA. (Cal. Code Regs., tit. 14, § 15124; see *City of Redlands v. County of San Bernardino* (2002) 96 Cal.App.4th 398, 406 [a negative declaration "is inappropriate where the agency has failed … to provide an accurate project description."]; *El Dorado County Taxpayers for Quality Growth v. County of El Dorado* (2004) 122 Cal.App.4th 1591, 1596.)	See Response to Comment 378. By replacing at least five (5) feet (60 inches) of topsoil on agricultural lands, pursuant to MM AGR-1, any impediment to normal agricultural activities will be avoided because the average depth of disking for row agriculture is between 4 to 8 inches below the surface, with deep tilling defined as anything deeper than 20 inches. Further, no evidence has been presented that farmland, Prime or otherwise, would be "irrevocably destroyed" or that there would even be a reduction in "plantable area" as a result of Proposed Project activities. Heavy equipment and machinery, not unlike the type proposed for use with the Project, are used regularly in agricultural operations, including tractors, field cultivators, ploughs, balers, machinery used for planting and cultivation, and drilling rigs used for constructing agricultural wells (see Master Response 6 for more information on drilling and permitting). The use of heavy equipment, in and of itself, does not provide proof of damage. The comment discusses a potential "loss of prime farmland" but does not provide evidence that this could occur or that analysis in the IS/MND is incorrect. Moreover, the CEQA Appendix G checklist is concerned with whether a project would convert Prime Farmland, and the like, to non-agricultural uses, not whether there would be any loss of acreage with perfect conditions for planting. The conversion of Prime Farmland is a wholly different process than the potential impacts being theorized in the comment. There is no chance of the Proposed Project converting Prime Farmland because it involves no uses or activity that would re-designate or reclassify Farmland or otherwise convert any land to non-agricultural uses. In fact, the boing and drilling of holes, for a variety of reasons such as constructing wells and agricultural buildings, is a typical activity on agricultural land and within agricultural zones and is readily allowable under most county codes, sometimes without permitting. It is incongruous to believe that these county codes, put in place by ordinances with the purpose of preserving agricultural operations, would allow an activity that would result in the loss of farmland. See also Master Response 3.

381	Local Agencies of the North Delta Supplemental Questions (received after closing)	Further, the MND does not discuss how the cement-bentonite would function in Delta soil; it is unclear whether this material is the appropriate choice to use as the backfill and sealant for borings in the Delta. Cement-bentonite is rigid and could easily break if the surrounding soils are less rigid. Other less-rigid materials, such as bentonite grout, could be more appropriate in the wet soil of the Delta.	See Response to Comment 378 and Response to Comment 380. Cement bentonite will be used in accordance with ANSI and ASTM standards. See further discussion in Response to Comment 88 regarding sealant material.
382	Local Agencies of the North Delta Supplemental Questions (received after closing)	The use of rigid sealing materials proposed by the Project could also interfere with groundwater movement. The intended function of cement-bentonite is to stop the movement of groundwater, it has low permeability. In areas with higher concentrations of Project borings, the increased presence of cement-bentonite up to 200 feet below ground may have a potentially significant impact on groundwater. However, the MND fails to provide relevant information or even consider the impact. Overall, the practical effects of using cement-bentonite as the backfill and sealant for borings is inadequately discussed. Without such disclosure and analysis, those effects cannot be translated into impacts to agriculture.	The presence of the backfilled borehole, which will have a very small physical profile of 6.5 to 8 inches (165 to 203 mm) in the surrounding soil will have minimal effect on the movement or retention of groundwater in the surrounding landscape. Although the comment postulates that the cement-bentonite sealing may interfere with groundwater movement, no evidence is presented that it actually would, or, that even if it did, it is plausible that such minor interference could substantially degrade groundwater quality, substantially decrease supplies, or substantially interfere with groundwater recharge in a way that then would convert Prime Farmland or even result in another type of negative impact (see Draft IS/MND, Section 3.10, see also Master Response 4). See Response to Comment 380 for more detail on the conversation of Farmland and standard agricultural activities. For more information on groundwater and the lack of impacts from the Proposed Project, see Response to Comment 14 and Response to Comment 231.
383	Local Agencies of the North Delta Supplemental Questions (received after closing)	CEQA “requires the preparation of an EIR whenever it can be fairly argued on the basis of substantial evidence that the project may have significant environmental impact.” (*No Oil, Inc. v. Los Angeles* (1974) 13 Cal.3d 68, 75.) Here, substantial evidence supports a fair argument that the Project would have potentially significant impacts on Delta agriculture. Therefore, an EIR is required.	See Response to Comment 380, Response to Comment 382, and Master Response 4.

Appendix E:
Mitigation Monitoring and Reporting Plan

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Soil Investigations for Data Collection in the Delta Mitigation and Monitoring Reporting Plan (MMRP)

July 2020

California Department of Water Resources

1416 Ninth Street

Sacramento, CA 95814

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PURPOSE OF THE MMRP

The California Environmental Quality Act (CEQA) requires that agencies approving projects after adopting Mitigated Negative Declarations (MNDs) must take affirmative steps to determine that all approved mitigation measures are implemented subsequent to project approval.

This Mitigation Monitoring and Reporting Plan (MMRP) has been prepared by the California Department of Water Resources (DWR) pursuant to CEQA for Soil Investigations for Data Collection in the Delta (Investigations), which has been analyzed in the Initial Study – Mitigated Negative Declaration (IS/MND) for Soil Investigations for Data Collection in the Delta. DWR will adopt this MMRP at the time it adopts "CEQA Findings" pursuant to CEQA Guidelines section 15074[d].

Implementation of the mitigation measures would reduce impacts to below a level of significance for biological resources, cultural resources, greenhouse gas emissions, hazards and hazardous materials, tribal cultural resources, and wildfire.

Mitigation measures must be implemented within the time periods indicated in the table that appears below. DWR as the lead agency has the primary responsibility for monitoring compliance of all mitigation measures and for reporting to the applicable regulatory agencies on the progress in implementing those measures, where required. These monitoring and reporting requirements are set forth in the IS/MND and are summarized at the front of the attached table.

The remainder of this MMRP consists of the checklist that identifies the mitigation measures by resource for each project component. The following items are identified for each mitigation measure: Mitigation Measure, Implementation Schedule, Responsible Party, and Status/Date/Initials. The "Mitigation Measure Number" and "Mitigation Measure" columns identify and detail the specific mitigation measure found in the IS/MND. The "Timing" column shows the date or phase when each mitigation measure will be implemented. The "Responsible Party" column identifies the agency or classification of a person within the lead agency that is primarily responsible for implementing the mitigation measure. The "Completion Date" and "Verified By" shall be completed by the Permittee during preparation of each Status Report and the Final Mitigation Report and must identify the date that the mitigation measure implementation was completed and will include initials of the person determining the completion. If the mitigation measure was not completed or other issues have arisen preventing the completion, this should be documented in the "Comments" column.

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM AES-1a	Each Impact Area will be returned to as close to pre-activity conditions as possible. This will be documented by still photos taken pre- and post-activity.	At the conclusion of impact area disturbance	Construction Contractor			
MM AES-1b	No building structures will be removed or disturbed. Soil investigation activities will occur at a distance greater than 100 feet (30.5 meters) from residences and small business operations. If fencing needs to be removed for access, it would be replaced after the work is completed.	During construction	Construction Contractor			
MM AES-1c	No trees or vines will be removed during exploration activities; and only minor disturbances to vegetation would occur during mobilization of equipment. This minor disturbance may consist of mowing, removal of a few tree limbs, or trimming of bushes for site access. However, if access requires removal of any vegetation, the landowner would be consulted first to minimize the impact to both vegetation and the landowner.	During construction	Construction Contractor, Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM AES-2a	Navigational lighting will be used as needed for overwater work, but will meet the standards required for waterway safety, and are will not increase the existing ambient lighting of the area in a substantial way. Any lighting used on barges or drill ships will not exceed the standards of brightness for standard navigational safety requirements.	Before and during construction	Construction Contractor			
MM AES-2b	All work will occur between sunrise and sunset.	During construction	Construction Contractor, Biologist			
MM AGR-1	Any proposed soil investigation activities that occur on agricultural lands will be grouted in accordance with materials that conform to ANSI and ASTM standards from the full depth to five feet (1.5 meters) below the surface. The final five feet (1.5 m) of topsoil will be replaced to return the Impact Area to as close to pre-activity conditions as possible. The backfill procedure will be in accordance with State of California Bulletin 74-81/74-90 and local county standards.	At the conclusion of impact area disturbance	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM AIR-1a	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.	During construction	Construction Contractor			
MM AIR-1b	Cover or maintain at least six feet (1.8 meters) 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 will be covered.	During construction	Construction Contractor			
MM AIR-1c	All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. Use wet power vacuum street sweepers to remove any visible track out mud or dirt onto adjacent public roads as needed. Use of dry power sweeping and blower devices is prohibited.	During construction	Construction Contractor, Engineer			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM AIR-1d	Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).	During construction	Construction Contractor, Engineer			
MM BIO-1a (General Biological Measures)	All litter, debris, unused materials, rubbish, supplies, or other material will be appropriately stored in closed containers until it can be removed from project sites and deposited at an appropriate disposal or storage site. All trash that is brought to a project site during soil investigation activities (e.g., plastic water bottles, plastic lunch bags, cigarettes) shall be removed from the site daily.	During construction	Construction Contractor, Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-1b (General Biological Measures)	As stated in the project description, all on-land soil investigation Impact Areas will be located outside of wetlands as defined in the Corps of Engineers Wetlands Delineation Manual (USACE 1987). Evaluation of conditions at each site will be conducted by qualified wetland delineators. If after review of applicable data sources, nearby aquatic resources are identified for on-land soil investigation sites, including those that meet the Corps definition of wetlands or non-wetland waters, wetland delineators will participate in the site surveys for those sites and relocate them outside of the boundaries of observed aquatic resources.	Before construction	Construction Contractor, Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-1c (General Biological Measures)	Over-water sites will be located within portions of navigable channels or sloughs that generally do not provide appropriate habitat for terrestrial plant or wildlife species, and will be authorized under the Clean Water Act sections 401 and 404, and Fish and Game Code section 1602 et seq.	Before construction	Construction Contractor, Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-1d (General Biological Measures)	A qualified team of biologists will conduct a habitat assessment and reconnaissance level surveys approximately two weeks prior to the onset of ground disturbing soil investigation activities for any special status plants and wildlife that have the potential to occur within the project area. If the biologists identify the potential for special status wildlife impacts within the Impact Area and associated standard species buffers based on the site reconnaissance, the location will be shifted the minimum distance necessary to reduce the potential for biological impacts to a less than significant level without increasing impacts to other resources to above a level of significance. If a suitable location cannot be determined within adjacent areas, then the soil investigation at that location will not be conducted.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-1e (General Biological Measures)	The qualified biologist(s) must, at a minimum, have experience conducting surveys to identify the specific species and associated habitat that could occur on site.	Before and during construction	Biologist			

MM BIO-1f (General Biological Measures)	A qualified biologist will be on-site for all project activities and will conduct an environmental awareness training session for all new field personnel prior to the start of work each day. Throughout the project, any new staff will be provided training before they begin working on the project. A running list of trained personnel will be kept on site in the project permit binder and includes name, date of training, work site and their signature. At a minimum, the training shall: i. include a description of each species with the potential to occur, including physical description, habitat needs, and life history as well as a discussion of the importance of avoiding impacts to special status wildlife. ii. explain the general measures that are being implemented to conserve these species as they relate to the project and project area, and	Before and during construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
	procedures to follow should they encounter wildlife during work. iii. explain the stop work authority of biologists and/or cultural resource specialists.					
MM BIO-1g (General Biological Measures)	Any observations of federally or state-listed species or California Species of Special Concern will be reported to CDFW within three (3) working days of the observation, and the observation(s) will be submitted to the California Natural Diversity Database (CNDDB). Any observations of federally listed species will also be reported to the U.S. Fish and Wildlife Service.	Before and during construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-1h (General Biological Measures)	All federally or state-listed species observed will be allowed to leave the Impact Area on their own. If the biologist determines that continuing activities could potentially cause unpermitted take under federal or State law to a federally or state-listed species, activities must cease. Work may not resume until the on-site biologist has determined there is no longer the possibility of causing unpermitted take under federal and State law.	Before and during construction	Biologist			
MM BIO-1i (General Biological Measures)	The area below any vehicle or piece of equipment that has been stationary for 24 hours or greater will be examined prior to operation to ensure that no wildlife species is present.	Before and during construction	Construction Contractor, Biologist			
MM BIO-1j (General Biological Measures)	No pets or firearms will be permitted on site.	Before and during construction	Construction Contractor, Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-1k (General Biological Measures)	Any open holes or trenches that will be left exposed overnight will either be securely covered or have an escape ramp installed to prevent entrapment of any wildlife.	During construction	Construction Contractor, Biologist			
MM BIO-1l (General Biological Measures)	Any piping or casing left exposed overnight will be capped to prevent wildlife from entering.	During construction	Construction Contractor, Biologist			
MM BIO-2a (Special Status Amphibians)	No project activities will be conducted during or within 24 hours following a rain event in locations that have a potential for special status amphibians to occur or are near wetlands or other water features.	During construction	Construction Contractor, Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-2b (Special Status Amphibians)	In areas with the potential for special-status reptiles and amphibians to occur, prior to the onset of project activities at any Impact Area, a qualified biologist will conduct pre-construction surveys to determine whether any such species are present. A qualified biologist must, at a minimum, have experience conducting surveys to identify the California tiger salamander, California red-legged frog, western spadefoot, western pond turtle, and/or giant garter snake and their associated habitat.	Before and during construction	Biologist			
MM BIO-2c (Special Status Amphibians)	Any active rodent burrows or suitable cracks identified by a qualified biologist during the pre-construction survey will be flagged so that they can be avoided.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-2d (Special Status Amphibians)	Any burrows, cracks or fissures suitable for rodents that cannot be avoided and will be temporarily impacted by the movement and placement of equipment or other project activities will be covered with plywood to avoid burrow collapse.	Before and during construction	Biologist			
MM BIO-2e (Special Status Amphibians)	Leaf litter will be surveyed by the biologist for presence of wildlife prior to the onset of work, and if any special-status species are identified as using the leaf litter for refuge it will be avoided and a buffer will be established by a qualified biologist and flagged.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-2f (Special Status Amphibians)	If any special-status reptiles or amphibians are observed within the Impact Area, the on-site biologist will determine if the work can continue without harm to the individual(s). If the biologist determines that it is not safe to continue work, all work will cease until the animal has left the Impact Area. Once the individual(s) is determined by the on-site biologist to have left the Impact Area and is out of harm's way, work may resume.	Before and during construction	Biologist			
MM BIO-2g (Special Status Amphibians)	Piles of rock, rip-rap, or other materials that could provide refuge to reptiles or amphibians will be avoided. If movement of such materials cannot be avoided, a qualified biologist will survey the area prior to disturbance and monitor the material movement and restoration of the area following completion of Proposed Project activities.	Before and during construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-3a (Western Pond Turtle)	In areas with the potential for western pond turtle to occur, pre-activity presence/absence surveys for western pond turtle shall occur within 48 hours prior to the onset of project activities at any Impact Area.	Before construction	Biologist			
MM BIO-3b (Western Pond Turtle)	If Western pond turtles are observed on land during the pre-activity surveys, the area within 328 feet (100 meters) of the boundary of the aquatic habitat will be flagged and avoided if feasible.	Before construction	Biologist			
MM BIO-3c (Western Pond Turtle)	If western pond turtles are observed within the Impact Area during a pre-activity survey or during project activities, they will be relocated outside of the Impact Area to appropriate aquatic habitat by a qualified biologist.	Before and during construction	Biologist			
MM BIO-4a (Giant Garter Snake)	Upland habitat within 200 feet (61 meters) of suitable aquatic habitat, that is suitable for giant garter snake (containing cracks or rodent burrows) will be flagged and avoided.	Before and during construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-4b (Giant Garter Snake)	On-land soil investigations within suitable upland habitat for giant garter snake will be conducted during the snake's active season of May 1 through October 1.	During construction	Biologist			
MM BIO-5a (Rookery Birds)	A pre-activity survey for active rookeries will be conducted (during nesting season between February 1 – August 31) a maximum of 72 hours prior to the onset of soil investigation field activities. The qualified biologist(s) must, at a minimum, have experience conducting surveys to identify the specific rookery bird species and associated habitat that could occur on site.	Before construction	Biologist			
MM BIO-5b (Rookery Birds)	If any active rookeries are identified within or adjacent to an Impact Area, a buffer will be put in place to ensure that the birds are not disturbed during work activities. This buffer will be up to 50 feet (15 meters), but can be smaller, dependent on-site conditions and at the discretion of the qualified biologist.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-6a (Raptors; excluding Swainson's Hawk and Burrowing Owl)	For soil investigation field activities that will occur between February 1 – August 31, a pre-activity survey for actively nesting raptors will be conducted by a qualified biologist a maximum of 72 hours prior to the onset of project activities. The qualified biologist(s) must, at a minimum, have experience conducting surveys to identify the specific species and associated habitat that could occur on site.	Before construction	Biologist			
MM BIO-6b (Raptors; excluding Swainson's Hawk and Burrowing Owl)	If any active raptor nests are identified within or adjacent to an Impact Area by the pre-action survey, a buffer will be put in place to avoid disturbance to birds during and as a result of work activities. This buffer will be up to 250 feet (76 meters), but can be smaller, dependent on-site conditions and at the discretion of the qualified biologist.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-6c (Raptors; excluding Swainson's Hawk and Burrowing Owl)	Any identified actively nesting raptors will be monitored by a qualified biologist during activity activities for signs of distress or disturbance as a result of field activities. Should the birds show signs of distress, work will cease at that location until the birds have resumed normal behavior and it is determined by the on-site biologist that work can be resumed.	During construction	Biologist			
MM BIO-7a (Tricolored Blackbird)	For soil investigation field activities that will occur March 15-July 31 in areas with potential breeding habitat for Tricolored Blackbird, a pre-activity survey for breeding colonies will be conducted by a qualified biologist within 1,300 feet (396 meters) of Impact Areas a maximum of 72 hours prior to the onset of soil investigation activities. The qualified biologist(s) must, at a minimum, have experience conducting surveys to identify Tricolored Blackbird and associated habitat that could occur on site.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-7b (Tricolored Blackbird)	For soil investigation field activities that will occur August 1 – March 14 in areas with potential roosting habitat for Tricolored Blackbird, a pre-activity survey for roosting Tricolored Blackbirds will be conducted during the nonbreeding season within 300 feet (91 meters) of Impact Areas a maximum of 72 hours prior to the onset of soil investigation activities by a qualified biologist.	Before construction	Biologist			
MM BIO-7c (Tricolored Blackbird)	If active Tricolored Blackbird breeding colonies or roost sites are identified within or adjacent to an Impact Area, a buffer will be put in place to ensure that the birds are not disturbed during work activities. This buffer will be up to 1,300 feet (396 meters) but may be reduced to a minimum of 300 feet (91 meters), dependent on-site conditions and at the discretion of the qualified biologist.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-8a (Nesting Birds)	For soil investigation field activities that will occur February 1 – August 31, a pre-activity survey for actively nesting birds will be conducted a maximum of 72 hours prior to the onset of soil investigation activities by a qualified biologist. The qualified biologist(s) must, at a minimum, have experience conducting surveys to identify the specific species and associated habitat that could occur on site.	Before construction	Biologist			
MM BIO-8b (Nesting Birds)	If any active nests are identified within or adjacent to an Impact Area, a buffer will be put in place to ensure that no take (as defined by MBTA), and no take, possession, or needless destruction (as prohibited under the Fish and Game Code) occurs. This buffer will be up to 50 feet (15 meters), but can be smaller, dependent on-site conditions and at the discretion of the qualified biologist.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-9a (Sandhill Crane)	For soil investigation field activities that will occur September 15 through March 15, during roosting season, pre-activity surveys and an assessment of known roost sites will be conducted within 0.75 mile (1,207 meters) of Impact Areas by a qualified biologist.	Before construction	Biologist			
MM BIO-9b (Sandhill Crane)	If roost sites are identified within 0.25 mile (402 meters) of Impact Areas by the qualified biologist, start of large equipment use for soil investigation activities will be delayed to an hour after sunrise and stop an hour before sunset to minimize potential for noise disturbance at the roost site.	During construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-10a (Burrowing Owl)	In areas with the potential for Burrowing Owl to occur, prior to soil investigation field activities, a qualified biologist will conduct a pre-activity survey. The surveys will establish the presence or absence of Burrowing Owl and/or suitable habitat features and evaluate use by owls in accordance with CDFW survey guidelines (CDFW 1993). For each Impact Area, the biologist will survey the proposed disturbance footprint and a 500-foot (152 meter) radius from the perimeter of the proposed footprint to identify any suitable burrows and owls. Adjacent parcels under different land ownership will not be surveyed. Surveys should take place near sunrise or sunset in accordance with CDFW guidelines. Suitable burrows or Burrowing Owls will be identified and mapped.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-10a (Burrowing Owl) continued	Surveys will take place no more than 30 days prior to soil investigation field activities. During the breeding season (February 1– August 31), surveys will document whether Burrowing Owls are nesting in or directly adjacent to any Impact Area. During the nonbreeding season (September 1–January 31), surveys will document whether Burrowing Owls are using habitat in or directly adjacent to any disturbance area. Survey results will be valid only for the season (breeding or nonbreeding) during which the survey is conducted.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-10b (Burrowing Owl)	If Burrowing Owls are found during the breeding season (February 1 – August 31), all nest sites that could be disturbed by project activities will be avoided during the remainder of the breeding season or while the nest is occupied by adults or young. Avoidance will include establishment of a non-disturbance buffer zone (described below in parts c and d).	During construction	Biologist			
MM BIO-10c (Burrowing Owl)	Soil investigation activities may occur during the breeding season only if a qualified biologist monitors the nest and determines that the birds have not begun egg-laying and incubation or that the juveniles from the occupied burrows have fledged. During the nonbreeding season (September 1 – January 31) the owls and the burrows they are using will be avoided. Avoidance will include the establishment of a buffer zone (described below).	During construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-10d (Burrowing Owl)	During the breeding season, buffer zones of at least 250 feet (76 meters) in which no soil investigation activities can occur will be established around each occupied burrow (nest site). Buffer zones of 160 feet (49 meters) will be established around each burrow being used during the nonbreeding season. The buffers will be delineated by highly visible, temporary fencing or flagging.	During construction	Biologist			
MM BIO-11a (Swainson's Hawk)	If soil investigations field activities will occur during the nesting season (March 15–September 15), a pre-activity survey will be conducted by a qualified biologist within 0.25 mile (402 meters) of Impact Areas following the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (SWHA Technical Advisory Committee 2000) between 5 days and 72 hours prior to the start of soil investigation activities to identify Swainson's Hawk nests.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-11b (Swainson's Hawk)	If active nests are observed within 0.25 mile (402 meter) of an Impact Area, project activities will be limited to outside of the breeding season (March 15 – September 15) or until the nest is determined to be inactive or fledged by a qualified biologist.	During construction	Biologist			
MM BIO-11c (Swainson's Hawk)	When soil investigation activities must occur within 0.25 mile (402 meters) of a known or potential nest during nesting season (March 15 – September 15), soil investigation field activities will be initiated prior to egg-laying, if possible. If soil investigation activities must begin after egg-laying, a 650-foot (198 meter) no-activity buffer will be established between an active nest and any soil investigation activities until eggs have hatched. If site-specific conditions or the nature of the project activity (e.g., steep topography, dense vegetation, limited activities) indicate that a smaller buffer could be used, the qualified biologist will determine the appropriate buffer size.	During construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-11d (Swainson's Hawk)	If young fledge prior to September 15, soil investigation activities can proceed normally, subject to confirmation by a qualified biologist that the young have fledged from active nest sites. If the active nest site is shielded from view and noise from the project site by other development, topography, or other features, the qualified biologist may determine that project activities can proceed.	During construction	Biologist			
MM BIO-11e (Swainson's Hawk)	A qualified biologist with stop-work authority will be present during soil investigation field activities and may halt project activities if the biologist determines that Swainson's Hawks in the vicinity of soil investigation activities are disturbed to the point where nest abandonment is likely. Additional protective measures, as determined by the qualified biologist, will be implemented prior to resuming soil investigation activities.	During construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-12a (Vernal Pool Species)	All ground disturbing activities (boring, CPT, or vegetation removal) shall be located at least 100 feet (30 meter) from a vernal pool to avoid impacts to sensitive vernal pool invertebrates.	Before and during construction	Biologist			
MM BIO-12b (Vernal Pool Species)	No project activities shall take place within an area identified as vernal pool complex, as determined by a qualified biologist, when wet soil conditions would increase the likelihood of vehicle traffic or other activities altering the site topography.	Before and during construction	Biologist			
MM BIO-13a (Valley Elderberry Longhorn Beetle)	When feasible, project activities shall be sited at least 164 feet (50 meters) from elderberry shrubs with stem diameter greater than 1-inch (2.5 centimeter).	Before and during construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-13b (Valley Elderberry Longhorn Beetle)	If activities must be conducted within 164 feet (50 meters) of an elderberry shrub, the following measures will apply: i. activities will be conducted outside of VELB flight season (March 1-July 31); ii. a biological monitor will be present to monitor all project activities at the site; iii. all ground disturbing activities (boring, CPT, or vegetation removal) will be located at least 20 feet (6 meters) from the dripline of the elderberry shrub; and high visibility fencing, or flagging will be installed to delineate the 6-meter avoidance buffer.	During construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-14 (General Fish)	Over-water activities will be limited to only being conducted during the fish work window (August 1 – October 31) to avoid impacts to sensitive fish species that have the potential to occur in the Study Area.	During construction	Biologist			
MM BIO-15a (Special-Status Bats)	Pre-activity roosting special-status bat surveys and an evaluation of roosting habitat suitability for bats will be conducted by a qualified biologist familiar with the species that could potentially occur within the Impact Area. The qualified biologist should, at a minimum have experience conducting roosting bat surveys and be able to identify the presence of guano and urine stains.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-15b (Special-Status Bats)	Any identified roosts of special-status bats will be avoided, and a buffer of up to 100 feet (30 meters) will be established based on-site conditions and at the discretion of the biologist, to ensure that the roosting bats are not disturbed. If a nursery colony is identified, additional measures may be required including a larger buffer, to ensure no disturbance. Such additional measures will be determined and monitored by a qualified biologist.	During construction	Biologist			
MM BIO-16a (American Badger)	A qualified biologist shall conduct pre-activity surveys for American badger and dens in suitable habitat within 48 hours prior to the start of soil investigation activities. If there is a lapse in soil investigation activities of two weeks or greater the area shall be resurveyed within 24 hours prior to recommencement of work. Potential American badger dens identified in the project area shall be monitored by the qualified biologist to determine current use.	Before and during construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-16b (American Badger)	American badger dens determined by the qualified biologist to be occupied during the breeding season (February 15 through June 30) shall be flagged, and ground disturbing activities avoided, within 100 feet (30 meters) of the den to protect adults and nursing young. Buffers may be modified by the qualified biologist, depending on the applicable site conditions and characteristics of the den, and shall not be removed until the qualified biologist has determined that the den is no longer in use.	Before and during construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-17a (San Joaquin Kit Fox)	Prior to any ground disturbance within an Impact Area, a qualified biologist will conduct a pre-activity survey in areas identified in the pre-activity surveys as supporting suitable breeding or denning habitat for San Joaquin kit fox. The surveys will establish the presence or absence of San Joaquin kit foxes and/or suitable dens and evaluate use by kit foxes in accordance with USFWS survey guidelines (U.S. Fish and Wildlife Service 1999).	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-17b (San Joaquin Kit Fox)	Pre-activity surveys will be conducted within 30 days prior to ground disturbance. The biologist will survey the proposed Impact Area and a 250-foot (76 meter) buffer from the perimeter of the proposed Impact Area to identify San Joaquin kit foxes and/or suitable dens. Adjacent parcels under different land ownership, for which DWR not have access, will not be surveyed. The status of all dens will be determined and mapped. Written results of pre-activity surveys will be submitted to USFWS within 5 working days after survey completion and before the start of ground disturbance.	Before construction	Biologist			

MM BIO-17c (San Joaquin Kit Fox)	If San Joaquin kit foxes and/or suitable dens are identified within those areas included in the pre-activity survey area, the measures described below will be implemented. i. If a San Joaquin kit fox den is discovered in the Impact Area, the Impact Area will be moved at a minimum to meet the appropriate buffer distances as described below in subsection (c)(ii). ii. If dens are identified in the survey area but outside the Impact Area, exclusion zones around each den entrance or cluster of entrances will be demarcated. The configuration of exclusion zones should be circular, with a radius measured outward from the den entrance(s). No covered activities will occur within the exclusion zones. Exclusion zone radii for potential or atypical dens will be at least 50 feet (15 meters) and will be	During construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
	demarcated with four to five flagged stakes. Exclusion zone radii for known dens will be at least 100 feet (30 meters) and will be demarcated with staking and flagging that encircles					
MM BIO-17c (San Joaquin Kit Fox) continued	each den or cluster of dens but does not prevent access to the den by kit fox. iii. If a natal or pupping den is found within the Impact Area or within 200-feet (61 meters) of the Impact Area boundary, USFWS and CDFW will be notified immediately. The den will not be disturbed or destroyed, depending on the applicable site conditions and characteristics of the den, the soil investigation site may be moved.	During construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-18a (Botanical Resources)	All botanical evaluations will be conducted by a qualified botanist, who at a minimum shall have experience conducting floristic field surveys; knowledge of plant taxonomy and plant community ecology and classification; familiarity with the plants of the area, including special-status and locally significant plants; familiarity with the appropriate state and federal statutes related to plants and plant collecting; and experience with analyzing impacts of a project on native plants and communities.	Before and during construction	Biologist			

MM BIO-18b (Botanical Resources)	A qualified botanist will conduct a habitat assessment to determine whether the habitat is appropriate for special-status plants. If suitable habitat is present, the qualified botanist will conduct a habitat quality assessment to determine the potential for presence of sensitive plant species. The habitat quality assessment will consider factors such as soil type, degree and frequency of previous soil disturbance, abundance of invasive species, and distance from known sensitive plant occurrences. If a qualified botanist determines that special-status plants are likely to occur at a proposed Impact Area, a botanical survey will be conducted within the Impact Area at each soil investigation site. When feasible based on scheduling and property access, the surveys will be conducted at proper times of year when special-status and locally significant plants are both evident and identifiable; will be floristic in nature, ensuring that all plants observed are identified to a level sufficient for determining rarity, and will be conducted using	Before and during construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
	systematic field techniques in all habitats of the site to ensure thorough coverage of potential Impact Areas.					
MM BIO-18c (Botanical Resources)	Any special-status plant species present within 33 feet (10 meters) of an Impact Area will be flagged, or mapped using a GPS, for avoidance. A qualified botanist will establish an appropriate buffer. During field activities avoidance of the buffered area will be enforced by an environmental monitor to ensure that special-status plants are avoided to the maximum extent practicable.	Before and during construction	Biologist			

MM BIO-18d (Botanical Resources)	If special-status plant species (excluding listed species) are present within the Impact Area and impacts cannot practicably be avoided, a qualified botanist will evaluate the following criteria to ensure these impacts are less than significant: i. the total range and distribution of the species, ii. local population abundance iii. approximate number of individuals potentially impacted, iv. area of habitat potentially impacted, v. life history of the species (annual versus perennial and seedbank dynamics), vi. species sensitivity and response to disturbance, vii. species fecundity, and	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
	viii. the probability of population recovery from impacts					
MM BIO-18d (Botanical Resources) continued	If loss of individuals due to project activities would exceed 2% of the local population or if the particular life history of the plant species indicates that a loss of that scale would threaten the persistence of the local population, or if there are fewer than 10 statewide extant occurrences, the soil investigation will not be allowed to proceed at that location.	Before construction	Biologist			
MM BIO-19 (Botanical Considerations for Vegetation Removal)	If access requires minor disturbances to or removal of vegetation, a qualified botanist will be consulted to ensure that no special-status vegetation is significantly impacted.	During construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-20 (Botanical Avoidance Zones)	Soil investigation activities will not be conducted within the intertidal zone of rivers or sloughs, including in-channel islands, or shoals to the extent feasible. If work in these areas is necessary, the Impact Area will be surveyed by a qualified botanist during tidal conditions that expose the intertidal area where Delta mudwort or Mason's lilaeopsis would occur. If Delta mudwort or Mason's lilaeopsis are identified, they will be flagged or mapped with a GPS for avoidance.	Before and during construction	Biologist			
MM CUL-1a	All Impact Area would be reviewed by a qualified archaeologist to evaluate the potential for impacts, if any, to cultural resources.	Before construction	Cultural Resource Specialist			
MM CUL-1b	Locations that have no previous survey coverage must be surveyed by, or under the direct supervision of a qualified archaeologist prior to the start of any ground disturbing activities.	Before construction	Cultural Resource Specialist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM CUL-1c	If the archaeologist observes cultural or potential tribal cultural resources within the Impact Area or associated resource buffer as identified by a qualified archaeologist, the location will be shifted the minimum distance necessary to reduce the potential for significant cultural resource impacts without significantly increasing potential impacts to other resources.	Before and during construction	Cultural Resource Specialist			
MM CUL-1d	A tribal representative from the consulting tribes will be invited to participate in the pre-activity field visits and archaeological surveys in Impact Areas specified as an area of interest/concern during consultation by that consulting tribe/tribes.	Before and during construction	DCA, Cultural Resource Specialist			
MM CUL-1e	Consulting tribes will be informed of any potential tribal cultural resources located within the study area specified as an area of interest/concern by a consulting tribe/tribes.	Before construction	Cultural Resource Specialist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM CUL-1f	If a suitable location cannot be determined within adjacent areas, then the soil investigation at that location would not be conducted.	Before construction	Cultural Resource Specialist			
MM CUL-2a	Should any unexpected cultural resources be exposed during project activities, all work would immediately stop in the immediate vicinity (e.g. 100 feet [30 meters]) of the find until it can be evaluated by a qualified archaeologist and an appropriate plan of action can be determined in consultation with the State Office of Historic Preservation, as necessary.	During construction	Cultural Resource Specialist			
MM CUL-2b	If the resource is associated with Native American contexts or is a potential Tribal Cultural Resource and is within a region specified as an area of interest/concern by a consulting tribe/tribes, the appropriate consulting tribal entity/entities will be contacted and consulted with to produce an appropriate plan of action.	During construction	Cultural Resource Specialist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM CUL-3	Should human remains be discovered during the course of project activities, all work would stop immediately in the vicinity (e.g. 100 feet [30 meters]) of the finds until they can be verified. The coroner would be contacted in accordance with Health and Safety Code section 7050.5(b). Protocol and requirements outlined in Health and Safety Code sections 7050.5(b) and 7050.5(c) as well as Public Resources Code section 5097.98 would be followed.	During construction	Cultural Resource Specialist			
MM CUL-4	Cultural sensitivity training will be provided for the environmental monitors and individuals conducting the field activities and geological analysis to ensure awareness about cultural resources, including identification of and proper protocol for handling any unexpected finds.	Before and during construction	Cultural Resource Specialist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM GHG-1a	Evaluate project characteristics, including location, project work flow, site conditions, and equipment performance requirements, to determine whether specifications of the use of equipment with repowered engines, electric drive trains, or other high efficiency technologies are appropriate and feasible for the project or specific elements of the project.	Before construction	Construction Contractor, Engineer			
MM GHG-1b	Minimize idling time by requiring that equipment be shut down after five minutes when not in use (as required by the State airborne toxics control measure [Title 13, section 2485 of the California Code of Regulations]). This requirement will be enforced by the environmental monitor.	During construction	Biologist, Construction Contractor, Engineer			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM GHG-1c	Maintain all soil investigation equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition.	During construction	Construction Contractor, Engineer			
MM GHG-1d	Implement tire inflation program on jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every two weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site weekly for correct tire inflation.	During construction	Construction Contractor			
MM GHG-1e	Encourage carpools or shuttle vans for worker commutes as feasible.	During construction	Construction Contractor, Engineer			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM HAZ-1a	A Plan(s) (often a contractor's safety plan) with a section on Hazardous Materials shall be written and kept on site that describes the hazardous materials used during project activities, and how the materials will be properly stored, used, transported, and disposed of. The Plan will be shared with local fire and emergency personnel and their mutual aid districts. All hazardous materials shall be properly labeled and be recycled properly or disposed of at a properly licensed disposal facility.	Before and during construction	Construction Contractor			
MM HAZ-1b	The contractor shall contact the local fire agency and the local CUPA for any site-specific requirements regarding hazardous materials or hazardous waste containment or handling.	Before and during construction	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM HAZ-1c	If hazardous materials, such as oil, batteries or paint cans, are encountered in the Impact Area, the contractor(s) shall carefully remove and dispose of them according to the Safety Plan and Spill Prevention and Response Plan. All hazardous materials will be disposed of at a properly licensed disposal facility.	Before and during construction	Construction Contractor			
MM HAZ-1d	Contact of chemicals with precipitation shall be minimized by storing chemicals in watertight containers or in a storage shed (completely enclosed), with appropriate secondary containment to prevent any spillage or leakage.	During construction	Construction Contractor			
MM HAZ-1e	Quantities of toxic materials, such as equipment fuels and lubricants, shall be stored with secondary containment that is capable of containing 110% of the primary container(s).	During construction	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM HAZ-1f	Petroleum products, chemicals, fuels, lubricants, and non-storm drainage water or water contaminated with the aforementioned materials shall not contact soil and not be allowed to enter surface waters or the storm drainage system. All lubricants used downhole shall be non-petroleum based pursuant to common industry practice.	During construction	Construction Contractor			
MM HAZ-1g	All toxic materials, including waste disposal containers, shall be covered when they are not in use, and located as far away as possible from a direct connection to the storm drainage system or surface water.	During construction	Construction Contractor			
MM HAZ-1h	Sanitation facilities (e.g., portable toilets) shall be sited in a manner that avoids any direct connection to the storm drainage system or receiving water.	During construction	Construction Contractor			
MM HAZ-1i	Sanitation facilities shall be regularly cleaned and/or replaced and inspected daily for leaks and spills.	During construction	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM HAZ-2	A Plan(s) (often a contractor's safety plan) with a section on Spill Prevention and Response Plan shall be developed by the Contractor and submitted to DWR before any ground-disturbing activities in order to prevent the accidental release of chemicals, fuels, lubricants, and non-storm drainage water (including untreated wastewater) into channels the. The Plan will be shared with local fire and emergency personnel and their mutual aid districts. The following measures shall be included in the Plan: a. All field personnel shall be appropriately trained in spill prevention, hazardous material control, and cleanup of accidental spills.	Before construction	Construction Contractor			

MM HAZ-2 continued	b. Equipment and materials for cleanup of spills will be available on site and spills and leaks shall be cleaned up immediately and disposed of according to guidelines stated in the Spill Prevention and Response Plan. c. Field personnel shall ensure that hazardous materials are properly handled, and natural resources are protected by all reasonable means, including compliance with Code of Federal Regulations (CFR) containment measures for tanks containing hazardous materials (see 40 CFR Section 264.175). d. Spill prevention kits shall always be in close proximity when using hazardous materials (e.g., at crew trucks and other logical locations). All field personnel shall be advised of these locations. e. Field personnel shall routinely inspect the work	Before construction	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
	site to verify that spill prevention and response measures are properly implemented and maintained.					

