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CalCapture CCS Project

Aquatic Resources Delineation Report



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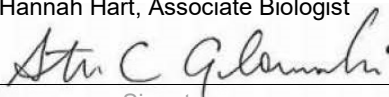
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Acronyms / Abbreviations

Acronym / Abbreviation	Full Name
AMSL	above mean sea level
ARDR	Aquatic Resources Delineation Report
CalGEM	California Geologic Energy Management Division
CARB	California Air Resources Board
CCS	Carbon Capture and Sequestration
CCU	Carbon Capture Unit
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CFGF	California Fish and Game Code
CFR	Code of Federal Regulations
CO ₂	carbon dioxide
CRC	California Resources Corporation
CTV	Carbon TerraVault Holdings, LLC
CTV I	Carbon TerraVault I
CUP	Conditional Use Permit
the CUP	Collectively, CUP No. 13, Map 118; CUP No. 14, Map 118; CUP No. 5, Map 119; CUP No. 3, Map 120; CUP No. 2, Map 138; and CUP No. 6, Map 119
CWA	Clean Water Act
EFG+	Econamine FG Plus SM
EHOF	Elk Hills Oilfield
EHPP	Elk Hills Power Plant
EIR	Environmental Impact Report
FieldMaps	FieldMaps for ArcGIS TM
GIS	geographic information system
GPS	global positioning system
GT	gas turbines
HDD	horizontal directional drilling
HRSG	heat recovery steam generators
HUC	Hydrologic Unit Code
Kern County	Kern County Planning and Natural Resources Department
kV	kilovolt
LSAA	Lake and Streambed Alteration Agreement



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 Acronyms / Abbreviations

Acronym / Abbreviation	Full Name
M	magnitude
MDB&M	Mount Diablo Base and Meridian
MMTPY	million metric tons per year
MTPD	metric tons per day
MWe	megawatt equivalent
NHD	National Hydrography Dataset
NOD	Notice of Determination
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
NWPR	Navigable Waters Protection Rule
OHWM	ordinary high water mark
PCC	prior converted cropland
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
Project	CalCapture Carbon Capture and Sequestration Project
Rapanos	Rapanos v. United States and Carabell v. United States (consolidated cases)
RO	reverse osmosis
RWQCB	Regional Water Quality Control Board
Sackett	Sackett v. Environmental Protection Agency
ST	steam turbine
Stantec	Stantec Consulting Services Inc.
SWANCC	Solid Waste Agency of Northern Cook County
SWRCB	State Water Resources Control Board
TOB	top of bank
UIC	Underground Injection Control
U.S.	United States
USACE	United States Army Corps of Engineers
U.S. EPA	U.S. Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
waters of the state	waters of the State of California
WOTUS	waters of the United States
WDR	Waste Discharge Requirements
WQC	Water Quality Certification



1 Introduction

This Aquatic Resources Delineation Report (ARDR) presents the findings of an investigation of potential jurisdictional water features conducted by Stantec Consulting Services Inc. (Stantec) for the Carbon TerraVault Holdings, LLC (CTV), a carbon management subsidiary of California Resources Corporation (CRC) CalCapture Carbon Capture and Sequestration (CCS) Project (Project). The initial assessment of potential jurisdictional wetlands, other waters of the United States (WOTUS), “waters of the state,” and California Department of Fish and Wildlife (CDFW) jurisdictional waters was conducted on February 11, 2025, by Stantec biologists Stan Glowacki and Hannah Hart. Subsequent biological reconnaissance surveys and jurisdictional waters assessments were conducted on February 19, 20, and May 8, 2025, by Hannah Hart and on June 24, 2025, by Stantec biologists Cassandra Cortez and Megan Wong. This assessment was conducted to determine the extent of resources that may qualify to be under the jurisdiction of the United States Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and CDFW within the Aquatic Study Area (Appendix A, Figure 1).

1.1 Project Description

The proposed Project would capture carbon dioxide (CO₂) generated as a by-product by CRC’s 550-megawatt-equivalent (MWe) Elk Hills Power Plant (EHPP), located in the EHOE near Tupman, Kern County, California. The EHPP was commissioned in 2003 and is powered by two General Electric 7FA gas turbines (GTs), with two heat recovery steam generators (HRSGs) providing steam to a General Electric D11 steam turbine (ST). The Carbon Capture Unit (CCU), not including pipelines or temporary staging and parking areas, would be located immediately south of the EHPP in a 7.64-acre existing disturbed area.

Implementation of the Project will require approval of a Petition for Modification Application from the California Energy Commission (CEC), who has the exclusive authority for licensing thermal power plants of 50 MW or larger, as well as related transmission lines, fuel supply lines, and other facilities.

The CCU would utilize Fluor’s Econamine FG PlusSM (EFG+) process to capture and concentrate the CO₂. The EFG+ process is designed to capture 95 percent of the CO₂ from the total flue gas feed to the unit. The EFG+ CCU can be divided into seven primary subsystems or sections: Flue Gas Cooling, CO₂ Absorption, Solvent Regeneration, Solvent Maintenance, Chemical Storage and Supply, CO₂ Compression, and Utility Support Systems. The treated flue gas is vented to the atmosphere directly from the EFG+ CCU plant absorber. The concentrated CO₂ would then be compressed, dehydrated, and stripped of oxygen prior to conveyance to the permitted manifold pad, permitted as part of the approved Carbon TerraVault I (CTV I) project (State Clearinghouse No. 2022030180), which will direct the CO₂ to the U.S. Environmental Protection Agency (U.S. EPA) approved Class VI Underground Injection Control (UIC) wells to be injected into a depleted oil and gas reservoir located on the CRC property and approved as part of the CTV I project. The previously approved CTV I manifold pad, injection wells, depleted oil and gas reservoir and related facilities further discussed in Section 1.2 below are not part of the CalCapture CCS Project analyzed in this report.



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A new, approximately 0.5-mile, 8- to 10-inch pipeline, installed primarily below ground utilizing either trenching or horizontal directional drilling (HDD) techniques, would transport the CO₂ from the CCU to the tie-in with the Carbon TerraVault I (CTV I) permitted 35R manifold facility (pad). It is anticipated that the proposed Project would capture approximately 4,400 metric tons of CO₂ per day (MTPD) (1.6 million metric tons of CO₂ per year [MMTPY]). The proposed Project is estimated to be in operation for up to 26 years.¹

Water use during operation of the CalCapture CCU would be minimized by the inclusion of a hybrid cooling system (Wet Surface Air Coolers [WSAC], air coolers, secondary glycol cooling, and water cooling). Additionally, the CCU would be equipped with a water treatment system, consisting of a reverse osmosis (RO) Unit that is designed to recover and reuse water from the Cooling Tower blowdown. The recovered water is utilized as make-up to the CO₂ absorption system and the Wash Water WSAC Basin. A wastewater stream (less than 10 gallons per minute) would be collected at the CalCapture CCU and transferred by a new surface pipeline to the EHPP for disposal via an existing UIC Class I injection well.

The proposed Project includes a single connection to the CRC Power System and would include a connection of a new 115-kilovolt (kV) transmission line to a new CRC electrical substation. The proposed Project would require a new transmission tie line to connect the Project switching station to the existing CRC substation. Electrical power would be supplied to the CalCapture Substation with a new dedicated electrical transformer. The new 115-kV transmission tie line is expected to be built using pre-engineered steel poles with anchor bolt foundation designs.

During construction, temporary offices and existing parking areas would be used by construction personnel. Temporary office and parking areas have been designated on previously disturbed areas to the south and northeast of the Project site. Two additional areas are located approximately 5.5 miles southeast of the Project site. There are no permanent new buildings proposed for the Project, and no grading would occur within the temporary office and parking areas. Total temporary staging and parking area would be approximately 30.74 acres.

1.2 CTV I Background Information

On December 31, 2024, the U.S. EPA issued four UIC Class VI well permits to CTV, a carbon management subsidiary of CRC.

The specific U.S. EPA permits issued for the four wells are as follows:

- R9UIC-CA6-FY22 1.1 for well 373-35R
- R9UIC-CA6-FY22 1.2 for well 345C-36R
- R9UIC-CA6-FY22 1.3 for well 353XC-35R

¹The life of the project is dependent on the sources permitted for injection into the CTV I approved storage reservoir, the ability of the project year by year to obtain CO₂ and inject at the maximum 2,210,000 million tons per year, and the total estimated storage capacity of up to 48 million tons of CO₂.



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- R9UIC-CA6-FY22 1.4 for well 363C-27R

These four wells would be utilized to inject the CO₂ captured from the proposed Project into the Monterey Formation 26R storage reservoir located approximately 6,000 feet below the ground surface. The CTV I project area is located within the EHOF, which is a suitable area for long-term CO₂ storage and sequestration. The CTV I project was designed to implement sustainable CCS in support of California's initiative to combat climate change by reducing CO₂ levels in the atmosphere.