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM HAZ-2 continued	f. Field personnel will routinely inspect the work site to verify that the Spill Prevention and Response Plan is properly implemented and maintained. Staff will notify contractors immediately if there is a noncompliance issue and will require immediate correction of any noncompliant behavior. g. Absorbent materials will be used on small spills located on impervious surface rather than hosing down the spill; wash waters shall not discharge to the storm drainage system or surface waters. For small spills on pervious surfaces such as soils, wet materials will be excavated and properly disposed rather than burying it. The absorbent materials will be collected and disposed of properly and promptly.	Before construction	Construction Contractor			

MM HAZ-2 continued	As defined in 40 CFR 110, a federal reportable spill of petroleum products is the spilled quantity that: a. Violates applicable water quality standards; b. Causes a film or sheen on, or discoloration of, the water surface or adjoining shoreline; or c. Causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines. h. If a spill is reportable, the contractor will notify the DWR staff, and the DWR staff will take action to contact the appropriate safety and cleanup crews to ensure that the Spill Prevention and Response Plan is followed. A written description of reportable releases must be submitted to the Regional Board and the California Department of Toxic Substances Control (DTSC).	Before construction	Construction Contractor			

MM HAZ-2 continued	This submittal must contain a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. The releases will be documented on a spill report form. i. If a significant spill has occurred, and results determine that project activities have adversely affected surface water or groundwater quality, a detailed analysis will be performed to the specifications of DTSC to identify the likely cause of contamination. This analysis will include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this analysis, the DWR or contractors will select and implement measures to control contamination, with	Before construction	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
	a performance standard that surface, and groundwater quality must be returned to baseline conditions.					
MM HAZ-2 continued	These measures will be subject to approval by the DWR, DTSC, and the Regional Board.	Before construction	Construction Contractor			
MM HAZ-3a	Stockpiling materials, portable equipment, vehicles, and supplies, including chemicals, will be restricted to areas adjacent to the drill or CPT rig, and not adjacent or within riparian and wetlands areas or other sensitive habitats	During construction	Construction Contractor			
MM HAZ-3b	Stockpiling materials, portable equipment, vehicles, and supplies, including chemicals, will be restricted to docks or within the drill barge or ship.	During construction	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM HAZ-4a	The contractor would develop a fire protection and prevention plan which incorporates fire safety measures on all equipment with the potential to create a fire hazard.	Before construction	Construction Contractor			
MM HAZ-4b	The plan would ensure that fire suppression equipment is onsite and that all employees have received appropriate fire safety training.	Before construction	Construction Contractor			
MM HAZ-4c	The Plan will be shared with local fire and emergency personnel and their mutual aid districts.	Before construction	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM HYD-1a	All fueling and maintenance of vehicles or other equipment for on-land soil investigation activities shall occur on established private access roads, or in designated staging areas at least 50 feet (15 meters) away from any on-site water feature. Fueling and maintenance activities will be conducted sufficiently away from public roadways to ensure safety of workers and the public. Secondary containment for fuel and gas tanks will be used to prevent spills from entering any water features.	During construction	Construction Contractor			
MM HYD-1b	Absorbent materials will be available on-site. Any accidental leaks or spills will be immediately cleaned up per the procedures identified in the contractors Spill Prevention and Response Plan, and the equipment will not be able to return to the project area until it has been repaired sufficiently to prevent further leaks or spills.	During construction	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM HYD-1c	For overwater soil investigations positive barriers consisting of hay waddles and/or other suitable type of spill-stoppage materials will be placed around the work area on the barge and ship decks.	During construction	Construction Contractor			
MM HYD-1d	Discarded soil samples, cuttings, and excess drilling fluids will be kept in a closed system, to prevent spillage of the drilling fluid and will be disposed of off-site at an appropriate landfill.	During construction	Construction Contractor			
MM HYD-1e	All over-water work will include the use of conductor casings to confine the drill fluid and cuttings to the drill hole and the operating deck of the barge or drill ship and prevent any inadvertent spillage into the water. Soil samples will be collected from within the conductor casing. The casing will remain in place until the bore hole is complete and has been filled in, to minimize sediment disturbance of the slough or river bottom	During construction	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM HYD-1f	During overwater soil investigations a qualified environmental monitor will watch for colored plumes (an indication that drilling fluid or other material is entering the water and may affect water quality). If found, activities will cease until appropriate corrective measures have been completed or it has been determined that the environment will not be harmed.	During construction	Construction Contractor			
MM NOI-1	All equipment will be properly tuned and shall utilize appropriate mufflers.	Before and during construction	Construction Contractor			
MM PUB-1a	A Plan(s) (often Contractor's safety plan) with a section on Fire Protection and Prevention will be submitted to DWR for review and approval which incorporates fire safety measures on all equipment with the potential to create a fire hazard.	Before construction	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM PUB-1b	The contractor will prepare a Safety Plan in accordance with the DWR protocols.	Before construction	Construction Contractor			

MM TRANS-1a	Appropriate traffic controls will be implemented, based on the conditions at each soil investigation site, according to standards set by Caltrans and counties. Flaggers may be used during ingress and egress of boring equipment and work crews to allow flow of traffic while maintaining safety measures for the crew, especially if these activities occur in areas of heavy traffic or reduced visibility. Lane closures will be implemented when soil investigation sites are within or immediately adjacent to public roadways and will employ safety measures such as advance warning areas and flaggers, as prescribed by Caltrans and county regulations. Public notifications will be made in coordination with Caltrans, counties, CHP, and other entities. Traffic controls and lane closures will consider access for emergency services and be coordinated through the encroachment permit processes implemented by Caltrans and counties, with CHP coordination as required.	During construction	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM TRANS-1b	Parking on public roads and thoroughfares by crew vehicles will be avoided to the maximum extent practicable to allow for the flow of traffic to continue.	During construction	Construction Contractor			
MM TRANS-1c	No public roads, waterways or land access will be closed.	During construction	Construction Contractor			
MM TRANS-1d	For overwater sites, the project area shall be a no-wake zone, with boats not exceeding 5 mph within 500 feet (152 meters) of the work area.	During construction	Construction Contractor			
MM UTI-1	A field reconnaissance, marking or staking the exploration site, and calling Underground Service Alert (USA) for utility clearance will be conducted by qualified personnel for each planned soil exploration location. Based upon the information gathered, sites will be adjusted to ensure no utilities are impacted.	Before construction	Construction Contractor			

5.2 Attachment B: NOD for Final ISMND

Appendix D: Notice of Determination

To: Office of Planning and Research
1400 Tenth St., Rm 113
Sacramento CA, 95814

From: CA Department of Water Resources
1416 Ninth Street
Sacramento, CA 95814
Contact: Katherine Marquez, (916) 651-7011

SUBJECT: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

State Clearinghouse Number (if submitted to State Clearinghouse): 2019119073

Project Title: Soil Investigations for Data Collection in the Delta

Project Applicant: CA Department of Water Resources

Project Location (include county): Alameda, Contra Costa, Sacramento, Solano, San Joaquin, Yolo

Project Description: The Project includes overwater and land-based soil borings, cone penetration tests, and geophysical surveys. The primary objective of the Project is to determine the composition, location, and geotechnical properties of soil materials commonly found in the Delta which would inform the design, environmental analysis, and development of alternatives for a potential Delta conveyance project and contribute to DWR's overall understanding of Delta geology.

This is to advise that the CA Department of Water Resources, as the Lead Agency, has approved the above described project on July 9, 2020 and has made the following determinations regarding the above described project.

1. The project will not have a significant effect on the environment.

2. A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.

3. Mitigation measures were made a condition of the approval of the project.

4. A mitigation reporting or monitoring plan was adopted for this project.

5. A statement of Overriding Considerations was not adopted for this project.

6. Findings were made pursuant to the provisions of CEQA.

This is to certify that the final negative declaration with comments and responses and record of project approval, is available to the General Public at: https://water.ca.gov/Programs/State-Water-Project/Delta-Conveyance/Environmental-Planning

Carolyn Buckman

Carolyn Buckman, Environmental Program Manager
California Department of Water Resources

July 9, 2020
Date

Date Received for filing at OPR: _____

Authority cited: Sections 21083, Public Resources Code. Reference Section 21000-21174, Public Resources Code. Revised 2011

5.3 Attachment C: 2020 MMRP

Soil Investigations for Data Collection in the Delta Mitigation and Monitoring Reporting Plan (MMRP)

July 2020

California Department of Water Resources

1416 Ninth Street

Sacramento, CA 95814

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PURPOSE OF THE MMRP

The California Environmental Quality Act (CEQA) requires that agencies approving projects after adopting Mitigated Negative Declarations (MNDs) must take affirmative steps to determine that all approved mitigation measures are implemented subsequent to project approval.

This Mitigation Monitoring and Reporting Plan (MMRP) has been prepared by the California Department of Water Resources (DWR) pursuant to CEQA for Soil Investigations for Data Collection in the Delta (Investigations), which has been analyzed in the Initial Study – Mitigated Negative Declaration (IS/MND) for Soil Investigations for Data Collection in the Delta. DWR will adopt this MMRP at the time it adopts "CEQA Findings" pursuant to CEQA Guidelines section 15074[d].

Implementation of the mitigation measures would reduce impacts to below a level of significance for biological resources, cultural resources, greenhouse gas emissions, hazards and hazardous materials, tribal cultural resources, and wildfire.

Mitigation measures must be implemented within the time periods indicated in the table that appears below. DWR as the lead agency has the primary responsibility for monitoring compliance of all mitigation measures and for reporting to the applicable regulatory agencies on the progress in implementing those measures, where required. These monitoring and reporting requirements are set forth in the IS/MND and are summarized at the front of the attached table.

The remainder of this MMRP consists of the checklist that identifies the mitigation measures by resource for each project component. The following items are identified for each mitigation measure: Mitigation Measure, Implementation Schedule, Responsible Party, and Status/Date/Initials. The "Mitigation Measure Number" and "Mitigation Measure" columns identify and detail the specific mitigation measure found in the IS/MND. The "Timing" column shows the date or phase when each mitigation measure will be implemented. The "Responsible Party" column identifies the agency or classification of a person within the lead agency that is primarily responsible for implementing the mitigation measure. The "Completion Date" and "Verified By" shall be completed by the Permittee during preparation of each Status Report and the Final Mitigation Report and must identify the date that the mitigation measure implementation was completed and will include initials of the person determining the completion. If the mitigation measure was not completed or other issues have arisen preventing the completion, this should be documented in the "Comments" column.

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM AES-1a	Each Impact Area will be returned to as close to pre-activity conditions as possible. This will be documented by still photos taken pre- and post-activity.	At the conclusion of impact area disturbance	Construction Contractor			
MM AES-1b	No building structures will be removed or disturbed. Soil investigation activities will occur at a distance greater than 100 feet (30.5 meters) from residences and small business operations. If fencing needs to be removed for access, it would be replaced after the work is completed.	During construction	Construction Contractor			
MM AES-1c	No trees or vines will be removed during exploration activities; and only minor disturbances to vegetation would occur during mobilization of equipment. This minor disturbance may consist of mowing, removal of a few tree limbs, or trimming of bushes for site access. However, if access requires removal of any vegetation, the landowner would be consulted first to minimize the impact to both vegetation and the landowner.	During construction	Construction Contractor, Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM AES-2a	Navigational lighting will be used as needed for overwater work, but will meet the standards required for waterway safety, and are will not increase the existing ambient lighting of the area in a substantial way. Any lighting used on barges or drill ships will not exceed the standards of brightness for standard navigational safety requirements.	Before and during construction	Construction Contractor			
MM AES-2b	All work will occur between sunrise and sunset.	During construction	Construction Contractor, Biologist			
MM AGR-1	Any proposed soil investigation activities that occur on agricultural lands will be grouted in accordance with materials that conform to ANSI and ASTM standards from the full depth to five feet (1.5 meters) below the surface. The final five feet (1.5 m) of topsoil will be replaced to return the Impact Area to as close to pre-activity conditions as possible. The backfill procedure will be in accordance with State of California Bulletin 74-81/74-90 and local county standards.	At the conclusion of impact area disturbance	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM AIR-1a	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.	During construction	Construction Contractor			
MM AIR-1b	Cover or maintain at least six feet (1.8 meters) 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 will be covered.	During construction	Construction Contractor			
MM AIR-1c	All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. Use wet power vacuum street sweepers to remove any visible track out mud or dirt onto adjacent public roads as needed. Use of dry power sweeping and blower devices is prohibited.	During construction	Construction Contractor, Engineer			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM AIR-1d	Limit vehicle speeds on unpaved roads to 15 miles per hour (mph).	During construction	Construction Contractor, Engineer			
MM BIO-1a (General Biological Measures)	All litter, debris, unused materials, rubbish, supplies, or other material will be appropriately stored in closed containers until it can be removed from project sites and deposited at an appropriate disposal or storage site. All trash that is brought to a project site during soil investigation activities (e.g., plastic water bottles, plastic lunch bags, cigarettes) shall be removed from the site daily.	During construction	Construction Contractor, Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-1b (General Biological Measures)	As stated in the project description, all on-land soil investigation Impact Areas will be located outside of wetlands as defined in the Corps of Engineers Wetlands Delineation Manual (USACE 1987). Evaluation of conditions at each site will be conducted by qualified wetland delineators. If after review of applicable data sources, nearby aquatic resources are identified for on-land soil investigation sites, including those that meet the Corps definition of wetlands or non-wetland waters, wetland delineators will participate in the site surveys for those sites and relocate them outside of the boundaries of observed aquatic resources.	Before construction	Construction Contractor, Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-1c (General Biological Measures)	Over-water sites will be located within portions of navigable channels or sloughs that generally do not provide appropriate habitat for terrestrial plant or wildlife species, and will be authorized under the Clean Water Act sections 401 and 404, and Fish and Game Code section 1602 et seq.	Before construction	Construction Contractor, Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-1d (General Biological Measures)	A qualified team of biologists will conduct a habitat assessment and reconnaissance level surveys approximately two weeks prior to the onset of ground disturbing soil investigation activities for any special status plants and wildlife that have the potential to occur within the project area. If the biologists identify the potential for special status wildlife impacts within the Impact Area and associated standard species buffers based on the site reconnaissance, the location will be shifted the minimum distance necessary to reduce the potential for biological impacts to a less than significant level without increasing impacts to other resources to above a level of significance. If a suitable location cannot be determined within adjacent areas, then the soil investigation at that location will not be conducted.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-1e (General Biological Measures)	The qualified biologist(s) must, at a minimum, have experience conducting surveys to identify the specific species and associated habitat that could occur on site.	Before and during construction	Biologist			

MM BIO-1f (General Biological Measures)	A qualified biologist will be on-site for all project activities and will conduct an environmental awareness training session for all new field personnel prior to the start of work each day. Throughout the project, any new staff will be provided training before they begin working on the project. A running list of trained personnel will be kept on site in the project permit binder and includes name, date of training, work site and their signature. At a minimum, the training shall: i. include a description of each species with the potential to occur, including physical description, habitat needs, and life history as well as a discussion of the importance of avoiding impacts to special status wildlife. ii. explain the general measures that are being implemented to conserve these species as they relate to the project and project area, and	Before and during construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
	procedures to follow should they encounter wildlife during work. iii. explain the stop work authority of biologists and/or cultural resource specialists.					
MM BIO-1g (General Biological Measures)	Any observations of federally or state-listed species or California Species of Special Concern will be reported to CDFW within three (3) working days of the observation, and the observation(s) will be submitted to the California Natural Diversity Database (CNDDB). Any observations of federally listed species will also be reported to the U.S. Fish and Wildlife Service.	Before and during construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-1h (General Biological Measures)	All federally or state-listed species observed will be allowed to leave the Impact Area on their own. If the biologist determines that continuing activities could potentially cause unpermitted take under federal or State law to a federally or state-listed species, activities must cease. Work may not resume until the on-site biologist has determined there is no longer the possibility of causing unpermitted take under federal and State law.	Before and during construction	Biologist			
MM BIO-1i (General Biological Measures)	The area below any vehicle or piece of equipment that has been stationary for 24 hours or greater will be examined prior to operation to ensure that no wildlife species is present.	Before and during construction	Construction Contractor, Biologist			
MM BIO-1j (General Biological Measures)	No pets or firearms will be permitted on site.	Before and during construction	Construction Contractor, Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-1k (General Biological Measures)	Any open holes or trenches that will be left exposed overnight will either be securely covered or have an escape ramp installed to prevent entrapment of any wildlife.	During construction	Construction Contractor, Biologist			
MM BIO-1l (General Biological Measures)	Any piping or casing left exposed overnight will be capped to prevent wildlife from entering.	During construction	Construction Contractor, Biologist			
MM BIO-2a (Special Status Amphibians)	No project activities will be conducted during or within 24 hours following a rain event in locations that have a potential for special status amphibians to occur or are near wetlands or other water features.	During construction	Construction Contractor, Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-2b (Special Status Amphibians)	In areas with the potential for special-status reptiles and amphibians to occur, prior to the onset of project activities at any Impact Area, a qualified biologist will conduct pre-construction surveys to determine whether any such species are present. A qualified biologist must, at a minimum, have experience conducting surveys to identify the California tiger salamander, California red-legged frog, western spadefoot, western pond turtle, and/or giant garter snake and their associated habitat.	Before and during construction	Biologist			
MM BIO-2c (Special Status Amphibians)	Any active rodent burrows or suitable cracks identified by a qualified biologist during the pre-construction survey will be flagged so that they can be avoided.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-2d (Special Status Amphibians)	Any burrows, cracks or fissures suitable for rodents that cannot be avoided and will be temporarily impacted by the movement and placement of equipment or other project activities will be covered with plywood to avoid burrow collapse.	Before and during construction	Biologist			
MM BIO-2e (Special Status Amphibians)	Leaf litter will be surveyed by the biologist for presence of wildlife prior to the onset of work, and if any special-status species are identified as using the leaf litter for refuge it will be avoided and a buffer will be established by a qualified biologist and flagged.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-2f (Special Status Amphibians)	If any special-status reptiles or amphibians are observed within the Impact Area, the on-site biologist will determine if the work can continue without harm to the individual(s). If the biologist determines that it is not safe to continue work, all work will cease until the animal has left the Impact Area. Once the individual(s) is determined by the on-site biologist to have left the Impact Area and is out of harm's way, work may resume.	Before and during construction	Biologist			
MM BIO-2g (Special Status Amphibians)	Piles of rock, rip-rap, or other materials that could provide refuge to reptiles or amphibians will be avoided. If movement of such materials cannot be avoided, a qualified biologist will survey the area prior to disturbance and monitor the material movement and restoration of the area following completion of Proposed Project activities.	Before and during construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-3a (Western Pond Turtle)	In areas with the potential for western pond turtle to occur, pre-activity presence/absence surveys for western pond turtle shall occur within 48 hours prior to the onset of project activities at any Impact Area.	Before construction	Biologist			
MM BIO-3b (Western Pond Turtle)	If Western pond turtles are observed on land during the pre-activity surveys, the area within 328 feet (100 meters) of the boundary of the aquatic habitat will be flagged and avoided if feasible.	Before construction	Biologist			
MM BIO-3c (Western Pond Turtle)	If western pond turtles are observed within the Impact Area during a pre-activity survey or during project activities, they will be relocated outside of the Impact Area to appropriate aquatic habitat by a qualified biologist.	Before and during construction	Biologist			
MM BIO-4a (Giant Garter Snake)	Upland habitat within 200 feet (61 meters) of suitable aquatic habitat, that is suitable for giant garter snake (containing cracks or rodent burrows) will be flagged and avoided.	Before and during construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-4b (Giant Garter Snake)	On-land soil investigations within suitable upland habitat for giant garter snake will be conducted during the snake's active season of May 1 through October 1.	During construction	Biologist			
MM BIO-5a (Rookery Birds)	A pre-activity survey for active rookeries will be conducted (during nesting season between February 1 – August 31) a maximum of 72 hours prior to the onset of soil investigation field activities. The qualified biologist(s) must, at a minimum, have experience conducting surveys to identify the specific rookery bird species and associated habitat that could occur on site.	Before construction	Biologist			
MM BIO-5b (Rookery Birds)	If any active rookeries are identified within or adjacent to an Impact Area, a buffer will be put in place to ensure that the birds are not disturbed during work activities. This buffer will be up to 50 feet (15 meters), but can be smaller, dependent on-site conditions and at the discretion of the qualified biologist.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-6a (Raptors; excluding Swainson's Hawk and Burrowing Owl)	For soil investigation field activities that will occur between February 1 – August 31, a pre-activity survey for actively nesting raptors will be conducted by a qualified biologist a maximum of 72 hours prior to the onset of project activities. The qualified biologist(s) must, at a minimum, have experience conducting surveys to identify the specific species and associated habitat that could occur on site.	Before construction	Biologist			
MM BIO-6b (Raptors; excluding Swainson's Hawk and Burrowing Owl)	If any active raptor nests are identified within or adjacent to an Impact Area by the pre-action survey, a buffer will be put in place to avoid disturbance to birds during and as a result of work activities. This buffer will be up to 250 feet (76 meters), but can be smaller, dependent on-site conditions and at the discretion of the qualified biologist.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-6c (Raptors; excluding Swainson's Hawk and Burrowing Owl)	Any identified actively nesting raptors will be monitored by a qualified biologist during activity activities for signs of distress or disturbance as a result of field activities. Should the birds show signs of distress, work will cease at that location until the birds have resumed normal behavior and it is determined by the on-site biologist that work can be resumed.	During construction	Biologist			
MM BIO-7a (Tricolored Blackbird)	For soil investigation field activities that will occur March 15-July 31 in areas with potential breeding habitat for Tricolored Blackbird, a pre-activity survey for breeding colonies will be conducted by a qualified biologist within 1,300 feet (396 meters) of Impact Areas a maximum of 72 hours prior to the onset of soil investigation activities. The qualified biologist(s) must, at a minimum, have experience conducting surveys to identify Tricolored Blackbird and associated habitat that could occur on site.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-7b (Tricolored Blackbird)	For soil investigation field activities that will occur August 1 – March 14 in areas with potential roosting habitat for Tricolored Blackbird, a pre-activity survey for roosting Tricolored Blackbirds will be conducted during the nonbreeding season within 300 feet (91 meters) of Impact Areas a maximum of 72 hours prior to the onset of soil investigation activities by a qualified biologist.	Before construction	Biologist			
MM BIO-7c (Tricolored Blackbird)	If active Tricolored Blackbird breeding colonies or roost sites are identified within or adjacent to an Impact Area, a buffer will be put in place to ensure that the birds are not disturbed during work activities. This buffer will be up to 1,300 feet (396 meters) but may be reduced to a minimum of 300 feet (91 meters), dependent on-site conditions and at the discretion of the qualified biologist.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-8a (Nesting Birds)	For soil investigation field activities that will occur February 1 – August 31, a pre-activity survey for actively nesting birds will be conducted a maximum of 72 hours prior to the onset of soil investigation activities by a qualified biologist. The qualified biologist(s) must, at a minimum, have experience conducting surveys to identify the specific species and associated habitat that could occur on site.	Before construction	Biologist			
MM BIO-8b (Nesting Birds)	If any active nests are identified within or adjacent to an Impact Area, a buffer will be put in place to ensure that no take (as defined by MBTA), and no take, possession, or needless destruction (as prohibited under the Fish and Game Code) occurs. This buffer will be up to 50 feet (15 meters), but can be smaller, dependent on-site conditions and at the discretion of the qualified biologist.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-9a (Sandhill Crane)	For soil investigation field activities that will occur September 15 through March 15, during roosting season, pre-activity surveys and an assessment of known roost sites will be conducted within 0.75 mile (1,207 meters) of Impact Areas by a qualified biologist.	Before construction	Biologist			
MM BIO-9b (Sandhill Crane)	If roost sites are identified within 0.25 mile (402 meters) of Impact Areas by the qualified biologist, start of large equipment use for soil investigation activities will be delayed to an hour after sunrise and stop an hour before sunset to minimize potential for noise disturbance at the roost site.	During construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-10a (Burrowing Owl)	In areas with the potential for Burrowing Owl to occur, prior to soil investigation field activities, a qualified biologist will conduct a pre-activity survey. The surveys will establish the presence or absence of Burrowing Owl and/or suitable habitat features and evaluate use by owls in accordance with CDFW survey guidelines (CDFW 1993). For each Impact Area, the biologist will survey the proposed disturbance footprint and a 500-foot (152 meter) radius from the perimeter of the proposed footprint to identify any suitable burrows and owls. Adjacent parcels under different land ownership will not be surveyed. Surveys should take place near sunrise or sunset in accordance with CDFW guidelines. Suitable burrows or Burrowing Owls will be identified and mapped.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-10a (Burrowing Owl) continued	Surveys will take place no more than 30 days prior to soil investigation field activities. During the breeding season (February 1– August 31), surveys will document whether Burrowing Owls are nesting in or directly adjacent to any Impact Area. During the nonbreeding season (September 1–January 31), surveys will document whether Burrowing Owls are using habitat in or directly adjacent to any disturbance area. Survey results will be valid only for the season (breeding or nonbreeding) during which the survey is conducted.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-10b (Burrowing Owl)	If Burrowing Owls are found during the breeding season (February 1 – August 31), all nest sites that could be disturbed by project activities will be avoided during the remainder of the breeding season or while the nest is occupied by adults or young. Avoidance will include establishment of a non-disturbance buffer zone (described below in parts c and d).	During construction	Biologist			
MM BIO-10c (Burrowing Owl)	Soil investigation activities may occur during the breeding season only if a qualified biologist monitors the nest and determines that the birds have not begun egg-laying and incubation or that the juveniles from the occupied burrows have fledged. During the nonbreeding season (September 1 – January 31) the owls and the burrows they are using will be avoided. Avoidance will include the establishment of a buffer zone (described below).	During construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-10d (Burrowing Owl)	During the breeding season, buffer zones of at least 250 feet (76 meters) in which no soil investigation activities can occur will be established around each occupied burrow (nest site). Buffer zones of 160 feet (49 meters) will be established around each burrow being used during the nonbreeding season. The buffers will be delineated by highly visible, temporary fencing or flagging.	During construction	Biologist			
MM BIO-11a (Swainson's Hawk)	If soil investigations field activities will occur during the nesting season (March 15–September 15), a pre-activity survey will be conducted by a qualified biologist within 0.25 mile (402 meters) of Impact Areas following the Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley (SWHA Technical Advisory Committee 2000) between 5 days and 72 hours prior to the start of soil investigation activities to identify Swainson's Hawk nests.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-11b (Swainson's Hawk)	If active nests are observed within 0.25 mile (402 meter) of an Impact Area, project activities will be limited to outside of the breeding season (March 15 – September 15) or until the nest is determined to be inactive or fledged by a qualified biologist.	During construction	Biologist			
MM BIO-11c (Swainson's Hawk)	When soil investigation activities must occur within 0.25 mile (402 meters) of a known or potential nest during nesting season (March 15 – September 15), soil investigation field activities will be initiated prior to egg-laying, if possible. If soil investigation activities must begin after egg-laying, a 650-foot (198 meter) no-activity buffer will be established between an active nest and any soil investigation activities until eggs have hatched. If site-specific conditions or the nature of the project activity (e.g., steep topography, dense vegetation, limited activities) indicate that a smaller buffer could be used, the qualified biologist will determine the appropriate buffer size.	During construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-11d (Swainson's Hawk)	If young fledge prior to September 15, soil investigation activities can proceed normally, subject to confirmation by a qualified biologist that the young have fledged from active nest sites. If the active nest site is shielded from view and noise from the project site by other development, topography, or other features, the qualified biologist may determine that project activities can proceed.	During construction	Biologist			
MM BIO-11e (Swainson's Hawk)	A qualified biologist with stop-work authority will be present during soil investigation field activities and may halt project activities if the biologist determines that Swainson's Hawks in the vicinity of soil investigation activities are disturbed to the point where nest abandonment is likely. Additional protective measures, as determined by the qualified biologist, will be implemented prior to resuming soil investigation activities.	During construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-12a (Vernal Pool Species)	All ground disturbing activities (boring, CPT, or vegetation removal) shall be located at least 100 feet (30 meter) from a vernal pool to avoid impacts to sensitive vernal pool invertebrates.	Before and during construction	Biologist			
MM BIO-12b (Vernal Pool Species)	No project activities shall take place within an area identified as vernal pool complex, as determined by a qualified biologist, when wet soil conditions would increase the likelihood of vehicle traffic or other activities altering the site topography.	Before and during construction	Biologist			
MM BIO-13a (Valley Elderberry Longhorn Beetle)	When feasible, project activities shall be sited at least 164 feet (50 meters) from elderberry shrubs with stem diameter greater than 1-inch (2.5 centimeter).	Before and during construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-13b (Valley Elderberry Longhorn Beetle)	If activities must be conducted within 164 feet (50 meters) of an elderberry shrub, the following measures will apply: i. activities will be conducted outside of VELB flight season (March 1-July 31); ii. a biological monitor will be present to monitor all project activities at the site; iii. all ground disturbing activities (boring, CPT, or vegetation removal) will be located at least 20 feet (6 meters) from the dripline of the elderberry shrub; and high visibility fencing, or flagging will be installed to delineate the 6-meter avoidance buffer.	During construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-14 (General Fish)	Over-water activities will be limited to only being conducted during the fish work window (August 1 – October 31) to avoid impacts to sensitive fish species that have the potential to occur in the Study Area.	During construction	Biologist			
MM BIO-15a (Special-Status Bats)	Pre-activity roosting special-status bat surveys and an evaluation of roosting habitat suitability for bats will be conducted by a qualified biologist familiar with the species that could potentially occur within the Impact Area. The qualified biologist should, at a minimum have experience conducting roosting bat surveys and be able to identify the presence of guano and urine stains.	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-15b (Special-Status Bats)	Any identified roosts of special-status bats will be avoided, and a buffer of up to 100 feet (30 meters) will be established based on-site conditions and at the discretion of the biologist, to ensure that the roosting bats are not disturbed. If a nursery colony is identified, additional measures may be required including a larger buffer, to ensure no disturbance. Such additional measures will be determined and monitored by a qualified biologist.	During construction	Biologist			
MM BIO-16a (American Badger)	A qualified biologist shall conduct pre-activity surveys for American badger and dens in suitable habitat within 48 hours prior to the start of soil investigation activities. If there is a lapse in soil investigation activities of two weeks or greater the area shall be resurveyed within 24 hours prior to recommencement of work. Potential American badger dens identified in the project area shall be monitored by the qualified biologist to determine current use.	Before and during construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-16b (American Badger)	American badger dens determined by the qualified biologist to be occupied during the breeding season (February 15 through June 30) shall be flagged, and ground disturbing activities avoided, within 100 feet (30 meters) of the den to protect adults and nursing young. Buffers may be modified by the qualified biologist, depending on the applicable site conditions and characteristics of the den, and shall not be removed until the qualified biologist has determined that the den is no longer in use.	Before and during construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-17a (San Joaquin Kit Fox)	Prior to any ground disturbance within an Impact Area, a qualified biologist will conduct a pre-activity survey in areas identified in the pre-activity surveys as supporting suitable breeding or denning habitat for San Joaquin kit fox. The surveys will establish the presence or absence of San Joaquin kit foxes and/or suitable dens and evaluate use by kit foxes in accordance with USFWS survey guidelines (U.S. Fish and Wildlife Service 1999).	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-17b (San Joaquin Kit Fox)	Pre-activity surveys will be conducted within 30 days prior to ground disturbance. The biologist will survey the proposed Impact Area and a 250-foot (76 meter) buffer from the perimeter of the proposed Impact Area to identify San Joaquin kit foxes and/or suitable dens. Adjacent parcels under different land ownership, for which DWR not have access, will not be surveyed. The status of all dens will be determined and mapped. Written results of pre-activity surveys will be submitted to USFWS within 5 working days after survey completion and before the start of ground disturbance.	Before construction	Biologist			

MM BIO-17c (San Joaquin Kit Fox)	If San Joaquin kit foxes and/or suitable dens are identified within those areas included in the pre-activity survey area, the measures described below will be implemented. i. If a San Joaquin kit fox den is discovered in the Impact Area, the Impact Area will be moved at a minimum to meet the appropriate buffer distances as described below in subsection (c)(ii). ii. If dens are identified in the survey area but outside the Impact Area, exclusion zones around each den entrance or cluster of entrances will be demarcated. The configuration of exclusion zones should be circular, with a radius measured outward from the den entrance(s). No covered activities will occur within the exclusion zones. Exclusion zone radii for potential or atypical dens will be at least 50 feet (15 meters) and will be	During construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
	demarcated with four to five flagged stakes. Exclusion zone radii for known dens will be at least 100 feet (30 meters) and will be demarcated with staking and flagging that encircles					
MM BIO-17c (San Joaquin Kit Fox) continued	each den or cluster of dens but does not prevent access to the den by kit fox. iii. If a natal or pupping den is found within the Impact Area or within 200-feet (61 meters) of the Impact Area boundary, USFWS and CDFW will be notified immediately. The den will not be disturbed or destroyed, depending on the applicable site conditions and characteristics of the den, the soil investigation site may be moved.	During construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-18a (Botanical Resources)	All botanical evaluations will be conducted by a qualified botanist, who at a minimum shall have experience conducting floristic field surveys; knowledge of plant taxonomy and plant community ecology and classification; familiarity with the plants of the area, including special-status and locally significant plants; familiarity with the appropriate state and federal statutes related to plants and plant collecting; and experience with analyzing impacts of a project on native plants and communities.	Before and during construction	Biologist			

MM BIO-18b (Botanical Resources)	A qualified botanist will conduct a habitat assessment to determine whether the habitat is appropriate for special-status plants. If suitable habitat is present, the qualified botanist will conduct a habitat quality assessment to determine the potential for presence of sensitive plant species. The habitat quality assessment will consider factors such as soil type, degree and frequency of previous soil disturbance, abundance of invasive species, and distance from known sensitive plant occurrences. If a qualified botanist determines that special-status plants are likely to occur at a proposed Impact Area, a botanical survey will be conducted within the Impact Area at each soil investigation site. When feasible based on scheduling and property access, the surveys will be conducted at proper times of year when special-status and locally significant plants are both evident and identifiable; will be floristic in nature, ensuring that all plants observed are identified to a level sufficient for determining rarity, and will be conducted using	Before and during construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
	systematic field techniques in all habitats of the site to ensure thorough coverage of potential Impact Areas.					
MM BIO-18c (Botanical Resources)	Any special-status plant species present within 33 feet (10 meters) of an Impact Area will be flagged, or mapped using a GPS, for avoidance. A qualified botanist will establish an appropriate buffer. During field activities avoidance of the buffered area will be enforced by an environmental monitor to ensure that special-status plants are avoided to the maximum extent practicable.	Before and during construction	Biologist			

MM BIO-18d (Botanical Resources)	If special-status plant species (excluding listed species) are present within the Impact Area and impacts cannot practicably be avoided, a qualified botanist will evaluate the following criteria to ensure these impacts are less than significant: i. the total range and distribution of the species, ii. local population abundance iii. approximate number of individuals potentially impacted, iv. area of habitat potentially impacted, v. life history of the species (annual versus perennial and seedbank dynamics), vi. species sensitivity and response to disturbance, vii. species fecundity, and	Before construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
	viii. the probability of population recovery from impacts					
MM BIO-18d (Botanical Resources) continued	If loss of individuals due to project activities would exceed 2% of the local population or if the particular life history of the plant species indicates that a loss of that scale would threaten the persistence of the local population, or if there are fewer than 10 statewide extant occurrences, the soil investigation will not be allowed to proceed at that location.	Before construction	Biologist			
MM BIO-19 (Botanical Considerations for Vegetation Removal)	If access requires minor disturbances to or removal of vegetation, a qualified botanist will be consulted to ensure that no special-status vegetation is significantly impacted.	During construction	Biologist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM BIO-20 (Botanical Avoidance Zones)	Soil investigation activities will not be conducted within the intertidal zone of rivers or sloughs, including in-channel islands, or shoals to the extent feasible. If work in these areas is necessary, the Impact Area will be surveyed by a qualified botanist during tidal conditions that expose the intertidal area where Delta mudwort or Mason's lilaeopsis would occur. If Delta mudwort or Mason's lilaeopsis are identified, they will be flagged or mapped with a GPS for avoidance.	Before and during construction	Biologist			
MM CUL-1a	All Impact Area would be reviewed by a qualified archaeologist to evaluate the potential for impacts, if any, to cultural resources.	Before construction	Cultural Resource Specialist			
MM CUL-1b	Locations that have no previous survey coverage must be surveyed by, or under the direct supervision of a qualified archaeologist prior to the start of any ground disturbing activities.	Before construction	Cultural Resource Specialist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM CUL-1c	If the archaeologist observes cultural or potential tribal cultural resources within the Impact Area or associated resource buffer as identified by a qualified archaeologist, the location will be shifted the minimum distance necessary to reduce the potential for significant cultural resource impacts without significantly increasing potential impacts to other resources.	Before and during construction	Cultural Resource Specialist			
MM CUL-1d	A tribal representative from the consulting tribes will be invited to participate in the pre-activity field visits and archaeological surveys in Impact Areas specified as an area of interest/concern during consultation by that consulting tribe/tribes.	Before and during construction	DCA, Cultural Resource Specialist			
MM CUL-1e	Consulting tribes will be informed of any potential tribal cultural resources located within the study area specified as an area of interest/concern by a consulting tribe/tribes.	Before construction	Cultural Resource Specialist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM CUL-1f	If a suitable location cannot be determined within adjacent areas, then the soil investigation at that location would not be conducted.	Before construction	Cultural Resource Specialist			
MM CUL-2a	Should any unexpected cultural resources be exposed during project activities, all work would immediately stop in the immediate vicinity (e.g. 100 feet [30 meters]) of the find until it can be evaluated by a qualified archaeologist and an appropriate plan of action can be determined in consultation with the State Office of Historic Preservation, as necessary.	During construction	Cultural Resource Specialist			
MM CUL-2b	If the resource is associated with Native American contexts or is a potential Tribal Cultural Resource and is within a region specified as an area of interest/concern by a consulting tribe/tribes, the appropriate consulting tribal entity/entities will be contacted and consulted with to produce an appropriate plan of action.	During construction	Cultural Resource Specialist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM CUL-3	Should human remains be discovered during the course of project activities, all work would stop immediately in the vicinity (e.g. 100 feet [30 meters]) of the finds until they can be verified. The coroner would be contacted in accordance with Health and Safety Code section 7050.5(b). Protocol and requirements outlined in Health and Safety Code sections 7050.5(b) and 7050.5(c) as well as Public Resources Code section 5097.98 would be followed.	During construction	Cultural Resource Specialist			
MM CUL-4	Cultural sensitivity training will be provided for the environmental monitors and individuals conducting the field activities and geological analysis to ensure awareness about cultural resources, including identification of and proper protocol for handling any unexpected finds.	Before and during construction	Cultural Resource Specialist			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM GHG-1a	Evaluate project characteristics, including location, project work flow, site conditions, and equipment performance requirements, to determine whether specifications of the use of equipment with repowered engines, electric drive trains, or other high efficiency technologies are appropriate and feasible for the project or specific elements of the project.	Before construction	Construction Contractor, Engineer			
MM GHG-1b	Minimize idling time by requiring that equipment be shut down after five minutes when not in use (as required by the State airborne toxics control measure [Title 13, section 2485 of the California Code of Regulations]). This requirement will be enforced by the environmental monitor.	During construction	Biologist, Construction Contractor, Engineer			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM GHG-1c	Maintain all soil investigation equipment in proper working condition and perform all preventative maintenance. Required maintenance includes compliance with all manufacturer's recommendations, proper upkeep and replacement of filters and mufflers, and maintenance of all engine and emissions systems in proper operating condition.	During construction	Construction Contractor, Engineer			
MM GHG-1d	Implement tire inflation program on jobsite to ensure that equipment tires are correctly inflated. Check tire inflation when equipment arrives on-site and every two weeks for equipment that remains on-site. Check vehicles used for hauling materials off-site weekly for correct tire inflation.	During construction	Construction Contractor			
MM GHG-1e	Encourage carpools or shuttle vans for worker commutes as feasible.	During construction	Construction Contractor, Engineer			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM HAZ-1a	A Plan(s) (often a contractor's safety plan) with a section on Hazardous Materials shall be written and kept on site that describes the hazardous materials used during project activities, and how the materials will be properly stored, used, transported, and disposed of. The Plan will be shared with local fire and emergency personnel and their mutual aid districts. All hazardous materials shall be properly labeled and be recycled properly or disposed of at a properly licensed disposal facility.	Before and during construction	Construction Contractor			
MM HAZ-1b	The contractor shall contact the local fire agency and the local CUPA for any site-specific requirements regarding hazardous materials or hazardous waste containment or handling.	Before and during construction	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM HAZ-1c	If hazardous materials, such as oil, batteries or paint cans, are encountered in the Impact Area, the contractor(s) shall carefully remove and dispose of them according to the Safety Plan and Spill Prevention and Response Plan. All hazardous materials will be disposed of at a properly licensed disposal facility.	Before and during construction	Construction Contractor			
MM HAZ-1d	Contact of chemicals with precipitation shall be minimized by storing chemicals in watertight containers or in a storage shed (completely enclosed), with appropriate secondary containment to prevent any spillage or leakage.	During construction	Construction Contractor			
MM HAZ-1e	Quantities of toxic materials, such as equipment fuels and lubricants, shall be stored with secondary containment that is capable of containing 110% of the primary container(s).	During construction	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM HAZ-1f	Petroleum products, chemicals, fuels, lubricants, and non-storm drainage water or water contaminated with the aforementioned materials shall not contact soil and not be allowed to enter surface waters or the storm drainage system. All lubricants used downhole shall be non-petroleum based pursuant to common industry practice.	During construction	Construction Contractor			
MM HAZ-1g	All toxic materials, including waste disposal containers, shall be covered when they are not in use, and located as far away as possible from a direct connection to the storm drainage system or surface water.	During construction	Construction Contractor			
MM HAZ-1h	Sanitation facilities (e.g., portable toilets) shall be sited in a manner that avoids any direct connection to the storm drainage system or receiving water.	During construction	Construction Contractor			
MM HAZ-1i	Sanitation facilities shall be regularly cleaned and/or replaced and inspected daily for leaks and spills.	During construction	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM HAZ-2	A Plan(s) (often a contractor's safety plan) with a section on Spill Prevention and Response Plan shall be developed by the Contractor and submitted to DWR before any ground-disturbing activities in order to prevent the accidental release of chemicals, fuels, lubricants, and non-storm drainage water (including untreated wastewater) into channels the. The Plan will be shared with local fire and emergency personnel and their mutual aid districts. The following measures shall be included in the Plan: a. All field personnel shall be appropriately trained in spill prevention, hazardous material control, and cleanup of accidental spills.	Before construction	Construction Contractor			

MM HAZ-2 continued	b. Equipment and materials for cleanup of spills will be available on site and spills and leaks shall be cleaned up immediately and disposed of according to guidelines stated in the Spill Prevention and Response Plan. c. Field personnel shall ensure that hazardous materials are properly handled, and natural resources are protected by all reasonable means, including compliance with Code of Federal Regulations (CFR) containment measures for tanks containing hazardous materials (see 40 CFR Section 264.175). d. Spill prevention kits shall always be in close proximity when using hazardous materials (e.g., at crew trucks and other logical locations). All field personnel shall be advised of these locations. e. Field personnel shall routinely inspect the work	Before construction	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
	site to verify that spill prevention and response measures are properly implemented and maintained.					

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM HAZ-2 continued	f. Field personnel will routinely inspect the work site to verify that the Spill Prevention and Response Plan is properly implemented and maintained. Staff will notify contractors immediately if there is a noncompliance issue and will require immediate correction of any noncompliant behavior. g. Absorbent materials will be used on small spills located on impervious surface rather than hosing down the spill; wash waters shall not discharge to the storm drainage system or surface waters. For small spills on pervious surfaces such as soils, wet materials will be excavated and properly disposed rather than burying it. The absorbent materials will be collected and disposed of properly and promptly.	Before construction	Construction Contractor			

MM HAZ-2 continued	As defined in 40 CFR 110, a federal reportable spill of petroleum products is the spilled quantity that: a. Violates applicable water quality standards; b. Causes a film or sheen on, or discoloration of, the water surface or adjoining shoreline; or c. Causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines. h. If a spill is reportable, the contractor will notify the DWR staff, and the DWR staff will take action to contact the appropriate safety and cleanup crews to ensure that the Spill Prevention and Response Plan is followed. A written description of reportable releases must be submitted to the Regional Board and the California Department of Toxic Substances Control (DTSC).	Before construction	Construction Contractor			

MM HAZ-2 continued	This submittal must contain a description of the release, including the type of material and an estimate of the amount spilled, the date of the release, an explanation of why the spill occurred, and a description of the steps taken to prevent and control future releases. The releases will be documented on a spill report form. i. If a significant spill has occurred, and results determine that project activities have adversely affected surface water or groundwater quality, a detailed analysis will be performed to the specifications of DTSC to identify the likely cause of contamination. This analysis will include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this analysis, the DWR or contractors will select and implement measures to control contamination, with	Before construction	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
	a performance standard that surface, and groundwater quality must be returned to baseline conditions.					
MM HAZ-2 continued	These measures will be subject to approval by the DWR, DTSC, and the Regional Board.	Before construction	Construction Contractor			
MM HAZ-3a	Stockpiling materials, portable equipment, vehicles, and supplies, including chemicals, will be restricted to areas adjacent to the drill or CPT rig, and not adjacent or within riparian and wetlands areas or other sensitive habitats	During construction	Construction Contractor			
MM HAZ-3b	Stockpiling materials, portable equipment, vehicles, and supplies, including chemicals, will be restricted to docks or within the drill barge or ship.	During construction	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM HAZ-4a	The contractor would develop a fire protection and prevention plan which incorporates fire safety measures on all equipment with the potential to create a fire hazard.	Before construction	Construction Contractor			
MM HAZ-4b	The plan would ensure that fire suppression equipment is onsite and that all employees have received appropriate fire safety training.	Before construction	Construction Contractor			
MM HAZ-4c	The Plan will be shared with local fire and emergency personnel and their mutual aid districts.	Before construction	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM HYD-1a	All fueling and maintenance of vehicles or other equipment for on-land soil investigation activities shall occur on established private access roads, or in designated staging areas at least 50 feet (15 meters) away from any on-site water feature. Fueling and maintenance activities will be conducted sufficiently away from public roadways to ensure safety of workers and the public. Secondary containment for fuel and gas tanks will be used to prevent spills from entering any water features.	During construction	Construction Contractor			
MM HYD-1b	Absorbent materials will be available on-site. Any accidental leaks or spills will be immediately cleaned up per the procedures identified in the contractors Spill Prevention and Response Plan, and the equipment will not be able to return to the project area until it has been repaired sufficiently to prevent further leaks or spills.	During construction	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM HYD-1c	For overwater soil investigations positive barriers consisting of hay waddles and/or other suitable type of spill-stoppage materials will be placed around the work area on the barge and ship decks.	During construction	Construction Contractor			
MM HYD-1d	Discarded soil samples, cuttings, and excess drilling fluids will be kept in a closed system, to prevent spillage of the drilling fluid and will be disposed of off-site at an appropriate landfill.	During construction	Construction Contractor			
MM HYD-1e	All over-water work will include the use of conductor casings to confine the drill fluid and cuttings to the drill hole and the operating deck of the barge or drill ship and prevent any inadvertent spillage into the water. Soil samples will be collected from within the conductor casing. The casing will remain in place until the bore hole is complete and has been filled in, to minimize sediment disturbance of the slough or river bottom	During construction	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM HYD-1f	During overwater soil investigations a qualified environmental monitor will watch for colored plumes (an indication that drilling fluid or other material is entering the water and may affect water quality). If found, activities will cease until appropriate corrective measures have been completed or it has been determined that the environment will not be harmed.	During construction	Construction Contractor			
MM NOI-1	All equipment will be properly tuned and shall utilize appropriate mufflers.	Before and during construction	Construction Contractor			
MM PUB-1a	A Plan(s) (often Contractor's safety plan) with a section on Fire Protection and Prevention will be submitted to DWR for review and approval which incorporates fire safety measures on all equipment with the potential to create a fire hazard.	Before construction	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM PUB-1b	The contractor will prepare a Safety Plan in accordance with the DWR protocols.	Before construction	Construction Contractor			

MM TRANS-1a	Appropriate traffic controls will be implemented, based on the conditions at each soil investigation site, according to standards set by Caltrans and counties. Flaggers may be used during ingress and egress of boring equipment and work crews to allow flow of traffic while maintaining safety measures for the crew, especially if these activities occur in areas of heavy traffic or reduced visibility. Lane closures will be implemented when soil investigation sites are within or immediately adjacent to public roadways and will employ safety measures such as advance warning areas and flaggers, as prescribed by Caltrans and county regulations. Public notifications will be made in coordination with Caltrans, counties, CHP, and other entities. Traffic controls and lane closures will consider access for emergency services and be coordinated through the encroachment permit processes implemented by Caltrans and counties, with CHP coordination as required.	During construction	Construction Contractor			

Mitigation Measure Number	Mitigation Measure	Timing	Responsible Party	Completion Date	Verified by	Comments
MM TRANS-1b	Parking on public roads and thoroughfares by crew vehicles will be avoided to the maximum extent practicable to allow for the flow of traffic to continue.	During construction	Construction Contractor			
MM TRANS-1c	No public roads, waterways or land access will be closed.	During construction	Construction Contractor			
MM TRANS-1d	For overwater sites, the project area shall be a no-wake zone, with boats not exceeding 5 mph within 500 feet (152 meters) of the work area.	During construction	Construction Contractor			
MM UTI-1	A field reconnaissance, marking or staking the exploration site, and calling Underground Service Alert (USA) for utility clearance will be conducted by qualified personnel for each planned soil exploration location. Based upon the information gathered, sites will be adjusted to ensure no utilities are impacted.	Before construction	Construction Contractor			

5.4 Attachment D: 2021 Addendum to Soil Investigation ISMND

Addendum

to the

Initial Study/Mitigated Negative Declaration

for

Soil Investigations for Data Collection in the Delta

February 2021

California Department of Water Resources

1416 Ninth Street

Sacramento, CA 95814

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ADDENDUM
TO THE INITIAL STUDY/MITIGATED NEGATIVE DECLARATION FOR SOIL INVESTIGATIONS FOR DATA COLLECTION IN THE DELTA ADDENDUM

PROJECT NAME:	Soil Investigations for Data Collection in the Delta	SCH #: 2019119073 Prev. Cert.: MND
LEAD AGENCY:	California Department of Water Resources 1416 Ninth Street Sacramento, California 95814	
CONTACT:	Katherine Marquez (916) 651-9569	
PROJECT DESCRIPTION:	The primary objective of the project is to determine the composition, location, and geotechnical properties of soil materials commonly found in the Delta which would inform the design, environmental analysis, and development of alternatives for a potential Delta conveyance project and contribute to DWR's overall understanding of Delta geology.	
ADDENDUM:	DWR is considering a project modification that would remove 60 geotechnical investigation sites identified in the 2020 Final IS/MND and replace them with 60 new geotechnical investigation sites in locations in and around the general study area of the Approved Project.	
LOCATION:	Alameda, Contra Costa, Sacramento, San Joaquin, Solano, and Yolo Counties	

1 Introduction

The Department of Water Resources (DWR), as the Lead Agency under the California Environmental Quality Act (CEQA), for the Soil Investigations for Data Collection in the Delta Project adopted a Final Initial Study and Mitigated Negative Declaration (IS/MND) and filed a Notice of Determination (NOD) documenting project approval on July 9, 2020 (SCH. 2019119073; Attachment A and Attachment B respectively).

A mitigation monitoring and reporting program (MMRP) was adopted for the Approved Project in July 2020 (Attachment C) as part of the project approval. Environmental impacts listed in the 2020 Final IS/MND were less than significant or had no effect on the environment with the exception of effects under biological resources, cultural resources, greenhouse gases, wildfire, hazards and hazardous materials, tribal resources, and mandatory findings of significance, which were clearly brought to less than significant with best management practices (BMPs), avoidance, and mitigation measures which were made conditions of the July 2020 project approval.

In addition to the records review already performed in consideration of the proposed project modifications and described in the Environmental Analysis (Section 4) of this Addendum, exploration locations at the proposed changed locations would be thoroughly surveyed by Environmental Scientists to further evaluate the potential impacts to environmental resources prior to any exploration activities as described in the 2020 Final IS/MND and consistent with the measures previously adopted for the July 2020 project approval (pp. 5-25). Just as with the project approved in July 2020, if sensitive resources are encountered during site clearance surveys, DWR would modify or move their work to either avoid the resources entirely or otherwise ensure less-than-significant impacts would occur (2020 Final IS/MND, pp. 5–7), or mitigate as described in the 2020 Final IS/MND (see Attachment C, MMRP), to ensure any potential environmental impacts clearly remain less than significant. In addition to avoiding impacts through specific siting of the exploration locations, and consistent with measures in the adopted MMRP for the July 202 project approval, an environmental monitor would survey the proposed changed sites immediately prior to exploration equipment entering the area and would be present for all geotechnical investigation field activities (see MM BIO-2(g), MM BIO-6(c), MM BIO-13(b)(ii), MM BIO-18(c), MM GHG-1(b), MM HYD-1(f); 2020 MMRP, pp. 16, 20, 31, 41, 48, and 63).

2 Addendum Purpose

The purpose of the 2020 Soil Investigation for Data Collection in the Delta Project, or "Approved Project", is to determine the composition, location, and geotechnical properties of soil materials commonly found in the Delta which would inform the design, environmental analysis, and development of alternatives for a potential Delta conveyance project and contribute to DWR's overall understanding of Delta geology. As stakeholder engagement and conceptual design for the proposed Delta Conveyance Project has progressed, the associated data gaps and information needs have shifted from what was originally understood when the Approved Project was analyzed in the 2020 Final IS/MND. Based on current engineering considerations of alternative alignments for the proposed Delta Conveyance Project, the following additional geotechnical information is needed for preliminary design and to support environmental review. The proposed changes include the removal of 60 geotechnical investigation sites identified in the 2020 Final IS/MND and the replacement with 60 new geotechnical investigation sites in locations that are in and around the general study area of the Approved Project but were not specifically, previously evaluated in the 2020 Final IS/MND (Figures 1a-d).

CEQA Guidelines sections 15162 and 15164 set forth criteria to assess which environmental document is appropriate; an Addendum, a Subsequent environmental impact report (EIR), or a MND (see also Public Resources Code section 21166). Further guidance is provided in case law. (*Friends of College of San Mateo Gardens v. San Mateo County Community College Dist.* (2016) 1 Cal.5th 937 (*Friends I*); and *Friends of College of San Mateo Gardens v. San Mateo County Community College Dist.* (2017) 11 Cal.App.5th 596 (*Friends II*).)

Environmental Analysis of the proposed project description that changed from the CEQA checklist used for the 2020 Final IS/MND is included in Section 4 of this document. The new environmental analysis of the proposed project modifications is used to support the determination made with respect to CEQA Guidelines sections 15162 and 15164 in Section 5 of this document. Based upon the information presented in Section 5 of this document, which makes explicit determinations on criteria present in the CEQA Guidelines and associated case law, no conditions triggering a subsequent MND or EIR are present. As such, an addendum is appropriate. This Addendum has been prepared to address the environmental impacts of the changes made to the Approved Project, outlined in the 2020 Final IS/MND.

3 Detailed Description of Proposed Changes

The Approved Project as described in the 2020 Final IS/MND consisted of both on-land and overwater soil investigations as well as several on-land geophysical surveys, including the following activities at specified locations:

- 167 soil borings from 50 feet to 200 feet (15 to 61 meters) below ground surface (158 of these from 125 to 200 feet);
- 103 cone penetration tests (CPTs) from approximately 50 feet to 200 feet (15 to 61 meters) below ground surface (101 of these from approximately 200 feet); and
- Up to 5 noninvasive geophysical survey investigation arrays on up to five Impact Areas within a location on Bouldin Island.
- 56 overwater soil borings up to 200 feet (61 meters) below the slough or river bottom (measured at the mudline)

This Addendum evaluates what are referred to here as the “Proposed Changes”:

The removal of:

- 25 soil borings between 125 feet to 200 feet deep (38 - 61 meters),
- 22 CPTs up to 200 feet deep (61 meters), and
- 13 overwater soil borings up to 200 feet deep (61 meters),

The replacement with:

- 23 soil borings between 125 feet to 200 feet deep (38 to 61 meters),
- 2 soil borings up to 250 feet (61 meters) and 300 feet (91 meters) deep, respectively
- 22 CPTs up to 200 feet deep (61 meters), and

- 13 overwater soil borings up to 200 feet deep (61 meters).

The Proposed Changes would not result in a net increase in the number of soil investigations as compared to the 2020 Approved Project (although new sampling techniques are proposed at limited locations, as described below). The 60 geotechnical investigation sites proposed to replace the removed geotechnical investigation sites are in various locations across Alameda, Contra Costa, Sacramento, and San Joaquin Counties, and are within or adjacent to the general study area of the previously Approved Project and in accordance with methods described in Section 2.0 of the 2020 Final IS/MND (pp. 5-25). Refer to Table 1 for a summary of changes per county and Figures 1 and 1a-1c for maps showing the locations of the removed and replacement investigation sites.

Table 1: Proposed Changes Per County.

County	Proposed Removal	Proposed Replacement	Net Change per County
Alameda	2	7	+5
Contra Costa	15	6	-9
Sacramento	17	26	+9
San Joaquin	5	21	+16
Solano	5	0	-5
Yolo	16	0	-16

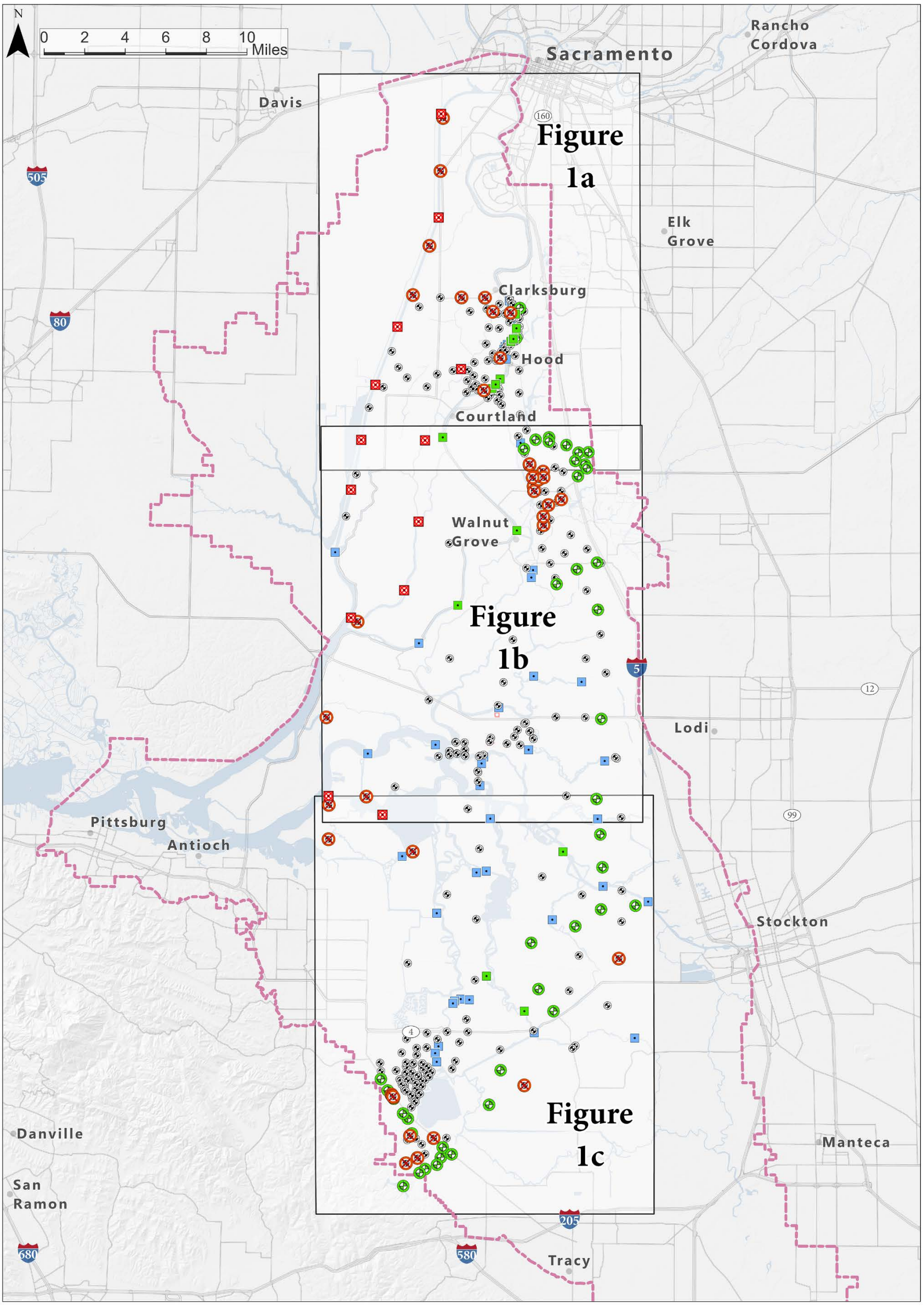
Soil samples would be collected from borings using all of the methods described in Section 2.1 through 2.2.1 of the 2020 Final IS/MND (pp. 12-25) with the addition of rock coring samplers that are anticipated to be needed at the two deeper boring locations (proposed to be up to 250 and 300 feet deep, respectively) near Bethany Reservoir and may also be used at other locations in that same region as needed. Rock coring collects bedrock cores for engineering and geological data so that DWR may better understand, from an engineering standpoint, the geological nature of the rock formation in order to properly assess the potential for a water conveyance alignment. While rock coring samplers utilize a different downhole sample tool, the collection of that sample would

not be significantly different than sampling methods described in section 2.1.1 of the 2020 Final IS/MND (pp. 13-14).

In addition to the limited downhole testing previously described in the 2020 Final IS/MND, which would involve sending a small probe down the hole and taking readings periodically with depth (pp. 13–14), additional downhole testing is proposed to be conducted at the two deeper borings. This additional testing would consist of packer tests, performed at defined intervals within boreholes. Packer testing is a technique in which one or more inflatable devices, or "packers," are used to isolate different regions of a borehole for hydraulic testing. Packer tests are done to measure the hydraulic conductivity of isolated sections within the borehole. Test water supplied from a municipal water source is pumped into a section of the borehole that is sealed using packers. The water is then pumped at varying pressures and the flow rate at each pressure is measured. In addition to the standard drilling equipment onsite, a water truck would be onsite to supply water for the test.

The duration of soil investigation activities for borings and CPTs remain as described in Sections 2.1.1 and 2.1.3 of the 2020 Final IS/MND (pp. 14 and 16), with the exception of the two deeper borings (250 and 300 feet respectively). These borings are expected to require up to 20 workdays, instead of up to 13 workdays, due to the anticipated presence of rock and additional downhole testing.

Other than the changes described above, all other components of the Approved Project remain as described in Section 2 of the 2020 Final IS/MND, including containment of all cuttings, excess drilling fluid, and water returned from the newly added packer test to be disposed of offsite at an appropriate landfill.



DEPARTMENT OF WATER RESOURCES · STATE OF CALIFORNIA ·	**IS/MND 2019** Land Exploration Overwater Boring Geophysical Line Legal Delta Boundary	**Addendum Deletions** Land Exploration Overwater Boring	**Addendum Additions** Land Exploration Overwater Boring	**Soil Investigations in the Delta 2020 Addendum**	**Figure 1**

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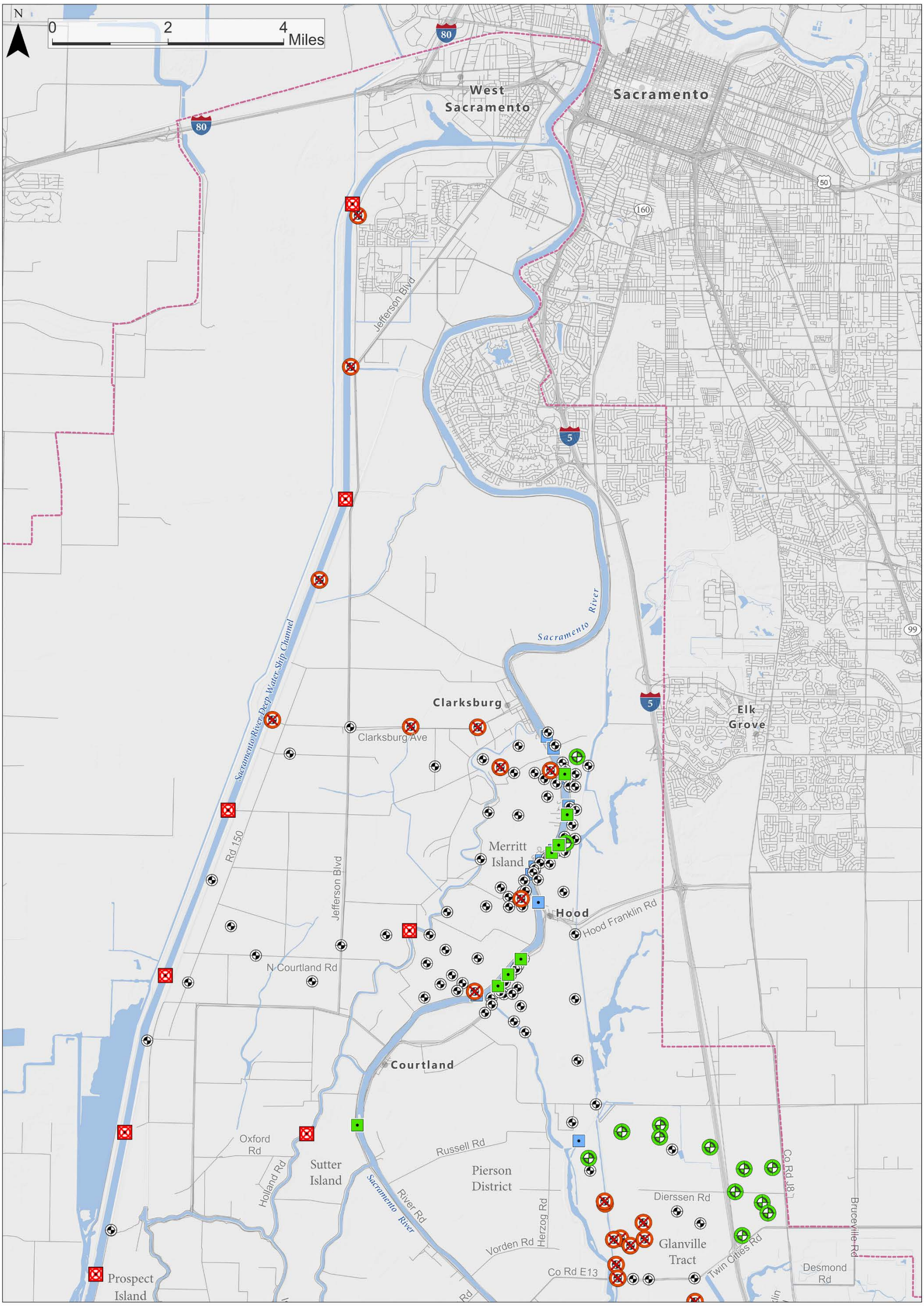
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Oxford Rd
Holland Rd
Sutter Island
Russell Rd
Pierson District
River Rd
Herzog Rd
Dierssen Rd
Co Rd J87
Bruceville Rd
Vorden Rd
Glanville Tract
Twin Cities Rd
Co Rd E13
Desmond Rd
Prospect Island
IS/MND 2019
Land Exploration
Overwater Boring
Geophysical Line
Legal Delta Boundary
Addendum Deletions
Land Exploration
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Addendum Additions
Land Exploration
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Soil Investigations in the Delta 2020 Addendum
Figure 1a
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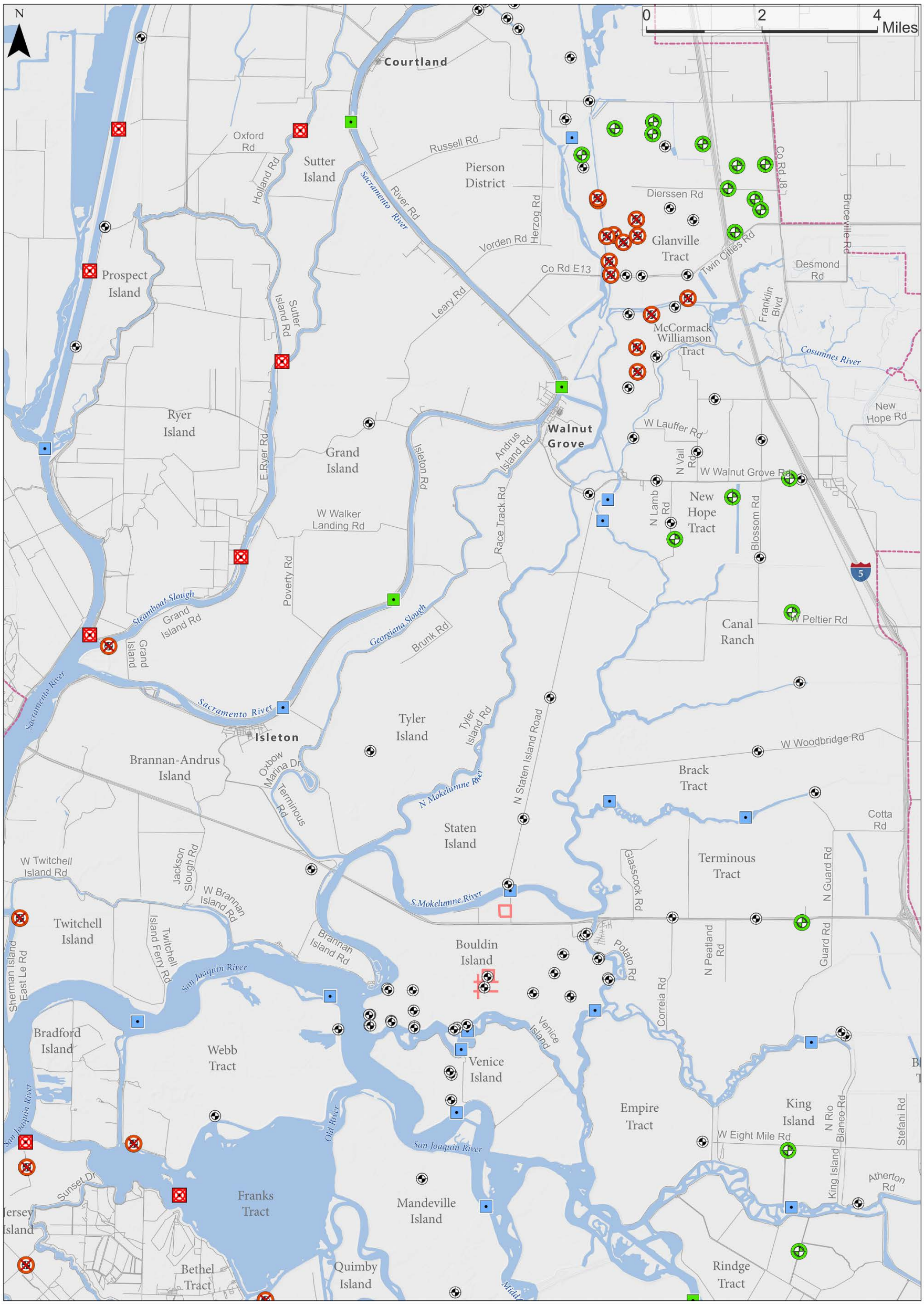
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Leary Rd
Franklin Blvd
McCormack Williamson Tract
Cosumnes River
New Hope Rd
Ryer Island
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Grand Island
Isleton Rd
Andrus Island Rd
Walnut Grove
W Lauffer Rd
N Vail Rd
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W Walker Landing Rd
Race Track Rd
N Lamb Rd
New Hope Tract
Blossom Rd
Poverty Rd
Steamboat Slough
Grand Island Rd
Georgiana Slough
Brunk Rd
W Peltier Rd
Canal Ranch
Sacramento River
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Tyler Island
Tyler Island Rd
N Staten Island Road
W Woodbridge Rd
Brannan-Andrus Island
Oxbow Marina Dr
Terminous Rd
N Mokelumne River
Brack Tract
Cotta Rd
Staten Island
W Twitchell Island Rd
Jackson Slough Rd
W Brannan Island Rd
S Mokelumne River
Glasscock Rd
Terminous Tract
N Guard Rd
Twitchell Island
Twitchell Island Ferry Rd
Brannan Island Rd
Bouldin Island
Potato Rd
N Peatland Rd
Guard Rd
Sherman Island East Le Rd
San Joaquin River
Venice Island
Correia Rd
Bradford Island
Webb Tract
Old River
Empire Tract
King Island
N Rio Blanco Rd
Stefani Rd
W Eight Mile Rd
Sunset Dr
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IS/MND 2019
Land Exploration
Overwater Boring
Geophysical Line
Legal Delta Boundary
Addendum Deletions
Land Exploration
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Addendum Additions
Land Exploration
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Soil Investigations in the Delta 2020 Addendum
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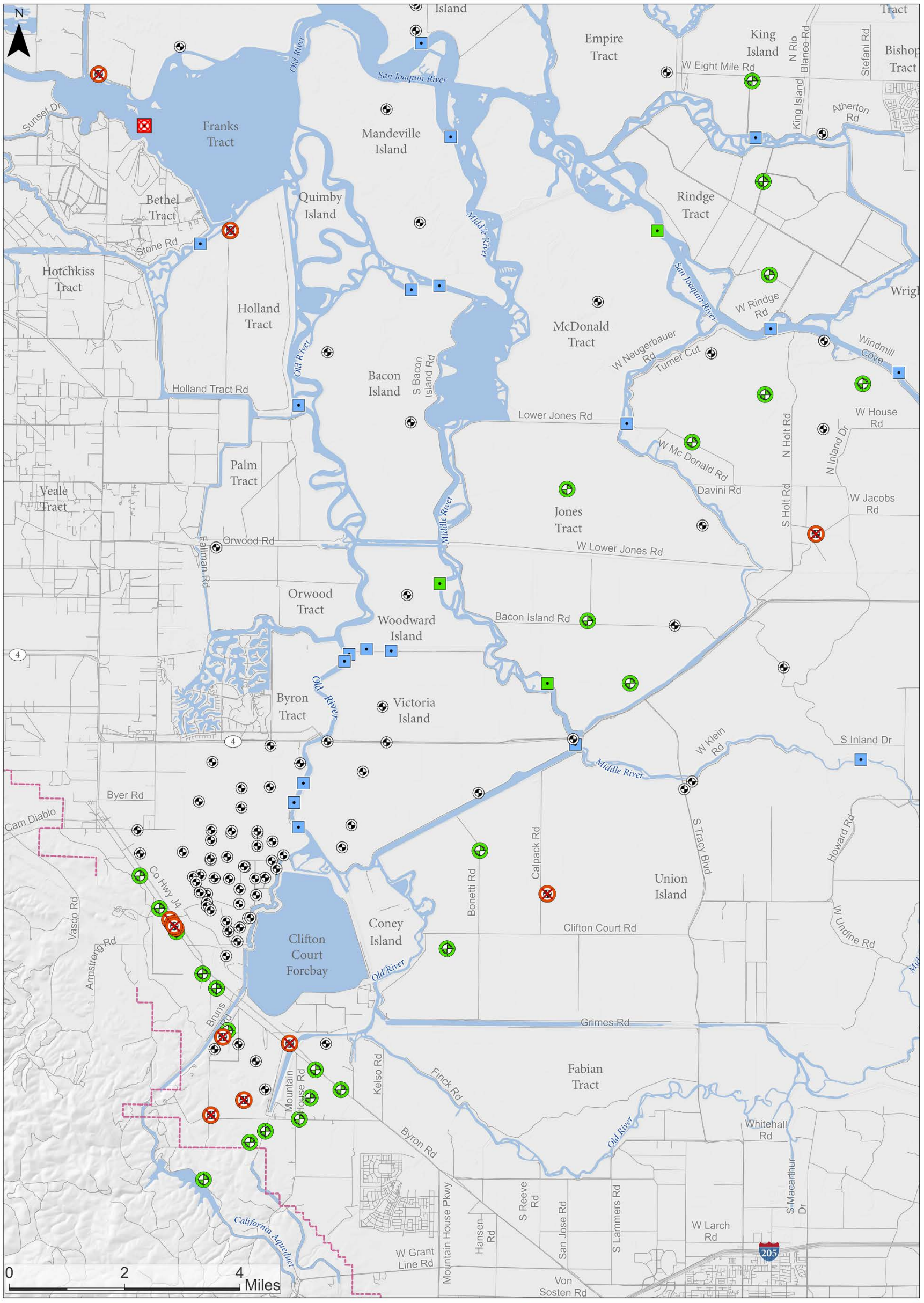
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Holland Tract
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Turner Cut
Windmill Cove
Old River
Bacon Island
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Holland Tract Rd
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W House Rd
N Holt Rd
N Inland Dr
W Mc Donald Rd
Palm Tract
Veale Tract
Davini Rd
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W Jacobs Rd
Middle River
Jones Tract
Orwood Rd
Fallman Rd
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Woodward Island
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Howard Rd
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Vasco Rd
Bonetti Rd
Calpack Rd
Union Island
Clifton Court Forebay
Coney Island
Clifton Court Rd
W Undine Rd
Armstrong Rd
Old River
Bruns Rd
Grimes Rd
Mountain House Rd
Kelso Rd
Finck Rd
Fabian Tract
Byron Rd
Old River
Whitehall Rd
S Macarthur Dr
California Aqueduct
Mountain House Pkwy
Hansen Rd
S Reeve Rd
San Jose Rd
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IS/MND 2019
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Figure 1c
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Environmental Analysis

The following section will evaluate impacts to each CEQA checklist item as it relates to the proposed project changes described in Section 3 of this Addendum.

Aesthetics

Would the project have a substantial adverse effect on a scenic vista?

One of the replacement geotechnical investigation sites has been identified in a location not previously evaluated by the 2020 Final IS/MND. This location is adjacent to the Bethany Reservoir State Recreation Area (SRA) Bike Trail, which is part of the California Aqueduct Bikeway (California Department of Parks and Recreation 2020). This bike path follows the eastern edge of Bethany Reservoir from the parking lot entrance to the Bethany Reservoir SRA southeast of the California Aqueduct. The surrounding vistas include the reservoir, which is a popular location for boating and fishing, assorted State Water Project facilities, and rolling grasslands that support intermittent windmills in the distance along the Altamont Hills. Information collection activities, such as the Proposed Changes, including installation piezometers regularly occur in the Bethany Reservoir area because it is facility that is operated and maintained as part of the State Water Project. Thus, activity associated with the Proposed Changes would be consistent with other like activities visible from the Bike Trail.

While the proposed site near the Bike Trail is the deepest (up to 300 ft) boring proposed, the associated increase in workdays (from up to 13 work days to up to 20 work days) would not result in a change in the significance of the impact because the work is still relatively short in duration and temporary in nature.

Consistent with the analysis in the 2020 Final IS/MND (p. 27), there would be a less than significant impact to scenic vistas, and implementation of Mitigation Measure AES-1 (2020 MMRP, p. 2) would further avoid, minimize and/or reduce potential impacts.

Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

As with the Impact Areas evaluated in the 2020 Final IS/MND, the replacement geotechnical sites would avoid all historical structures, trees or rock outcroppings and would not substantially damage scenic resources during project activities (2020 Final IS/MND, pp. 6-7, 27).

Would the project substantially degrade the existing visual character or quality of public views of the site and its surroundings?