In addition to the Class VI Permit, CTV obtained a land use permit from the Kern County Planning and Natural Resources Department (Kern County) in 2024. Specifically, the CTV I project was approved by the Kern County Board of Supervisors on October 21, 2024, based on a final Environmental Impact Report (EIR, State Clearinghouse #2022030180) prepared by Kern County and certified by it on the same date. A Notice of Determination was filed with the Kern County Clerk on October 22, 2024. The CTV I project is subject to the terms, conditions and restrictions set forth in the Conditional Use Permits (CUP) issued by Kern County and identified as CUP No. 13, Map 118; CUP No. 14, Map 118; CUP No. 5, Map 119; CUP No. 3, Map 120; CUP No. 2, Map 138; and CUP No. 6, Map 119 (collectively, "the CUP"). Implementation of the CUP authorizes the construction and operation of underground CO₂ facility pipelines to support the CTV I CCS facility and related infrastructure (e.g., injection/monitoring wells, CO₂ manifold piping and metering facilities) within the 9,104-acre project site, located within the EHOF.

Four monitoring wells permitted by the California Geologic Energy Management Division (CalGEM), as part of the CUP issued by Kern County for the CTV I project would be used for CO₂ monitoring. In addition, six CTV I permitted wells would be used to monitor for seismic activity. The seismic monitoring wells will be used to detect seismic events at or above magnitude (M) 1.0 in real time as required by the California Air Resources Board (CARB) CCS Protocol under the Low Carbon Fuel Standard (LCFS) (C.4.3.2.3). Additionally, the California Integrated Seismic Network will be monitored continuously for indication of a 2.7 M or greater earthquake or greater occurring within a 1-mile radius of injection operations from commencement of injection activity to its completion.

Monitoring activities would extend beyond the injection phase of the Project pursuant to Code of Federal Regulation (CFR) Title 40 Section 146.93 until site closure is granted. Monitoring requirements during post-injection are similar to those during injection, with activities such as sampling occurring quarterly and monitoring well integrity testing at frequency per U.S. EPA requirement.

As noted above, the facilities approved as part of the CTV I project, including but not limited to the manifold, pad, injection wells, monitoring wells and related transmission lines, pipelines and other related facilities that have already been approved by applicable agencies with jurisdiction over those facilities, including the U.S. EPA, CalGEM and Kern County, are not included as part of the proposed Project. Accordingly, such facilities are not analyzed in this report.



1.3 Project Location

The Project is located within the EHOE in the southwestern edge of the San Joaquin Valley near Tupman in Kern County, California.

The Project comprises portions of six parcels owned by CRC. The Project is contained within the following sections of EHOE: sections 26, 34, and 35 of Township 30 South Range 23 East and sections 10 and 11 of Township 31 South Range 24 East, Mount Diablo Base and Meridian (MDB&M), Kern County, State of California (Table 1). The proposed Project would be located on approximately 52 acres within the identified parcels.

Table 1 Project Parcel Data

Assessor's Parcel Number	Section/ Township/ Range	Acreage*
158-090-19	Section 35/ Township 30S/ Range 23E	590.61
158-090-16	Section 35/ Township 30S/ Range 23E	14.78
158-090-02	Section 26/ Township 30S/ Range 23E	640
158-090-04	Section 34/ Township 30S/ Range 23E	682.86
298-070-05	Section 11/Township 31S/Range 24E	640
298-070-06	Section 10/Township 31S/Range 24E	640

Notes:

Assessor's parcel acreages from Kern County Web Map ([Kern County GIS](#), 2025).

For this ARDR, a 50-foot buffer was added to the Project site; this is called the Aquatic Study Area. The Aquatic Study Area is approximately 88.12 acres (Appendix A, Figure 3a and Figure 3b).



2 Existing Site Conditions

2.1 Topography and Surrounding Land Uses

The Aquatic Study Area is situated north of the Buena Vista Valley in the EHO, in western Kern County. The Aquatic Study Area is surrounded by gently sloping hills that are highly disturbed by oil and gas infrastructure and industrial activities. Topography in the general area is characterized by open gently undulating plains, from which isolated low hills periodically rise. The main work area within the Aquatic Study Area ranges in elevation from approximately 1,300 feet above mean sea level (AMSL) to 1,370 feet AMSL. The proposed Temporary Parking, Office, and Staging Areas range in elevation from approximately 450 to 1,250 feet AMSL. The Aquatic Study Area is surrounded predominately by highly developed oil and gas infrastructure and open space areas.

2.2 Vegetation and Land Cover Types

The Manual of California Vegetation, 2nd Edition (Sawyer et al., 2009), was utilized to classify vegetation/land cover types present in the Aquatic Study Area. Two vegetation communities and one land cover type were identified within the Aquatic Study Area as described below. A photographic record documenting the vegetation and other cover is provided in Appendix B.

2.2.1 Vegetation Communities

2.2.1.1 Allscale Saltbush Scrub (*Atriplex polycarpa* Shrubland Alliance)

Allscale saltbush scrub is predominantly composed of allscale saltbush (*Atriplex polycarpa*) in the shrub canopy with other component shrubs including bladderpod (*Cleome isomeris*) and alkali goldenbush (*Isocoma acradenia*). Shrubs are usually less than 3 meters in height and vary in density with an open to continuous canopy and a variable herbaceous understory layer primarily comprising brome grasses (*Bromus* spp.). Allscale saltbush scrub is found along washes, playa lakebeds and shores, dissected alluvial fans, rolling hills, terraces, and edges of large low gradient washes. Soils may be rich in carbonate, alkaline, sandy, or sandy clay loams (CNPS, 2025).

Within the Aquatic Study Area, this vegetation community occurs within the open spaces adjacent to the Disturbed/Developed areas and within the ephemeral drainages. A total of 16.58 acres of this community type were mapped within the Aquatic Study Area during the surveys.

2.2.1.2 Red Brome Mediterranean Grassland (*Bromus rubens* Herbaceous Semi-Natural Alliance)

Red brome Mediterranean grassland is predominantly comprised of red brome (*Bromus rubens*), common Mediterranean grass (*Schismus barbatus*), and Arabian schismus (*Schismus arabicus*) as dominant or co-dominant species with other non-natives in the herbaceous layer. Emergent shrubs may be present at



low cover including species as described above in the Allscale scrub community. Herbs are usually less than 0.75 meters in height, with intermittent to continuous cover. This vegetation community occurs in all topography settings and soil textures.

Within the Aquatic Study Area, this vegetation community occurs within the northern portion adjacent to allscale saltbush scrub. A total of 0.49 acres of this community type was mapped within the Aquatic Study Area during the surveys.

2.2.2 Land Cover Types

2.2.2.1 Disturbed/Developed

This classification is used to describe areas within the Aquatic Study Area that are significantly disturbed by oil and gas infrastructure, including well pads, buildings, fences, parking lots, and paved and unpaved access roads. These areas are mainly devoid of vegetation other than ruderal species. A total of 71.04 acres of this land cover type was mapped within the Aquatic Study Area during the surveys.

2.3 Climate

The nearest long-term weather station, Taft, California (NWS COOP# 048752; period of record 1948 to 2016), has a mean annual temperature for the region of 65.2 degrees Fahrenheit and average annual precipitation of 5.39 inches (Western Regional Climate Center, 2025). The regional climate is usually characterized by long, hot, dry summers and rainy, mild winters with precipitation evenly distributed through fall, winter, and spring. Winters are moderate with the occasional frost, and the evaporation rate in the summer is very high.

2.4 Hydrology and Geomorphology

The Aquatic Study Area is predominantly within the Middle Kern – Upper Tehachapi-Grapevine (Hydrologic Unit Code [HUC] 18030003) watershed (Appendix A Figure 4), which drains an approximately 712,960-acre (1,114-square-mile) area in the southern portion of the San Joaquin Valley. Three unnamed ephemeral stream traverses through the Aquatic Study Area downslope according to the following sources:

- United States Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) (USFWS, 2025) (Appendix A, Figure 3);
- United States Geological Survey (USGS) National Hydrography Dataset (NHD) (USGS, 2025) (Appendix A, Figure 4); and
- USGS 7.5-minute topographic maps for East Elk Hills Quadrangle.

The Aquatic Study Area encompasses several features mapped as R4SBC riverine habitat (R-Riverine, 4-Intermittent, SB-Streambed, C-Seasonally Flooded) by NWI (USFWS, 2025) and mapped as stream/river by NHD (NRCS, 2025). One of the mapped drainages did not exhibit any field indicators of CDFW, USACE, and/or waters of the state jurisdiction. Watercourses within the Study Area generally drain towards Buena



Vista Creek or the California Aqueduct, but drainages in the Aquatic Study Area appear to be discontinuous and do not connect to a drained watercourse. USFWS NWI and USGS NHD maps are available in Appendix A, Figures 3 and 4.