The Proposed Changes would not substantially degrade the existing visual character or quality of the area, scenic resources or its surroundings. Each Impact Area associated with the Proposed Changes has a small project footprint and is temporary by nature, with no permanent structures associated with the Proposed Changes (2020 Final IS/MND, pp. 27–28). Therefore, there would be no substantially adverse effect on scenic vistas, public views or existing visual character of the Study Area.

Consistent with the analysis in the 2020 Final IS/MND (pp. 27-28), there would be a less than significant impact to scenic resources and visual character, and implementation of Mitigation Measure AES-1 (2020 MMRP, p. 2) would further avoid, minimize and/or reduce potential impacts.

Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

The equipment used for the Project does not have substantial reflective properties and there would be no nighttime work associated with the Proposed Changes, and as such there no substantial effect on day or nighttime views in the area (2020 Final IS/MND, p. 28). Consistent with the analysis in the 2020 Final IS/MND (pp. 27-28), there would be no impact to permanent day or nighttime views in the area, and implementation of *Mitigation Measures* MM AES-1 and AES-2 (2020 MMRP, pp. 2-3) would further avoid, minimize and/or reduce the potential for any glare-related impacts.

Conclusion

The conclusion regarding a less than significant impact on Aesthetics from the 2020 Final IS/MND (pp. 26-28) remains unchanged, as the Proposed Changes do not result in any new potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Aesthetics that could result in any new potentially significant impacts.

Agricultural & Forestry

Would the project convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

The Proposed Changes would not convert prime farmland, unique farmland, or farmland of Statewide importance. On-land Impact Areas associated with the Proposed Changes are primarily located on agricultural access roads, public roads and road right of ways. None of the Impact Areas associated with the Proposed Changes are located within agricultural fields, and those Impact areas near agricultural fields would be temporary and would not require a conversion of land use. Consistent with the analysis in the 2020 Final IS/MND (pp. 31-32), there would be no impact to Prime Farmland, Unique Farmland, or Farmland of Statewide Importance convergence, and implementation of Mitigation Measure *AGR-1* (2020 MMRP, p. 3) would further insure no impacts to agricultural resources.

Would the project conflict with existing zoning for agricultural use or a Williamson Act contract?

As with the activities outlined for the Approved Project in the 2020 Final IS/MND, Impact Areas associated with the Proposed Changes would not affect existing zoning for agricultural use or a Williamson Act contract. Consistent with the analysis

in the 2020 Final IS/MND (p. 32), there would be no impact to existing zoning for agricultural use or a Williamson Act, and implementation of Mitigation Measure AGR-1 (2020 Final IS/MND p. 32; 2020 MMRP, p. 3) would further avoid, minimize and/or reduce the potential for impacts.

Would the project conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?

No rezoning would take place as part of the activities in the Proposed Changes. Consistent with the analysis in the 2020 Final IS/MND (p. 32), there would be no impact to existing zoning for forest land, timberland or timberland zoned Timberland Production, and implementation of Mitigation Measure AGR-1 (2020 MMRP, p. 3) would further avoid, minimize and/or reduce the potential for impacts.

Would the project result in the loss of forest land or conversion of forest land to non-forest use?

The Proposed Changes would not result in the loss of forest land or conversion to non-forest use as the project activities do not consist of removal of trees or conversion of any forest land, and the Impact Areas are primarily located on agricultural access roads, public roads and road right of ways. Consistent with the analysis in the 2020 Final IS/MND (p. 32), there would be no impact to loss of forest land, and implementation of Mitigation Measure AGR-1 (2020 MMRP, p. 3) would further avoid, minimize and/or reduce the potential for impacts.

Would the project 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 Proposed Changes would not result in loss or conversion of Farmland to non-agricultural use, or loss or conversion of forest land to non-forest uses, as Proposed Changes do not consist of land conversion or loss. Consistent with the analysis in the 2020 Final IS/MND (pp. 32-33), there would no impact to farmland or forest land conversion, and implementation of Mitigation Measure AGR-1 (2020 MMRP p. 3) would further avoid, minimize and/or reduce the potential for impacts.

Conclusion

The conclusion regarding no impact on Agricultural and Forestry Resources from the 2020 Final IS/MND (pp. 29-33) remains unchanged, as the Proposed Changes do not result in any new potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Agricultural and Forestry Resources that could result in any new potentially significant impacts.

Air Quality

Does the project conflict with or obstruct implementation of the applicable air quality plan?

The Proposed Changes do not involve land development, nor would they induce growth. Consistent with the analysis in the 2020 Final IS/MND (p. 40), the Proposed Changes do not conflict with or obstruct implementation of the air quality plans for the applicable Air Districts, therefore there would be no impact.

Would the project result in a cumulatively considerable net increase of any project region is non-attainment under an applicable federal or state ambient air quality standard?

As described with the activities outlined for the Approved Project in the 2020 IS/MND (p. 40), the Proposed Changes would be temporary in nature and would not include permanent facilities or structures that would generate air pollutant emissions.

The Proposed Changes, which consist of the removal and subsequent replacement of 60 geotechnical investigation sites and a minimal increase in work days only at the two deeper proposed soil investigation sites, have resulted in a net reduction in total investigation sites and consequently total emissions in the Yolo-Solano Air Quality Management District (YSAQMD), which includes Solano and Yolo Counties, and the Bay Area Air Quality Management District (BAAQMD), which includes Contra Costa and Alameda Counties. The Proposed Changes would result in a net increase in sites and total emissions in the Sacramento Metropolitan Air Quality Management District (SMAQMD), and San Joaquin Valley Air Pollution Control District (SJVAPCD) (Table 1).

Table 2: Proposed Changes Per Air Quality Management District.

AQ Management District	Proposed Removal	Proposed Replacement	Net Change per District
BAAQMD	17	13	-4
SMAQMD	17	26	+9
SJVAPCD	5	21	+16
YSAQMD	21	0	-21

Air quality calculations were updated using methods and assumptions recommended by the Air Districts (2020 Final IS/MND, p. 39) to address the changes to each Air District (Table 2; Appendix X) and it was determined that the project with the Proposed Changes would not exceed the established significance thresholds for pollutants including reactive organic gases, nitrogen oxides, PM_{10} and

$PM_{2.5}$ for the Air Quality Management Districts in which there are additional investigation sites.

Consistent with the determination in the 2020 Final IS/MND (p. 43), because the Proposed Changes would be short-term in duration and equipment emissions are below the established significance thresholds for criteria pollutants, the Project with the Proposed Changes would not result in a cumulatively considerable net increase of any criteria pollutant for which the Proposed Project region is non-attainment under an applicable federal or state ambient air quality standard. Therefore, the impact would be less than significant.

Table 3: Updated Total Exhaust Emissions (Pounds per Day) per Air District

Location	Pollutant	BAAQMD Exhaust Emissions	BAAQMD Significance Threshold	SMAQMD Exhaust Emissions	SMAQMD Significance Threshold	SJVAPCD Exhaust Emissions	SJVAPCD Significance Threshold	YSAQMD Exhaust Emissions	YSAQMD Significance Threshold
On-land	ROG	2.2	54	1.8	--	3.1	10 tons/yr	1.0	10 tons/yr
On-land	NO_X	18.1	54	12.2	85	26.5	10 tons/yr	7.3	10 tons/yr
On-land	PM_{10}	0.6	82	0.4	80	1.1	15 tons/yr	0.2	80
On-land	$PM_{2.5}$	0.6	54	0.3	82	1.0	15 tons/yr	0.2	80
Overwater	ROG	1.8	54	5.5	--	6.5	10 tons/yr	0.5	10 tons/yr
Overwater	NO_X	17.7	54	55.5	85	65.6	10 tons/yr	5.0	10 tons/yr
Overwater	PM_{10}	0.6	82	1.9	80	2.3	15 tons/yr	0.5	80
Overwater	$PM_{2.5}$	0.6	54	1.9	82	2.3	15 tons/yr	0.5	80
Combined	ROG	4.0	54	7.3	--	9.6	10 tons/yr	1.5	10 tons/yr
Combined	NO_X	35.8	54	67.7	85	92.1	10 tons/yr	12.3	10 tons/yr
Combined	PM_{10}	1.2	82	2.3	80	3.4	15 tons/yr	0.7	80
Combined	$PM_{2.5}$	1.2	54	2.2	82	3.3	15 tons/yr	0.7	80

Expose sensitive receptors to substantial pollutant concentrations?

The Impact Areas associated with the Proposed Changes are not adjacent to sensitive receptors such as schools or housing developments. In addition, geotechnical investigation activities at each site are short-term in duration and have estimated emissions calculated to be below the threshold of significance established by the Air Districts (Table 3 (above)). Consistent with the determination in the 2020 Final IS/MND (p. 43), there would be a less than significant impact on sensitive receptors by the Proposed Changes, *Mitigation Measure* AIR-1 (2020 MMRP pp. 4-5) would further, avoid, minimize and lessen potential for impacts.

Result in other emissions such adversely affecting a substantial number of people?

The Proposed Changes would not result in odor-causing emissions that would adversely affect a substantial number of people. The Impact Areas associated with the Proposed Changes are small, discrete, and are located away from housing, and while the Impact Area adjacent to the California Aqueduct Bikeway is in a location that is used for recreation, the nature of the Bikeway is such that it is not used for public gathering, but rather as a pathway for activities such as walking, cycling and fishing, which are generally mobile in nature and do not result in gatherings of members of the public. In addition, the equipment used does not generate strong odors, the project activities are short-term in duration and emissions would cease upon completion. Consistent with the analysis in the 2020 Final IS/MND (p. 43), Proposed Changes would not result in odor-causing emissions that would adversely affect a substantial number of people.

Conclusion

The conclusion regarding a less than significant impact on Air Quality from the 2020 Final IS/MND (2020 Final IS/MND, pp. 34-43) remains unchanged, as the Proposed Changes do not result in any new potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Air Quality that could result in any new potentially significant impacts.

Biological Resources

Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game and the U.S. Fish and Wildlife Service?

The Proposed Changes remain within the same Biological Resources Study Area identified within the 2020 Final IS/MND. Utilizing the same methodology described in the Section 3.4.1.1 of the 2020 Final IS/MND (pp. 46-47), a search of available data sources for biological resources was conducted. On January 11, 2021, DWR conducted a review of the California Natural Diversity Database (CNDDB), Sacramento U.S. Fish and Wildlife Service website (USFWS), and the California Native Plant Society (CNPS) on-line Inventory of Rare and Endangered Plants for the following 42 USGS 7.5 minute Quadrangle maps: Gray's Bend, Taylor

Monument, Rio Linda, Davis, Sacramento West, Sacramento East, Saxon, Merritt, Clarksburg, Florin, Dixon, Elk Grove, Dozier, Liberty Island, Courtland, Bruceville, Galt, Lodi North, Thornton, Isleton, Rio Vista, Birds Landing, Antioch North, Jersey Island, Bouldin Island, Terminous, Lodi South, Stockton West, Holt, Woodward Island, Brentwood, Antioch South, Tassajara, Byron Hot Springs, Clifton Court Forebay, Union Island, Lathrop, Tracy, Midway, Livermore, Vernalis, and Altamont (California Department of Fish and Wildlife 2021; California Native Plant Society 2021). This search resulted no change in to the wildlife and plant species lists in Appendix A of the 2020 Final IS/MND.

As discussed in the 2020 Final IS/MND the Study Area provides potentially suitable habitat for 70 special-status wildlife species and 79 special-status plant species (2020 Final IS/MND, p. 48). No new information of substantial importance regarding species status occurrences, including addition of any species not evaluated previously, or assumptions regarding suitable potential habitat in the Study Area were identified in this review effort. Therefore, all the special status species and potential habitat and sensitive biological resources in or adjacent to the Proposed Changes were previously evaluated for potential impact in the 2020 Final IS/MND. Species specific determinations are discussed in detail in section 3.4.2.1 of the 2020 Final IS/MND (pp. 48-133).

Consistent with the analysis in the 2020 Final IS/MND (pp. 48-133), the Proposed Changes, which consist of the removal and subsequent replacement of 60 geotechnical investigation sites and a minimal increase in work days only at the two deeper proposed soil investigation sites, are limited and temporary in nature, vegetation management would be minimal, and implementation of *Mitigation Measures BIO-1-20*, *AES-1 and -2*, *HYD-1* and *HAZ-1-4* (2020 MMRP, pp. 2-3, 5-44 and 50-63) would reduce potential impacts to Biological Resources to less than significant.

Would the project 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 California Department of Fish and Game or the U.S. Fish and Wildlife Service?

The 2020 Final IS/MND identified fifteen sensitive natural communities (2020 IS/MND pp. 133-134), based on the review DWR conducted of the California Natural Diversity Database (CNDDB), Sacramento U.S. Fish and Wildlife Service website (USFWS), and the California Native Plant Society (CNPS) on-line Inventory of Rare and Endangered Plants on January 11, 2021, no new sensitive natural communities were determined to be potentially impacted by the Proposed Changes.

Consistent with the analysis in the 2020 Final IS/MND (pp. 133-134), the Proposed Changes would be limited and temporary in nature, and vegetation management would be minimal, implementation of *Mitigation Measures BIO-1b, -12, -13 and -19* (2020 MMRP, pp. 6, 30-31, 43) would ensure the Proposed Changes would have a less than significant impact on the identified sensitive natural communities.

Would the project have a substantial adverse effect on federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

The Proposed Changes would not have a substantial adverse effect on federally protected wetlands as the Proposed Changes would not subject wetlands to removal, filling, hydrological interruption, or any other means of adverse effects. As stated in the 2020 Final IS/MND (pp. 6-7), evaluation of conditions at each on-land soil investigation Impact Area will be conducted by qualified wetland delineators. If aquatic resources meeting the Corps definition of wetlands are observed within on-land soil investigation sites, those sites would be relocated outside of the boundaries of these aquatic resources. Previously verified pre-jurisdictional determinations would be utilized during mapping and field visits to ensure that the Proposed Project would avoid any areas that, as determined by a wetland specialist, may require a Wetland Delineation to satisfy the Corps' definition of wetlands.

Consistent with the analysis in the 2020 Final IS/MND (pp. 134-135), the Proposed Changes would have no impact on federally protected wetlands and *Mitigation Measures BIO- 1b and -12* (2020 MMRP, pp. 6 and 30) reiterate the avoidance component presented in the project description (2020 Final IS/MND pp. 6-7).

Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

The Proposed Changes would not increase the potential for impacts to any native resident or migratory fish or native wildlife species, corridors, or nursery sites.

Consistent with the analysis in the 2020 Final IS/MND (pp. 135-136), the Proposed Changes are limited in scope and duration, and implementation of *Mitigation Measures AES-2, BIO-1 and -14, and HYD-1* (2020 MMRP, pp. 3, 5-32 and 61-63) would ensure the Proposed Changes would continue to have a less than significant impact on any native resident or migratory fish or native wildlife species, corridors or nursery sites.

Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

The Proposed Changes to the Approved Project are occurring in four of the six counties assessed in the 2020 Final IS/MND: Alameda, Contra Costa, Sacramento, and San Joaquin Counties. The evaluation of policies and ordinances in the 2020 Final IS/MND (p. 136) for the Approved Project remains unchanged.

Consistent with the analysis in the 2020 Final IS/MND (p. 136), the Proposed Changes would have no impact with regard to conflicts with local policies or ordinances protecting biological resources. Implementation of *Mitigation Measures AES-1 and -2, Bio-1 through -20, HYD -1 through -4* (2020 MMRP, pp. 2-3, 5-44, and 61-63) would further avoid, minimize and/or reduce the potential for impacts to biological resources.

Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

The Proposed Changes do not add additional plans for consideration on top of those analyzed in the 2020 Final IS/MND (pp. 136-138). The Proposed Changes would not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional stat habitat conservation plan, as the Proposed Changes would fully avoid any covered species or habitat and wetland resources, ground disturbing effects would be limited and temporary in nature, and vegetation management would be minimal.

Consistent with the analysis in the 2020 Final IS/MND (pp. 136-138), the Proposed Changes would have a less than significant impact with regard to conflicts with any adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state.

habitat conservation plan. Implementation of *Mitigation Measures AES -1 and -2, BIO-1 through 20, HYD-1 through 4* (2020 MMRP, pp. 2-3, 5-44, and 61-63) would further avoid, minimize and/or reduce potential impacts.

Conclusion

The conclusion regarding a less than significant impact, with mitigation, on Biological Resources from the 2020 Final IS/MND (pp. 48-138) remains unchanged, as the Proposed Changes do not result in any new potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Biological Resources that could result in any new potentially significant impacts.

Cultural Resources

The Proposed Changes were evaluated with the same methodology described in Section 3.5.1.2 of the 2020 Final IS/MND (pp. 141-144). DWR reviewed records search results from the California Historical Resources Information System (CHRIS)'s Northwest Information Center (NWIC), Central California Information Center (CCaIC), and North Central Information Center (NCIC), aerial photographs and past topographic maps, and prior cultural resources studies found in both CHRIS search results and past DWR projects relevant to the investigation sites. The Sacramento-San Joaquin Delta is sensitive for both prehistoric and historic-era cultural resources. As such, all proposed soil investigation sites would be surveyed by a qualified archaeologist prior to the start of any ground disturbing activities and only after DWR obtains access to properties (MM CUL-1, 2020 MMRP, p. 44).

Would this project cause a substantial adverse change in the significance of a historical resource pursuant to section 15064.5?

The Proposed Changes would not cause a substantial adverse change in the significance of a historical resource pursuant to CEQA Guidelines section 15064.5 .

Each of the replacement geotechnical investigation sites were assessed using the same criteria as the 2020 Final IS/MND (pp 141-144), which includes Impact Areas consisting of the soil investigation site and a 60-foot radius (120-foot diameter) buffer around the soil investigation site for the staging of equipment and staff. The research sources listed in the preceding paragraph were used to identify previous studies and recorded cultural resources in a .25-mile radius buffer around each Impact Area. No recorded resources were identified within the Impact Areas or within the 0.25-mile buffers for the replacement geotechnical investigation sites, with the exception of historic built-environment resources that would not be impacted by the work. Historic era cultural resources also include levees, railroads, roads, and other built environment structures older than 50 years that are within the Study Area. Due to the limited nature of the activities in the Project and the Proposed Changes, there would be no substantial adverse change to these resources, and there would be no substantial adverse change to important aspects of any levee's or railroad alignment's integrity or characteristics that depends on environmental factors around the feature (specifically categories of setting, feeling, location, and design).

Consistent with the analysis in the 2020 Final IS/MND (pp. 144-146), incorporation of *Mitigation Measures* MM CUL-1, CUL-2, CUL-3, and CUL-4 (2020 MMRP, pp. 44-47) would further reduce potential effects to previously unidentified historical resources to less than significant.

Would this project cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

Consistent with the analysis in the 2020 Final IS/MND (p. 146), the Proposed Changes would not cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines section 15064.5, impact would be less than significant with mitigation incorporated. There are no known previously recorded archaeological resources within the Impact Areas associated with the Proposed Changes. Additionally, Incorporation of mitigation measure MM CUL-1, CUL-2, CUL-3, and CUL-4 (2020 MMRP, pp. 44-47) would further reduce potential impacts to less than significant for any unique archeological resources not currently recorded, would provide training to those that would be present during the soil investigations activities at the locations that have been cleared, and would aid in identification and prevention of substantial impacts to any previously undiscovered unique archaeological resources that may appear during boring and CPT activities.

Would this project disturb any human remains, including those interred outside of formal cemeteries?

No known locations of human remains are located within the Impact areas associated with the Proposed Changes. The Proposed Changes would not disturb any human remains with known locations, including those interred outside of formal cemeteries. Consistent with the analysis in the 2020 Final IS/MND (p. 147), incorporation of *Mitigation Measures* CUL-1 through CUL-4 (2020 MMRP, pp. 44-47)

would ensure that any potential impacts to known and previously undiscovered human remains would be reduced to less than significant.

Conclusion

The conclusion regarding a less than significant impact, with mitigation, on Cultural Resources from the 2020 Final IS/MND (pp. 144-147) remains unchanged, as the Proposed Changes do not result in any new or significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Cultural Resources that could result in any new potentially significant impacts.

Energy

Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

The Proposed Changes, like the sites evaluated in the 2020 Final IS/MND (p. 149) for the Approved Project, would consume energy in the form of gasoline and diesel fuel through the operation of drill rigs, heavy off-road equipment, trucks, and worker traffic. There is no operational energy use associated with the Proposed Changes, and all consumption of energy would be temporary, localized and cease upon completion of the project activities. Additionally, all vehicles would comply with all federal and state efficiency standards. While two of the Impact Areas associated with the Proposed Changes are longer in duration, this change is negated by other Impact Areas that would be shorter in duration, such that the net change is not significant. None of the Impact Areas associated with the Proposed Changes would require the use of new equipment not described in the 2020 Final IS/MND that would constitute the wasteful, inefficient or unnecessary consumption of those resources, and would not conflict with State or local plans for renewable energy or energy efficiency.

Consistent with the analysis in the 2020 Final IS/MND (p. 149), there would be a less than significant impact regarding wasteful, inefficient, or unnecessary consumption of energy resources, and implementation of Mitigation Measure MM GHG-1 (2020 MMRP, pp. 48-49) would further avoid, minimize and/or reduce the potential for impacts.

Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Consistent with the analysis in the 2020 Final IS/MND (p. 149) the Proposed Changes would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency, as Project activities would employ efficient vehicles in compliance with CARB standards, are temporary in nature, and would not include generating or altering an existing energy source.

Conclusion

The conclusion regarding a less than significant impact on Energy from the 2020 Final IS/MND (p. 149) remains unchanged, as the Proposed Changes do not result in any new potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Energy that could result in any new potentially significant impacts.

Geology and Soils

Utilizing the same methodology described in the 2020 Final IS/MND (p. 152), available data provided by California Department of Conservation was used to determine the Proposed Changes are also not located in liquefaction, landslide or Alquist-Priolo Earthquake Fault Zones (California Department of Conservation 2018),

Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

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

The California Geologic Survey has mapped various active and inactive faults in the region. There are several active faults located within or surrounding all four counties overlapping the Study Area: Antioch, Calaveras, Cleveland Hills, Concord, Greenville-Marsh Creek, Hayward, San Andreas, San Joaquin and Sierra Nevada Faults. The southern Impact Areas associated with the Proposed Changes are subject to strong ground motion resulting from earthquakes on nearby faults. However, the footprint of each Impact Area is small and temporary and, even with the increase in work days for the two proposed deeper locations, not anticipated to cause enough ground disturbance to result in strong seismic shaking. Additionally, the limited nature of the Proposed Changes minimizes potential adverse impacts related to ruptures of known earthquake faults. Consistent with the analysis in the 2020 Final IS/MND (p. 152), there would be a less than significant impact as a result of the Proposed Changes, and implementation of *Mitigation Measures* MM AES-1 and MM AGR-1 (2020 MMRP, pp. 2- 3) would further avoid, minimize and/or reduce the potential for impacts.

Strong seismic ground shaking?

As with the Impact Areas evaluated for the 2020 Final IS/MND, Impact Areas associated with the Proposed Changes are in the same general seismic region that was analyzed in the 2020 Final IS/MND (p. 153).The Impact Areas of the Proposed Changes are small, work would be temporary, and, even with the increase in work days for the two proposed deeper locations, not anticipated to cause enough ground disturbance to result in strong seismic shaking. Consistent with the analysis in the 2020 Final IS/MND (p. 152), the Proposed Changes would result in a less than significant impact. Implementation of *Mitigation Measures* MM AES-1 and AGR-1

(2020 MMRP, pp. 2-3) would further avoid, minimize and/or reduce the potential for impacts.

Seismic-related ground failure, including liquefaction?

Consistent with the description of the previously analyzed Study Area (2020 Final IS/MND, p. 153), there is a low to moderate liquefaction potential for the Proposed Changes. Due to the lack of liquification resulting from the 1980 earthquakes on the Greenville-Marsh Creek Fault, and no liquefaction events reported within the vicinity of the Impact Areas associated with the Proposed Changes, as well as the limited footprint of each soil exploration, ground failure, including liquefaction and levee failure, is not expected to occur.

Consistent with the analysis in the 2020 Final IS/MND (p. 153), there would be no impact associated with seismic-related ground failure for the Proposed Changes. Implementation of *Mitigation Measures* MM AES-1 and AGR-1 (2020 MMRP, pp. 2-3) would further avoid, minimize and/or reduce the potential for impacts.

Landslides?

The Impact Areas of the Proposed Changes are in relatively flat areas, which do not have a potential for landslide. The Study Area associated with the Proposed Changes is not located in areas susceptible to landslide risk and there have been no mapped areas of landslide deposits in the vicinity.

Consistent with the analysis in the 2020 Final IS/MND (pp. 153-154), the Proposed Changes would have no impact associated with landslides.

Would the project result in substantial soil erosion or the loss of topsoil?

The footprint of each Impact Area associated with the Proposed Changes is small, temporary, and would not involve significant alterations to the topsoil (only the soil borehole/CPT hole itself would affect topsoil). Consistent with the analysis in the 2020 Final IS/MND (p. 154), there would be a less than significant impact to soil erosion or the loss of topsoil as a result of the Proposed Changes. Implementation of *Mitigation Measures* MM AES-1 and AGR-1 (2020 MMRP, pp. 2-3) would further avoid, minimize and/or reduce the potential for impacts.

Would the project 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?

As described in the 2020 Final IS/MND (p. 154), the suitability of the geologic units for soil investigation was used in the siting of the Proposed Changes, and if the soil is deemed unstable by a geologist during the required reconnaissance site visits (2020 Final IS/MND, p. 154), or at any time thereafter, the Impact Area would be moved to decrease potential of on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. Consistent with the analysis in the 2020 Final IS/MND (p. 154), the Proposed Changes require avoidance of these types of risks/impacts, and as such the Proposed Changes have no impact due to unstable soils or that would result in unstable soils.

Would the project 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?

The Proposed Changes do not include the construction of any structures. Consistent with the analysis in the 2020 Final IS/MND (p. 154), there would be no impact due to expansive soils as a result of the Proposed Changes. Implementation of *Mitigation Measures* MM AES-1 and AGR-1 (2020 MMRP pp. 2-3) would further avoid, minimize and/or reduce the potential for impacts

Conclusion

The conclusion regarding a less than significant impact on Geology and Soils from the 2020 Final IS/MND (pp.152-155) remains unchanged, as the Proposed Changes do not result in any new potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Geology and Soils that could result in any new potentially significant impacts.

Greenhouse Gas Emissions

Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

The GHG emission for the project with the Proposed Changes were calculated using the same methodology as the 2020 Final IS/MND and described in the 2012 DWR Climate Action Plan-Phase I: Greenhouse Gas Emissions Reduction Plan (GGERP). Differences in assumed depths of individual borings between 125 and 200 feet between those that are proposed to be removed and those that are proposed to be replaced resulted in a decrease of 271 working days from the calculation, despite the increase in work days for the two deeper borings proposed. The reduction in work days resulted in a lower amount of GHG emissions than originally calculated for the Approved Project (2020 Final IS/MND, p. 144). GHG emissions for the Proposed Changes have been calculated to be 6049.5 mtCO2e (Attachment D), which is 153.7 mtCO2e less than the calculated emissions expected for the Approved Project. Therefore, the Project with the Proposed Changes remains consistent with the GGERP. As the lead agency, DWR has determined that the Proposed Changes' incremental contribution to the cumulative impact of increasing atmospheric levels of GHGs is less than cumulatively considerable. Consistent with the analysis in the 2020 Final IS/MND (p. 157), the Project with the Proposed Changes would have a less than significant impact on greenhouse gas emissions.

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

The Proposed Changes would not conflict with an applicable plan, policy or regulation regarding GHG emission. In fact, the Proposed Changes have been evaluated for GHG emissions and are determined to be consistent with DWR's GGERP to reduce emissions. In addition, the project with the Proposed Changes has lower GHG emissions from what the Approved Project originally calculated.

Consistent with the analysis in the 2020 Final IS/MND (pp. 158-159), implementation of Mitigation Measure MM *GHG-1* would reduce potential impacts of the Proposed Changes to less than significant (2020 MMRP, pp. 48-49).

Conclusion

The conclusion regarding a less than significant impact, with mitigation, on Greenhouse Gas Emissions from the 2020 Final IS/MND (pp. 157-159) remains unchanged, as the Proposed Changes do not result in any new potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Greenhouse Gas Emissions that could result in any new potentially significant impacts.

Hazards & Hazardous Materials

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

The Proposed Changes, including the increased depth and work days proposed for two locations, would not require extensive or on-going use of acutely hazardous materials or substances, and as described in the 2020 Final ISMND (p. 162) would require limited transport, storage, use, and disposal of hazardous materials. In addition, a Hazardous Materials Plan and Spill Prevention and Response Plan has been developed and none of the Proposed Changes would generate new sources of hazardous materials.

Consistent with the analysis in the 2020 Final IS/MND (pp. 162-165), the potential for impacts due to hazards and hazardous materials for the Proposed Changes would be reduced to less than significant with the incorporation of *Mitigation Measures* BIO-1a, MM-HAZ 1 and HAZ 2 (2020 MMRP, pp. 5, 50-59).

Create a significant hazard to the public or the environment through reasonably foreseeable upset and/or accident conditions involving the release of hazardous materials into the environment?

The Proposed Changes, including the increased depth and work days proposed for two locations, would not create a significant hazard to the public or the environment as the associated activities would have the same requirements for responding to accidental releases as described in the 2020 Final IS/MND (p. 165). Consistent with the analysis in the 2020 Final IS/MND (p. 165), with the incorporation of *Mitigation Measures HAZ-1 through -3* (2020 MMRP, pp. 50-59) impacts of the Proposed Changes would be reduced to less than significant.

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 within one-quarter mile of an Impact Areas associated with the Proposed Changes. Therefore, no impacts to existing or proposed schools are anticipated to occur. Consistent with the analysis in the 2020 Final IS/MND (pp. 165-166), there would be no impact on regarding hazardous emissions or waste within one-quarter mile of an existing or proposed school. Implementation of *Mitigation*

Measures HAZ-1 and -2, and PUB-1 (2020 MMRP, pp. 50-59 and 63-64) would further avoid, minimize and/or reduce the potential for impacts.

Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would it create a significant hazard to the public or the environment?

The presence of hazardous materials and sites were evaluated, and it was determined that the Impact Areas associated with the Proposed Changes are not included on any lists of hazardous materials sites maintained by the State Water Resources Control Board or the Department of Toxic Substances Control that are compiled pursuant to Government Code Section 65962.5 (Department of Toxic Substances Control 2020). Consistent with the analysis in the 2020 Final IS/MND (p. 166), the Proposed Changes would not create a significant hazard to the public or the environment and therefore no impacts would occur.

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?

Some of the Impact Areas associated with the Proposed Changes are within 2 miles of Byron Airport and thus the Contra Costa County Airport Land Use Compatibility Plan ("the Plan")- (Contra Costa County Airport Land Use Commission 2020) was considered in the evaluation. The Plan, updated by the Contra Costa Land Use Commission on September 1, 2020, was reviewed for any changes that could alter the determinations within the 2020 Final IS/MND (p. 167) regarding safety hazards or excessive noise for project activities planned near the Byron Airport.

Twelve of the newly proposed site locations are within compatibility zones B1, B2, C1 and D, as described in the Plan: Chapter 4 Byron Airport Policies (Contra Costa County Airport Land Use Commission 2020). These zones include the following height limitations: Zone B1 less than or equal to 35 feet, Zone B2 less than or equal to 70 feet, Zones C1 and D less than or equal to 100 feet. The drill rig towers that would be used for the project are between 20 and 30 feet in height, and therefore do not violate the height restrictions outlined in the Plan. All other considerations regarding potential hazards associated with Airport land use are consistent with those described in the 2020 Final IS/MND (p. 167). Consistent with the analysis in the 2020 Final IS/MND (p. 166), there would be a less than significant impact on safety hazard associated with airport land use as a result of the Proposed Changes. Implementation of *Mitigation Measures AES-2, NOI-1 and PUB 1* (2020 MMRP, pp. 3, and 63-64) would further avoid, minimize and/or reduce the potential for impacts.

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

Emergency response routes and plans would not be impacted by the Proposed Changes. Project activities for the Proposed Changes would be of limited size and duration. Additionally, the two proposed deeper boring locations that would require an increase in workdays would not require any public road lane closures. Consistent with the analysis in the 2020 Final IS/MND (p. 167), the Proposed Changes would

result in a less than significant impact on the implementation of or physically interfering with an adopted emergency response plan or evacuation plan. Implementation of Mitigation Measure *PUB-1* (2020 MMRP, pp. 63- 64) would further avoid, minimize and/or reduce the potential for impacts.

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

The Proposed Changes would not expose people or structures to significant risk of loss, injury or death involving wildland fires. As stated in the 2020 Final IS/MND (p. 167) CalFire has designated the Study Area, which includes the Impact Areas associated with the Proposed Changes, as being near a moderate or high threat of fire. However, the Proposed Changes are not likely to cause any risk of fire due to the nature of the activity. Consistent with the analysis in the 2020 Final IS/MND (p. 167), the Proposed Changes would result in less than significant impacts. Implementation of *Mitigation Measures BIO-1 and HAZ-4* (2020 MMRP, pp. 5-13 and 60) would further avoid, minimize and/or reduce the potential for impacts.

Conclusion

The conclusion regarding a less than significant impact, with mitigation, on Hazards and Hazardous Materials from the 2020 Final IS/MND (pp.162-167) remains unchanged, as the Proposed Changes do not result in any new potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Hazards and Hazardous Materials that could result in any new potentially significant impacts.

Hydrology and Water Quality

Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?

The Proposed Changes would follow the same project activities outlined in the 2020 Final IS/MND and would not introduce any potential new impacts pertaining to hydrology and water quality. There are no net increases in the combined total number of overwater borings, on-land borings, or CPTs. The Impact Areas are all within the Study Area evaluated in section 3.10, Hydrology and Water Quality, of the 2020 Final IS/MND (pp. 168-172), and, therefore, no new waterways or watersheds need to be evaluated as a result of the Proposed Changes.

Consistent with the analysis in the 2020 Final IS/MND (pp. 169-170), there would be no impact regarding violation of water quality standards or waste discharge requirements or degrading surface or ground water quality due to the Proposed Changes being temporary and minimal in footprint, and DWR obtaining and complying with a Clean Water Act 401 Water Quality Certification from the State Water Resources Control Board. Implementation of *Mitigation Measures HYD-1, BIO-2, AES-1, AGR-1, HAZ-1 and -2* (2020 MMRP pp. 2-3, 13-16, 50-59) would further avoid, minimize and/or reduce the potential for impacts.

Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Proposed Project may impede sustainable groundwater management of the basin?

The Proposed Changes would not introduce any potential new impacts pertaining to groundwater. The Proposed Changes would not decrease groundwater supplies or interfere substantially with groundwater recharge because no water would be pumped from any on- or off-site groundwater sources for the Proposed Changes, and no changes would be made to the permeability of surfaces as a result of the work. Consistent with the analysis in the 2020 Final IS/MND (p. 171), the Proposed changes would have no impact on groundwater supplies, recharge or sustainable management.

Would the project 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:

Result in substantial erosion or siltation on- or off-site?

The Proposed Changes would not introduce any potential new impacts pertaining to erosion or siltation -on or -off site. Ground disturbance due to the Proposed Changes only includes the boreholes or CPT holes, and is temporary with minimal ground disturbance. Over-water borings would be separated from the water, fully contained within the casing. Therefore, it would not result in substantial on- or off-site erosion or siltation.

Consistent with the analysis in the 2020 Final IS/MND (p. 171), the Proposed Changes would have no impact associated with substantial erosion or siltation. Implementation of Mitigation Measure *AES-1 and MM AGR-1* would further avoid, minimize and/or reduce the potential for impacts (2020 MMRP, pp. 2 -3).

Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite?

The Proposed Changes would not introduce any potential new impacts pertaining to increasing the rate of surface runoff. Soil investigation activities are minimal in ground disturbance area and are temporary in nature. Soil investigation activities would not require the addition of significant areas of impervious surface therefore no impacts to rates or amount of runoff would occur. Consistent with the analysis in the 2020 Final IS/MND (p. 171), the Proposed Changes would have no impact on the rate or amount of surface runoff in a manner which would result in on- or off-site flooding.

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?

The Proposed Changes would not introduce any potential new impacts pertaining to contributions of runoff water. The Proposed Project would not create or contribute to runoff water or provide additional sources of polluted runoff because no additional sources runoff would be generated by the Proposed Project. Bentonite drilling fluids are considered to have very little toxicity and in compliance with California

regulations for Water Well Standards, the drilling fluids would be fully contained within the casing.

Consistent with the analysis in the 2020 Final IS/MND (pp.171-172), the Proposed Changes would have no impact on runoff water or drainage capacity. Implementation of Mitigation Measure *HAZ-1 through 2 and HYD-1,* would further avoid, minimize, and/or reduce potential for impacts (2020 MMRP, pp. 50-52 and 61-63).

Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to Proposed Project inundation?

The Proposed Changes reside in the same study areas outlined in the 2020 Final IS/MND. Consistent with the analysis in the 2020 Final IS/MND (p. 172), the Proposed Changes would have no impact as they are not located within a tsunami or seiche zone and would not affect the existing risk of flood hazard, seiche, tsunami or release of pollutants and would not increase populations located with an area subject to these risks.

Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

The Proposed Changes would not introduce any potential new conflicts pertaining to implementation of a water quality control plan or sustainable groundwater management plan. The Proposed Changes would not conflict with or obstruct implementation of a water quality control plan, including the Bay-Delta Water Quality Control Plan or a sustainable groundwater management plan because Proposed Project activities are limited in scope and duration. Additionally, DWR would obtain and comply with a 401 Water Quality Certification from the State Water Resources Control Board to ensure compliance with all applicable water quality standards, limitations, and restrictions.

Consistent with the analysis in the 2020 Final IS/MND (p. 172), the Proposed Change would have a less than significant impact related to implementation of a water quality control plan or sustainable groundwater management plan. Implementation of *Mitigation Measures HYD-1, HAZ-1, and 2* would further avoid, minimize and/or reduce the potential for impacts (2020 MMRP, pp. 50-52 and 61-63).

Conclusion

The conclusion regarding a less than significant impact on Hydrology and Water Quality from the 2020 Final IS/MND (pp. 169-172) remains unchanged, as the Proposed Changes do not result in any new potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Hydrology and Water Quality that could result in any new potentially significant impacts.

Land Use and Planning

Physically divide an established community?

The Proposed Changes would be temporary in nature and limited to soil investigations which would not alter or change the existing land use and would not divide an established community. Consistent with the analysis in the 2020 Final IS/MND (p. 173), the Proposed Changes would have no impact regarding dividing established communities.

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

The Proposed Changes would be temporary and limited to information collection, which would not alter or change existing land uses or conflict with any land use plans, policies or regulations, such as the Land Use and Resource Management Plan for the Primary Zone of the Delta. Consistent with the analysis in the 2020 Final IS/MND (p. 173), the Proposed Changes would have no impact regarding conflicts with any land use plan, policy or regulation.

Conclusion

The conclusion regarding No Impact on Land Use from the 2020 Final IS/MND remains unchanged, as the Proposed Changes do not result in any new potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Land Use that could result in any new potentially significant impacts.

Mineral Resources

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?

None of the Proposed Changes are located within known or mapped mineral resource areas, and as discussed in the 2020 Final IS/MND (p. 175), project activities are temporary and would be returned to, as close to, pre-activity conditions as possible and would not interrupt existing or potential future mining operations or result in loss of available known significant mineral resources. Consistent with the analysis in the 2020 Final IS/MND (p. 175), the Proposed Changes would have a less than significant impact on known mineral resources.

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?

There are known natural gas regions in Sacramento and San Joaquin County that have the potential to overlap with the Impact Areas for the Proposed Changes. However, the activities of the Proposed Changes consist of soil investigations that would result in a minimal disturbance area for each soil investigation site and site would be returned to as close to pre-activity conditions as possible. Consistent with the analysis in the 2020 Final IS/MND (p. 165), the Proposed Changes would have a less than significant impact on the availability of mineral resources delineated on a local general plan, specific plan, or other land use plan.