2.5 Soils

Historic soils data from the Natural Resources Conservation Service (NRCS) were used to determine possible soil types that may occur within the Aquatic Study Area, including areas where hydric soils have historically occurred (USDA, 2025a, 2025b) (USDA and NRCS 2018). Characteristics of soils present within the Aquatic Study Area are summarized in Table 2 and are shown relative to the Aquatic Study Area in Appendix A, Figure 6.

Table 2 Soil Units Occurring in the Aquatic Study Area

Map Unit Symbol	Map Unit Name	Description	Acres Within Aquatic Study Area
146	Elkhills sandy loam, 9 to 50 percent slopes, eroded	A well-drained soil that occurs within erosion remnants on terraces at elevations ranging from 400 to 1,600 feet; parent material consists of alluvium derived from igneous and sedimentary rock; no flooding or ponding; depth to the water table is more than 80 inches; typical profile consists of 0–49 inches of gravelly sandy loam and 49–65 inches of stratified gravelly sand to silt loam. This soil is not considered a hydric soil.	2.14
150	Elkhills-Torriorthents stratified complex, 9 to 15 percent slopes	A well-drained soil that occurs within erosion remnants on terraces at elevations ranging from 400 to 3,500 feet; parent material consists of alluvium derived from igneous and sedimentary rock; no flooding or ponding; depth to the water table is more than 80 inches; typical profile consists of 0–49 inches of gravelly sandy loam and 49–65 inches of stratified gravelly sand to silt loam. This soil is not considered a hydric soil.	19.24
151	Elkhills-Torriorthents stratified, eroded complex, 15 to 50 percent slopes	A well-drained soil that occurs within erosion remnants on terraces at elevations ranging from 400 to 3,500 feet; parent material consists of alluvium derived from igneous and sedimentary rock; no flooding or ponding; depth to the water table is more than 80 inches; typical profile consists of 0–49 inches of gravelly sandy loam and 49–6 inches of stratified gravelly sand to silt loam. This soil is not considered a hydric soil.	5.27
176	Kimberlina sandy loam, 5 to 9 percent slopes	A well-drained soil that occurs within alluvial fans at elevations ranging from 120 to 1,000 feet; parent material consists of alluvium derived from igneous and sedimentary rock; no flooding or ponding; depth to the water table is more than 80 inches; typical profile consists of 0-9" sandy loam, 9-45" fine sandy loam, and 45-71" stratified silt loam to sandy clay loam. This soil is not considered a hydric soil.	34.28



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Map Unit Symbol	Map Unit Name	Description	Acres Within Aquatic Study Area
217	Kimberlina-Urban land complex, 0 to 5 percent slopes	A well-drained soil that occurs within fan skirts at elevations ranging from 460 to 1,250 feet; parent material consists of alluvium derived from sandstone and shale; very rare flooding and no ponding; depth to water table is more than 80 inches; typical profile consists of 0–60 inches of sandy loam. This soil is not considered hydric soil.	18.47
729	Sodic Haplocambids, thick-Torriorthents, thin-Torriorthents, very thin, eroded, complex, 30 to 60 percent slopes	A well-driained soil that occurs on hillslopes at elevations ranging from 500 to 1,160 feet; parent material consists of alluvium derived from sedimentary rock and/or granitoid rock; no flooding or ponding; depth to water table is more than 80 inches; typical profile consists of 0–18 inches of loam, 18–24 inches of silt loam, 24–27 inches of fine sandy loam, 27–42 inches of silty clay, 42–61 inches sandy clay loam. This soil is not considered hydric soil.	0.56
733	Sodic Haplocambids, thick-Torriorthents, thin, complex, 15 to 30 percent slopes	A well-drained soil that occurs on hillslopes at elevations ranging from 300 to 1,180 feet; parent material consists of alluvium derived from sedimentary rock and/or granitoid rock; no flooding or ponding; depth to water table is more than 80 inches; typical profile consists of 0–18 inches of loam, 18–24 inches of silt loam, 24–27 inches of fine sandy loam, 27–42 inches of silty clay, 42–61 inches of sandy clay loam. This soil is not considered hydric soil.	4.78
735	Sodic Haplocambids, thick-Elkhills-Torriorthents, thin, complex, 30 to 60 percent slopes	A well-drained soil that occurs on hillslopes at elevations ranging from 340 to 1,18 feet; parent material consists of alluvium derived from sedimentary rock and/or granitoid rock; no flooding or ponding; depth to water table is more than 80 inches; typical profile consists of 0–18 inches of loam, 18–24 inches of silt loam; 24–27 inches of fine sandy loam, 27–42 inches of silky clay, 42–61 inches of sandy clay loam. This soil is not considered hydric soil.	3.37
Total			88.12



3 Regulatory Background

3.1 Clean Water Act Section 404 and Federal Jurisdictional Waters

The Clean Water Act (CWA), introduced in 1972 via amendatory legislation of the Federal Water Pollution Control Act, is the primary federal law in the U.S. regulating water pollution. Section 404 of the CWA regulates the discharge of dredged material, placement of fill material, or certain types of excavation within federal WOTUS and authorizes the Secretary of the Army, through the Chief of Engineers, to issue permits for such actions. Permits can be issued for individual projects (individual permits) or for general categories of projects (general permits). Terrestrial WOTUS as defined by the CWA have typically included rivers, creeks, streams, and lakes extending to their headwaters and any associated wetlands. Wetlands are defined by the CWA as “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas.” The definition of WOTUS has changed over the years, and USACE has adopted several revisions to their regulations in order to more clearly define WOTUS. The protection of federal jurisdictional WOTUS has been particularly contentious and subject to numerous legal decisions since 2001.

3.1.1 1986 Regulations

In 1986, the federal agencies (USACE and U.S. EPA) implemented historic regulations (the 1986 Regulations) that defined WOTUS to mean traditional navigable waters, the territorial seas, interstate waters, and intrastate waters whose use or degradation could affect interstate or foreign commerce, as well as tributaries (streams that flow into larger streams or other bodies of water) of and wetlands adjacent to any of those waters.

3.1.2 2001 SWANCC Ruling

Until the beginning of 2001, WOTUS included, among other things, isolated wetlands and lakes, intermittent streams, prairie potholes, and other waters that are not part of a tributary system to interstate waters or to navigable WOTUS. The jurisdictional extent of USACE regulation changed with the 2001 Solid Waste Agency of Northern Cook County (SWANCC) v. U.S. Army Corps of Engineers ruling. The U.S. Supreme Court held that the USACE could not apply Section 404 of the CWA to extend their jurisdiction over an isolated quarry pit. The U.S. Supreme Court ruled that the CWA does not extend federal regulatory jurisdiction over non-navigable, isolated, intra-state waters. However, the U.S. Supreme Court made it clear that non-navigable wetlands adjacent to navigable waters are still subject to USACE jurisdiction.



3.1.3 2006 Rapanos Ruling

In 2006, the U.S. Supreme Court issued its seminal decision in the consolidated cases *Rapanos v. United States* and *Carabell v. United States* (collectively referred to as *Rapanos*). Justice Scalia narrowly interpreted the statutory term “waters of the United States” in a four-Justice plurality opinion, holding that CWA jurisdiction extended over only “relatively permanent, standing or continuously flowing bodies of water” that are connected to traditional navigable waters, plus wetlands with a “continuous surface connection” to such relatively permanent water bodies. Justice Kennedy wrote separately, concurring with the U.S. Supreme Court’s judgment with respect to the facts of the case, but interpreted “waters of the United States” to include wetlands that possess a “significant nexus” to waters that are or were navigable in fact or that could reasonably be so made.

The U.S. Supreme Court’s split decision and lack of a commanding majority opinion in *Rapanos* created confusion among the federal agencies and public. On December 2, 2008, the federal agencies released a regulatory guidance document, *Clean Water Act Jurisdiction*, following the U.S. Supreme Court’s Decision in *Rapanos* (USACE and USEPA, 2008), addressing common questions about federal jurisdiction over WOTUS and clarifying the two jurisdictional standards from *Rapanos*. In the 2008 *Rapanos* Guidance, the federal agencies concluded that federal jurisdiction existed over certain waterbodies that meet the “relatively permanent” standard from Justice Scalia’s plurality opinion or Justice Kennedy’s “significant nexus” standard, the latter of which would be determined by a fact-specific analysis.

3.1.4 2015 Clean Water Rule

The 1986 Regulations as interpreted by the 2008 *Rapanos* Guidance were later replaced by the 2015 Clean Water Rule. The federal agencies attempted to provide clarification on jurisdiction following the *Rapanos* ruling by replacing the numerous categories of waterbodies found in the 1986 Regulations with four broader categories: (1) waters that are categorically “jurisdictional by rule” without the need for further analysis, including traditional navigable waters, interstate waters, the territorial seas, and impoundments of these waters; (2) waters that are jurisdictional by rule, if they meet the definitions for tributaries and adjacent waters established in the 2015 Clean Water Rule; (3) waters that are subject to case-specific jurisdictional analysis under the “significant nexus” standard; and (4) waters that are categorically excluded from jurisdiction. Therefore, the 2015 Clean Water Rule resulted in an expansion in federal jurisdiction over waterbodies that might have otherwise been excluded from the definition of WOTUS on a case-by-case basis under the 1986 Regulations and the *Rapanos* ruling.