Conclusion

The conclusion regarding no impact on Mineral Resources from the 2020 Final IS/MND (p. 175) remains unchanged, as the Proposed Changes do not result in any new potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Mineral Resources that could result in any new potentially significant impacts.

Noise

Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project excess of standards established in the local general plan or noise ordinance, or in other applicable local, state, or federal standards?

The Proposed Changes would employ the same equipment evaluated in the 2020 Final IS/MND (p. 180) with the exception of the addition of rock coring samplers at the two proposed deeper borings in Alameda County. The noise emitted by the sampling method would be similar to what was previously described (2020 Final IS/MND, pp. 13-14). However, unlike the standard penetration test (SPT) sampling, the rock coring sampling would be continuous and not include driven samples. The rock coring sampling's loudest noise emitted would be no louder or equal to that emitted by a truck-mounted CPT rig (120dBA), a drill rig sampling (79-84 dBA, at 50 feet from the source) or by the noise produced from a nearby Highway (HWY), in this case Byron HWY or Interstate 5 (USDOT 2006). In addition, rock core sampling would be temporary in duration and noise would be localized to the two Impact Areas. Therefore, the Proposed Change would not result in excessive ground borne vibration or noise levels.

As addressed and evaluated in the 2020 Final IS/MND (pp. 179-180), the Proposed Changes would have short-term localized noise, small vibrations and would not expose people residing or working in the vicinity to excessive noise levels. Noise from the geotechnical drilling equipment is generally comparable to the noise produced by diesel trucks. While equipment is working, ambient noise levels would increase slightly, but the Proposed Changes would still result in less than significant impacts, as Project activity noises are consistent with ambient noise of surrounding existing activities, project activities would not occur within 100 ft of potential sensitive receptors, and work would be limited to daytime hours. Consistent with the analysis in the 2020 Final IS/MND (p. 179-180), the Proposed Changes would have a less than significant impact on ambient noise levels in excess of applicable local, State, or federal standards. Implementation of *Mitigation Measures AES-1b and NOI-1* (2020 MMRP, pp. 3- 63) would further avoid, minimize and/or reduce the potential for impacts.

Generation of excessive ground borne vibration or ground borne noise levels?

The Proposed Changes would employ the same equipment evaluated in the 2020 Final IS/MND (p. 180) with the exception of the addition of rock coring samplers at the two proposed deeper borings in Alameda County. As described above, impacts due to the use of rock coring samplers are consistent with those described for other

sampling techniques in the 2020 Final IS/MND (pp. 13-14). The vibrations from on-land truck mounted drill rigs and CPT rigs are minimal and vibrations are typically not detectable by people outside of the immediate area. Vibrations from over-water soil boring explorations are minimal. Consistent with the analysis in the 2020 Final IS/MND (p. 180), the Proposed Changes would have a less than significant impact on the generation of ground borne vibration or noise levels.

For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

The Proposed Changes include Impact Areas within the Byron Airport Land Use Plan; however, consistent with the evaluation in the 2020 Final IS/MND (p. 180), project noise would not be excessive. Consistent with the analysis in the 2020 Final IS/MND (p. 180), the Proposed Changes would have a less than significant impact regarding excessive noise levels within the vicinity of airports or airport land use plans.

Conclusion

The conclusion regarding a less than significant impact on Noise from the 2020 Final IS/MND (pp.179-180) remains unchanged, as the Proposed Changes do not result in any new potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Noise that could result in any new potentially significant impacts.

Population and Housing

Would the project 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 Changes do not include proposing new homes or businesses, nor would it require adding roads or other infrastructure in association with the activities. Furthermore, the Project activities would be short in duration. Consistent with the analysis in the 2020 Final IS/MND (p. 183), the Proposed Changes would have no impact on population growth in the area, either directly or indirectly.

Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

The Proposed Changes, consistent with the activities evaluated in the 2020 Final IS/MND (p. 183), would be temporary, discreet work that has a small footprint at each Impact Area and would not require infrastructure, and. mostly located on or adjacent to roads and road shoulders in disturbed areas. Consistent with the analysis in the 2020 Final IS/MND (p. 183), the Proposed Changes would have no impact on displacement of existing people or housing.

Conclusion

The conclusion regarding no impact on Population and Housing from the 2020 Final IS/MND (p.183) remains unchanged, as the Proposed Changes do not result in any new potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Population and Housing that could result in any new potentially significant impacts.

Public Services

Would the project 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 including:

Fire protection?

The Proposed Changes would not introduce any potential new impacts pertaining to fire protection, as activities are minor (requiring limited amounts of additional people and vehicles on site) and short in duration. Proposed Changes would not increase the demand on fire protection services. Emergency response routes and plans would not be impacted by soil exploration activities at each site. While a small subset of proposed geotechnical investigation sites along Highway 160 may require flaggers or temporary lane closures, the Proposed Changes would not require any road closures. Additionally, the two proposed deeper locations that would require an increase in workdays are would not require any public road lane closures. The Proposed Changes would not significantly impair or interfere with emergency access, including any emergency response or evacuation routes. service ratios, response times, and other performance objectives would not be significantly impacted during soil exploration activities as it relates to fire protection.

Consistent with the analysis in the 2020 Final IS/MND (p. 187), the Proposed Changes would have a less than significant impact to fire protection. Implementation of *Mitigation Measures PUB-1 and TRANS-1* would further avoid, minimize and/or reduce the potential for impacts (2020 MMRP, pp. 63-66).

Police Protection?

The Proposed Changes would not introduce any potential new impacts pertaining to police protection, as activities are minor (requiring limited amounts of additional people and vehicles on site) and short in duration. Proposed Changes would not increase the demand on police services. Emergency response routes and plans would not be impacted by soil exploration activities at each site. While a small subset of proposed geotechnical investigation sites along Highway 160 may require flaggers or temporary lane closures, the Proposed Changes would not require any road closures. Additionally, the two proposed deeper locations that would require an increase in workdays are would not require and public road lane closures. The Proposed Changes would not significantly impair or interfere with emergency access, including any emergency response or evacuation routes. service ratios,

response times, and other performance objectives would not be significantly impacted during soil exploration activities as it relates to police protection.

Consistent with the analysis in the 2020 Final IS/MND (pp. 187-188), the Proposed Changes would have no impact on police protection. Implementation of *Mitigation Measures PUB-1 and TRANS-1* would further avoid, minimize and/or reduce the potential for impacts (2020 MMRP, pp. 63-66).

Schools?

The Proposed Changes would not introduce any potential new impacts pertaining to schools as activities are minor and short in duration and would not impact service ratios or any other performance objective for schools within the Proposed Project area. Additionally, as discussed above in the Population and Housing Section, soil exploration activities would not induce any population growth that would necessitate building new schools. Consistent with the analysis in the 2020 Final IS/MND (p. 188), the Proposed Changes would have no impact on the need for new or physically altered schools.

Parks?

The Proposed Changes would not introduce any potential new impacts pertaining to parks. While some Proposed Changes include adding soil investigation sites that occur within or in close proximity to parks, wildlife areas, ecological reserves, and open spaces, drilling locations are mostly located on or adjacent to roads and road shoulders in disturbed areas, and would only require limited amounts people and vehicles at each site. Soil exploration activities are minor and short in duration, therefore disturbances to these areas would be minimal. Consistent with the analysis in the 2020 Final IS/MND (p. 188), the Proposed Changes would have no impact on the need for new or physically altered parks.

Other public facilities?

The Proposed Changes would not introduce any potential new impacts pertaining to public facilities, as activities are minor and occurring over a short duration of time, service ratios and other performance objectives would not be impacted during soil exploration activities as it relates to other public facilities, including those such as hospitals and libraries. Proposed Changes would not increase the demand on public facilities, either due to an increased worker population or due to Proposed Project-related hazards. Consistent with the analysis in the 2020 Final IS/MND (p. 188), the Proposed Changes would have no impact on the need for new or physically altered public facilities.

Conclusion

The conclusion regarding a less than significant impact on Public Services from the 2020 Final IS/MND remains unchanged, as the Proposed Changes do not result in any new potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Public Services that could result in any new potentially significant impacts.

Recreation

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?

One of the Impact Areas associated with the Proposed Changes, has been identified in a recreation location not previously evaluated by the 2020 Final IS/MND. This location is adjacent to the Bethany Reservoir State Recreation Area (SRA) Bike Trail, which is part of the California Aqueduct Bikeway (CDPR 2020). This bike path follows the eastern edge of Bethany Reservoir from the parking lot entrance to the Bethany Reservoir SRA southeast of the California Aqueduct. The Bethany Reservoir SRA is a popular location for boating and fishing, and the Bethany Reservoir State Recreation Area (SRA) Bike Trail is used for recreation by both cyclists as well as pedestrians. The Impact Area adjacent to the trail would not prevent current trail users from accessing the trail, nor increase use of the trail, Additional recreation opportunities in the vicinity of Impact Areas associated with the Proposed Changes are similar to those described in the 2020 Final IS/MND (p. 190). The Proposed Changes are short in duration and small in size and would not result in the increase in use of use of existing neighborhood and regional parks or other recreational facilities. Consistent with the analysis in the 2020 Final IS/MND (p. 189-190), the Proposed Changes would have no impact on the increased use of parks or recreational facilities.

Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?

The Proposed Changes do not include construction or expansion of recreational facilities. Consistent with the analysis in the 2020 Final IS/MND (p. 190), the Proposed Changes would have no impact on the construction or expansion of recreational facilities.

Conclusion

The conclusion regarding no impact on Recreational resources from the 2020 Final IS/MND (pp. 189-190) remains unchanged, as the Proposed Changes do not result in any new potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Recreational resources that could result in any new potentially significant impacts.

Transportation

Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

The Proposed Changes would follow the same project activities outlined in the 2020 Final IS/MND (p. 192), activities are temporary in nature and would not permanently alter the circulation system, including transit, and pedestrian facilities. During operation of the drilling equipment there would be other vehicles on site which may delay traffic or cause traffic congestion. However, temporary congestion and/or lane

closures would not conflict with any applicable plans, programs, ordinances, or policies. Consistent with the analysis in the 2020 Final IS/MND (pp. 192-193), the Proposed Changes would have a less than significant impact with regard to conflicts with programs, plans, ordinances or policies addressing the circulation system. Implementation of *BIO-1, GHG-1, and TRANS-1* would further ensure Proposed Changes avoid, minimize and/or reduce the potential for impacts (2020 MMRP, pp. 5-13, 48- 49, 65-66).

Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3 subdivision (b)?

The Proposed Changes would follow the same project activities outlined in the 2020 Final IS/MND, activities are temporary in nature and are not considered a "land use project" or "transportation project", and therefore would not alter the land use and subsequently generate additional sustained amounts of VMT. Section 15064.3, subdivision (a), states, "For the purposes of this section, 'vehicle miles traveled'
refers to the amount and distance of automobile travel attributable to a project. Soil exploration activities would continue to equate to only a limited number of trips per day at any specific soil investigation location while field activities are occurring. Because of this small number of trips and the temporary nature of the activity, the Proposed Changes would not result in a significant increase in VMT. Both DWR and the counties in which the soil explorations are located have not yet elected to be governed by the VMT provision of Section 15064.3, so there is currently no VMT standard to compare VMTs of the Approved Project or Proposed Changes. Consistent with the analysis in the 2020 Final IS/MND (pp. 193-194), the Proposed Changes would have no impact with regard to with CEQA Guidelines section 15064.3 subdivision (b).

Would the project substantially increase hazards due to geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

The Proposed Changes would follow the same project activities outlined in the 2020 Final IS/MND, activities would not include any changes to the existing roadway. No sharp curves, dangerous intersection, or incompatible uses would result from this Proposed Change. Consistent with the analysis in the 2020 Final IS/MND (p. 194), the Proposed Changes would have no impact on hazards due to geometric design features or incompatible uses.

Would the project result in inadequate emergency access?

The Proposed Changes would follow the same project activities outlined in the 2020 Final IS/MND, as traffic delays may occur due to soil investigation related activities. The Proposed Changes would not close access to any access roads and would not result in the redesign or alteration of any public roadways, nor would emergency access be blocked. Consistent with the analysis in the 2020 Final IS/MND (pp. 192-194), the Proposed Changes would have a less than significant impact to emergency access. Implementation of *Mitigation Measures HAZ-3, GHG-1, TRANS-*

1 and 2 would further avoid, minimize and/or reduce the potential for impacts (2020 MMRP, pp. 59, 48-49 and 65-66).

Conclusion

The conclusion regarding a less than significant impact on Transportation from the 2020 Final IS/MND remains unchanged, as the Proposed Changes do not result in any new potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Transportation that could result in any new potentially significant impacts.

Tribal Cultural Resources

Would the Proposed Project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is?

a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code 5020.1 (k), or

b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resources Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

As discussed in Section 3.18.1.2 of the 2020 Final IS/MND (pp. 198-201) Tribal consultation was conducted to support the identification of Tribal Cultural Resources in the Study Area. AB 52 consultation is required “prior to release of the ND, MND, or EIR.” AB 52 Consultation started on Summer of 2019 and closed late spring 2020 (prior to the July 9, 2020 approval of the project). However, Tribal coordination has continued through implementation of adopted *Mitigation Measures*.

Tribal coordination with all AB-52 Tribes and other Tribes consulting under DWR’s Tribal Engagement Policy has been on-going regarding implementation of the adopted *Mitigation Measures*. Thus, through this established coordination process all coordinating Tribes have already been informed of the Proposed Changes and offered an opportunity to conduct a preliminary review of the Proposed Changes. Based on Tribal input from the preliminary review, some of the locations of the Proposed Changes were modified prior to the finalization of this analysis in order to avoid areas of concern identified in Tribal records. Coordinating Tribes would also have opportunities for further coordination on the Proposed Changes through the implementation of *Mitigation Measures CUL-1- 4* (2020 MMRP, pp. 44-47). Consistent with the analysis in the 2020 Final IS/MND (pp. 201-202), implementation

of *Mitigation Measures CUL-1- 4* (2020 MMRP, pp. 44-47) would reduce potential impacts of the Proposed Changes to less than significant.

Conclusion

The conclusion regarding a less than significant impact, with mitigation, on Tribal Cultural Resources from the 2020 Final IS/MND remains unchanged, as the Proposed Changes do not result in any new or significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Tribal Cultural Resources during this review for the Proposed Changes.

Utilities and Service Systems

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

The Proposed Changes would have no impact on utilities and service systems, wastewater systems, power, gas or telecommunications, due to the minor and temporary nature of the soil exploration project activities. Consistent with the analysis in the 2020 Final IS/MND (p. 206), the Proposed Changes would have no impact on utilities and service systems. Implementation of Mitigation Measure *UTI-1* (2020 MMRP, p. 66) would further avoid, minimize and/or reduce the potential for impacts on utilities and service systems.

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

Due to the minor and temporary nature of the soil exploration activities, the Proposed Changes would not change the availability of existing water supplies. Consistent with the analysis in the 2020 Final IS/MND (p. 206), the Proposed Changes would have no impact on existing water supplies available to serve the project.

Result in a determination by the wastewater treatment provider that serves or may serve the Proposed Project that it has adequate capacity to serve the Proposed Project's Proposed Projected demand, in addition to the provider's existing commitments?

The Proposed Changes are minor and temporary and would not impact the service of wastewater treatment providers in the Study Area, and Consistent with the analysis in the 2020 Final IS/MND (pp. 206-207), the Proposed Changes would have no impact on the a determination by the wastewater treatment providers for inadequate capacity.

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?

Consistent with the analysis in the 2020 Final IS/MND (p. 207), the Proposed Changes would have no impact on the generation of 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 statutes and regulations related to solid waste?

Consistent with the analysis in the 2020 Final IS/MND (p. 207), the Proposed Changes would have no impact on compliance with federal, state, and local management and reduction statuses and regulations related to solid waste.

Conclusion

The conclusion regarding no impact on Utilities and Service Systems from the 2020 Final IS/MND (pp. 206-207) remains unchanged, as the Proposed Changes do not result in any new potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Utilities and Service Systems that could result in any new potentially significant impacts.

Wildfire

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

The Impact areas associated with the Proposed Changes, are similar to the locations evaluated in the 2020 Final IS/MND (p. 209), and would not impact public roads or highways, no complete road closures would take place, and soil investigation activities would not result in emergency vehicles or law enforcement delays. Additionally, safety and emergency response services would be covered in the Proposed Project's Job Hazard Assessment daily to ensure safe mobility while on the Proposed Project site and evacuation if necessary. The Proposed Project work would not hinder Contra Costa or Sacramento counties' ability to implement their Community Wildfire Protection Plans. Consistent with the analysis in the 2020 Final IS/MND (pp. 209-210), the Proposed Changes would have a less than significant impact on an adopted emergency response plan or emergency evacuation plan. Implementation of *Mitigation Measures* MM- HAZ-2 and PUB-1 (2020 MMRP, pp. 53-59 and 63- 64) would further avoid, minimize and/or reduce the potential for impacts.

Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose Proposed Project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?

Consistent with the 2020 Final IS/MND (p. 209), some Impact Areas associated with the Proposed Changes may be located in tall, dry grasses where the machinery and vehicles actively working have the potential to exacerbate wildfires. However, the amount of locations in these potential areas is not increased significantly with the Proposed Changes. Consistent with the analysis in the 2020 Final IS/MND (p. 210), implementation of Mitigation Measure *PUB-1* (2020 MMRP, pp. 63-64), which would

include county specific emergency response considerations, would reduce the potential impacts of the Proposed Changes to less than significant.

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?

Consistent with the analysis in the 2020 Final IS/MND (p. 210), the Proposed Changes would have no impact on the installation or maintenance of associated infrastructure (roads, fuel breaks, emergency water sources, powerlines or other utilities).

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 Proposed Changes would not alter the current runoff regime and drainage of the Impact Areas, nor would it impact people or structures in a way that could pose significant risks through downslope or downstream flooding or landslides as a result of runoff, post-fire slope instability, or drainage changes. Consistent with the analysis in the 2020 Final IS/MND (p. 210), the Proposed Changes would have no impact as a result of runoff, post-fire slope instability, or drainage changes.

Conclusion

The conclusion regarding a less than significant impact, with mitigation, on Wildfire from the 2020 Final IS/MND (pp. 209-210) remains unchanged, as the Proposed Changes do not result in any new potentially significant impacts. Additionally, no changes in circumstance or new information of substantial importance have been identified for Wildfire that could result in any potentially significant impacts.

Mandatory Findings of Significance

The Mandatory Findings of Significance conclusion of a less-than-significant impact, with mitigation, from the 2020 Final IS/MND remains unchanged, as the Proposed Changes do not result in any new potentially significant impacts, discussed in more detail in Section 5. Additionally, no changes in circumstance or new information of substantial importance have been identified for the Mandatory Findings of Significance that could result in any potentially significant impacts.

4 Environmental Determination

In support of the consideration of the Proposed Changes to the Approved Project, this Addendum was prepared to evaluate the criteria set forth in Public Resources Code section 21166 and CEQA Guidelines sections 15162 and 15164, as interpreted in *Friends I*, *supra*, 1 Cal.5th 937, and *Friends II*, *supra*, 11 Cal.App.5th 596. An addendum is an appropriate subsequent document to a previously adopted MND when some changes to a project are necessary, but those changes do not create new potentially significant environmental impacts that warrant major revisions to the previous document (CEQA Guidelines §§ 15162(a)(1), 15164(a); *Friends II*, 11 Cal.App.5th at pp.

607-608). An addendum is also appropriate when circumstances surrounding a project have not substantially changed and when no new information of substantial importance has been uncovered that indicates the project could create new potentially significant impacts.

Substantial evidence presented in this Addendum demonstrates that the proposed Project Changes, described and analyzed above, do not create any new potentially significant impacts. DWR finds no substantial evidence to the contrary. Nor are there any new circumstances or new information that could create potentially significant impacts or require more robust analysis (CEQA Guidelines § 15162(a)(2)-(3); *Friends I*, *supra*, at p. 953). Thus, an addendum is appropriate here, and neither a subsequent MND nor an EIR is warranted (CEQA Guidelines, § 15164(e); *Friends II*, 11 Cal.App.5th at pp. 607-608).

These criteria are individually examined below to demonstrate that no conditions triggering a subsequent MND or EIR are present.

1. **No substantial changes are proposed that will require major revisions to the MND because of new potentially significant environmental effects (CEQA Guidelines §§ 15162(a)(1), 15164(b); *Friends II*).**

The environmental checklist (Initial Study) for the 2020 Final IS/MND was utilized in the environmental analysis of Section 4 (above) to identify any new potentially significant environmental effects due to the Proposed Changes. Based upon the analysis above, it has been determined that the previous analysis of effects remains valid and the Proposed Changes would not result in any new potentially significant environmental impacts that were not previously examined in the 2020 Final IS/MND; would not impact the feasibility of mitigation measures considered in the 2020 Final IS/MND or their ability to reduce the significance of effects; and would not result in the need to adopt additional mitigation measures. DWR has not identified any substantial evidence supporting a contrary conclusion with respect to the possibility of new potentially significant impacts due to the Proposed Changes.

The Approved Project is currently being implemented as described in the previously Approved Project's 2020 Final IS/MND. Implementation of the Approved Project components, in conjunction with the adopted mitigation measures, have been effective in reducing potential impacts to less than significant. DWR presumes that implementation of the Proposed Changes would have the same effectiveness, with no known evidence to the contrary.

2. **No new substantial changes in circumstances under which the Project will be undertaken which will require major revisions of the MND due to involvement of new potentially significant environmental effects (CEQA Guidelines §§ 15162(a)(2), 15164(b); *Friends II*).**

The 2020 Final IS/MND was approved within a year of the consideration of this Addendum (July 2020), and the Approved Project has been consistently implemented since that time. In this short timeframe, the circumstances under which the Approved Project was approved and implemented have remain unchanged. There is no reason to believe that implementation of the Proposed Changes will encounter or otherwise

involve a substantial change in circumstances. As stated above, the Approved Project has been implemented effectively, and DWR presumes that implementation of the Project changes would have the same effective results, with no known evidence to the contrary.

3. **No new information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the MND was adopted, shows: (A) the Project may have one or more new potentially significant effects not discussed in the MND; (B) mitigation measures previously found not to be feasible would in fact be feasible and would substantially reduce one or more potentially significant effects of the Project; (C) mitigation measures which are considerably different from those analyzed in the MND would substantially reduce one or more potentially significant effects on the environment. (CEQA Guidelines §§ 15162(a)(3), 15164(b); *Friends II*).**

DWR is not aware of any new information of substantial importance that would alter the above determination that the Proposed Changes would not result in any new potentially significant environmental effects that were not previously examined in the 2020 Final IS/MND; would not impact the feasibility of mitigation measures considered in the 2020 Final IS/MND or their ability to reduce the significance of effects; and would not result in the need to adopt additional mitigation measures considerably different from those previously adopted.

* * *

This Addendum was prepared to evaluate the Proposed Changes, as required by CEQA Guidelines sections 15162 and 15164, Public Resources Code section 21166, and *Friends II*. Based on this analysis, DWR has determined that the Proposed Changes would not have any new potentially significant environmental effects not already addressed in the 2020 Final IS/MND. Mitigation measures that were previously adopted and made a part of the Approved Project would continue to be implemented to avoid, minimize and mitigate potential impacts to environmentally sensitive resources as a result of the Approved Project and the Proposed Changes. These Mitigation Measures are currently being implemented on previously approved activities and have been effective in avoiding, minimizing, and mitigating potential impacts to less than significant.

The analysis in this Addendum and attachments support the determination that neither a subsequent MND nor an EIR is required because none of the conditions described in CEQA Guidelines sections 15162 that would trigger a subsequent MND or an EIR would occur with the Proposed Changes.

Based on this determination a decision has been made to move forward with the Proposed Changes as analyzed in this Addendum.

Carolyn Buckman Date
California Department of Water Resources
Delta Conveyance, Environmental Program Manager

References

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US Department of Transportation, Federal Highway Administration (USDOT). 2006. Construction Noise Handbook. Available at: https://www.fhwa.dot.gov/environment/noise/construction_noise/handbook/handbook00 (accessed June 1, 2020).

Attachments:

Attachment A – 2020 IS/MND

Attachment B – IS/MND NOD

Attachment C – MMRP

Attachment D – GGERP: Excel, Consistency Determination Checklist and BMPs

5.5 Attachment E: NOD for 2021 Addendum

Appendix D: Notice of Determination

To: Office of Planning and Research
1400 Tenth St., Rm 113
Sacramento CA, 95814

From: CA Department of Water Resources
1416 Ninth Street
Sacramento, CA 95814
Contact: Katherine Marquez, (916) 651-7011

SUBJECT: Filing of Notice of Determination in compliance with Section 21108 or 21152 of the Public Resources Code.

State Clearinghouse Number (if submitted to State Clearinghouse): 2019119073

Project Title: Soil Investigations for Data Collection in the Delta

Project Applicant: CA Department of Water Resources

Project Location (include county): Alameda, Contra Costa, Sacramento, San Joaquin, Solano and Yolo Counties.

Project Description: The project is for "Proposed Changes" to the 2020 Soil Investigation for Data Collection in the Delta Project as approved in the previously adopted Initial Study/Mitigated Negative Declaration. The Proposed Changes to the previously approved project are: the removal of 25 soil borings from 125 feet to 200 feet (38 - 61 meters), 22 cone penetration tests (CPTs) to 200 feet (61 meters), and 13 overwater soil borings up to 200 feet (61 meters), and the replacement with 23 soil borings from 125 feet to 200 feet (38 to 61 meters), 2 soil borings from 200 to 300 feet (61 to 91 meters), 22 CPTs to 200 feet (61 meters), and 13 overwater soil borings up to 200 feet (61 meters). The primary objective of the project, including the Proposed Changes, remains unchanged: to determine the composition, location, and geotechnical properties of soil materials commonly found in the Delta which would further inform the design, environmental analysis, and development of alternatives for a potential Delta conveyance project and contribute to DWR's overall understanding of Delta geology.

This is to advise that the CA Department of Water Resources, as the Lead Agency, has approved the project on February 19, 2021 and has made the following determinations regarding the above described project. This determination has been made considering the previously adopted Initial Study/Mitigated Negative Declaration along with the Addendum to the IS/MND.

1. The project will not have a significant effect on the environment.

2. A Negative Declaration was prepared for this project pursuant to the provisions of CEQA.

3. An Addendum was prepared for the Proposed Changes documenting that none of the conditions described in Section 15162 calling for the preparation of a Subsequent Environmental Impact Report or Negative Declaration have occurred.

4. Mitigation measures were made a condition of the approval of the project.

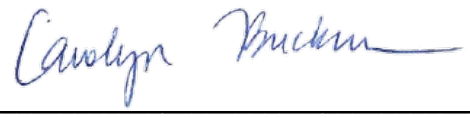
5. A mitigation reporting or monitoring plan was adopted for this project.

Authority cited: Sections 21083, Public Resources Code. Reference Section 21000-21174, Public Resources Code. Revised 2011

6. A statement of Overriding Considerations was not adopted for this project.

7. Findings were made pursuant to the provisions of CEQA.

This is to certify that the final negative declaration with comments and responses, along with the Addendum and record of project approval, is available to the General Public at: https://water.ca.gov/Programs/State-Water-Project/Delta-Conveyance/Environmental-Planning



February 19, 2021

Carolyn Buckman, Environmental Program Manager
California Department of Water Resources

Date

Date Received for filing at OPR: _____

Authority cited: Sections 21083, Public Resources Code. Reference Section 21000-21174, Public Resources Code. Revised 2011

5.6 Attachment F: Plant and Wildlife Table

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
Amphibians							
California tiger salamander	*Ambystoma californiense*	FT/ST	CDFW_WL-Watch List | IUCN_VU-Vulnerable	Cismontane woodland | Meadow & seep | Riparian woodland | Valley & foothill grassland | Vernal pool | Wetland	Need underground refuges, especially ground squirrel burrows, and vernal pools or other seasonal water sources for breeding.	High	Suitable upland and aquatic habitat may be present and several of the Impact Areas in Contra Costa and Alameda Counties are within 5 miles of recorded occurrences.
foothill yellow-legged frog	*Rana boylii*	-/CT	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_NT-Near Threatened | USFS_S-Sensitive	Aquatic | Chaparral | Cismontane woodland | Coastal scrub | Klamath/North coast flowing waters | Lower montane coniferous forest | Meadow & seep | Riparian forest | Riparian woodland | Sacramento/San Joaquin flowing waters	Partly-shaded, shallow streams and riffles with a rocky substrate in a variety of habitats. Needs at least some cobble-sized substrate for egg-laying. Needs at least 15 weeks to attain metamorphosis.	None	No suitable habitat is present in the vicinity of the Study Area, and there are no reported occurrences within 5 miles.
California red-legged frog	*Rana draytonii*	FT/-	CDFW_SSC-Species of Special Concern | IUCN_VU-Vulnerable	Aquatic | Artificial flowing waters | Artificial standing waters | Freshwater marsh | Marsh & swamp | Riparian forest | Riparian scrub | Riparian woodland | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters | South coast flowing waters | South coast standing waters | Wetland	Lowlands and foothills in or near permanent sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks of permanent water for larval development. Must have access to estivation habitat.	High	Suitable upland and aquatic habitat may be present, and several of the Impact Areas in Contra Costa and Alameda Counties are within 5 miles of recorded occurrences.
western spadefoot	*Spea hammondii*	-/-	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_NT-Near Threatened	Cismontane woodland | Coastal scrub | Valley & foothill grassland | Vernal pool | Wetland	Occurs primarily in grassland habitats but can be found in valley-foothill hardwood woodlands. Vernal pools are essential for breeding and egg-laying.	Moderate	Suitable habitat may be present, the Study Area is within the range of the species, and multiple recent documents occurrences are near the Study Area.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
Reptiles							
California legless lizard	*Anniella pulchra*	-/-	CDFW_SSC-Species of Special Concern | USFS_S-Sensitive	Chaparral | Coastal dunes | Coastal scrub	Sandy or loose loamy soils under sparse vegetation. Soil moisture is essential. They prefer soils with a high moisture content.	Low	Marginally suitable habitat may be present, the southern portion of the Study Area is within the range, and several of the Impact Areas in Contra Costa County are within 5 miles of recorded occurrences.
California glossy snake	*Arizona elegans occidentalis*	-/-	CDFW_SSC-Species of Special Concern	Open desert | Grasslands | Shrublands | Chaparral | Woodlands	Patchily distributed from the eastern portion of San Francisco Bay, southern San Joaquin Valley, the Coast, Transverse and Peninsular ranges, south to Baja California. Uses a range of scrub and grassland habitats, often with loose or sandy soils.	Moderate	The Study Area is within the range of the species, there is suitable habitat within the Study Area, and several occurrences nearby West and South of the Study Area.
western pond turtle	*Emys marmorata*	-/-	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_VU-Vulnerable | USFS_S-Sensitive	Aquatic | Artificial flowing waters | Klamath/North coast flowing waters | Klamath/North coast standing waters | Marsh & swamp | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters | | Wetland	A thoroughly aquatic turtle of ponds, marshes, rivers, streams and irrigation ditches, usually with aquatic vegetation, below 6000 ft elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat up to 0.5 km from water.	High	There are many known occurrences within the Study Area.
San Joaquin coachwhip	*Masticophis flagellum ruddocki*	-/-	CDFW_SSC-Species of Special Concern	Chenopod scrub | Valley & foothill grassland	Open, dry habitats with little or no tree cover. Found in valley grassland and saltbush scrub in the San Joaquin Valley. Needs mammal burrows for refuge and oviposition sites.	Moderate	The Study Area is within the range of the species and there is potentially suitable habitat present, however the nearest known occurrences are over 5 miles away.
Alameda whipsnake	*Masticophis lateralis euryxanthus*	FT/ST		Chaparral | Cismontane woodland | Coastal scrub | Valley & foothill grassland	Typically found in chaparral and scrub habitats but will also use adjacent grassland, oak savanna and woodland habitats. Mostly south-facing slopes and ravines,	None	There is no suitable habitat in the Study Area, and the nearest known occurrences are over 3 miles away.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
					with rock outcrops, deep crevices or abundant rodent burrows, where shrubs form a vegetative mosaic with oak trees and grasses.		
coast horned lizard	*Phrynosoma blainvillii*	-/-	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	Chaparral | Cismontane woodland | Coastal bluff scrub | Coastal scrub | Desert wash | Pinon & juniper woodlands | Riparian scrub | Riparian woodland | Valley & foothill grassland	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes. Open areas for sunning, bushes for cover, patches of loose soil for burial, and abundant supply of ants and other insects.	Low	The Study Area is within the range of the species, marginally suitable habitat may be present, and several of the Impact Areas in Contra Costa County are within 2.5 miles of recorded occurrences.
giant garter snake	*Thamnophis gigas*	FT/ST	IUCN_VU-Vulnerable	Marsh & swamp | Riparian scrub | Wetland	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches. This is the most aquatic of the garter snakes in California.	High	The project is within the range of the species, suitable habitat is present, and there are known occurrences within the footprint of the proposed activities.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
Birds							
Cooper's hawk	*Accipiter cooperii*	-/-	CDFW_WL-Watch List | IUCN_LC-Least Concern	Cismontane woodland | Riparian forest | Riparian woodland | Upper montane coniferous forest	Woodland, chiefly of open, interrupted or marginal type. Nest sites mainly in riparian growths of deciduous trees, as in canyon bottoms on river flood-plains; also, live oaks.	Moderate	Suitable habitat exists throughout much of the Study Area.
tricolored blackbird	*Agelaius tricolor*	-/ST	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_EN-Endangered | NABCI_RWL-Red Watch List | USFWS_BCC-Birds of Conservation Concern	Freshwater marsh | Marsh & swamp | Swamp | Wetland	Highly colonial species, most numerous in Central Valley & vicinity. Largely endemic to California. Requires open water, protected nesting substrate, and foraging area with insect prey within a few km of the colony.	Moderate	Suitable habitat exists within the Study Area, and several recorded occurrences are located near the Study Area. Wintering birds and a few individuals have been observed during breeding season, but no nesting colonies have been identified within 1/4 mile of the Study Area.
grasshopper sparrow	*Ammodramus savannarum*	-/-	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	Valley & foothill grassland	Dense grasslands on rolling hills, lowland plains, in valleys and on hillsides on lower mountain slopes. Favors native grasslands with a mix of grasses, forbs and scattered shrubs. Loosely colonial when nesting.	Low	Minimal suitable nesting habitat is present within the Study Area. Species has been observed rarely in the winter, although the Study Area is not within 5 miles of the known occurrences.
Lesser sandhill crane	*Antigone canadensis canadensis*	-/-	CDFW_SSC-Species of Special Concern	Wetlands	Forages in harvested corn fields, winter wheat, irrigated pastures, alfalfa fields, and fallow fields. Roosts in open shallowly flooded fields and wetlands.	High	Suitable habitat present for foraging and roosting, and they have been observed regularly in the winter within the Study Area.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
Greater sandhill crane	*Antigone canadensis tabida*	-/-	CDFW_FP-Fully Protected	Wetlands	Forages in harvested corn fields, winter wheat, irrigated pastures, alfalfa fields, and fallow fields. Roosts in open shallowly flooded fields and wetlands.	High	Suitable habitat present for foraging and roosting, and they have been observed regularly in the winter within the Study Area.
golden eagle	*Aquila chrysaetos*	-/-	BLM_S-Sensitive | CDF_S-Sensitive | CDFW_FP-Fully Protected | CDFW_WL-Watch List | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Broadleaved upland forest | Cismontane woodland | Coastal prairie | Great Basin grassland | Great Basin scrub | Lower montane coniferous forest | Pinon & juniper woodlands | Upper montane coniferous forest | Valley & foothill grassland	Rolling foothills, mountain areas, sage-juniper flats, and desert. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	Moderate	Suitable foraging habitat exists in the Study area and Golden Eagle are regularly observed foraging. Suitable nest trees are present, but no nesting has been recorded within 1 mile of the Study Area.
great egret	*Ardea alba*	-/-	CDF_S-Sensitive | IUCN_LC-Least Concern	Brackish marsh | Estuary | Freshwater marsh | Marsh & swamp | Riparian forest | Wetland	Colonial nester in large trees. Rookery sites located near marshes, tide-flats, irrigated pastures, and margins of rivers and lakes.	High	Suitable habitat exists within the Study Area, and several recorded occurrences are located nearby.
great blue heron	*Ardea herodias*	-/-	CDF_S-Sensitive | IUCN_LC-Least Concern	Brackish marsh | Estuary | Freshwater marsh | Marsh & swamp | Riparian forest | Wetland	Colonial nester in tall trees, cliffsides, and sequestered spots on marshes. Rookery sites close to foraging areas: marshes, lake margins, tide-flats, rivers, streams, wet meadows.	High	Suitable habitat exists within the Study Area, and several recorded occurrences are located nearby.
short-eared owl	*Asio flammeus*	-/-	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	Great Basin grassland | Marsh & swamp | Meadow & seep | Valley & foothill grassland | Wetland	Found in swamp lands, both fresh and salt; lowland meadows; irrigated alfalfa fields. Tule patches/tall grass needed for nesting/daytime seclusion. Nests on dry ground in	Moderate	Species has been observed at several locations throughout the Delta. If borings are located away from wetlands, no suitable

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
					depression concealed in vegetation.		nesting habitat in the Impact Areas.
burrowing owl	*Athene cunicularia*	-/-	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Coastal prairie | Coastal scrub | Great Basin grassland | Great Basin scrub | Mojave Desert scrub | Sonoran desert scrub | Valley & foothill grassland	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Subterranean nester, dependent upon burrowing mammals, such as California ground squirrel.	High	Several recorded occurrences are located nearby, and suitable habitat exists within the Study Area.
ferruginous hawk	*Buteo regalis*	-/-	CDFW_WL-Watch List | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Great Basin grassland | Great Basin scrub | Pinon & juniper woodlands | Valley & foothill grassland	Open grasslands, sagebrush flats, desert scrub, low foothills and fringes of pinyon and juniper habitats. Eats mostly lagomorphs, ground squirrels, and mice. Population trends may follow lagomorph population cycles.	Moderate	Several documented occurrences of over-wintering birds occur within 0.5 to 3 miles of several of the Impact Areas, and they are observed regularly in the winter, but do not nest in CA
Swainson's hawk	*Buteo swainsoni*	-/ST	BLM_S-Sensitive | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Great Basin grassland | Riparian forest | Riparian woodland | Valley & foothill grassland	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, & agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas with rodent populations.	High	Suitable nesting and foraging habitat found throughout the Study Area. There are known occurrences within the Study Area.
western snowy plover	*Charadrius alexandrinus nivosus*	FT/-	CDFW_SSC-Species of Special Concern | NABCI_RWL-Red Watch List |	Great Basin standing waters | Sand shore | Wetland	Sandy beaches, salt pond levees & shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	None	The Study Area is not within 5 miles of the known occurrences, and no suitable habitat is located within Study Area.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
			USFWS_BCC -Birds of Conservation Concern				
mountain plover	*Charadrius montanus*	-/-	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_NT-Near Threatened | NABCI_RWL -Red Watch List | USFWS_BCC -Birds of Conservation Concern	Chenopod scrub | Valley & foothill grassland	Short grasslands, freshly plowed fields, newly sprouting grain fields, & sometimes sod farms. Short vegetation, bare ground, and flat topography. Prefers grazed areas and areas with burrowing rodents.	Low	Winter records are located within 4.6 miles of the Study Area and minimal suitable habitat is present in the footprint; Species does not breed in CA.
northern harrier	*Circus hudsonius*	-/-	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	Coastal scrub | Great Basin grassland | Marsh & swamp | Riparian scrub | Valley & foothill grassland | Wetland	Coastal salt & freshwater marsh. Nest and forage in grasslands, from salt grass in desert sink to mountain cienagas. Nests on ground in shrubby vegetation, usually at marsh edge; nest built of a large mound of sticks in wet areas.	High	There are known occurrences within the Study area. Suitable nesting and foraging habitat found throughout the Study Area.
western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	FT/SE	BLM_S-Sensitive | NABCI_RWL -Red Watch List | USFS_S-Sensitive | USFWS_BCC	Riparian forest	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in riparian jungles of willow, often mixed with cottonwoods, with lower story of blackberry, nettles, or wild grape.	Low	There are known occurrences within the Study Area, and there is minimal suitable migratory habitat is present and species has been observed during

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
			-Birds of Conservation Concern				migration. Minimal habitat of suitable patch size for nesting, and species has not been recorded breeding in the vicinity in recent history.
snowy egret	*Egretta thula*	-/-	IUCN_LC-Least Concern	Marsh & swamp | Meadow & seep | Riparian forest | Riparian woodland | Wetland	Colonial nester, with nest sites situated in protected beds of dense tules. Rookery sites situated close to foraging areas: marshes, tidal-flats, streams, wet meadows, and borders of lakes.	High	Several recorded occurrences are located near Impact Areas, and suitable habitat exists within the Study Area.
white-tailed kite	*Elanus leucurus*	-/-	BLM_S-Sensitive | CDFW_FP-Fully Protected | IUCN_LC-Least Concern	Cismontane woodland | Marsh & swamp | Riparian woodland | Valley & foothill grassland | Wetland	Rolling foothills and valley margins with scattered oaks & river bottomlands or marshes next to deciduous woodland. Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	Moderate	Several recorded occurrences are located near Impact Areas, and suitable habitat exists within the Study Area.
California horned lark	*Eremophila alpestris actia*	-/-	CDFW_WL-Watch List | IUCN_LC-Least Concern	Marine intertidal & splash zone communities | Meadow & seep	Coastal regions, chiefly from Sonoma County to San Diego County. Also, main part of San Joaquin Valley and east to foothills. Short-grass prairie, "bald" hills, mountain meadows, open coastal plains, fallow grain fields, alkali flats.	Moderate	Several of the proposed on-land Impact Areas in Contra Costa County are within 1-2 miles of recorded occurrences, and potentially suitable habitat may be present.
Yellow-Breasted Chat	*Icteria virens*	-/-	CDFW_SSC-Species of Special Concern| USFWS BCC- Bird of	Riparian woodland	San Joaquin Delta in dense riparian understory with willow, blackberry and wild grape.	High	Suitable habitat is present and has been observed in riparian thickets and in-channel islands throughout the Sacramento-San Joaquin Delta.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
			Conservation Concern				
merlin	*Falco columbarius*	-/-	CDFW_WL-Watch List | IUCN_LC-Least Concern	Estuary | Great Basin grassland | Valley & foothill grassland	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands & deserts, farms & ranches. Clumps of trees or windbreaks are required for roosting in open country.	Low	Suitable foraging habitat is present in the Study Area, but species has been observed foraging and several recorded occurrences are located near Impact Areas.
prairie falcon	*Falco mexicanus*	-/-	CDFW_WL-Watch List | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	Great Basin grassland | Great Basin scrub | Mojave Desert scrub | Sonoran Desert scrub | Valley & foothill grassland	Inhabits dry, open terrain, either level or hilly. Breeding sites located on cliffs. Forages far afield, even to marshlands and ocean shores.	Low	No suitable nesting habitat is located in the Study Area, but species has been observed foraging.
American peregrine falcon	*Falco peregrinus anatum*	FD/SD	CDF_S-Sensitive | CDFW_FP-Fully Protected | USFWS_BCC-Birds of Conservation Concern		Near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures. Nest consists of a scrape or a depression or ledge in an open site.	Low	No suitable nesting habitat is located in the Study Area, but species has been observed foraging. One recorded occurrence is within 2.5 miles of Impact Areas, on the Rio Vista Bridge.
saltmarsh common yellowthroat	*Geothlypis trichas sinuosa*	-/-	CDFW_SSC-Species of Special Concern | USFWS_BCC-Birds of Conservation Concern	Marsh & swamp	Resident of the San Francisco Bay region, in fresh and salt water marshes. Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	None	The Study Area is not within the range of the species.
loggerhead shrike	*Lanius ludovicianus*	-/-	CDFW_SSC-Species of Special	Broadleaved upland forest | Desert wash | Joshua tree woodland | Mojave Desert	Broken woodlands, savannah, pinyon-juniper, Joshua tree, and riparian woodlands, desert	High	Several recorded occurrences are located near Impact Areas in

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
			Concern | IUCN_LC-Least Concern | USFWS_BCC-Birds of Conservation Concern	scrub | Pinon & juniper woodlands | Riparian woodland | Sonoran Desert scrub	oases, scrub & washes. Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.		Contra Costa and Alameda Counties, and suitable habitat exists within the Study Area.
California black rail	*Laterallus jamaicensis coturniculus*	-/ST	BLM_S-Sensitive | CDFW_FP-Fully Protected | IUCN_NT-Near Threatened | NABCI_RWL-Red Watch List | USFWS_BCC-Birds of Conservation Concern	Brackish marsh | Freshwater marsh | Marsh & swamp | Salt marsh | Wetland	Inhabits freshwater marshes, wet meadows and shallow margins of saltwater marshes bordering larger bays. Needs water depths of about 1 inch that do not fluctuate during the year and dense vegetation for nesting habitat.	Moderate	Several recorded occurrences are located near Impact Areas, and suitable habitat exists within the Study Area.
song sparrow ("Modesto" population)	*Melospiza melodia*	-/-	CDFW_SSC-Species of Special Concern	Open Woodlands | Tidal marshes | Grasslands | Chaparral | Agricultural fields	Inhabits a wide variety of habitats, nests from on the ground to 15 feet, often near water.	High	Several recorded occurrences are located near Impact Areas, and suitable habitat exists within the Study Area.
Suisun song sparrow	*Melospiza melodia maxillaris*	-/-	CDFW_SSC-Species of Special Concern | USFWS_BCC-Birds of Conservation Concern	Marsh & swamp | Wetland	Resident of brackish-water marshes surrounding Suisun Bay. Inhabits cattails, tules and other sedges, and Salicornia; also known to frequent tangles bordering sloughs.	None	The Study Area is not within the range of the species.
black-crowned night heron	*Nycticorax nycticorax*	-/-	IUCN_LC-Least Concern	Marsh & swamp | Riparian forest | Riparian woodland | Wetland	Colonial nester, usually in trees, occasionally in tule patches. Rookery sites located adjacent	High	Suitable habitat exists within the Study Area, and several recorded

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
					to foraging areas: lake margins, mud-bordered bays, marshy spots.		occurrences are located near Impact Areas.
Osprey	Pandion haliatus	-/-	CDFW_WL-Watch List	Riparian forest | Lakes	Nest in snags, man-made structures or trees in open areas near water.	High	Suitable habitat is present, and the species has been observed foraging in the Study Area.
double-crested cormorant	*Phalacrocorax auritus*	-/-	CDFW_WL-Watch List | IUCN_LC-Least Concern	Riparian forest | Riparian scrub | Riparian woodland	Colonial nester on coastal cliffs, offshore islands, and along lake margins in the interior of the state. Nests along coast on sequestered islets, usually on ground with sloping surface, or in tall trees along lake margins.	High	Suitable habitat exists within the Study Area, and several recorded occurrences are located near Impact Areas.
white-faced ibis	*Plegadis chihi*	-/-	CDFW_WL-Watch List | IUCN_LC-Least Concern	Marsh & swamp | Wetland	Shallow freshwater marsh. Dense tule thickets for nesting, interspersed with areas of shallow water for foraging.	Moderate	The species is regularly observed in the Delta year-round. Limited nesting habitat present and borings will be located outside of wetlands where nesting might occur.
purple martin	*Progne subis*	-/-	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	Broadleaved upland forest | Lower montane coniferous forest	Inhabits woodlands, low elevation coniferous forest of Douglas-fir, ponderosa pine, and Monterey pine. Nests in old woodpecker cavities mostly; also, in human-made structures. Nest often located in tall, isolated tree/snag.	Low	Species has been observed rarely in the area, and minimal suitable nesting habitat is present within the Study Area.
California Ridgway's Rail	*Rallus obsoletus obsoletus*	FE/SE	CDFW_FP-Fully Protected	Brackish marsh | Marsh & swamp | Salt marsh | Wetland	Salt water and brackish marshes traversed by tidal sloughs in the vicinity of San Francisco Bay.	None	The Study Area is not within the range of the species.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
					Associated with abundant growths of pickleweed but feeds away from cover on invertebrates from mud-bottomed sloughs.		
bank swallow	*Riparia riparia*	-/ST	BLM_S-Sensitive | IUCN_LC-Least Concern	Riparian scrub | Riparian woodland	Colonial nester; primarily in riparian and other lowland habitats west of the desert. Requires vertical banks/cliffs with fine-textured/sandy soils near streams, rivers, lakes, ocean to dig nesting hole.	Low	No suitable nesting habitat is present in the Study Area, but species has been observed foraging, especially during migration.
Yellow Warbler	*Setophaga petechia*	-/-	CDFW_SSC-Species of Special Concern | USFWS_BCC-Birds of Conservation Concern	Riparian forest | Riparian scrub | Riparian woodland	Riparian obligate uses willow and shrub thickets, and other riparian plant species.	Moderate	Suitable habitat is present, and species has been observed during migration in the vicinity of the Study Area.
California Least Tern	*Sternula antillarum browni*	FE/SE	CDFW_FP-Fully Protected	Alkali playa	Nests along the coast from San Francisco Bay south to northern Baja California.	Low	No suitable nesting habitat and no known colonies, foraging birds are rarely observed.
Least Bell's vireo	*Vireo bellii pusillus*	FE/SE	IUCN_NT-Near Threatened | NABCI_YWL-Yellow Watch List	Riparian forest | Riparian scrub | Riparian woodland	Summer resident of Southern California in low riparian in vicinity of water or in dry river bottoms; below 2000 ft. Nests placed along margins of bushes or on twigs projecting into pathways, usually willow, Baccharis, mesquite.	Moderate	Suitable habitat is present in the Study Area. Species formerly extirpated from the Central Valley, but recently species has been observed vocalizing during nesting season at Yolo Bypass WA, and Bradford Island . Breeding unconfirmed.
yellow-headed blackbird	*Xanthocephalus xanthocephalus*	-/-	CDFW_SSC-Species of Special Concern |	Marsh & swamp | Wetland	Nests in freshwater emergent wetlands with dense vegetation and deep water. Often along borders of lakes or ponds. Nests	Moderate	Suitable foraging habitat exists in the Study Area and the species is regularly observed

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
			IUCN_LC-Least Concern		only where large insects such as Odonata are abundant, nesting timed with maximum emergence of aquatic insects.		foraging in the winter. Minimal suitable nesting habitat is present in the Study Area, and nesting records are over 5 miles away.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
Fish							
Green sturgeon (southern DPS)	*Acipenser medirostris*	FT/-		Aquatic | Sacramento/San Joaquin flowing waters |Estuary	Anadromous. Spawns in Sacramento River, moves to estuary as juvenile, and out to ocean as adult.	High	Found within the waterways of the Study Area.
Sacramento perch	*Archoplites interruptus*	-/-	AFS_TH-Threatened | CDFW_SSC-Species of Special Concern	Aquatic | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters	Historically found in the sloughs, slow-moving rivers, and lakes of the Central Valley. Prefers warm water. Aquatic vegetation is essential for young. Tolerates wide range of physio-chemical water conditions.	Low	Potentially found within waterways of the Study Area.
Delta smelt	*Hypomesus transpacificus*	FT/SE	AFS_TH-Threatened | IUCN_EN-Endangered	Aquatic | Estuary	Sacramento-San Joaquin Delta. Seasonally in Suisun Bay, Carquinez Strait & San Pablo Bay. Seldom found at salinities > 10 ppt. Most often at salinities < 2ppt.	High	Found within the waterways of the Study Area.
steelhead - Central Valley DPS	*Oncorhynchus mykiss irideus pop. 11*	FT/-	AFS_TH-Threatened	Aquatic | Sacramento/San Joaquin flowing waters		High	Found within the waterways of the Study Area.
chinook salmon - Central Valley spring-run ESU	*Oncorhynchus tshawytscha pop. 6*	FT/ST	AFS_TH-Threatened	Aquatic | Sacramento/San Joaquin flowing waters	Adult numbers depend on pool depth and volume, amount of cover, and proximity to gravel. Water temps >27 C are lethal to adults. Federal listing refers to populations spawning in Sacramento River and tributaries.	High	Found within the waterways of the Study Area.
chinook salmon - Sacramento River winter-run ESU	*Oncorhynchus tshawytscha pop. 7*	FE/SE	AFS_EN-Endangered	Aquatic | Sacramento/San Joaquin flowing waters	Sacramento River below Keswick Dam. Spawns in the Sacramento River, but not in tributary streams. Requires clean, cold water, between 6 and 14 C, over gravel beds for spawning.	High	Found within the waterways of the Study Area.
Sacramento splittail	*Pogonichthys macrolepidotus*	-/-	AFS_VU-Vulnerable | CDFW_SSC-	Aquatic | Estuary | Freshwater marsh | Sacramento/San Joaquin flowing waters	Endemic to the lakes and rivers of the Central Valley, but now confined to the Delta, Suisun	High	Found within the waterways of the Study Area.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
			Species of Special Concern | IUCN_EN-Endangered		Bay and associated marshes. Slow moving river sections, dead end sloughs. Requires flooded vegetation for spawning and foraging for young.		
longfin smelt	*Spirinchus thaleichthys*	FC/ST		Aquatic | Estuary	Euryhaline, nektonic & anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column. Prefer salinities of 15-30 ppt but can be found in completely freshwater to almost pure seawater.	High	Found within the waterways of the Study Area.
eulachon	*Thaleichthys pacificus*	FT/-		Aquatic | Klamath/North coast flowing waters	Found in Klamath and Mad Rivers, Redwood Creek, and Smith River and Humboldt Bay tributaries. Spawn in lower reaches of coastal rivers with moderate water velocities and bottom of pea-sized gravel, sand, and woody debris.	Low	Potentially could migrate through waterways of the Study Area.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
Invertebrates							
Blennosperma vernal pool andrenid bee	*Andrena blennospermatis*	-/-		Vernal pool	This bee is oligolectic on vernal pool blennosperma. Bees nest in the uplands around vernal pools.	Low	Suitable habitat may be present, and the Study Area is within the range of the species, however the Study Area is not within 5 miles of recent known occurrences.
Antioch Dunes anthicid beetle	*Anthicus antiochensis*	-/-		Interior dunes	Usually found in bare unvegetated sand. Extirpated from Antioch Dunes, but found along the Sacramento River in Glenn, Tehema, Shasta, and Solono Counties and along the Feather River in Sutter County.	Low	Suitable habitat may be present within the Study Area, the project area is within the range and one reported occurrence is within 2 miles and a second is within 5 miles of the Study Area.
Sacramento anthicid beetle	*Anthicus sacramento*	-/-	IUCN_EN-Endangered	Interior dunes	Restricted to sand dune areas. Inhabit sand slipfaces among bamboo and willow but may not depend on presence of these plant species.	Low	Suitable habitat may be present within the Study Area, the project area is within the range and two reported occurrences are within 2 miles of Study Area.
Lange's metalmark butterfly	*Apodemia mormo langei*	FE/-	XERCES_CI-Critically Imperiled	Interior dunes	Inhabits stabilized dunes along the San Joaquin River. Endemic to Antioch Dunes, Contra Costa County. Primary host plant is *Eriogonum nudum var auriculatum*; feeds on nectar of other wildflowers, as well as host plant.	None	There is potential for some suitable habitat to be within the Study Area, however the Study Area is outside of the current known range, which is limited to the Antioch Dunes.
Crotch bumble bee	*Bombus crotchii*	-/-	IUCN_EN-Endangered		Coastal California east to the Sierra-Cascade crest and south into Mexico. Food plant genera include *Antirrhinum, Phacelia, Clarkia, Dendromecon, Eschscholzia*, and *Eriogonum.*	Moderate	Suitable habitat may be present within the project area, and the Study Area is within the range, although the nearest known

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
							occurrence s are over 5 miles away.
western bumble bee	*Bombus occidentalis*	-/-	USFS_S-Sensitive | XERCES_IM-Imperiled		Found from Pacific Coast to the Colorado Rockies. Select food plant genera: *Melilotus, Cirsium, Trifolium, Centaurea, Chrysothamnus, Eriogonum*	High	Potentially suitable habitat may be present, and the Study Area is within the species range, and two reported occurrences are within 2 miles and a third is within 5 miles of Impact Areas.
Conservancy fairy shrimp	*Branchinecta conservatio*	FE/-	IUCN_EN-Endangered	Valley & foothill grassland | Vernal pool | Wetland	Endemic to the grasslands of the northern two-thirds of the Central Valley; found in large, turbid pools. Inhabit astatic pools located in swales formed by old, braided alluvium; filled by winter/spring rains, last until June.	Moderate	Some suitable habitat could be present within the Study Area, and one reported occurrence is within 5 miles of the Study Area.
longhorn fairy shrimp	*Branchinecta longiantenna*	FE/-	IUCN_EN-Endangered	Valley & foothill grassland | Vernal pool | Wetland	Endemic to the eastern margin of the Central Coast mountains in seasonally astatic grassland vernal pools. Inhabit small, clear-water depressions in sandstone and clear-to-turbid clay/grass-bottomed pools in shallow swales.	Moderate	Some suitable habitat could be present within the Study Area, and two reported occurrences are within 5 miles of the Study Area.
vernal pool fairy shrimp	*Branchinecta lynchi*	FT/-	IUCN_VU-Vulnerable	Valley & foothill grassland | Vernal pool | Wetland	Endemic to the grasslands of the Central Valley, Central Coast mountains, and South Coast mountains, in astatic rain-filled pools. Inhabit small, clear-water sandstone-depression pools and grassed swale, earth slump, or basalt-flow depression pools.	Moderate	Some suitable habitat could be present within the Study Area, and multiple occurrences have been reported within 0.5 miles of several of the Impact Areas.
midvalley fairy shrimp	*Branchinecta mesovallensis*	-/-		Vernal pool | Wetland	Found in vernal pools in Southeastern Sacramento, the southern Sierra foothills, San Joaquin Vernal pool region, and	Moderate	Some suitable habitat could be present within the Study Area, and one reported occurrence is

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
					San Joaquin, Madera, Merced and Fresno Counties.		within 0.5 miles of Impact Areas.
Sacramento Valley tiger beetle	*Cicindela hirticollis abrupta*	-/-		Sand shore	Sandy floodplain habitat in the Sacramento Valley. No beetles located during intensive 2001-2004 surveys. Requires fine to medium sand, terraced floodplains or low sandy water edge flats.	None	Thought to be extirpated. No suitable habitat could be present within the Study Area, and nearest occurrence is within 5 miles of the northern edge of the Study Area.
San Joaquin dune beetle	*Coelus gracilis*	-/-	BLM_S-Sensitive | IUCN_VU-Vulnerable	Interior dunes	Inhabits fossil dunes along the western edge of San Joaquin Valley; extirpated from Antioch Dunes (type locality) and is limited in current distribution of the western edge of the San Joaquin Valley. Inhabits sites containing sandy substrates.	None	The Study Area is outside to the known range of the species and there is no suitable habitat on site.
valley elderberry longhorn beetle	*Desmocerus californicus dimorphus*	FT/-		Riparian scrub	Occurs only in the Central Valley of California, in association with blue elderberry (*Sambucus mexicana*). Prefers to lay eggs in elderberries 2-8 inches in diameter; some preference shown for "stressed" elderberries.	High	Suitable elderberry bushes may be present within the Study Area, and several reported occurrences are within 2 miles of the Study Area.
Antioch efferian robberfly	*Efferia antiochi*	-/-		Interior dunes	Known only from Antioch, Fresno and Scout Island in the San Joaquin River.	None	The Study Area is outside of the known range of this species.
Delta green ground beetle	*Elaphrus viridis*	FT/-	IUCN_CR-Critically Endangered	Vernal pool | Wetland	Restricted to the margins of vernal pools in the grassland area between Jepson Prairie and Travis AFB. Prefers the sandy mud substrate where it slopes gently into the water, with low-growing vegetation, 25-100% cover.	None	The Study Area is outside of the known range of this species.
redheaded sphecid wasp	*Eucerceris ruficeps*	-/-		Interior dunes	Central California interior dunes. Nest in hard-packed sand utilizing abandoned halictine bee burrows.	None	While there are two reported occurrences from the 1950's, presumed extirpated, in

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
							the vicinity of the Study Area.
Bridges' coast range shoulderband	*Helminthoglypta nickliniana bridgesi*	-/-	IUCN_DD-Data Deficient	Valley & foothill grassland	Inhabits open hillsides of Alameda and Contra Costa counties. Tends to colonize under tall grasses and weeds.	None	Outside of known range.
Ricksecker's water scavenger beetle	*Hydrochara rickseckeri*	-/-		Aquatic | Sacramento/San Joaquin flowing waters | Sacramento/San Joaquin standing waters		Moderate	Suitable habitat is present in the Sacramento River, and there is a reported occurrence within 2 miles of the Study Area.
curved-foot hygrotus diving beetle	*Hygrotus curvipes*	-/-		Aquatic		Moderate	Suitable habitat may be present within the Study Area, and multiple reported occurrences are present within 2 miles of the Study Area.
Middlekauff's shieldback katydid	*Idiostatus middlekauffi*	-/-	IUCN_CR-Critically Endangered	Interior dunes	Only known from Contra Costa County and may be extirpated.	None	The Study Area is outside of the known range, and no suitable habitat is present.
vernal pool tadpole shrimp	*Lepidurus packardi*	FE/-	IUCN_EN-Endangered	Valley & foothill grassland | Vernal pool | Wetland	Inhabits vernal pools and swales in the Sacramento Valley containing clear to highly turbid water. Pools commonly found in grass-bottomed swales of unplowed grasslands. Some pools are mud-bottomed and highly turbid.	Moderate	Suitable habitat may be present within the Study Area, and multiple reported occurrences are present within 2 miles of the Study Area.
California linderiella	*Linderiella occidentalis*	-/-	IUCN_NT-Near Threatened	Vernal pool	Seasonal pools in unplowed grasslands with old alluvial soils underlain by hardpan or in sandstone depressions. Water in the pools has very low alkalinity, conductivity, and total dissolved solids.	Moderate	Suitable habitat may be present within the Study Area, and multiple reported occurrences are present within 2 miles of the Study Area.
molestan blister beetle	*Lytta molesta*	-/-		Vernal pool | Wetland		Low	Suitable habitat may be present within the Study Area, and one reported

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
							occurrence is 5 miles from the Study Area.
Hurd's metapogon robberfly	*Metapogon hurdi*	-/-		Interior dunes		None	The Study Area is outside of the known range, and no suitable habitat is present.
Antioch multilid wasp	*Myrmosula pacifica*	-/-		Interior dunes		None	The Study Area is outside of the known range, and no suitable habitat is present.
Antioch andrenid bee	*Perdita scitula antiochensis*	-/-		Interior dunes	Known only from Antioch Dunes and Oakley. Visits flowers of *Eriogonum, Gutierrezia californica, Heterotheca grandiflora, Lessingia glandulifera*.	None	The Study Area is outside of the known range, and no suitable habitat is present.
Antioch specid wasp	*Philanthus nasalis*	-/-		Interior dunes		None	The Study Area is outside of the known range, and no suitable habitat is present.
Antioch Dunes halcitid bee	*Sphecodogastra antiochensis*	-/-	XERCES_CI-Critically Imperiled	Interior dunes	Restricted to Antioch Dunes. Host plant is *Oenothera deltoides howellii*. This bee nests in the ground in stabilized sand dunes in open, xeric areas.	None	The Study Area is outside of the known range, and no suitable habitat is present.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
Mammals							
pallid bat	*Antrozous pallidus*	-/-	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern | USFS_S-Sensitive | WBWG_H-High Priority	Chaparral | Coastal scrub | Desert wash | Great Basin grassland | Great Basin scrub | Mojave Desert scrub | Riparian woodland | Sonoran Desert scrub | Upper montane coniferous forest | Valley & foothill grassland	Deserts, grasslands, shrublands, woodlands and forests. Most common in open, dry habitats with rocky areas for roosting. Roosts must protect bats from high temperatures. Very sensitive to disturbance of roosting sites.	None	No suitable roosting and foraging habitat present within the Study Area, and nearest occurrences over 8 miles from Study Area.
Townsend's big-eared bat	*Corynorhinus townsendii*	-/-	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern | USFS_S-Sensitive | WBWG_H-High Priority	Broadleaved upland forest | Chaparral | Chenopod scrub | Great Basin grassland | Great Basin scrub | Joshua tree woodland | Lower montane coniferous forest | Meadow & seep | Mojave Desert scrub | Riparian forest | Riparian woodland | Sonoran desert scrub | Sonoran thorn woodland | Upper montane coniferous forest | Valley & foothill grassland	Throughout California in a wide variety of habitats. Most common in mesic sites. Roosts in the open, hanging from walls and ceilings. Roosting sites limiting. Extremely sensitive to human disturbance.	None	No suitable habitat, nearest occurrences over 10 miles from Study Area.
western mastiff bat	*Eumops perotis californicus*	-/-	BLM_S-Sensitive | CDFW_SSC-Species of Special Concern | WBWG_H-High Priority	Chaparral | Cismontane woodland | Coastal scrub | Valley & foothill grassland	Many open, semi-arid to arid habitats, including conifer & deciduous woodlands, coastal scrub, grasslands, chaparral, etc. Roosts in crevices in cliff faces, high buildings, trees and tunnels.	None	No suitable habitat, nearest occurrences over 25 miles from Study Area.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
silver-haired bat	*Lasionycteris noctivagans*	-/-	IUCN_LC-Least Concern | WBWG_M-Medium Priority	Lower montane coniferous forest | Old growth | Riparian forest	Primarily a coastal and montane forest dweller, feeding over streams, ponds & open brushy areas. Roosts in hollow trees, beneath exfoliating bark, abandoned woodpecker holes, and rarely under rocks.	None	No suitable habitat, nearest occurrences over 10 miles from Study Area.
western red bat	*Lasiurus blossevillii*	-/-	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern | WBWG_H-High Priority	Cismontane woodland | Lower montane coniferous forest | Riparian forest | Riparian woodland	Roosts primarily in trees, 2-40 ft above ground, from sea level up through mixed conifer forests. Prefers habitat edges and mosaics with trees that are protected from above and open below with open areas for foraging.	Moderate	Suitable habitat present, and several occurrences within 2 miles of the Study Area.
hoary bat	*Lasiurus cinereus*	-/-	IUCN_LC-Least Concern | WBWG_M-Medium Priority	Broadleaved upland forest | Cismontane woodland | Lower montane coniferous forest | North coast coniferous forest	Prefers open habitats or habitat mosaics, with access to trees for cover and open areas or habitat edges for feeding. Roosts in dense foliage of medium to large trees. Feeds primarily on moths.	Moderate	Suitable habitat present and reported occurrences within 2 and 5 miles of the Study Area.
San Francisco dusky-footed woodrat	*Neotoma fuscipes annectens*	-/-	CDFW_SSC-Species of Special Concern	Chaparral | Redwood	Forest habitats of moderate canopy & moderate to dense understory. May prefer chaparral & redwood habitats. Constructs nests of shredded grass, leaves & other material. May be limited by availability of nest-building materials.	None	No suitable habitat is present for this species and the Study Area is outside of the known range of this subspecies.
Riparian (=San Joaquin Valley) woodrat	*Neotoma fuscipes riparia*	FE/-	CDFW_SSC-Species of Special Concern	Chaparral | Redwood	Forest habitats of moderate canopy & moderate to dense understory. May prefer chaparral & redwood habitats. Constructs nests of shredded grass, leaves & other material.	None	No suitable habitat is present for this species and the Study Area is outside of the known range of this subspecies.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
					May be limited by availability of nest-building materials.		
San Joaquin Pocket Mouse	*Perognathus inornatus*	-/-	BLM_S-Sensitive | IUCN_LC-Least Concern	Cismontane woodland | Mojave Desert scrub | Valley & foothill grassland	Grassland, oak savanna and arid scrubland in the southern Sacramento Valley, Salinas Valley, San Joaquin Valley and adjacent foothills, south to the Mojave Desert. Associated with fine-textured, sandy, friable soils.	Moderate	Suitable habitat present and reported occurrences within 2 and 5 miles of the Study Area.
salt-marsh harvest mouse	*Reithrodontomys raviventris*	FE/SE	CDFW_FP-Fully Protected | IUCN_EN-Endangered	Marsh & swamp | Wetland	Only in the saline emergent wetlands of San Francisco Bay and its tributaries. Pickleweed is primary habitat but may occur in other marsh vegetation types and in adjacent upland areas. Does not burrow; builds loosely organized nests. Requires higher areas for flood escape.	None	Study Area is outside of the range for this species.
riparian brush rabbit	*Sylvilagus bachmani riparius*	FE/SE		Riparian forest	Riparian areas on the San Joaquin River in northern Stanislaus County. Dense thickets of wild rose, willows, and blackberries.	None	Study Area is outside of the range for this species.
American badger	*Taxidea taxus*	-/-	CDFW_SSC-Species of Special Concern | IUCN_LC-Least Concern	Alkali marsh | Alkali playa | Alpine | Alpine dwarf scrub | Bog & fen | Brackish marsh | Broadleaved upland forest | Chaparral | Chenopod scrub | Cismontane woodland | Closed-cone coniferous forest | Coastal bluff scrub | Coastal dunes | Coastal prairie | Coastal scrub | Desert dunes | Desert wash |	Most abundant in drier open stages of most shrub, forest, and herbaceous habitats, with friable soils. Needs sufficient food, friable soils and open, uncultivated ground. Preys on burrowing rodents. Digs burrows.	Moderate	Suitable habitat present and reported occurrences within 2 and 5 miles of the Study Area.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Determination
				Freshwater marsh | Great Basin grassland | Great Basin scrub | Interior dunes | Ione formation | Lower montane coniferous forest | Marsh & swamp | Meadow & seep | Mojave desert scrub | Montane dwarf scrub | North coast coniferous forest Redwood | Riparian forest | Riparian scrub | Riparian woodland | Salt marsh | Sonoran desert scrub | Sonoran thorn woodland | Ultramafic | Upper montane coniferous forest | Upper Sonoran scrub | Valley & foothill grassland			
San Joaquin kit fox	*Vulpes macrotis mutica*	FE/ST		Chenopod scrub | Valley & foothill grassland	Annual grasslands or grassy open stages with scattered shrubby vegetation. Need loose-textured sandy soils for burrowing, and suitable prey base.	Moderate	Suitable habitat present and reported occurrences within 2 and 5 miles of the Study Area.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
Santa Clara thorn-mint	*Acanthomintha lanceolata*	-/-/4.2		Chaparral (often serpentinite), Cismontane woodland, Coastal scrub	rocky. 80-1200m.	none	No habitat present, out of range.
large-flowered fiddleneck	*Amsinckia grandiflora*	FE/SE/1B.1		Cismontane woodland, Valley and foothill grassland	270-550m	moderate	Potentially suitable habitat present.
bent-flowered fiddleneck	*Amsinckia lunaris*	-/-/1B.2		Coastal bluff scrub, Cismontane woodland, Valley and foothill grassland	3-500m	low	Potentially suitable habitat present, however out of known range.
California androsace	*Androsace elongata ssp. acuta*	-/-/4.2		Chaparral, Cismontane woodland, Coastal scrub, Meadows and seeps, Pinyon and juniper woodland, Valley and foothill grassland	150-1305m	moderate	Potentially suitable habitat.
Mt. Diablo manzanita	*Arctostaphylos auriculata*	-/-/1B.3		Chaparral (sandstone), Cismontane woodland	135-650m	none	No habitat present.
Contra Costa manzanita	*Arctostaphylos manzanita ssp. laevigata*	-/-/1B.2		Chaparral (rocky)	430-1100m	none	No habitat present.
depauperate milk-vetch	*Astragalus pauperculus*	-/-/4.3		Chaparral, Cismontane woodland, Valley and foothill grassland	vernally mesic, volcanic. 60-1215m	low	Potentially suitable habitat present, Study Area is on edge of known range.
Ferris' milk-vetch	*Astragalus tener var. ferrisiae*	-/-/1B.1		Meadows and seeps (vernally mesic), Valley and foothill grassland (subalkaline flats)	2-75m	moderate	Potentially suitable habitat present.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
alkali milk-vetch	*Astragalus tener var. tener*	-/-/1B.2		Playas, Valley and foothill grassland (adobe clay), Vernal pools	alkaline. 1-60m	moderate	Potentially suitable habitat present.
heartscale	*Atriplex cordulata var. cordulata*	-/-/1B.2		Chenopod scrub, Meadows and seeps, Valley and foothill grassland (sandy)	saline or alkaline. 0-560m	moderate	Potentially suitable habitat present.
crownscale	*Atriplex coronata var. coronata*	-/-/4.2		Chenopod scrub, Valley and foothill grassland, Vernal pools	alkaline, often clay. 1-590m	moderate	Potentially suitable habitat present.
Lost Hills crownscale	*Atriplex coronata var. vallicola*	-/-/1B.2		Chenopod scrub, Valley and foothill grassland, Vernal pools	alkaline. 50-635m	moderate	Potentially suitable habitat present.
brittlescale	*Atriplex depressa*	-/-/1B.2		Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland, Vernal pools	alkaline, clay. 1-320m	moderate	Potentially suitable habitat present.
lesser saltscale	*Atriplex minuscula*	-/-/1B.1		Chenopod scrub, Playas, Valley and foothill grassland	alkaline, sandy. 15-200m	moderate	Potentially suitable habitat present.
vernal pool smallscale	*Atriplex persistens*	-/-/1B.2		Vernal pools (alkaline)	10-115m	low	Potentially suitable habitat present, however Study Area located on edge of range
big-scale balsamroot	*Balsamorhiza macrolepis*	-/-/1B.2		Chaparral, Cismontane woodland, Valley and foothill grassland	sometimes serpentinite. 45-1555m	moderate	Potentially suitable habitat present.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
big tarplant	*Blepharizonia plumosa*	-/-/1B.1		Valley and foothill grassland	Usually clay. 30-505m	moderate	Potentially suitable habitat present.
watershield	*Brasenia schreberi*	-/-/2B.3		Marshes and swamps (freshwater)	30-2200m	moderate	Potentially suitable habitat present.
valley brodiaea	*Brodiaea rosea ssp. vallicola*	-/-/4.2		Valley and foothill grassland (swales), Vernal pools	Old alluvial terraces; silty, sandy, and gravelly loam. 10-335m	moderate	Potentially suitable habitat present.
Brewer's calandrinia	*Calandrinia breweri*	-/-/4.2		Chaparral, Coastal scrub	sandy or loamy, disturbed sites and burns. 10-1220m	none	No habitat
Mt. Diablo fairy-lantern	*Calochortus pulchellus*	-/-/1B.2		Chaparral, Cismontane woodland, Riparian woodland, Valley and foothill grassland	30-840m	low	Suitable habitat present, however Study Area located on edge of range.
chaparral harebell	*Campanula exigua*	-/-/1B.2		Chaparral (rocky, usually serpentinite)	275 1250m	none	No habitat
bristly sedge	*Carex comosa*	-/-/2B.1		Coastal prairie, Marshes and swamps (lake margins), Valley and foothill grassland	0-625m	moderate	Potentially suitable habitat present.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
Lemmon's jewelflower	*Caulanthus lemmonii*	-/-/1B.2		Pinyon and juniper woodland, Valley and foothill grassland	80-1580m	moderate	Potentially suitable habitat present.
Congdon's tarplant	*Centromadia parryi ssp. congdonii*	-/-/1B.1		Valley and foothill grassland (alkaline)	0-230m	moderate	Potentially suitable habitat present.
pappose tarplant	*Centromadia parryi ssp. parryi*	-/-/1B.2		Chaparral, Coastal prairie, Meadows and seeps, Marshes and swamps (coastal salt), Valley and foothill grassland (vernally mesic)	often alkaline. 0-420m	moderate	Potentially suitable habitat present.
Parry's rough tarplant	*Centromadia parryi ssp. rudis*	-/-/4.2		Valley and foothill grassland, Vernal pools	alkaline, vernally mesic, seeps, sometimes roadsides. 0-100m	moderate	Potentially suitable habitat present.
Hispid salty bird's-beak	*Chloropyron molle ssp. hispidum*	-/-/1B.1		Meadows and seeps, Playas, Valley and foothill grassland	alkaline. 1-155m	moderate	Potentially suitable habitat present.
Soft salty bird's-beak	*Chloropyron molle ssp. molle*	FE/CR/1B.2		Marshes and swamps (coastal salt)	0-3m	low	Limited salt-marsh habitat present, edge of the known range.
palmate-bracted salty bird's-beak	*Chloropyron palmatum*	FE/CE/1B.1		Chenopod scrub, Valley and foothill grassland	alkaline.05-155m	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.
Bolander's water-hemlock	*Cicuta maculata var. bolanderi*	-/-/2B.1		Marshes and swamps Coastal, fresh or brackish water	0-200m	moderate	Potentially suitable habitat present.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
slough thistle	*Cirsium crassicaule*	-/-/1B.1		Chenopod scrub, Marshes and swamps (sloughs), Riparian scrub	3-100m	moderate	Potentially suitable habitat present.
small-flowered morning-glory	*Convolvulus simulans*	-/-/4.2		Chaparral (openings), Coastal scrub, Valley and foothill grassland	clay, serpentinite seeps.30-740m	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.
Hoover's cryptantha	*Cryptantha hooveri*	-/-/1A		Inland dunes, Valley and foothill grassland (sandy)	9-150m	moderate	Potentially suitable habitat present.
Peruvian dodder	*Cuscuta obtusiflora var. glandulosa*	-/-/2B.2		Marshes and swamps (freshwater)	15-280m	low	Potentially suitable habitat, however the Study Area is outside of the known range.
Livermore tarplant	*Deinandra bacigalupii*	-/CE/1B.1		Meadows and seeps (alkaline)	150-185m	moderate	Potentially suitable habitat present, within 100 m of Study Area.
Hospital Canyon larkspur	*Delphinium californicum ssp. interius*	-/-/1B.2		Chaparral (openings), Cismontane woodland (mesic), Coastal scrub	195-1095m	none	No habitat
recurved larkspur	*Delphinium recurvatum*	-/-/1B.2		Chenopod scrub, Cismontane woodland, Valley and foothill grassland	alkaline. 3-790m	moderate	Potentially suitable habitat present.
dwarf downingia	*Downingia pusilla*	-/-/2B.2		Valley and foothill grassland (mesic), Vernal pools	1-445m	moderate	Potentially suitable habitat present, within 100 m of Study Area.
Antioch Dunes buckwheat	*Eriogonum nudum var. psychicola*	-/-/1B.1		Inland dunes	0-20m	none	No habitat

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
Mt. Diablo buckwheat	*Eriogonum truncatum*	-/-/1B.1		Chaparral, Coastal scrub, Valley and foothill grassland	sandy. 3-350m	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.
Jepson's coyote thistle	*Eryngium jepsonii*	-/-/1B.2		Valley and foothill grassland, Vernal pools	clay. 3-300m	moderate	Potentially suitable habitat present.
Delta button-celery	*Eryngium racemosum*	-/CE/1B.1		Riparian scrub (vernally mesic clay depressions)	3-30m	moderate	Potentially suitable habitat present, within 100 m of Study Area.
spiny-sepaled button-celery	*Eryngium spinosepalum*	-/-/1B.2		Valley and foothill grassland, Vernal pools	80-975m	moderate	Potentially suitable habitat present.
Contra Costa wallflower	*Erysimum capitatum var. angustatum*	FE/CE/1B.1		Inland dunes	3-20m	none	No habitat
diamond-petaled California poppy	*Eschscholzia rhombipetala*	-/-/1B.1		Valley and foothill grassland (alkaline, clay)	0-975m	moderate	Potentially suitable habitat present.
San Joaquin spearscale	*Extriplex joaquinana*	-/-/1B.2		Chenopod scrub, Meadows and seeps, Playas, Valley and foothill grassland	alkaline. 1-835m	moderate	Potentially suitable habitat present.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
stinkbells	*Fritillaria agrestis*	-/-/4.2		Chaparral, Cismontane woodland, Pinyon and juniper woodland, Valley and foothill grassland	Clay, sometimes serpentinite. 10-1555	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.
fragrant fritillary	*Fritillaria liliacea*	-/-/1B.2		Cismontane woodland, Coastal prairie, Coastal scrub, Valley and foothill grassland	Often serpentinite. 3-410m	moderate	Potentially suitable habitat present.
adobe-lily	*Fritillaria pluriflora*	-/-/1B.2		Chaparral, Cismontane woodland, Valley and foothill grassland	often adobe. 60-705m	none	No habitat
phlox-leaf serpentine bedstraw	*Galium andrewsii ssp. gatense*	-/-/4.2		Chaparral, Cismontane woodland, Lower montane coniferous forest	serpentinite, rocky. 150-1450m	none	No habitat
Boggs Lake hedge-hyssop	*Gratiola heterosepala*	-/CE/1B.2		Marshes and swamps (lake margins), Vernal pools	clay. 10-2375m	moderate	Potentially suitable habitat present.
Diablo helianthella	*Helianthella castanea*	-/-/1B.2		Broadleafed upland forest, Chaparral, Cismontane woodland, Coastal scrub, Riparian woodland, Valley and foothill grassland	Usually rocky, axonal soils. Often in partial shade. 60-1300m	low	Marginally suitable habitat present.
hogwallow starfish	*Hesperevax caulescens*	-/-/4.2		Valley and foothill grassland (mesic, clay), Vernal pools (shallow)	sometimes alkaline. 0-505m	moderate	Potentially suitable habitat present.
Brewer's western flax	*Hesperolinon breweri*	-/-/1B.2		Chaparral, Cismontane woodland, Valley and foothill grassland	usually serpentinite. 30-945m	low	Marginally suitable habitat present.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
woolly rose-mallow	*Hibiscus lasiocarpos var. occidentalis*	-/-/1B.2		Marshes and swamps (freshwater)	Often in riprap on sides of levees. 0-120m	moderate	Potentially suitable habitat present.
Carquinez goldenbush	*Isocoma arguta*	-/-/1B.1		Valley and foothill grassland (alkaline)	1-20m	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.
Northern California black walnut	*Juglans hindsii*	-/-/1B.1		Riparian forest, Riparian woodland	0-440m	moderate	Potentially suitable habitat present.
Contra Costa goldfields	*Lasthenia conjugens*	FE/-/1B.1		Cismontane woodland, Playas (alkaline), Valley and foothill grassland, Vernal pools	mesic. 0-470m	moderate	Potentially suitable habitat present.
Ferris' goldfields	*Lasthenia ferrisiae*	-/-/4.2		Vernal pools (alkaline, clay)	20-700m	moderate	Potentially suitable habitat present.
Coulter's goldfields	*Lasthenia glabrata ssp. coulteri*	-/-/1B.1		Marshes and swamps (coastal salt), Playas, Vernal pools	1-1220m	moderate	Potentially suitable habitat present.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
Delta tule pea	*Lathyrus jepsonii var. jepsonii*	-/-/1B.2		Marshes and swamps (freshwater and brackish)	0-5m	high	Potentially suitable habitat present.
legenere	*Legenere limosa*	-/-/1B.1		Vernal pools	1-880m	moderate	Potentially suitable habitat present.
Heckard's pepper-grass	*Lepidium latipes var. heckardii*	-/-/1B.2		Valley and foothill grassland (alkaline flats)	2-200m	moderate	Potentially suitable habitat present.
Mason's lilaeopsis	*Lilaeopsis masonii*	-/CR/1B.1		Marshes and swamps (brackish or freshwater), Riparian scrub	0-10m	moderate	Potentially suitable habitat present.
Delta mudwort	*Limosella australis*	-/-/2B.1		Marshes and swamps (freshwater or brackish), Riparian scrub	Usually mud banks. 0-3m	moderate	Potentially suitable habitat present.
showy golden madia	*Madia radiata*	-/-/1B.1		Cismontane woodland, Valley and foothill grassland	25-1215m	moderate	Potentially suitable habitat present.
Hall's bush-mallow	*Malacothamnus hallii*	-/-/1B.2		Chaparral, Coastal scrub	10-760m	none	No habitat
San Antonio Hills monardella	*Monardella antonina ssp. antonina*	-/-/3		Chaparral, Cismontane woodland	320-1000m	none	No habitat

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
little mousetail	*Myosurus minimus ssp. apus*	-/-/3.1		Valley and foothill grassland, Vernal pools (alkaline)	20-640m	moderate	Potentially suitable habitat present.
hoary navarretia	*Navarretia eriocephala*	-/-/4.3		Cismontane woodland, Valley and foothill grassland	vernally mesic. 105-400m	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.
Tehama navarretia	*Navarretia heterandra*	-/-/4.3		Valley and foothill grassland (mesic), Vernal pools	30-1010m	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.
Baker's navarretia	*Navarretia leucocephala ssp. bakeri*	-/-/1B.1		Cismontane woodland, Lower montane coniferous forest, Meadows and seeps, Valley and foothill grassland, Vernal pools	Mesic. 5-1740m	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.
adobe navarretia	*Navarretia nigelliformis ssp. nigelliformis*	-/-/4.2		Valley and foothill grassland vernally mesic, Vernal pools sometimes	clay, sometimes serpentinite. 100-1000m	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.