After the final 2015 Clean Water Rule was published, the Sixth Circuit Court of Appeals issued an order staying the rule nationwide, pending a determination by the court on jurisdiction to review the rule. While the 2015 Clean Water Rule was stayed, the pre-2015 regulatory regime remained in effect. Following additional litigation and administrative processes, the 2015 Clean Water Rule was briefly in effect in select states beginning in August 2018.



3.1.5 2020 Navigable Waters Protection Rule

In 2017, the Trump Administration issued Executive Order 13778, “Restoring the Rule of Law, Federalism, and Economic Growth by Reviewing the ‘Waters of the United States’ Rule.” The executive order directed the federal agencies to review the 2015 Clean Water Rule for consistency with the policy “to ensure that the nation’s navigable waters are kept free from pollution, while at the same time promoting economic growth, minimizing regulatory uncertainty, and showing due regard for the roles of the Congress and the States under the Constitution.” It further directed the federal agencies to issue a proposed rule rescinding or revising the 2015 Clean Water Rule as appropriate and consistent with law.

On December 11, 2018, the federal agencies proposed a revised definition of WOTUS, which would repeal the 2015 Clean Water Rule. On December 23, 2019, the federal agencies repealed the 2015 Rule and restored the previous regulatory regime as it existed prior to finalization of the 2015 Clean Water Rule with the publication of a final rule described as “Definition of ‘Waters of the United States’—Recodification of Pre-Existing Rules.”

On April 21, 2020, the federal agencies published the Navigable Waters Protection Rule (NWPR) to redefine WOTUS. The agencies streamlined the definition to include four categories of jurisdictional waters:

1. Traditional navigable waters and the territorial seas;
2. Tributaries of traditional navigable waters and the territorial seas;
3. Lakes, ponds, and impoundments of the first two categories of waters; and
4. Wetlands adjacent to the first three categories of waters.

The NWPR provided exclusions for many water features that traditionally have not been regulated, and defined terms in the regulatory text that had never been defined before. Congress, in the CWA, explicitly directed the federal agencies to protect “navigable waters.” The intent of the NWPR was to regulate waters and the core tributary systems that provide perennial or intermittent flow and excluded ephemeral waters. The final NWPR fulfilling Executive Order 13788 became effective on June 22, 2020. However, on August 30, 2021, the U.S. District Court for the District of Arizona vacated the NWPR finding “fundamental, substantive flaws that cannot be cured without revising or replacing the NWPR’s definition.” The federal agencies subsequently announced that they would interpret WOTUS consistent with the pre-2015 regulatory regime until further notice.

3.1.6 2023 Revised Definition of “Waters of the United States” Rule

On June 9, 2021, the USACE and U.S. EPA under the Biden Administration announced their intent to revise the definition of WOTUS to protect more waterways, beginning a new rulemaking process that restores protections put in place before 2015.

On January 18, 2023, the federal agencies published the final Revised Definition of 'Waters of the United States' rule (2023 Rule) in the Federal Register, which became effective on March 20, 2023 (USACE and USEPA 2023b). The 2023 Rule generally returns to the pre-2015 definition. The implications of the final



2023 WOTUS rule were such that many ephemeral waters not considered protected under the former 2020 NWPR would now be protected.

The 2023 Rule defines WOTUS to include:

1. Traditional navigable waters, the territorial seas, and interstate waters;
2. Impoundments of other jurisdictional WOTUS, except for those that qualify under category 5, below;
3. Tributaries to either of the above waters and tributaries that meet the “relatively permanent” standard or the “significant nexus” standard, (collectively, “jurisdictional tributaries”);
4. Wetlands adjacent to traditional waters, wetlands adjacent and with a continuous surface connection to relatively permanent tributaries and impoundments, and wetlands adjacent to other jurisdictional tributaries when those wetlands meet the “significant nexus” standard; and
5. Intrastate lakes and ponds, streams, or wetlands that are not identified in categories 1–4 above that meet either the “relatively permanent” standard or the “significant nexus” standard.

For purposes of characterizing a “jurisdictional adjacent wetland” under the 2023 WOTUS Rule, a wetland may be considered “adjacent” to WOTUS if it is bordering, contiguous, or neighboring a WOTUS, including wetlands separated from other WOTUS by man-made dikes or barriers, natural river berms, beach dunes, and similarly situated wetlands.

However, a wetland, even if “adjacent,” must satisfy either the “relatively permanent” standard or the “significant nexus” standard to be considered WOTUS. The 2023 Rule did not categorically define “relatively permanent” or “significant nexus” and will likely determine the applicability of these standards on a case-by-case basis.

On March 19, 2023, the U.S. District Court for the Southern District of Texas enjoined the 2023 WOTUS Rule in Texas and Idaho pending its consideration of those states’ legal challenges to the rule. On April 12, 2023, the U.S. District Court for the District of North Dakota similarly issued a preliminary injunction preventing the application of the 2023 Rule in 24 states: Alabama, Alaska, Arkansas, Florida, Georgia, Indiana, Iowa, Kansas, Louisiana, Mississippi, Missouri, Montana, Nebraska, New Hampshire, North Dakota, Ohio, Oklahoma, South Carolina, South Dakota, Tennessee, Utah, Virginia, West Virginia, and Wyoming. The federal agencies announced that, pending resolution of the litigation, they would apply the pre-2015 regulatory regime in the 26 states subject to injunctions and the 2023 WOTUS Rule in the remaining 24 states, including California.

3.1.7 2023 Sackett Ruling and 2023 Revised Definition of “Waters of the United States”; Conforming Rule

On May 25, 2023, the U.S. Supreme Court issued its ruling in *Sackett v. Environmental Protection Agency* (Sackett), which established a more stringent test to determine whether the CWA applies to certain categories of wetland. The Sackett family had backfilled a lot near Priest Lake in Idaho, and in agreeing that the Sacketts’ lot is a wetland, the U.S. Court of Appeals for the Ninth Circuit applied the test outlined by Justice Kennedy in *Rapanos*: whether there is a “significant nexus” between the wetlands and waters that



are covered by the CWA, and whether the wetlands “significantly affect” the quality of those waters. With Sackett, the U.S. Supreme Court reversed the 9th Circuit’s ruling, thereby narrowing how the scope of the CWA should be interpreted. Following Sackett, the CWA will apply to wetlands that are “as a practical matter indistinguishable from waters of the United States” because they have a “continuous surface connection” with a larger body of water, “making it difficult to determine where the ‘water’ ends, and the ‘wetland’ begins” (USACE, 2023a).

The result of the Sackett ruling is that certain adjacent wetlands and tributaries formerly protected under the CWA will no longer be federally protected. The conforming rule “Revised Definition of Waters of the United States” (USACE and USEPA, 2023b) changed parts of the 2023 definition, including the following changes to the January 2023 WOTUS Rule categories:

- Interstate Waters: the conforming rule removes interstate wetlands from the text of the interstate waters provisions.
- Tributaries and Adjacent Wetlands: the conforming rule removes the significant nexus standard.
- Additional Waters: the conforming rule removes the significant nexus standard and removes wetlands and streams from the text of the provision.

Further, changes to the WOTUS 2023 definitions include revising the definition of “Adjacent” to mean “having a continuous surface connection,” and deleting the definition for “Significantly Affect.”

As a result of the implementation of the new 2023 Conforming rule, tributaries, adjacent wetlands, and waters assessed under are jurisdictional ONLY if they meet the relatively permanent standard. According to the 2023 Conforming Rule, relatively permanent waters include tributaries that have flowing or standing water year-round or continuously during certain times of year. Relatively permanent waters do not include tributaries with flowing or standing water for only a short duration in direct response to precipitation.

“Certain times of year” is intended to include extended periods of standing or continuously flowing water occurring in the same geographic feature year after year, except in times of drought. (USACE and USEPA, 2023c).

“Direct response to precipitation” is intended to distinguish between episodic periods of flow associated with discrete precipitation events versus continuous flow for extended periods of time. No minimum flow duration has been established because flow duration varies extensively by region. (USACE and USEPA, 2023c).

The relatively permanent standard as it applies to adjacent wetlands means that adjacent wetlands meet the relatively permanent standard only if they have a continuous surface connection to a relatively permanent impoundment or relatively permanent jurisdictional tributary. (USACE and USEPA, 2023c).

The continuous surface connection is a “physical connection requirement.” A continuous surface connection does not require a constant hydrological connection. A continuous surface connection means the wetlands either physically abut or touch the relatively permanent water or are connected to the relatively permanent water by a discrete feature like a non-jurisdictional ditch, swale, pipe, or culvert. (USACE and USEPA, 2023c).