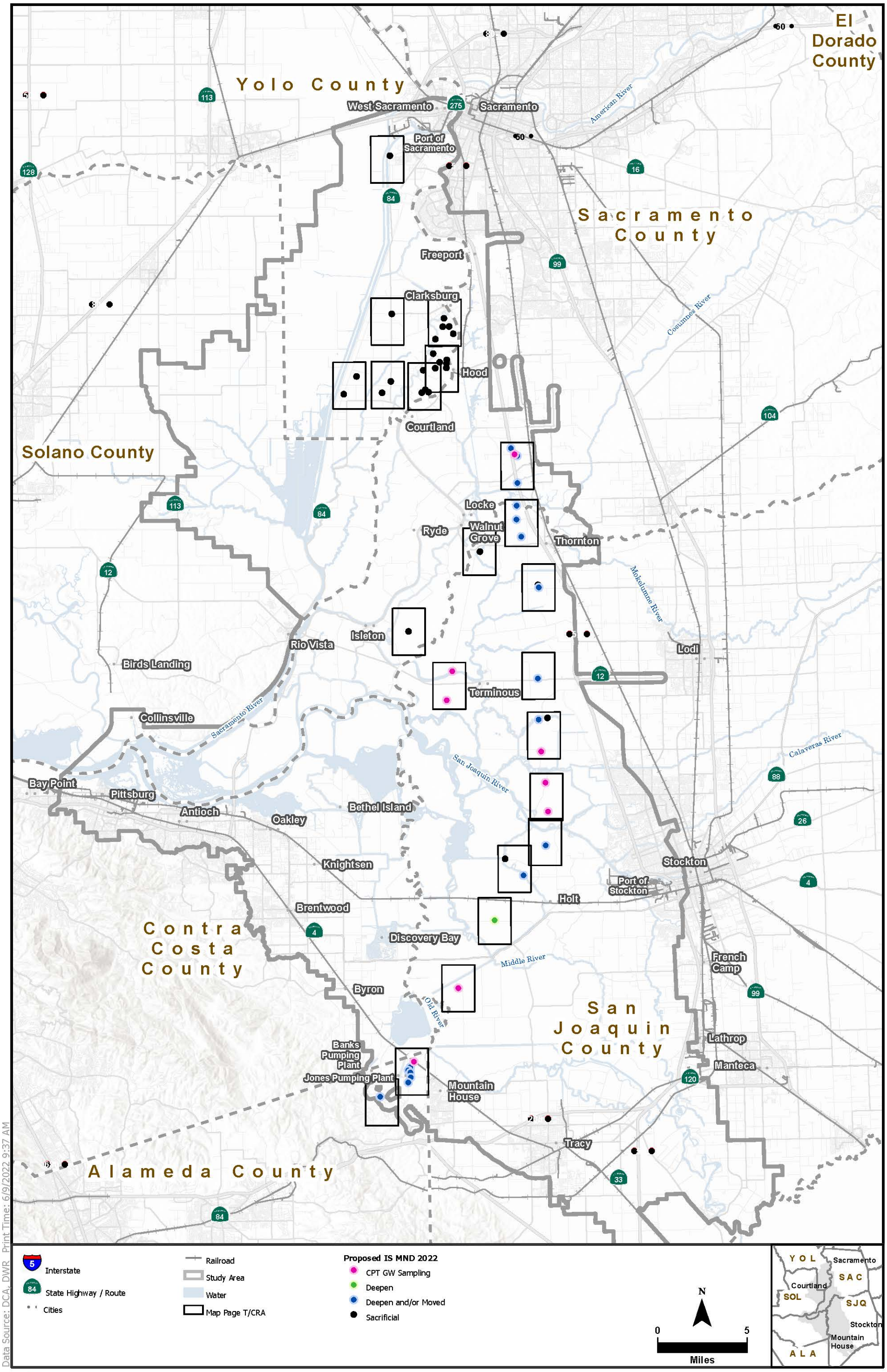
Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
shining navarretia	*Navarretia nigelliformis ssp. radians*	-/-/1B.2		Cismontane woodland, Valley and foothill grassland, Vernal pools	Sometimes clay. 65-1000m	moderate	Potentially suitable habitat present.
prostrate vernal pool navarretia	*Navarretia prostrata*	-/-/1B.1		Coastal scrub, Meadows and seeps, Valley and foothill grassland (alkaline), Vernal pools	Mesic. 3-1210m	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.
Colusa grass	*Neostapfia colusana*	FT/CE/1B.1		Vernal pools (adobe, large)	5-200m	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.
Antioch Dunes evening-primrose	*Oenothera deltoides ssp. howellii*	FE/CE/1B.1		Inland dunes	0-30m	none	No habitat
slender Orcutt grass	*Orcuttia tenuis*	FT/CE/1B.1		Vernal pools	Often gravelly. 35-1760m	moderate	Potentially suitable habitat present.
Sacramento Orcutt grass	*Orcuttia viscida*	FE/CE/1B.1		Vernal pools	30-100m	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
bearded popcornflower	*Plagiobothrys hystriculus*	-/-/1B.1		Valley and foothill grassland (mesic), Vernal pools margins	often vernal swales. 0-274m	low	Potentially suitable habitat present, however the Study Area is located on the edge of the known range.
eel-grass pondweed	*Potamogeton zosteriformis*	-/-/2B.2		Marshes and swamps (assorted freshwater)	0-1860m	moderate	Potentially suitable habitat present.
California alkali grass	*Puccinellia simplex*	-/-/1B.2		Chenopod scrub, Meadows and seeps, Valley and foothill grassland, Vernal pools	Alkaline, vernally mesic; sinks, flats, and lake margins. 2-930m	moderate	Potentially suitable habitat present.
Sanford's arrowhead	*Sagittaria sanfordii*	-/-/1B.2		Marshes and swamps (assorted shallow freshwater)	0-650m	moderate	Potentially suitable habitat present.
marsh skullcap	*Scutellaria galericulata*	-/-/2B.2		Lower montane coniferous forest, Meadows and seeps (mesic), Marshes and swamps	0-2100m	moderate	Potentially suitable habitat present.
side-flowering skullcap	*Scutellaria lateriflora*	-/-/2B.2		Meadows and seeps (mesic), Marshes and swamps	0-500m	moderate	Potentially suitable habitat present.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
chaparral ragwort	*Senecio aphanactis*	-/-/2B.2		Chaparral, Cismontane woodland, Coastal scrub	sometimes alkaline.15-800m	none	No habitat
sweet marsh ragwort	*Senecio hydrophiloides*	-/-/4.2		Lower montane coniferous forest, Meadows and seeps	Mesic. 0-2800m	none	No habitat
Keck's checkerbloom	*Sidalcea keckii*	FE/-/1B.1		Cismontane woodland, Valley and foothill grassland	serpentinite, clay. 75-650m	low	Limited potentially suitable habitat present, and the Study Area is located on the edge of the known range.
long-styled sand-spurrey	*Spergularia macrotheca var. longistyla*	-/-/1B.2		Meadows and seeps, Marshes and swamps	Alkaline. 0-225	moderate	Potentially suitable habitat present.
Suisun Marsh aster	*Symphyotrichum lentum*	-/-/1B.2		Marshes and swamps (brackish and freshwater)	0-3m	moderate	Potentially suitable habitat present.
Wright's trichocoronis	*Trichocoronis wrightii var. wrightii*	-/-/2B.1		Meadows and seeps, Marshes and swamps, Riparian forest, Vernal pools	alkaline. 5-435m	moderate	Potentially suitable habitat present.
saline clover	*Trifolium hydrophilum*	-/-/1B.2		Marshes and swamps, Valley and foothill grassland (mesic, alkaline), Vernal pools	0-300m	moderate	Potentially suitable habitat present.
caper-fruited tropidocarpum	*Tropidocarpum capparideum*	-/-/1B.1		Valley and foothill grassland (alkaline hills)	1-455m	moderate	Potentially suitable habitat present.

Common Name	Scientific Name	Fed/ State/ CNPS	Other Status	Habitat	Micro Habitat	Potential to Occur	Justification for Potential to Occur
Crampton's tuctoria or Solano grass	*Tuctoria mucronata*	FE/CE/1B.1		Valley and foothill grassland (mesic), Vernal pools	5-10m	none	No habitat
oval-leaved viburnum	*Viburnum ellipticum*	-/-/2B.3		Chaparral, Cismontane woodland, Lower montane coniferous forest	215-1400m	none	No habitat

5.7 Attachment G: Cultural Resources Maps



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Tribal Cultural Resources Assessment
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Index Figure

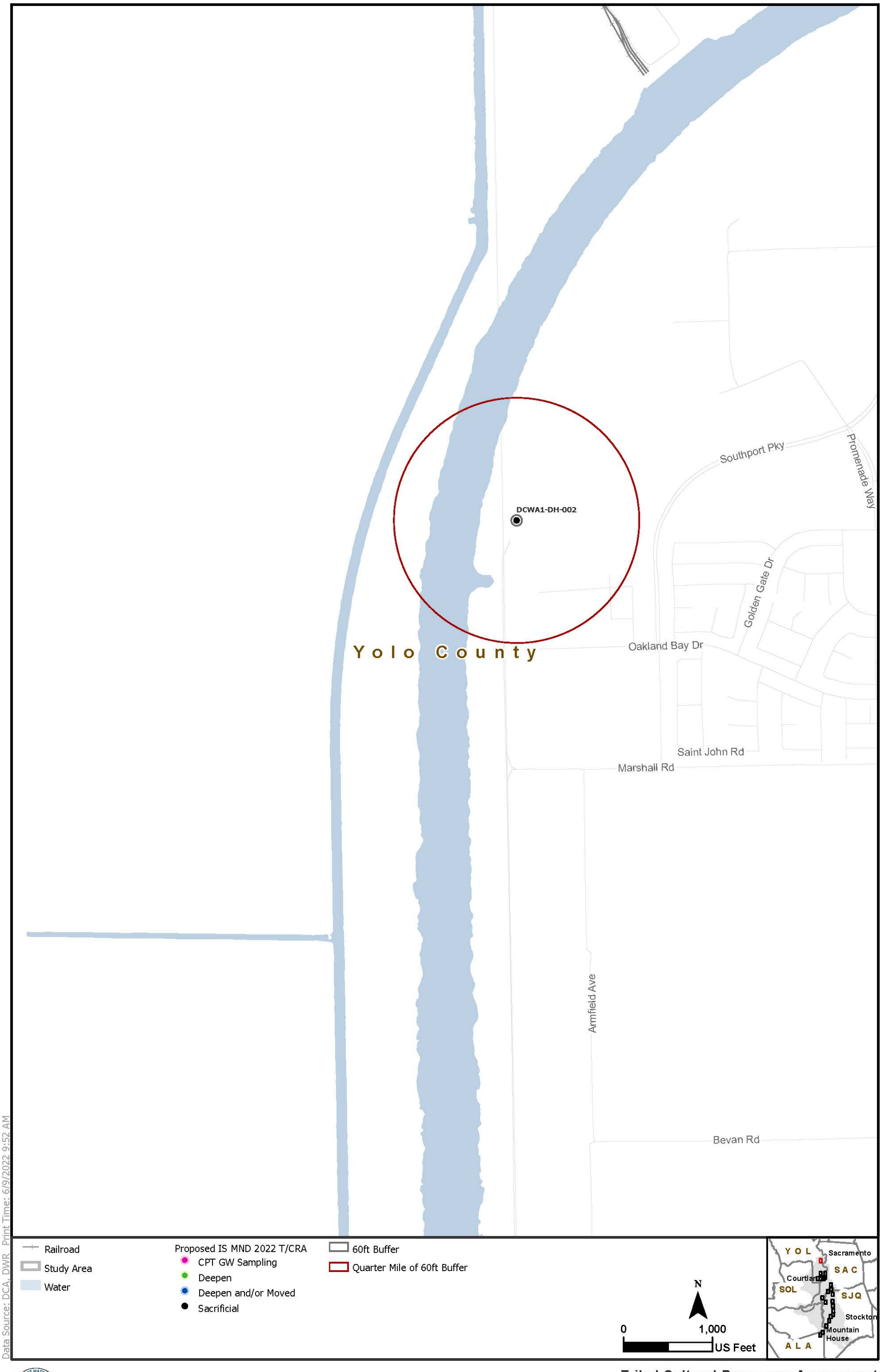

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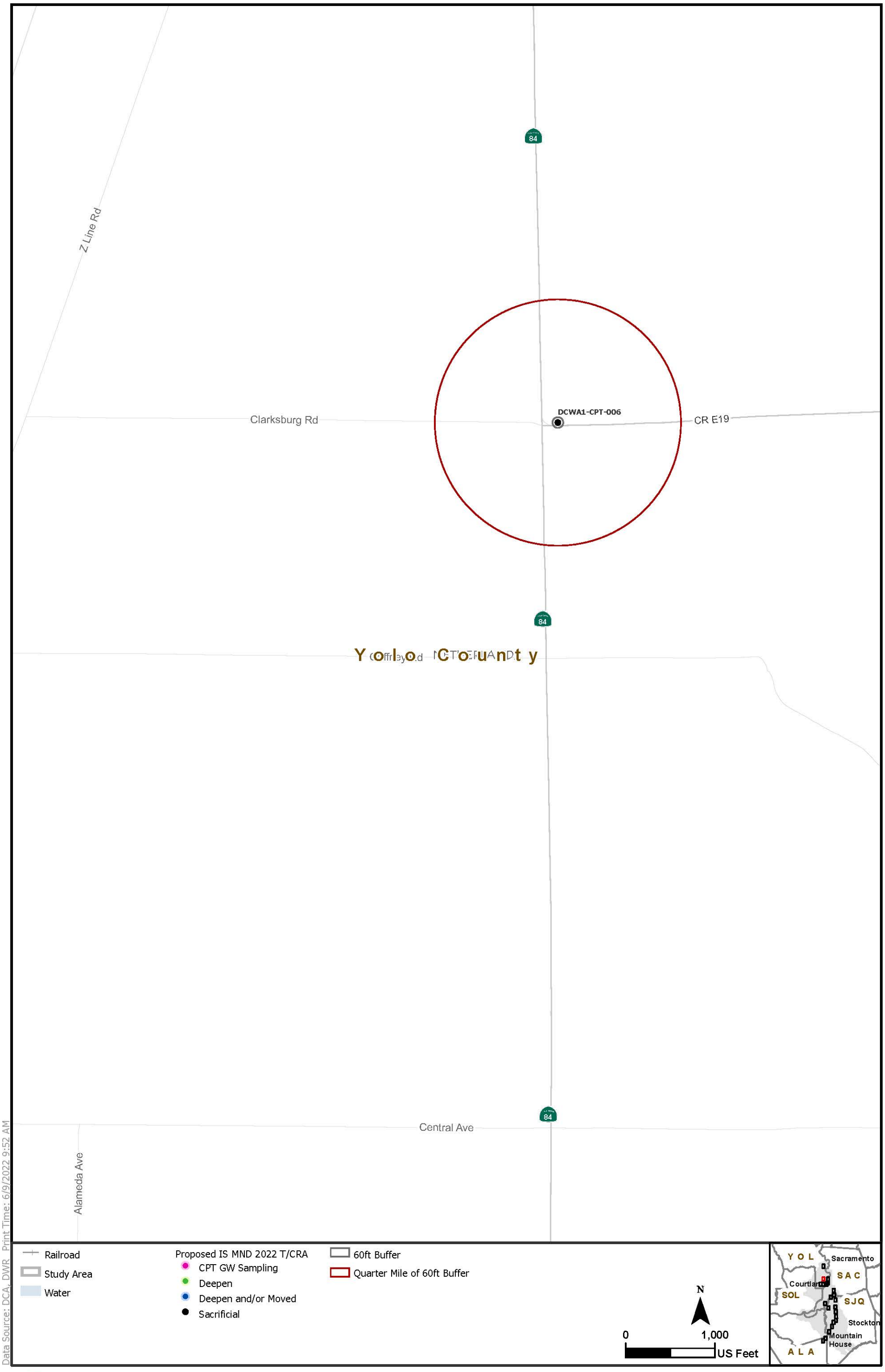
Figure 1 of 22



Tribal Cultural Resources Assessment
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Figure 2 of 22

Yolo County

Clarksburg

Sacramento St

CR E19

School St

Center St

Netherlands Ave

NETHERLANDS

Elk Slough Rd

DCIW1-DH-001

Sacramento County

Scribner Rd

CR E9

Sacramento River

141

DCIW1-DH-006

DCIW1-DH-005

MERRITT ISLAND

Netherlands Rd

DCIW1-DH-002

144

DCWA1-CPT-011

Railroad
Study Area
Water

Proposed IS MND 2022 T/CRA
CPT GW Sampling
Deepen
Deepen and/or Moved
Sacrificial

60ft Buffer
Quarter Mile of 60ft Buffer

N

0 1,000 US Feet

YOL
Sacramento
SAC
Courtland
SOL
SJQ
Stockton
Mountain House
ALA

Data Source: DCA, DWR Print Time: 6/9/2022 9:52 AM

Tribal Cultural Resources Assessment
Soil Investigations in the Delta 2022 Addendum
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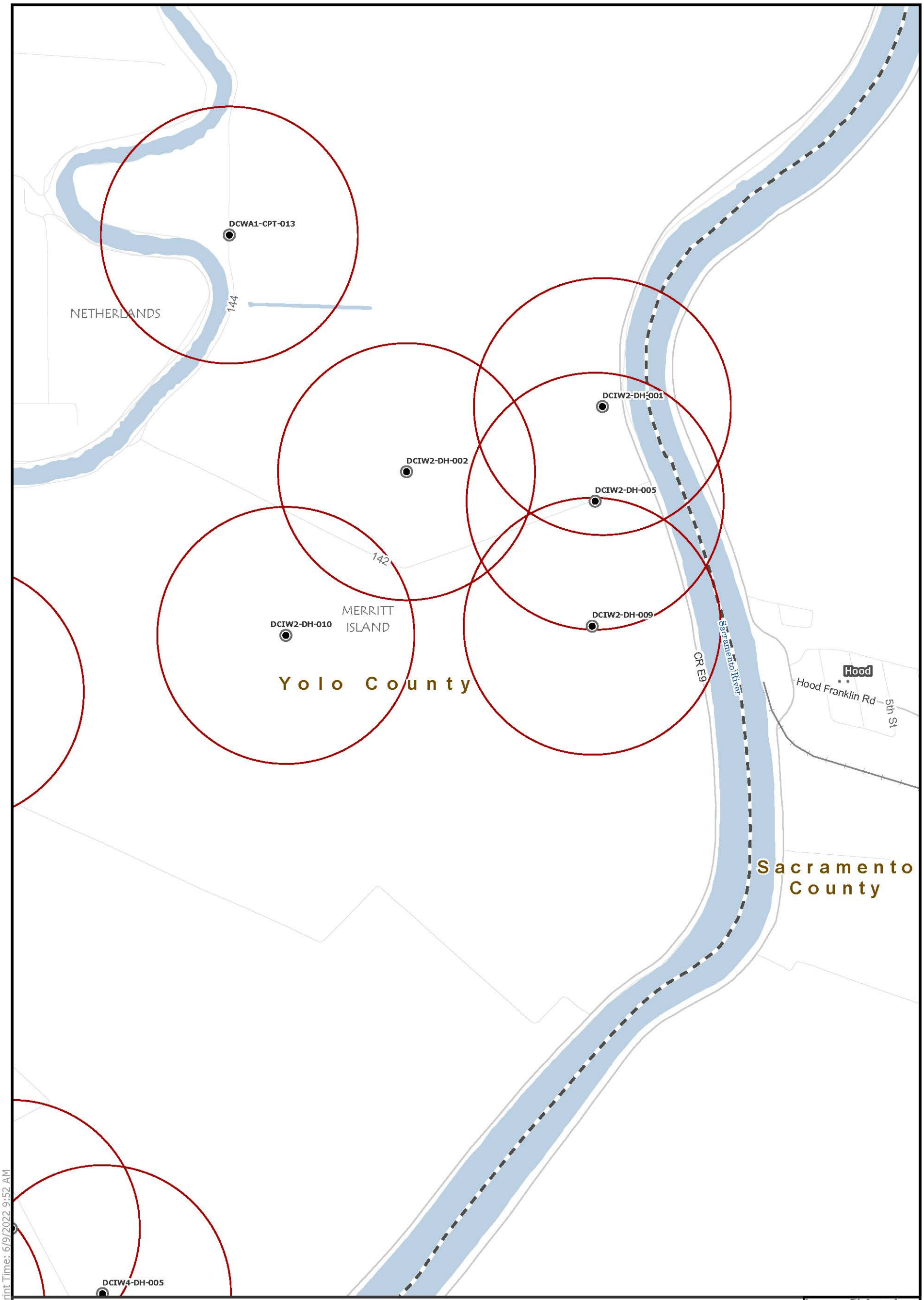

Tribal Cultural Resources Assessment
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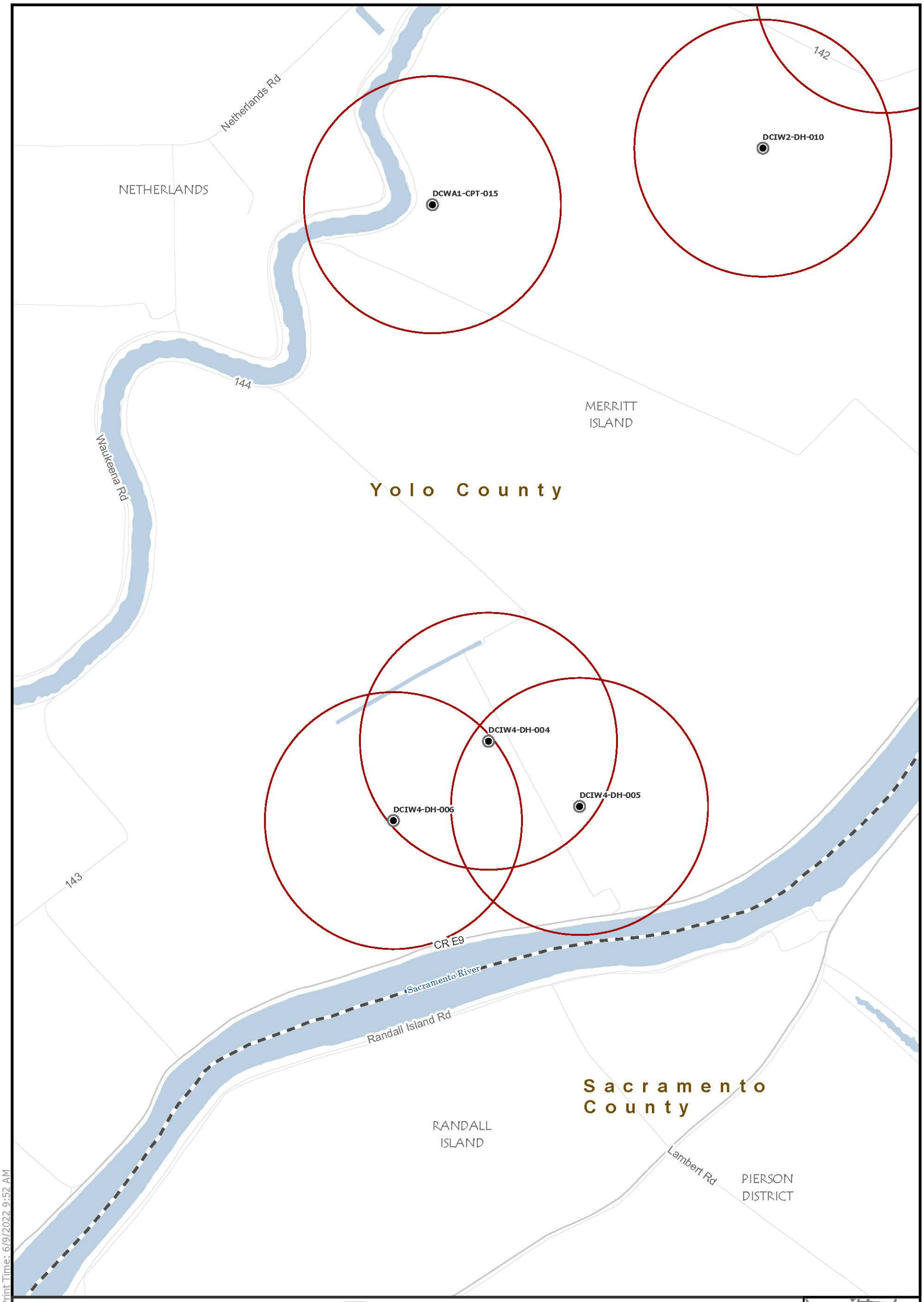

Data Source: DCA, DWR Print Time: 6/9/2022 9:52 AM

Tribal Cultural Resources Assessment
Soil Investigations in the Delta 2022 Addendum
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Netherlands Rd

Alameda Ave

Mallard Rd

84

DCWA1-CPT-017

NETHERLANDS

Courtland Rd

Yolo County

DCWA1-CPT-019

Waukeena Rd

84

MERRITT ISLAND

84

Morse Rd

Courtland Rd

Railroad
Study Area
Water

Proposed IS MND 2022 T/CRA
CPT GW Sampling
Deepen
Deepen and/or Moved
Sacrificial

60ft Buffer
Quarter Mile of 60ft Buffer

N

0 1,000 US Feet

YOL
Sacramento
SAC
Courtland
SOL
SJQ
Stockton
Mountain House
ALA

Data Source: DCA, DWR Print Time: 6/9/2022 9:52 AM

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Data Source: DCA, DWR Print Time: 6/9/2022 9:52 AM

Tribal Cultural Resources Assessment
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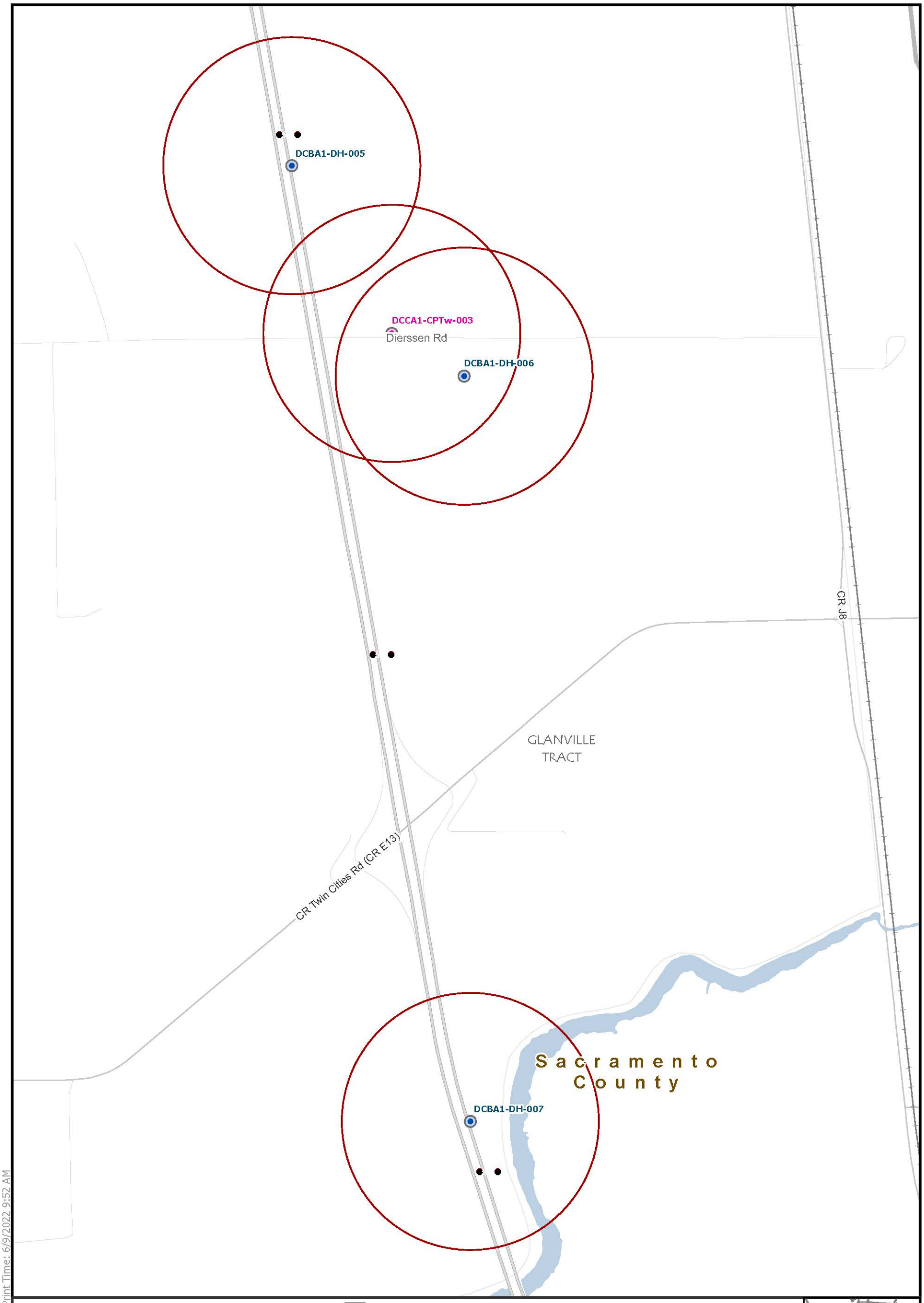

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Tribal Cultural Resources Assessment
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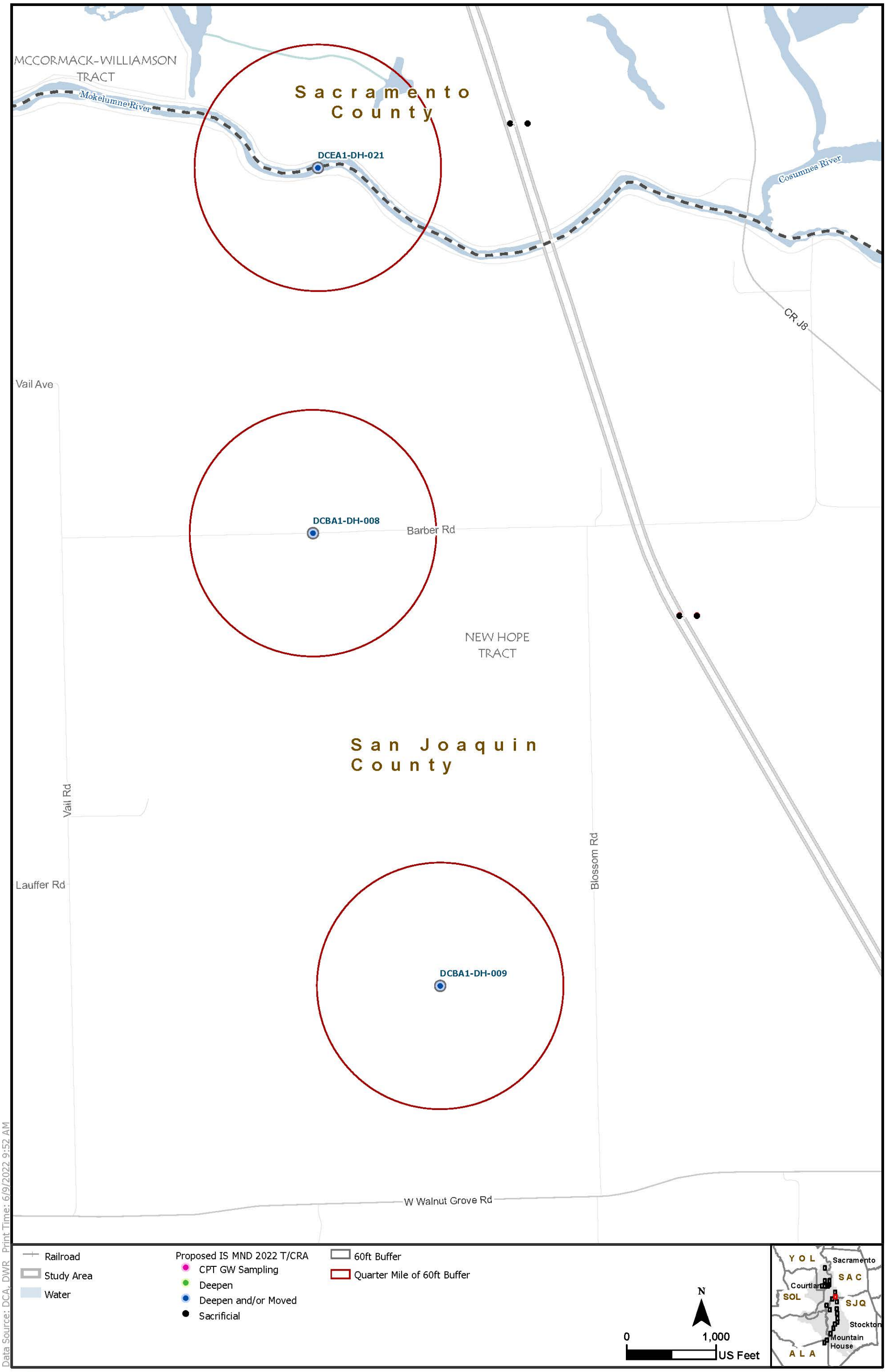

Tribal Cultural Resources Assessment
Soil Investigations in the Delta 2022 Addendum
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Sacramento County

San Joaquin County

Lauffer Rd

MCCORMACK-WILLIAMSON TRACT

Mokelumne River

DEAD HORSE ISLAND

Old Walnut Grove Thornton Rd

CR J11

W Walnut Grove Rd

DCCA1-DH-088

NEW HOPE TRACT

TYLER ISLAND

Staten Island Rd

STATEN ISLAND

Railroad
Study Area
Water

Proposed IS MND 2022 T/CRA
CPT GW Sampling
Deepen
Deepen and/or Moved
Sacrificial