3.1.8 Exemptions under Clean Water Act Section 404

Activities that are exempt under CWA Section 404(f) include:

1. Nominal farming, silviculture and ranching activities,
2. (Emergency) maintenance activities that would not change the original fill design;
3. Construction and maintenance of farm ponds, stock ponds, or irrigation ditches or the maintenance of drainage ditches;
4. Construction of temporary sedimentation basins;
5. Any activity with respect to which a State has an approved program under CWA Section 208(b)(4) which meets the requirements of sections 208(b)(4) (B) and (C) (this pertains to certain applicable statewide waste treatment management programs); and
6. Construction or maintenance of farm roads, forest roads, or temporary roads for moving mining equipment.

Exceptions to these exemptions (USACE, 2024a) include:

1. Discharge of toxic pollutants, and
2. If it is part of an activity whose purpose is to convert an area of a WOTUS into a use to which it was not previously subject, where the flow and/or circulation of waters may be impaired or the reach of the waters reduced.

3.1.9 Extent of Jurisdiction

The extent of CWA Section 404 jurisdiction for non-tidal waters includes non-isolated aquatic features (including wetlands qualifying under the original federal 1986 standards and non-wetland WOTUS) bound by an “ordinary high water mark” (OHWM) as defined by 33 CFR 328.3(e):

The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas.

Features considered isolated from traditional navigable waters and the exemptions listed above are not considered WOTUS under the jurisdiction of CWA Section 404.



3.2 Clean Water Act Section 401, Porter-Cologne Water Quality Control Act, and Waters of the State of California

3.2.1 Clean Water Act Section 401 Water Quality Certification

Section 401 of the CWA ensures that federally permitted activities comply with the federal CWA and state water quality laws. Under CWA Section 401, an applicant for a federal permit or license for any activity that may result in a discharge to federal waters must obtain a Water Quality Certification (WQC) certifying that the proposed activity will comply with applicable water quality standards. WQCs are generally issued by the state or tribe with jurisdiction over the area in which the activity will occur. If there is not a state or tribe with authority over the activity, the U.S. EPA will issue a WQC.

In California, CWA Section 401 is implemented either by the State Water Resources Control Board (SWRCB) or the applicable RWQCB, with most WQCs issued in connection with USACE CWA Section 404 permits for dredge and fill discharges. The SWRCB or RWQCB issues a WQC via the CWA Section 401 process verifying that a proposed project complies with water quality standards and other conditions of California law. CWA Section 401 certification typically precedes USACE CWA Section 404 permit issuance.

In addition, the Porter-Cologne Water Quality Control Act (Porter-Cologne Act) serves as the primary water quality state law in California and addresses two primary functions: water quality control planning and waste discharge regulation. The SWRCB and various RWQCBs are charged with protecting all waters of the state of California (waters of the state), broadly defined as “any surface water or groundwater, including saline waters, within the boundaries of the State.” This definition encompasses all waters of the state, including those waters not under federal jurisdiction; therefore, the State of California’s jurisdiction expands beyond federal jurisdiction. The Porter-Cologne Act does not include physical descriptors or interstate commerce limitations in defining “waters of the state.”

3.2.2 Porter-Cologne Act Waste Discharge Requirements

Under the Porter-Cologne Act, discharges of dredged or fill material to waters of the state not subject to CWA Section 404 (i.e., non-USACE jurisdictional) are regulated under the Porter-Cologne Act Chapter 3, article 4 via Waste Discharge Requirements (WDRs). The WDR permit requirements ensure that the permitted activities comply with state water quality standards over the term of the action and are consistent with the requirements of the Porter-Cologne Act, the California Environmental Quality Act, and the California Endangered Species Act. There are two types of WDRs: individual WDRs, which are tailored to specific dischargers, and general WDRs, which are for a similar group of dischargers. The applicable RWQCB (for respective regions) or the SWRCB (for statewide applicability) can adopt general WDRs for categories of discharges if they involve similar operations, similar types of waste, and monitoring. Applicants must file an application with the Water Boards for any activity that could result in the discharge of dredged or fill material to waters of the state in accordance with Title 23 California Code of Regulations



Section 3855. Procedures for complying with WDR regulations, including submittal of an application with a project description and impact assessment, are similar to CWA Section 401 procedures.

3.2.3 State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State

On April 2, 2019, the Water Boards (including the SWRCB and the nine RWQCBs) adopted the *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (Procedures)* (SWRCB, 2021). The Procedures became effective on May 28, 2020, and were subsequently revised on April 6, 2021. *Additional Implementation Guidance for the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State* was released in April 2020 (SWRCB, 2020); this implementation guidance has been considered during the preparation of this ARDR.

The Procedures define wetlands as follows:

An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.

Per the Procedures, the following wetlands are considered waters of the state (SWRCB, 2021):

1. Natural wetlands,
2. Wetlands created by modification of a surface water of the state, and
3. Artificial wetlands (that result from human activity) that meet any of the following criteria:
 - a. Approved by an agency as compensatory mitigation for impacts to other waters of the state, except where the approving agency explicitly identifies the mitigation as being of limited duration;
 - b. Specifically identified in a water quality control plan as a wetland or other water of the state;
 - c. Resulted from historic human activity, is not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape; or
 - d. Greater than or equal to one acre in size, unless the artificial wetland was constructed, and is currently used and maintained, primarily for one or more of the following purposes (i.e., the following artificial wetlands are not waters of the state unless they also satisfy the criteria set forth in 2, 3a, or 3b);
 - i. Industrial or municipal wastewater treatment or disposal,
 - ii. Settling of sediment,



- iii. Detention, retention, infiltration, or treatment of stormwater runoff and other pollutants or runoff subject to regulation under a municipal, construction, or industrial stormwater permitting program,
- iv. Treatment of surface waters,
- v. Agricultural crop irrigation or stock watering,
- vi. Fire suppression,
- vii. Industrial processing or cooling,
- viii. Active surface mining – even if the site is managed for interim wetlands functions and values,
- ix. Log storage,
- x. Treatment, storage, or distribution of recycled water, or
- xi. Maximizing groundwater recharge (this does not include wetlands that have incidental groundwater recharge benefits); or
- xii. Fields flooded for rice growing.

All artificial wetlands that are less than 1 acre in size and that do not satisfy the criteria set forth in 2, 3.a, 3.b, or 3.c as outlined above are not waters of the state. If an aquatic feature meets the wetland definition, the burden is on the applicant to demonstrate that the wetland is not a water of the state (SWRCB, 2021).

3.2.4 Activities and Areas Excluded from the Application Procedures for Regulation of Discharges of Dredged or Fill Material to Waters of the State

The Procedures do not apply to proposed discharges of dredged or fill material to waters of the state from the following activities or to the following areas (SWRCB, 2021):

- 1. Activities excluded from application procedures:
 - a. Activities that are exempt under CWA section 404(f) include:
 - i. Nominal farming, silviculture and ranching activities,
 - ii. (Emergency) maintenance activities,
 - iii. Construction and maintenance of farm ponds, stock ponds, or irrigation ditches or the maintenance of drainage ditches,
 - iv. Construction of temporary sedimentation basins,



- v. Any activity with respect to which a State has an approved program under CWA Section 208(b)(4) which meets the requirements of sections 208(b)(4) (B) and (C) (this pertains to certain applicable statewide waste treatment management programs), and
 - vi. Construction or maintenance of farm roads, forest roads, or temporary roads for moving mining equipment.
 - vii. Exceptions to these exemptions (USACE, 2024a) include:
 - 1. Discharge of toxic pollutants, and
 - 2. If it is part of an activity whose purpose is to convert an area of a WOTUS into a use to which it was not previously subject, where the flow and/or circulation of waters may be impaired or the reach of the waters reduced.
 - b. Suction dredge mining activities for mineral recovery regulated under CWA Section 402.
 - c. Routine and emergency operation and maintenance activities conducted by public agencies, water utilities, or special districts that result in discharge of dredged or fill material to artificial, existing waters of the state:
 - i. Currently used and maintained primarily for one or more of the purposes previously listed in 3.d. (ii), (iii), (iv), (x), or (xi) of Section 3.2.3 of this ARDR; or
 - ii. For the purpose of preserving the line, grade, volumetric or flow capacity within the existing footprint of a flood control or stormwater conveyance facility.
 - d. Routine operation and maintenance activities that result in discharge of dredged or fill material to artificially-created waters currently used and maintained primarily for one or more of the purposes previously listed in section II.3.d. (i), (ii), (iii), (vi), (vii), (x), or (xi) of this ARDR. This exclusion does not apply to the discharge of dredged or fill material to (a) a water of the U.S., (b) a water specifically identified in a water quality control plan, (c) a water created by modification of a water of the state, or (d) a water approved by an agency as compensatory mitigation.
2. Areas excluded from application procedures:
- a. Wetland areas that qualify as prior converted cropland (PCC) within the meaning of 33 CFR 507 Section 328.3(b)(2). The applicant may establish that the area is PCC by providing relevant documentary evidence that the area qualifies as PCC and has not been abandoned due to five consecutive years of non-use for agricultural purposes, or by providing a current PCC certification by the NRCS, the USACE, or the U.S. EPA to the permitting authority;



- b. Wetlands that are, or have been, in rice cultivation (including wild rice) within the last five years as of April 2, 2019 and have not been abandoned due to five consecutive years of non-use in rice production;
- c. The following features used for agricultural purposes:
 - i. Ditches with ephemeral flow that are not a relocated water of the state or excavated in a water of the state;
 - ii. Ditches with intermittent flow that are not a relocated water of the state or excavated in a water of the state, or that do not drain wetlands other than any wetlands described in (iv) or (v) below;
 - iii. Ditches that do not flow, either directly or through another water, into another water of the state;
 - iv. Artificially irrigated areas that would revert to dry land should application of waters to that area cease; or
 - v. Artificial, constructed lakes and ponds created in dry land such as farm and stock watering ponds, irrigation ponds, and settling basins.

These exclusions do not apply to discharges of dredged or fill material that convert wetland areas to a non-agricultural use.

3.2.5 Extent of Jurisdiction

The extent of CWA Section 401 jurisdiction is identical to CWA Section 404 jurisdiction (i.e., up to the OHWM of a federal wetland or non-wetland WOTUS). If there happens to be both CWA Section 404/401 WOTUS and non-WOTUS waters of the state that could be impacted by a proposed project, the Water Boards may issue coverage under a single CWA Section 401 WQC permitting action, rather than separate WQC and WDR permitting actions.

3.3 Jurisdictional Aquatic Resources under California Fish and Game Code Section 1602

3.3.1 Notification

Section 1602 of the California Fish and Game Code (CFGF) requires a proponent proposing a project that may affect a “river, stream, or lake” to notify the CDFW before beginning the project, within a format similar to a permit application process. Any activities that result in one or more of the following require a CDFW notification (CDFW, 2023):

- 1. Substantially divert or obstruct the natural flow of any river, stream, or lake;



2. Substantially change or use any material from the bed, channel, or bank of any river, stream, or lake; or
3. Deposit or dispose of debris, waste or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake.

Note that "any river, stream, or lake" includes those features that are dry for periods of time (e.g., intermittent and ephemeral features) as well as those that flow perennially year-round. If an applicant is not certain a particular activity requires notification, CDFW recommends the applicant notify. CDFW has historically required a Lake and Streambed Alteration Agreement (LSAA) for activities within a feature that has a definable "bed and bank."

3.3.2 Lake and Streambed Alteration Agreement

Once a Section 1602 notification is processed, CDFW may issue a proposed LSAA. An LSAA is an agreement between the applicant and CDFW for the performance of activities subject to CFGC Section 1602. An LSAA lists the conditions relative to a proposed project that CDFW identifies as necessary to protect applicable water quality, plants, and wildlife. If the parties agree to the conditions, they will execute the LSAA, which will govern the activities described in the agreement.

3.3.3 Extent of Jurisdiction

Based on the CFGC, The CDFW's Section 1602 jurisdiction typically extends from the streambed/thalweg (deepest portion) of a river, stream, or lake up to the top of bank (TOB), and the outer edge of associated riparian vegetation, or outer edge of the associated floodplain (whichever is greatest). For purposes of this ARDR, Stantec has conservatively interpreted CDFW Section 1602 jurisdiction as applying to both natural and anthropogenic drainage features, and Section 1602 jurisdiction is generally coterminous with the extent of the "waters of the State" as defined by the RWQCB.



4 Waters/Wetlands Assessment and Delineation

4.1 Delineation Methodology

The aquatic resources delineation for the Project includes three steps: a desktop review, a field assessment, and a jurisdictional assessment. Methods for each step are described below.

4.1.1 Desktop Review

Prior to conducting fieldwork, the following map resources were reviewed:

- USFWS NWI (USFWS, 2025)
- USGS National Hydrography Dataset (USGS, 2025)
- Google Earth color aerial imagery (Google Earth, 2025)
- USGS 7.5-minute topographic maps – East Elk Hills (USGS, 2025)

These resources were used to identify potential aquatic features based on changes in vegetation, topographic changes, and/or visible drainage patterns. Prior to field surveys, potential features were digitized into a working field map that was then used as a reference during field surveys.



4.1.2 Field Assessment

The initial field assessment and delineation of potential jurisdictional waters within the Aquatic Study Area was conducted on February 11, 2025, by Stantec biologists Stan Glowacki and Hannah Hart. Subsequent biological reconnaissance surveys and jurisdictional waters assessments were conducted on February 19, 20, and May 8, 2025, by Hannah Hart, and on June 24, 2025, by Stantec biologists Cassandra Cortez and Megan Wong. Stantec's approach was to systematically assess the entire Aquatic Study Area, including each NWI and NHD mapped feature within the Aquatic Study Area. Each observed aquatic feature was given a unique name for identification. Stantec biologists walked along these features to compare ground-truthed positions and aerial basemaps. Delineation data collected in the field were mapped over aerial photograph base map layers using the ESRI® Field Maps application on a smart phone coupled with external Global Positioning System (GPS) units. Representative TOB and/or basin boundary lines/polygons were recorded, if applicable. If TOB or basin boundaries were found to not closely match the aerial basemaps, the ground-truthed features were physically walked in the field and recorded by GPS, followed by desktop adjustments made via geographic information system (GIS) software.

Stantec Biologists conducted the on-site delineation of wetlands and “other” WOTUS and waters of the state based on field observations of positive indicators for wetland vegetation, hydrology, and soils; and indicators of an OHWM. The delineation includes a standard three-parameter data point to determine wetland features, other waters, and uplands. This methodology is consistent with the approach outlined in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Arid West Region (Version 2.0)* (USACE, 2008a) (National Wetland Plant List 2020). The OHWM was determined using the approach outlined in the updated *National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams – Final Version* (USACE 2025).

Prior to conducting the on-site delineation, the USFWS NWI Wetland Mapper (USFWS, 2025) was reviewed to determine if any surface water or wetland feature was previously mapped in the Aquatic Study Area and general vicinity. During the delineation, photographs were taken, and survey data was collected to support the determination (Appendices B and C, respectively). Additional notes were also collected during the evaluation to confirm the absence of wetland indicators in select locations. The boundaries of the delineated aquatic features and associated points were mapped using a sub-meter-accurate Arrow unit paired with Apple iPhone loaded with FieldMaps for ArcGIS™ (FieldMaps). All spatial data was collected in World Geodetic System 1984 Web Mercator Auxiliary Sphere and converted to North American Datum 1983 California State Plane 5 US Foot.

4.1.2.1 Drainages and Other Waters

Drainages and other waters that do not fall within the “wetland” category (e.g., impoundments, tidal channels) but do potentially fall under the jurisdiction of USACE, RWQCB, and CDFW, were mapped within the Aquatic Study Area. As with wetlands, the definition of what constitutes a “drainage” or other water varies between the agencies. As such, a variety of data was collected on the ground to establish adequate



documentation per the different agency requirements. Additional details regarding each agency requirement are included below.

- **USACE:** OHWM boundaries were documented to determine the extent of the USACE's jurisdiction and support Section 404 and 401 of the CWA.
- **RWQCB:** The RWQCB follows the USACE methods to determine the presence of a drainage following previously listed guidance and methods based on presence of an OHWM. The RWQCB also takes jurisdiction over bed and bank to the limit of the TOB if no OHWM is present.
- **CDFW:** Typically, TOB measurements would be noted for each drainage, also called a "stream" and defined under Title 14, CCR Section 1.72, as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and that supports fish and other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation." The term "stream" does not include areas under tidal influence. In general, CDFW jurisdiction generally extends beyond the bed and banks of a stream to the limit of contiguous riparian habitat.

Drainages were mapped using an Arrow GPS (sub-foot-accuracy) unit paired with FieldMaps. Representative photographs were also taken of the drainage features (Appendix C). The following attributes were collected or measured for each mapped drainage where applicable: OHWM width and depth, hydrologic regime, OHWM indicators, substrate below OHWM, and depth of water. The potentially jurisdictional drainages with primary or secondary indicators of OHWM and bed and bank were mapped.

4.1.2.2 Wetlands

The potential wetland aquatic resources were evaluated within the Aquatic Study Area. The definition of what constitutes a "wetland" varies between the agencies. As such, a variety of data was collected on the ground to establish adequate documentation per the various agency requirements. The definition of a "wetland" summarized by each agency is as follows:

- **USACE:** Wetland delineation per USACE guidance follows the routine determination method given in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory, 1987) and the revised procedures in the *Regional Supplement to the USACE of Engineers Wetland Delineation Manual: Arid West Region* (USACE, 2008a). This methodology entails examination of specific sample points in both wetlands and uplands (i.e., paired points) to determine the boundaries of wetland features. Sample points are examined for hydrophytic vegetation, hydric soils, and wetland hydrology. In most cases, by the federal definition, all three parameters must be present for an area to be considered a wetland. Problematic situations in which only two parameters are met do occur in the Arid West (outlined in the 2008 Arid West Regional Supplement), especially in areas that have been altered by human activity.
- **RWQCB:** Wetlands as defined and adopted on April 2, 2019, and updated on April 6, 2021, by the SWRCB follow the USACE three-parameter requirement as outlined above. However, unlike the



federal definition, the SWRCB wetland definition allows for the presence of hydric substrates as criteria for wetland identification (not just wetland soils) and wetland hydrology for an area devoid of vegetation (less than 5 percent cover) to be considered a wetland.