60ft Buffer
Quarter Mile of 60ft Buffer

N

0 1,000 US Feet

YOL Sacramento SAC Courtland SOL SJQ Stockton Mountain House ALA

Data Source: DCA, DWR Print Time: 6/9/2022 9:52 AM

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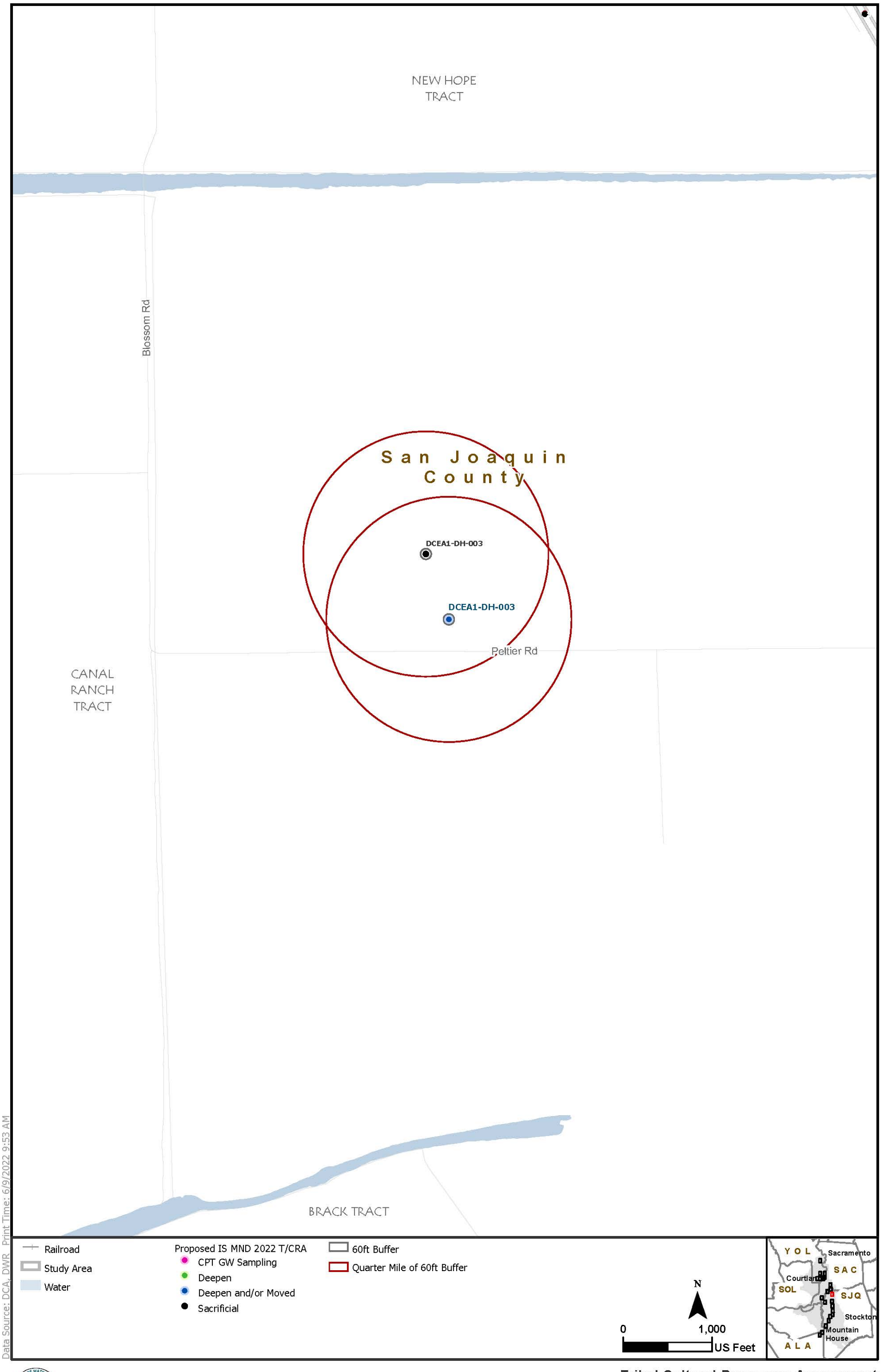

Data Source: DCA, DWR Print Time: 6/9/2022 9:53 AM

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BRANNAN-ANDRUS ISLAND

Tyler Island Rd

Oxbow Marina Dr

DCWA1-CPT-023

TYLER ISLAND

Sacramento County

San Joaquin County

STATEN ISLAND

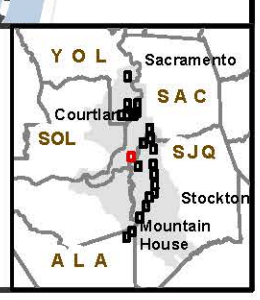
Railroad
Study Area
Water

Proposed IS MND 2022 T/CRA
CPT GW Sampling
Deepen
Deepen and/or Moved
Sacrificial

60ft Buffer
Quarter Mile of 60ft Buffer

N

0 1,000 US Feet



Data Source: DCA, DWR Print Time: 6/9/2022 9:53 AM

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STATEN ISLAND

Staten Island Rd

DCCA1-CPTw-040

12

12

San Joaquin County

BOULDIN ISLAND

DCCA1-CPTw-043

Railroad
Study Area
Water

Proposed IS MND 2022 T/CRA
CPT GW Sampling
Deepen
Deepen and/or Moved
Sacrificial

60ft Buffer
Quarter Mile of 60ft Buffer

N

0 1,000 US Feet

YOL
Sacramento
SAC
Courtland
SOL
SJQ
Stockton
Mountain House
ALA

Data Source: DCA, DWR Print Time: 6/9/2022 9:53 AM

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Guard Rd

TERMINOUS
TRACT

San Joaquin
County

DCBA1-DH-010

12

12

Grand Rd

SHIN KEE
TRACT

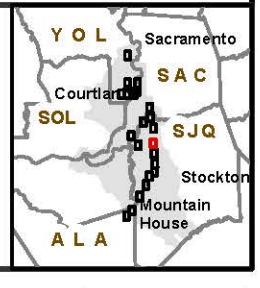
Railroad
Study Area
Water

Proposed IS MND 2022 T/CRA
CPT GW Sampling
Deepen
Deepen and/or Moved
Sacrificial

60ft Buffer
Quarter Mile of 60ft Buffer

N

0 1,000
US Feet



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DCEA1-CPTw-012

RINDGE TRACT

San Joaquin County

DCEA1-CPTw-013

Ringe Rd

Railroad
Study Area
Water

Proposed IS MND 2022 T/CRA
CPT GW Sampling
Deepen
Deepen and/or Moved
Sacrificial

60ft Buffer
Quarter Mile of 60ft Buffer

N

0 1,000 US Feet

YOL Sacramento SAC Courtland SOL SJQ Stockton Mountain House ALA

Data Source: DCA, DWR Print Time: 6/9/2022 9:53 AM

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RINDGE TRACT

Rindge Rd

Neugebauer Rd

San Joaquin River

Windmill Cove

Holt Rd

San Joaquin County

DCBA1-DH-011

LOWER ROBERTS ISLAND

Railroad
Study Area
Water

Proposed IS MND 2022 T/CRA
CPT GW Sampling
Deepen
Deepen and/or Moved
Sacrificial

60ft Buffer
Quarter Mile of 60ft Buffer

N

0 1,000 US Feet

Data Source: DCA, DWR Print Time: 6/9/2022 9:53 AM

Tribal Cultural Resources Assessment
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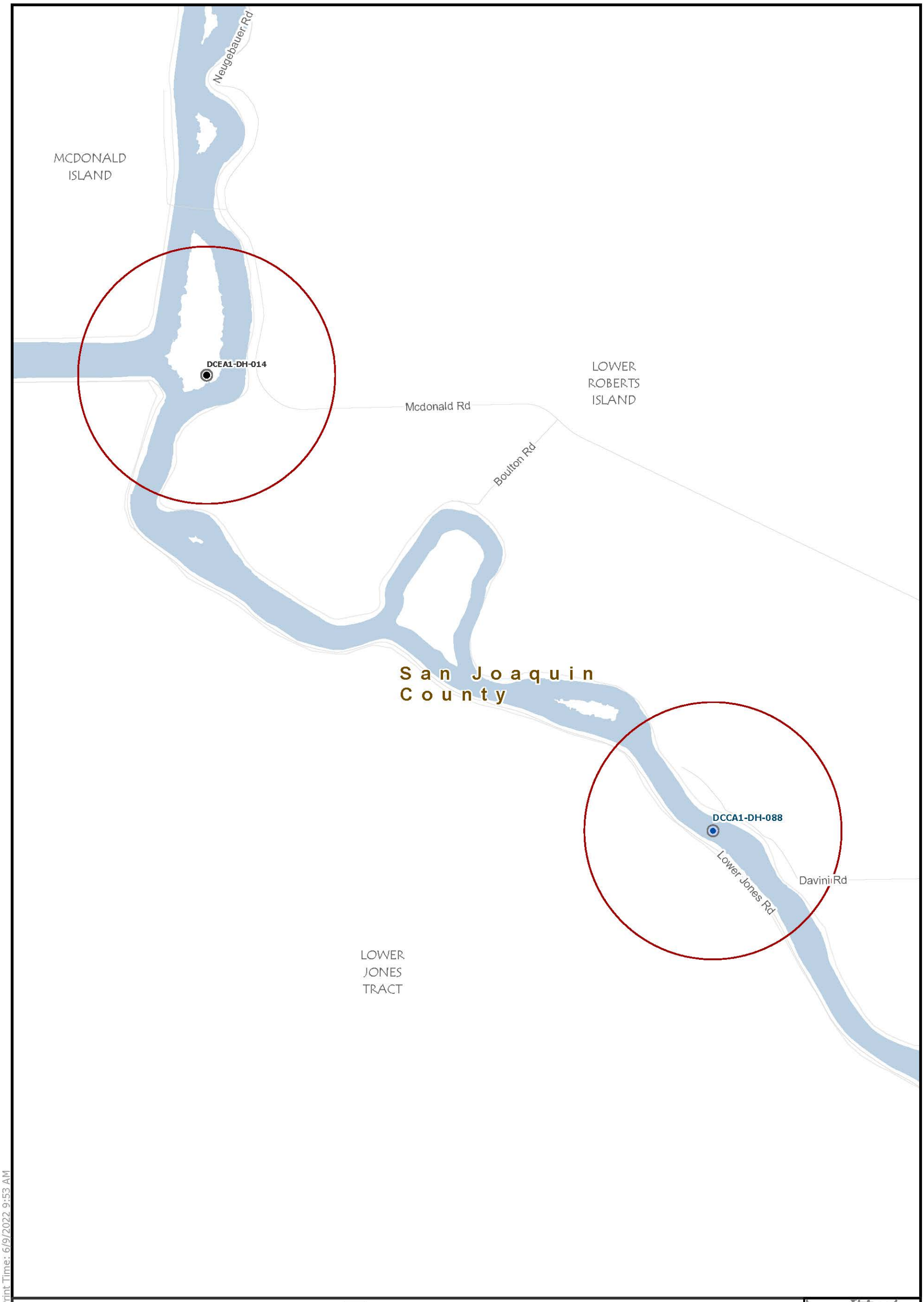

Data Source: DCA, DWR Print Time: 6/9/2022 9:53 AM

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LOWER
JONES
TRACT

UPPER
JONES
TRACT

DCBA1-DH-001

Bacon Island Rd

Middle River

San Joaquin
County

VICTORIA
ISLAND

Railroad
Study Area
Water

Proposed IS MND 2022 T/CRA
CPT GW Sampling
Deepen
Deepen and/or Moved
Sacrificial

60ft Buffer
Quarter Mile of 60ft Buffer

N

0 1,000
US Feet

Data Source: DCA, DWR Print Time: 6/9/2022 9:53 AM

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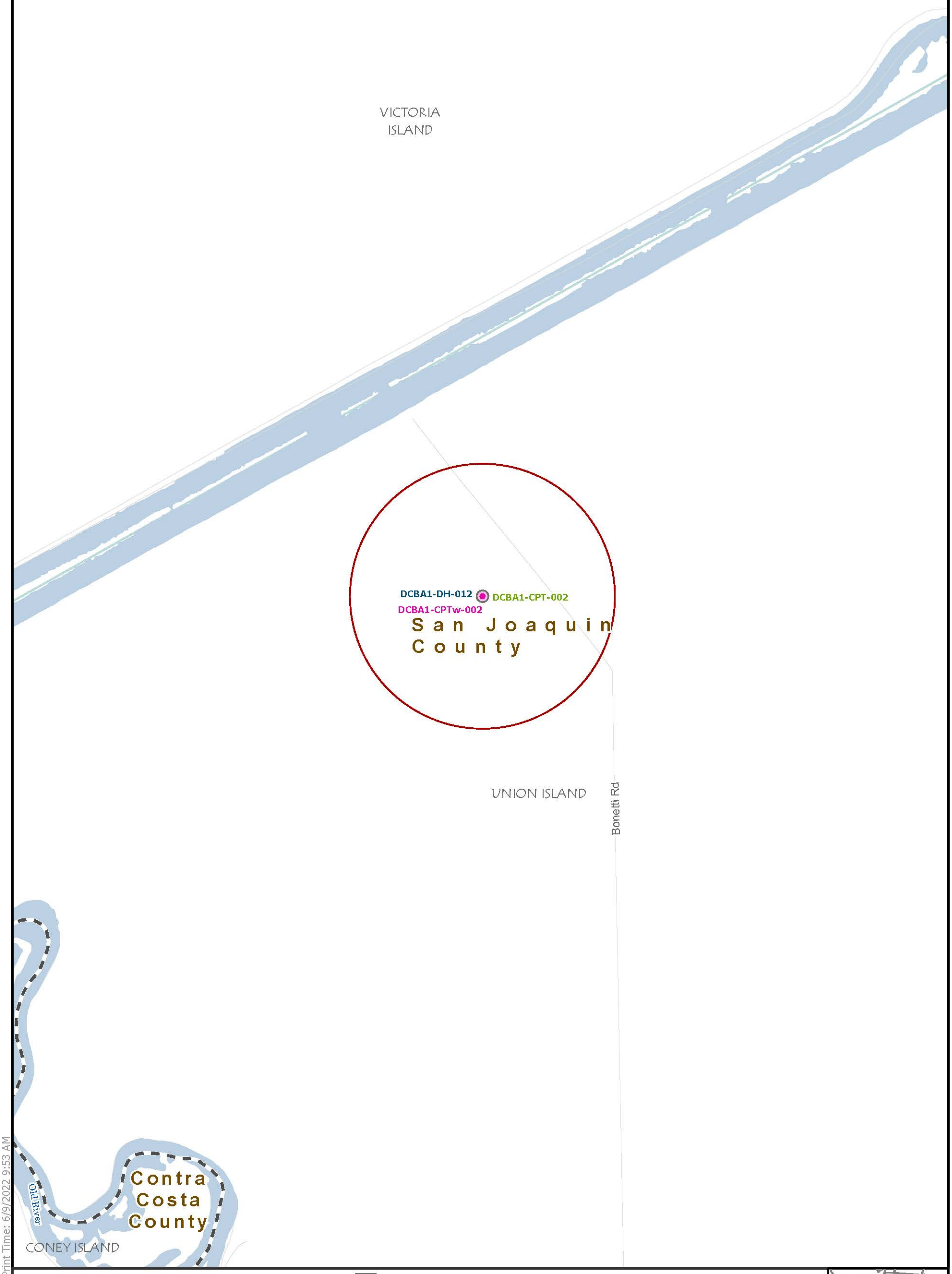
Figure 19 of 22



Data Source: DCA, DWR Print Time: 6/9/2022 9:53 AM

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Herdlyn Rd

Contra Costa County

Byron Hwy

DCBA1-CPTw-003

DCBA1-DH-013

DCBA1-DH-014

DCBA1-DH-015

DCBA1-DH-016

DCBA1-DH-017

Jones Pumping Plant

Mountain House Rd

Kelso Rd

Lindeman Rd

San Joaquin County

Alameda County

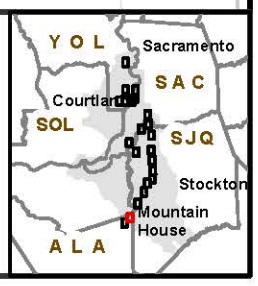
Railroad
Study Area
Water

Proposed IS MND 2022 T/CRA
CPT GW Sampling
Deepen
Deepen and/or Moved
Sacrificial

60ft Buffer
Quarter Mile of 60ft Buffer

N

0 1,000 US Feet



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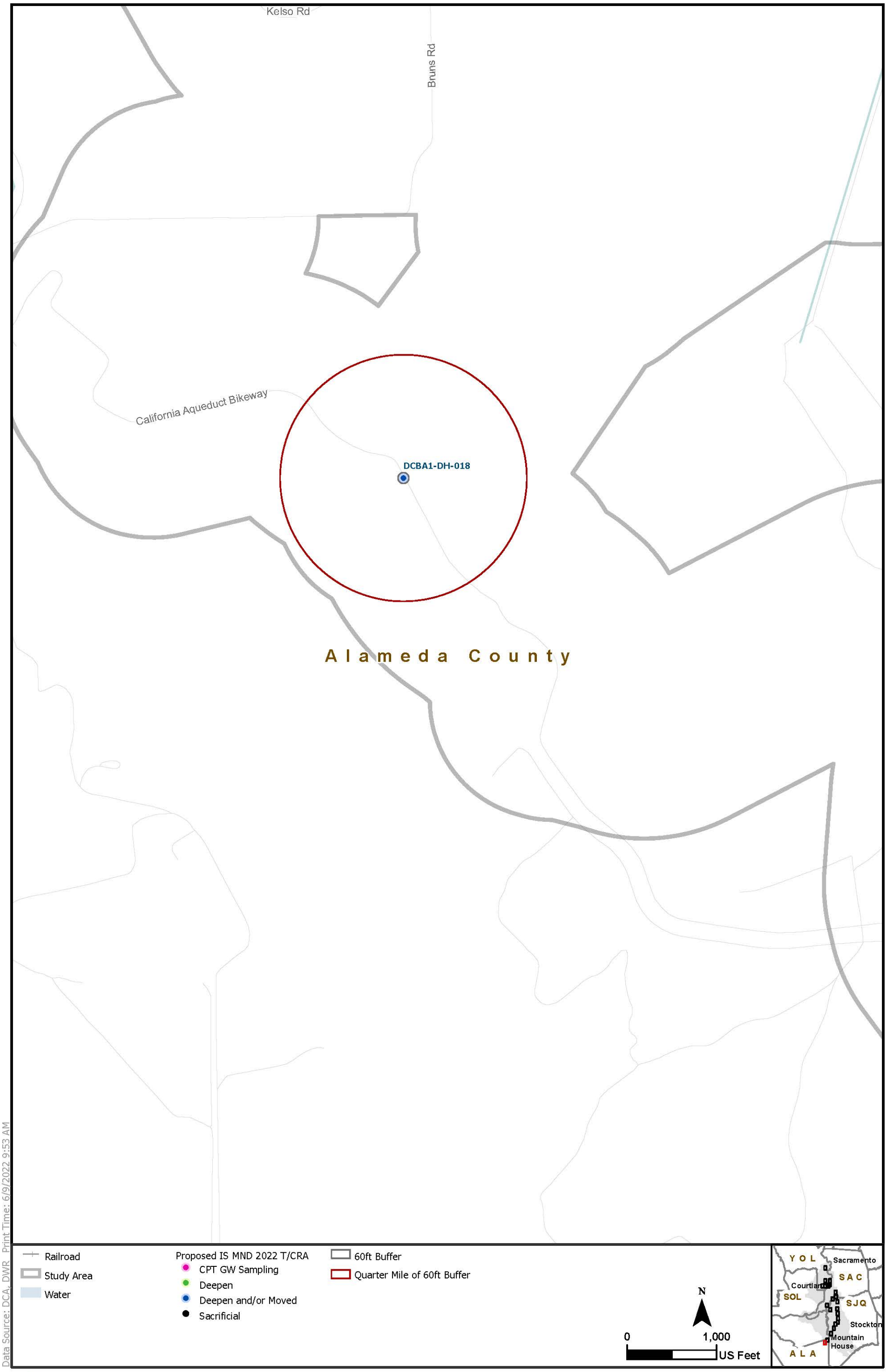

Data Source: DCA, DWR Print Time: 6/9/2022 9:53 AM

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5.8 Attachment H: Air Quality and GHG Calculations

TOTAL EXHAUST EMISSIONS (pounds/day)						Number of borings per county							Total exhaust emissions per activity, per county (*pounds/day*)						
VEHICLES	**WORK DAYS**	**ROG**	**NOX**	**PM10**	**PM2.5**	**Alameda**	**Contra Costa**	**Sacramento**	**San Joaquin**	**Solano**	**Yolo**	**Total**		**Alameda**	**Contra Costa**	**Sacramento**	**San Joaquin**	**Solano**	**Yolo**
On-Land 50' Borings									22			22	Percentage of exhaust emissions				1.0		
Drill Rigs - 50-foot deep borings	44.0	0.3	3.1	0.1	0.1								On-land 50 Max daily exhaust emissions						
Water Truck	44.0	0.6	5.3	0.2	0.2								ROG	0.0	0.0	0.0	1.2	0.0	0.0
Liftgate Truck	44.0	0.2	2.1	0.1	0.1								NOX	0.0	0.0	0.0	10.7	0.0	0.0
Employee Vehicles	198.0	0.1	0.3	0.0	0.0								PM10	0.0	0.0	0.0	0.4	0.0	0.0
Maximum Daily		**1.2**	**10.7**	**0.4**	**0.4**								PM2.5	0.0	0.0	0.0	0.4	0.0	0.0
On-Land 125-150' Borings						1	20	1				22	Percentage of exhaust emissions	0.05	0.91	0.05			
Drill Rigs - 125- to 150-foot deep	88.0	0.3	3.1	0.1	0.1								On-land 125-150 Max daily exhaust emissions						
Water Truck	88.0	0.6	5.3	0.2	0.2								ROG	0.1	1.1	0.1	0.0	0.0	0.0
Liftgate Truck	88.0	0.2	2.1	0.1	0.1								NOX	0.5	10.2	0.5	0.0	0.0	0.0
Employee Vehicles	374.0	0.2	0.7	0.01	0.01								PM10	0.0	0.4	0.0	0.0	0.0	0.0
Maximum Daily		**1.3**	**11.2**	**0.4**	**0.4**								PM2.5	0.0	0.4	0.0	0.0	0.0	0.0
On-Land 175-200' Borings						6	21	55.0	13	2	14	111	Percentage of exhaust emissions	0.1	0.2	0.5	0.1	0.0	0.1
Drill Rigs - 175- to 200-foot deep borings	777.0	0.3	3.1	0.1	0.1								On-land 175-200 Max daily exhaust emissions						
Water Truck	777.0	0.6	5.3	0.2	0.2								ROG	0.2	0.6	1.6	0.4	0.1	0.4
Tractor-Trailer Lowboy Truck	222.0	0.2	2.0	0.1	0.1								NOX	1.1	3.9	10.3	2.4	0.4	2.6
Liftgate Truck	777.0	0.2	2.1	0.1	0.1								PM10	0.0	0.1	0.3	0.1	0.0	0.1
Employee Vehicles	3996.0	1.8	8.3	0.1	0.1								PM2.5	0.0	0.1	0.3	0.1	0.0	0.1
Maximum Daily		**3.1**	**20.7**	**0.6**	**0.5**														
On-Land 250-300' Borings						3		1	7		0	11	Percentage of exhaust emissions	0.3	0.0	0.1	0.6	0.0	0.0
Drill Rigs - 250- to 300-foot deep borings	220.0	0.3	3.1	0.1	0.1								On-land 250-300 Max daily exhaust emissions						
Water Truck (2 - incorporated in calcs)	220.0	0.6	5.3	0.2	0.2								ROG	0.4	0.0	0.1	0.9	0.0	0.0
Tractor-Trailer Lowboy Truck	22.0	0.2	2.0	0.1	0.1								NOX	3.5	0.0	1.2	8.2	0.0	0.0
Liftgate Truck	220.0	0.2	2.1	0.1	0.1								PM10	0.1	0.0	0.0	0.3	0.0	0.0
Employee Vehicles	1111.0	0.1	0.4	0.005	0.004								PM2.5	0.1	0.0	0.0	0.3	0.0	0.0
Maximum Daily		**1.4**	**12.8**	**0.5**	**0.5**														
On-Land 700' Angled Boring						1						1	Percentage of exhaust emissions	0.0	0.0	0.0	0.0	0.0	0.0
Drill Rigs - 700-foot deep borings	35.0	0.3	3.1	0.1	0.1								On-land 700' Max daily exhaust emissions						
Water Truck (2 - incorporated in calcs)	35.0	0.6	5.3	0.2	0.2								ROG	0.0	0.0	0.0	0.0	0.0	0.0
Tractor-Trailer Lowboy Truck	2.0	0.2	2.0	0.1	0.1								NOX	0.0	0.0	0.0	0.0	0.0	0.0
Liftgate Truck	35.0	0.2	2.1	0.1	0.1								PM10	0.0	0.0	0.0	0.0	0.0	0.0
Employee Vehicles	176.0												PM2.5	0.0	0.0	0.0	0.0	0.0	0.0
Maximum Daily		**1.3**	**12.4**	**0.5**	**0.5**														
CPT Soundings 50'-300'						3	22	18	44	1	7	95	Percentage of exhaust emissions	0.0	0.2	0.2	0.5	0.0	0.1
CPT Truck	190.0	1.0	9.8	0.4	0.3								CPT Max daily exhaust emissions						
Grout Truck	190.0	0.1	1.1	0.0	0.0								ROG	0.1	0.4	0.3	0.8	0.0	0.1
Tractor-Trailer Lowboy Truck	190.0	0.2	2.0	0.1	0.1								NOX	0.5	3.3	2.7	6.6	0.2	1.1
Employee Vehicles	855.0	0.3	1.5	0.0	0.0								PM10	0.0	0.1	0.1	0.2	0.0	0.0
Maximum Daily		**1.7**	**14.3**	**0.5**	**0.4**								PM2.5	0.0	0.1	0.1	0.2	0.0	0.0
CPT Soundings 50'-200' w/ Groundwater						1		1	6			8	Percentage of exhaust emissions	0.0	0.0	0.0	0.0	0.0	0.0
CPT Truck	24.0	1.0	9.8	0.4	0.3								CPT Max daily exhaust emissions						
Grout Truck	16.0	0.1	1.1	0.0	0.0								ROG	0.1	0.4	0.3	0.8	0.0	0.1
Tractor-Trailer Lowboy Truck	16.0	0.2	2.0	0.1	0.1								NOX	0.5	3.3	2.7	6.6	0.2	1.1
Employee Vehicles	104.0	0.3	1.5	0.0	0.0								PM10	0.0	0.1	0.1	0.2	0.0	0.0
Maximum Daily		**1.7**	**14.3**	**0.5**	**0.4**								PM2.5	0.0	0.1	0.1	0.2	0.0	0.0
Geophysical Survey									5			5	Percentage of exhaust emissions	0.0	0.0	0.0	1.0	0.0	0.0
Envirovibe Rig	35.0	0.4	4.0	0.3	0.3								Geophysical survey Max daily exhaust emissions						
Tractor-Trailer Lowboy Truck	2.0	0.2	2.0	0.1	0.1								ROG	0.0	0.0	0.0	0.7	0.0	0.0
Employee Vehicles	230.0	0.1	0.4	0.0	0.0								NOX	0.0	0.0	0.0	6.4	0.0	0.0
Maximum Daily		**0.7**	**6.4**	**0.4**	**0.3**								PM10	0.0	0.0	0.0	0.4	0.0	0.0
													PM2.5	0.0	0.0	0.0	0.3	0.0	0.0
Over Water Borings							7	22	25	1	1	56	Percentage of exhaust emissions	0.0	0.1	0.4	0.4	0.0	0.0
Hazard Survey Boat (<50 HP)	168.0	0.5	3.9	0.4	0.4								Over Water boring Max daily exhaust emissions						
Drill Rig Barge/Tugboat or Ship	448.0	12.1	121.7	3.7	3.7								ROG	0.0	1.8	5.6	6.4	0.3	0.3
Worker Transport Boat	448.0	1.2	15.7	0.8	0.8								NOX	0.0	18.0	56.5	64.2	2.6	2.6
Employee Vehicles	1400.0	0.5	2.4	0.0	0.0								PM10	0.0	0.6	2.0	2.2	0.1	0.1
Maximum Daily		**14.3**	**143.7**	**5.0**	**4.9**								PM2.5	0.0	0.6	1.9	2.2	0.1	0.1

Based on:
Construction Equipment calculations based on Engine Emission Factors for 2020 from Sacramento
Employee Vehicles calculaitons based on EMFAC2017 (v1.0.2) Emissions Inventory for 2010 MDV at 35 MPH

		Total exhaust emissions (maximum pounds per day) per air district			
Location	**Pollutant**	**BAAQMD**	**SMAQMD**	**SJVAPCD**	**YSAQMD**
On-land	ROG	3.2	2.4	4.7	2.0
	NO_X	26.8	17.4	26.1	5.5
	PM_{10}	0.9	0.5	1.1	0.2
	$PM_{2.5}$	0.9	0.5	1.0	0.2
Overwater	ROG	1.8	5.6	6.4	0.5
	NO_X	18.0	56.5	64.2	5.1
	PM_{10}	0.6	2.0	2.2	0.2
	$PM_{2.5}$	0.6	1.9	2.2	0.2
CHANGES FROM 2021 ADDENDUM		White= unchanged	Green= reduction in emissions	Yellow= increase in emissions	

Project Activities for Soil Explorations - Inventory and Calculation of Greenhouse Gas Emissions

Line	Emissions from Construction Equipment								
1	**Type of Equipment**	**Maximum Number per Day**	**Total Operation Days**	**Average Hours Per Day**	**Total Operation Hours[1]**	**Fuel Consumption Per Hour (gal/hour)[2]**	**Total Fuel Consumption (gal. diesel)**	**CO_2e/gal diesel[3]**	**Total CO_2 Equivalent Emissions (metric tons)**
2	**On-Land 50' Borings**								
3	Drill Rigs - 50-foot deep borings	1	44	10	440	14.07	6,191	0.010	64
4	Water Truck	1	44	10	440	7.55	3,323	0.010	35
5	Liftgate Truck	1	44	4	176	7.55	1,329	0.010	14
6	**On-Land 125-150' Borings**								
7	Drill Rigs - 125- to 150-foot deep borings	1	88	10	880	14.07	12,383	0.010	129
8	Water Truck	1	88	10	880	7.55	6,647	0.010	69
9	Liftgate Truck	1	88	4	352	7.55	2,659	0.010	28
10	**On-Land 175-200' Borings**								
11	Drill Rigs - 175- to 200-foot deep borings	1	777	10	7770	14.07	109,333	0.010	1,136
12	Water Truck	1	777	10	7770	7.55	58,687	0.010	610
13	Tractor-Trailer Lowboy Truck	1	222	2	444	12.35	5,484	0.010	57
14	Liftgate Truck	1	777	4	3108	7.55	23,475	0.010	244
15	**On-Land 250-300' Borings**								
16	Drill Rigs -250-300-foot deep borings	1	220	10	2200	14.07	30,957	0.010	322
17	Water Truck - 2 vehicles	2	220	10	2200	7.55	16,617	0.010	173
18	Tractor-Trailer Lowboy Truck	1	22	2	44	12.35	543	0.010	6
19	Liftgate Truck	1	220	4	880	7.55	6,647	0.010	69
15	**On-Land 700' Boring**								
16	Drill Rigs	1	35	10	350	14.07	4,925	0.010	51
17	Water Truck - 2 vehicles	2	35	10	350	7.55	2,644	0.010	27
18	Tractor-Trailer Lowboy Truck	1	2	2	4	12.35	49	0.010	1
19	Liftgate Truck	1	35	4	140	7.55	1,057	0.010	11
20	**CPT Soundings**								
21	CPT Truck	1	190	10	1900			0.010	-
22	Grout Truck	1	190	2	380	7.55	2,870	0.010	30
23	Tractor-Trailer Lowboy Truck	1	190	2	380	12.35	4,693	0.010	49
20	**CPT Soundings with Groundwater**								
21	CPT Truck	1	24	10	240			0.010	-
22	Grout Truck	1	16	2	32	7.55	242	0.010	3
23	Tractor-Trailer Lowboy Truck	1	16	2	32	12.35	395	0.010	4
24	**Geophysical Survey**								
25	Envirovibe Rig	1	35	10	350	12.35	4,323	0.010	45
26	Tractor-Trailer Lowboy Truck	1	2	2	4	12.35	49	0.010	1
27	**Over Water Borings**								
28	Hazard Survey Boat (<50 HP)	1	168	10	1680	19.86	33,365	0.010	347
29	Drill Rig Barge/Tugboat or Ship	1	448	10	4480	43.50	194,880	0.010	2,025
30	Worker Transport Boat	1	448	4	1792	19.86	35,589	0.010	370
31	TOTAL						**569,357**		**5,916**

32 [1] An 8-hour work day is assumed, unless otherwise indicated

33 [2] California Air Resource Board Offroad 2007 Emissions Inventory fuel consumption factors for on-land estimates; California Air Resource Board 1999 Source Inventory for Tugs and Towboats, Dredge Vessels and Others, Table 3, for over-water estimates (https://ww3.arb.ca.gov/ei/areasrc/districtmeth/bayarea/99td1194.pdf)

34 [3] World Resources Institute-Mobile combustion CO_2 emissions tool, June 2003 Version 1.2

Emissions from Transportation of Construction Workforce

Average Number of Workers per Day	Total Number of Workdays	Average Distance Travelled (round trip)	Total Miles Travelled	Average Passenger Vehicle Fuel Efficiency[4] (miles/gal)	Total Fuel Consumption (gal. gasoline)	CO_2e/gal Gasoline [3]	Total CO_2 Equivalent Emissions (metric tons)
On-Land 50' Borings							
15	198	60	178200	20.8	**8567.3**	0.009	**77**
On-Land 125-150' Borings							
15	374	60	336600	20.8	**16182.7**	0.009	**146**
On-Land 175-200' Borings							
17	3996	60	4075920	20.8	**195957.7**	0.009	**1766**
On-Land 250-300' Borings							
17	1111	60	1133220	20.8	**54481.7**	0.009	**491**
On-Land 700' Borings							
17	176	60	179520	20.8	**8630.8**	0.009	**78**
CPT Soundings							
15	855	60	769500	20.8	**36995.2**	0.009	**333**
CPT Soundings with Groundwater							
15	104	60	93600	20.8	**4500.0**	0.009	**41**
Geophysical Survey							
14	230	60	193200	20.8	**9288.5**	0.009	**84**
Over Water Borings							
13	1400	60	1092000	20.8	**52500.0**	0.009	**473**

[4] United States Environmental Protection Agency. 2008. Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2008. [EPA420-R-08-015]

3487.806

Total Construction Activity Emissions	9,404.2
Total Years of Construction	4
Expected Start Date of Construction	2020-2023

Estimated Project Useful life	4	Years
Average Annual Total GHG Emissions[7]	2,351.1	**MT CO_2 equivalents**
Max. Year Construction GHG Emissions[8]		**MT CO2 equivalents**

[7] short-term construction emissions amortized over life of project

[8] Emissions total from single year of construction when emissions peak (for multi-year construction projects)

5.9 Attachment I: GGERP Consistency Determination

Greenhouse Gas Emissions Reduction Plan Consistency Determination

For Projects Using Contractors or Other Outside Labor

This form is to be used by DWR Project Managers to document a CEQA project's consistency with the DWR Greenhouse Gas Emissions Reduction Plan (GGERP). This form is to be used only when DWR is the Lead Agency and when contractors or outside labor and equipment are used to implement the project.

Additional Guidance on filling out this form can be found at:
https://cawater.sharepoint.com/teams/prog/icc/SitePages/ClimateActionPlan.aspx

The DWR Greenhouse Gas Emissions Reduction Plan can be accessed at:
https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/All-Programs/Climate-Change-Program/Climate-Action-Plan/Files/CAP-I-GGERP-Update-2020.pdf

Project Name:	Soil Investigations for Data Collection in the Delta
Environmental Document Type:	Addendum to 2020 Final IS/MND
Project Manager's Name:	Carolyn Buckman
Project Manager's E-mail:	Carolyn.Buckman@water.ca.gov
Division:	Executive
Office, Branch, or Field Division:	Delta Conveyance

Short Project Description:
This Addendum evaluates the removal of 17 soil borings at 200 feet (61 meters), 10 cone penetration tests (CPTs) to 200 feet (61 meters), and 3 overwater soil borings up to 200 feet (61 meters) and the additions of 9 soil borings to 300 feet (91 meters), 2 CPTs to 300 feet (91 meters), 7 soil borings to 200 feet (61 meters), 8 CPTs for the purpose of groundwater sampling, 3 overwater soil borings up to 200 feet (61 meters), and 1 deep-angled boring up to 700 feet (214 m) . Soil investigation locations are spread throughout the potential study area for the Delta Conveyance.

Project Greenhouse Gas (GHG) Emissions Summary:		
Total Construction Emissions	9404.2	$mtCO_2e$
Maximum Annual Construction Emissions	2351.1	$mtCO_2e$ (For construction lasting 12 months or less the total and maximum annual construction emissions will be the same)

☐ All other emissions from the project not accounted for above will occur as ongoing operational, maintenance, or business activity emissions and therefore have already been accounted for and analyzed in the GGERP.

Extraordinary Construction Project Determination:
Do total project construction emissions exceed 25,000 $mtCO_2e$ for the entire construction phase or exceed 12,500 $mtCO_2e$ in any single year of construction?
☒ No – Additional analysis not required ☐ Yes – Project specific emissions mitigation measures have been included in the environmental analysis document for the project

Project GHG Reduction Plan Checklist:

☒ All Project Level GHG Emissions Reduction Measures have been incorporated into the design or implementation plan for the project. (Project Level GHG Emissions Reduction Measures)

Or

☐ All feasible Project Level GHG Emissions Reduction Measures have been incorporated into the design or implementation plan for the project and Measures not incorporated have been listed and determined not to apply to the proposed project (include as an attachment)

☒ Project does not conflict with any of the Specific Action GHG Emissions Reduction Measures (Specific Action GHG Emissions Reduction Measures)

Would implementation of the project result in additional energy demands on the SWP system of 15 GWh/yr or greater?

☐ Yes ☒ No

If you answered Yes, attach a letter documenting that the project has consulted with the DWR SWP Power and Risk Office regarding the additional power requirements of the project.

Is there substantial evidence that the effects of the proposed project may be cumulatively considerable notwithstanding the proposed project's compliance with the requirements of the DWR GHG Reduction Plan?

☐ Yes ☒ No

If you answered Yes, the project is not eligible for streamlined analysis of GHG emissions using the DWR GHG Emissions Reduction Plan. (See CEQA Guidelines, section 15183.5, subdivision (b)(2).)

Project Manager Signature: Carolyn Buckman Date: 6/27/2022

After the Project Manager has reviewed and signed above please use DocuSign to forward this form to the DWR Climate Change Program at ceqaclimatechange@water.ca.gov for final approval.

For DWR Climate Change Program Use Only:
Based on the information provided above and information provided in associated environmental documentation completed pursuant to the above referenced project, the DWR Climate Change Program has determined that:

☑ The entire proposed project is consistent with the DWR GGERP and the GHGs emitted by the project are covered by the plan's analysis.

☐ The operational and maintenance phase of the project is consistent with the DWR GGERP and the GHGs emitted by the project are covered by the plan's analysis. Emissions from the construction phase of the project are not covered by the DWR GGERP and will be mitigated as part of the project.

Climate Change Program Approval Signature: Jordi Vasquez Date: 6/28/2022

Attachments:

☒ GHG Emissions Inventory ☐ List and Explanation of excluded Project level GHG Emissions Reduction Measures ☐ SWP Power and Risk Office Consultation Letter

Links:
https://cawater.sharepoint.com/teams/prog/icc/SitePages/HomePage.aspx
https://water.ca.gov/Programs/All-Programs/Climate-Change-Program