- **CDFW:** Previous guidance by CDFW considers riparian canopy and riparian wetlands under the jurisdiction of CDFW when a wetland, shrub, or forest community associated with a drainage feature or “stream” passes the USACE criterion for hydrophytic vegetation or adjacent non-hydrophytic vegetation under the influence of stream hydrology and/or occurring within the floodplain.

Jurisdictional features were mapped using a sub-meter Arrow GPS receiver paired with FieldMaps based on the limits of the hydrophytic vegetation. All spatial data was collected in the WGS 1984 data. The features were assigned a vegetation community based on dominant vegetation within each delineated feature. Nomenclature for vegetation communities contained within aquatic resources follows the alliances and associations used in the MCV and updated in the online edition (Sawyer et al., 2009; CNPS, 2025). Detailed descriptions applicable at the aquatic resource survey level (i.e., vegetation for each delineated feature) are provided in Section 5, Results and Discussion.

4.1.3 Jurisdictional Assessment

The jurisdictional assessment was made for each feature after completion of field work and development of an aquatic resource map. Once the resource map was completed, each feature was analyzed per the requirements to determine potential jurisdiction under each of the three resource agencies. The jurisdictional assessments in this ARDR should be considered preliminary until the USACE, RWQCB, and CDFW provide verification. Specifics as to potential jurisdiction for each agency are described below.

4.1.3.1 Drainages and Other Waters

Once a feature is defined by qualified personnel as non-wetland drainage (or other water), the potential jurisdiction varies across the agencies. The potential drainages and other waters were evaluated to identify their connection to on-site and off-site hydrologic resources. The mapped features were then assessed for potential jurisdiction under each agency following agency guidance:

- **USACE:** Other waters are defined as traditional navigable waters and their tributaries (33 CFR 329). Delineation of other waters was based on presence of an OHWM as defined in USACE regulations (33 CFR 328.3 and 33 CFR 328.4). Physical characteristics of an OHWM include but are not limited to the following conditions: a natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, presence of litter and debris, leaf litter disturbed or washed away, scour, deposition, presence of bed and bank, and water staining. One data point was selected to best represent the OHWM of other waters for each other waters type. This data point was used to collect information regarding the OHWM, along with dominant substrate, anthropogenic influences, and other features (floodplain, low flow channel, etc.) associated with the other waters' type).



- **RWQCB:** The RWQCB generally takes jurisdiction over all waters defined as “drainages” based upon the presence of OHWM and/or bed and bank; connectivity is not considered. In addition, isolated open waters or impoundments are also generally considered under the jurisdiction of the RWQCB. Therefore, all drainages (tidal or otherwise) or other non-wetland waters on-site are considered potentially jurisdictional.
- **CDFW:** The term “stream” is not defined in the CFGC, and CDFW has not promulgated any regulation that defines “stream.” However, the Fish and Game Commission has defined “stream” in Section 1.72 in Title 14 of the California Code of Regulations as follows:

A body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having a surface or subsurface flow that supports or has supported riparian vegetation.

In general, CDFW jurisdiction extends beyond the bed and banks of a stream to the extent of contiguous riparian habitat.

4.1.3.2 Wetlands

Regarding what defines a “wetland”, the potential jurisdiction of a wetland under one or more agencies differs. The mapped features were assessed for potential jurisdiction under each agency following their specific guidance:

- **USACE:** all three-parameter wetlands with direct connection to a true WOTUS.
- **RWQCB:** Under the broad Porter-Cologne Act definition of waters of the state, all waters defined as “wetlands” under the USACE three-parameter requirement, including adjacent to WOTUS or isolated features, would likely be considered RWQCB jurisdictional. Therefore, all wetlands that meet the three-parameter wetland criterion are considered potentially jurisdictional.
- **CDFW:** Wetlands typically fall under the jurisdiction of CDFW when they are adjacent to or associated with a drainage feature or “stream”. However, Under Title 14, CCR Section 1.72, a “stream” is defined as “a body of water that flows at least periodically or intermittently through a bed or channel having banks and that supports fish and other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation.”

In summary, potential jurisdiction of wetlands was assessed for each agency and generally assigned as follows: three-parameter wetlands within the Aquatic Study Area directly connected to a WOTUS were considered potentially USACE and RWQCB jurisdictional; three-parameter wetlands adjacent to an WOTUS were considered potentially RWQCB jurisdictional. Assessment of each mapped resource was on a case-by-case basis; additional details on each case are included in Section 5, Results and Discussion.



5 Results and Discussion

The following presents a description of the potentially jurisdictional features in the Aquatic Study Area, followed by the results of the preliminary determination of federal and state jurisdictional features. Representative photographs are included in Appendix B.

Aquatic resources and potentially jurisdictional features identified and assessed within the Aquatic Study Area include ephemeral streams. Aquatic resources covered approximately 0.86 acres of the Aquatic Study Area (see Table 3) and are described in further detail below.

Table 3 Aquatic Resources within the Aquatic Study Area

Aquatic Resources^{1,2}	Acres*	Square Feet*	Linear Feet*
Aquatic Resource 1 (Ephemeral Stream)	0.28	12,139.41	406.77
Aquatic Resource 2 (Ephemeral Stream)	0.58	25,278.51	823.50
Total	0.86	37,417.92	1,230.27

Notes:

*Numbers are rounded up to the nearest 100th.

¹ Areas of potential jurisdiction are subject to final verification and approval by the regulatory agencies (i.e., USACE, RWQCB, and CDFW).

² No potential federal WOTUS were delineated with the Aquatic Study Area due to lack of an OHWM and/or no evident connectivity to any other federal WOTUS recognized as a traditional navigable water.

5.1 Potential Jurisdictional Features

No aquatic features were observed within the Project site during the assessments; however, two aquatic features were observed within the Aquatic Study Area. The features were determined to be potentially jurisdictional waters based on apparent field-verifiable indicators such as bed/bank, scour, and hydrological conveyance.

5.1.1 Ephemeral Streams

No ephemeral streams were mapped in the Project site; however, two ephemeral streams (Aquatic Resource 1 and Aquatic Resource 2) were mapped within the buffer area of the Aquatic Study Area. Each are described in detail below.

5.1.1.1 Aquatic Resource 1

Aquatic Resource 1 was mapped in the Aquatic Study Area (Appendix A, Figure 7-4) and this feature was identified on the NWI dataset (Appendix A, Figure 5b). Aquatic Resource 1 is located adjacent to one of the proposed Temporary Parking, Office, and Staging Areas north of Taft Highway. This feature trends north to south and connects downstream to the California Aqueduct. Within the Aquatic Study Area, it is continuous along the western side of the proposed Temporary Parking, Office, and Staging Areas; however, it



bottlenecks and flows through a culvert and pipe under the roadway and flows back out on the other side of the roadway. Although Aquatic Resource 1 intersects the Aquatic Study Area, it does not overlap the Project site, which includes proposed Temporary Parking, Office, and Staging Areas in this location.

At the time of the field surveys, Aquatic Resource 1 was dry but exhibited clear indicators of recent water flow. The feature was clearly defined by scour, a natural bottom, channel banks, and dense vegetation (Allscale Saltbush Scrub) within the channel and along its banks. Representative photos are shown in Appendix B.

Aquatic Resource 1 is potentially under the jurisdiction of the RWQCB and CDFW as waters of the state because of the presence of a bed and banks and intermittent flow (Appendix A, Figure 7-4). Aquatic Resource 1 does not meet the current definition of a WOTUS, is ephemeral, and does not connect to a WOTUS; therefore, it is not under USACE jurisdiction. Table 4 quantifies the potential jurisdictional features (in acres, square feet, and linear feet) for the delineated resources within the Aquatic Study Area based on Stantec's understanding of current regulatory guidance.

5.1.1.2 Aquatic Resource 2

Aquatic Resource 2 was mapped in the Aquatic Study Area (Appendix A, Figure 7-5) and this feature was identified on the NHD dataset (Appendix A, Figure 5b). Aquatic Resource 2 is located adjacent to one of the proposed Temporary Parking, Office, and Staging Areas north of Taft Highway. This feature trends north to south and connects downstream to the California Aqueduct. Within the Aquatic Study Area, it is continuous along the western side of the proposed Temporary Parking, Office, and Staging Areas. Although Aquatic Resource 2 intersects the Aquatic Study Area, it does not overlap the Project site, which includes proposed Temporary Parking, Office, and Staging Areas in this location.

At the time of the field surveys, Aquatic Resource 2 was dry but exhibited clear indicators of recent water flow. The feature was clearly defined by scour, a natural bottom, channel banks, and dense vegetation (Allscale Saltbush Scrub) within the channel and along its banks. Representative photos are shown in Appendix B.

Aquatic Resource 2 is potentially under the jurisdiction of the RWQCB and CDFW as waters of the state because of the presence of a bed and banks and intermittent flow (Appendix A, Figure 7-5). Aquatic Resource 2 does not meet the current definition of a WOTUS, is ephemeral, and does not connect to a WOTUS; therefore, it is not under USACE jurisdiction. Table 4 quantifies the potential jurisdictional features (in acres, square feet, and linear feet) for the delineated resources within the Aquatic Study Area based on Stantec's understanding of current regulatory guidance.



Table 4 Summary of Potential Jurisdictional Waters within the Aquatic Study Area

Potential Jurisdictional Waters ¹	Acres*	Square Feet*	Linear Feet*
<i>Potential RWQCB Jurisdiction</i>			
Aquatic Resource 1	0.25	10,792.88	406.77
Aquatic Resource 2	0.36	15,819.36	823.50
Total	0.61	26,612.24	1,230.27
<i>Potential CDFW Jurisdiction</i>			
Aquatic Resource 1	0.28	12,139.41	406.77
Aquatic Resource 2	0.58	25,278.51	823.50
Total	0.86	37,417.92	1,230.27

Notes:

¹ Areas of potential jurisdiction are subject to final verification and approval by the regulatory agencies (i.e., USACE, RWQCB, and CDFW).

*Numbers are rounded up to the nearest 100th.

5.2 Wetlands

No wetlands as defined by the USACE, RWQCB, and CDFW were observed during the surveys; however, three sets of USACE wetland data forms were filled out to document the conditions at the sample point sites (Appendix C).



6 Conclusion

Based on Stantec's preliminary assessment, the Project Site does not include any potentially jurisdictional water features; however, the Aquatic Study Area includes two potentially jurisdictional water features. Aquatic Resource 1 and Aquatic Resource 2 fall under potential RWQCB and CDFW jurisdiction as water of the state due to clear evidence of a bed and banks. OHWM was confirmed to be occasionally present throughout Aquatic Resource 1 and Aquatic Resource 2.

The jurisdictional delineation identified no potential RWQCB jurisdictional areas within the Project site; however, two potential RWQCB jurisdictional areas within the Aquatic Study Area. Based on Stantec's professional opinion, these include 0.61 acres that may potentially fall under the jurisdiction of RWQCB.

The jurisdictional delineation identified no potential CDFW jurisdictional areas within the Project site; however, two potential CDFW jurisdictional areas within the Aquatic Study Area. Based on Stantec's professional opinion, these include 0.86 acres that may potentially fall under the jurisdiction of CDFW.

Full avoidance of jurisdictional water features during Project construction is anticipated based on the potentially jurisdictional features being present only in the buffered area of the Aquatic Study Area, not within the Project site. If the proposed Project cannot completely avoid the potential jurisdictional waters delineated within the Aquatic Study Area, CRC will likely need to procure regulatory permits. Section 7 includes a list of Avoidance and Minimization Measures that may be required if the Project cannot avoid the potential jurisdictional waters. Because of the apparent absence of resources that fit the definition of WOTUS, it will not be necessary to obtain a CWA Section 404 Permit and a Section 401 WQC for any Project impacts. For unavoidable impacts on state aquatic resources under the jurisdiction of the RWQCB and CDFW, it will be necessary to obtain a general WDR Permit from the RWQCB and an LSAA from CDFW.

The conclusions presented above represent Stantec's professional opinion based on our surveys, knowledge, experience with the applicable laws and regulations, and experience with regulatory agencies, including their technical guidance documents and manuals. However, the USACE, CDFW, and RWQCB have final authority in determining the status and presence of jurisdictional wetlands/waters and the extent of their boundaries.



7 Avoidance and Minimization Measures

The following avoidance and minimization measures are to be implemented during construction:

- A Workers Environmental Awareness Training will be created for this Project and will be required for all personnel working on site. The training will include the locations of jurisdictional waters, the methods and timing for flagging their locations for avoidance, and other applicable regulatory information.
- Potential jurisdictional features within the work area will be clearly identified in the field prior to construction to ensure full avoidance.
- A qualified biological monitor will document that work remains outside of potential jurisdictional features.
- Construction workers will stay within approved work areas and on designated access roads and will park vehicles and equipment in designated areas.
- A biological monitor will be on site when working within 50 feet of a potentially jurisdictional feature.



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CalCapture CCS Project – Aquatic Resources Delineation Report

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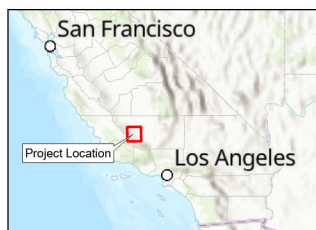
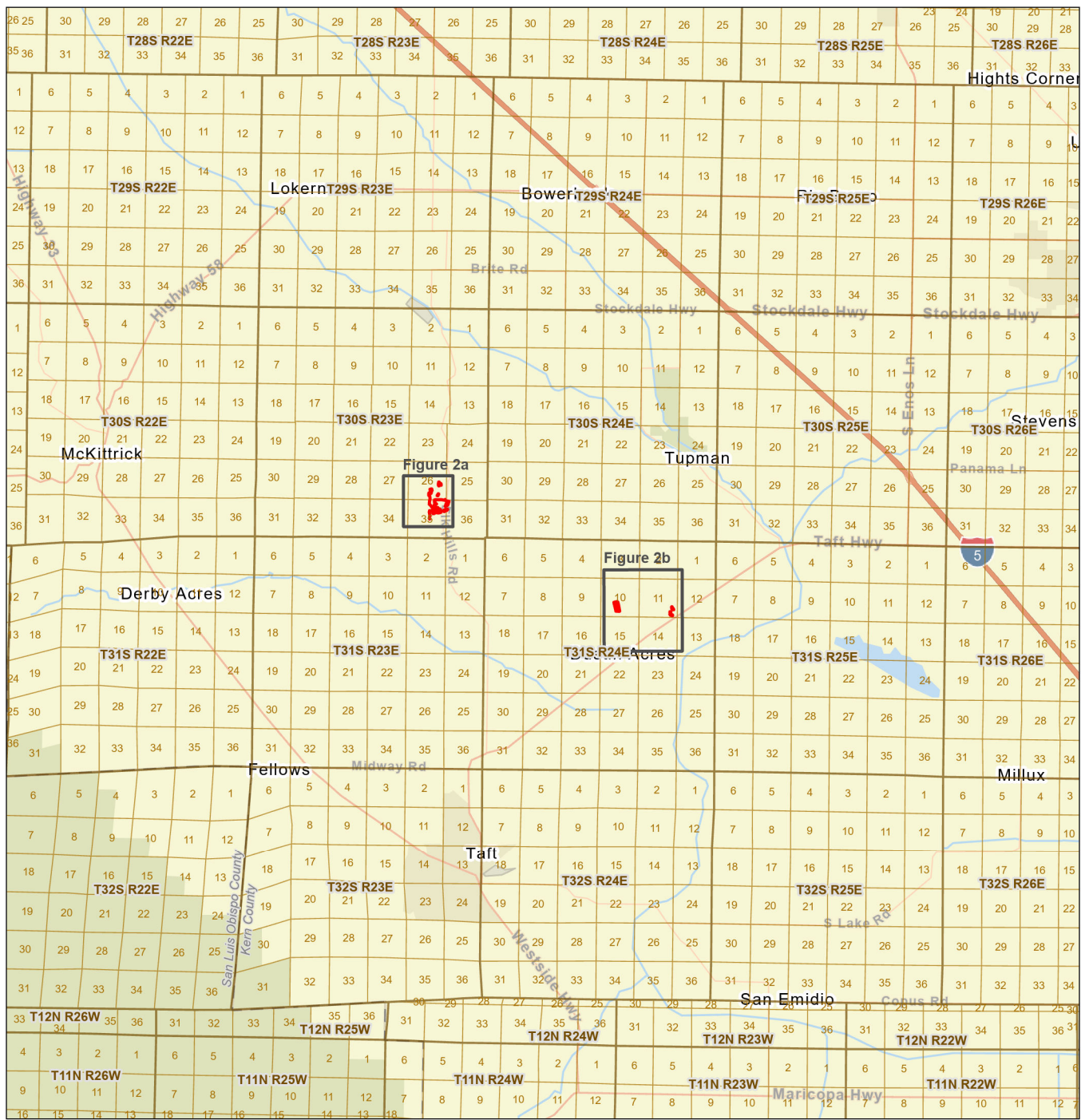


Appendices

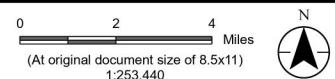


Appendix A Figures





- Project Area
- Township and Range
- Section



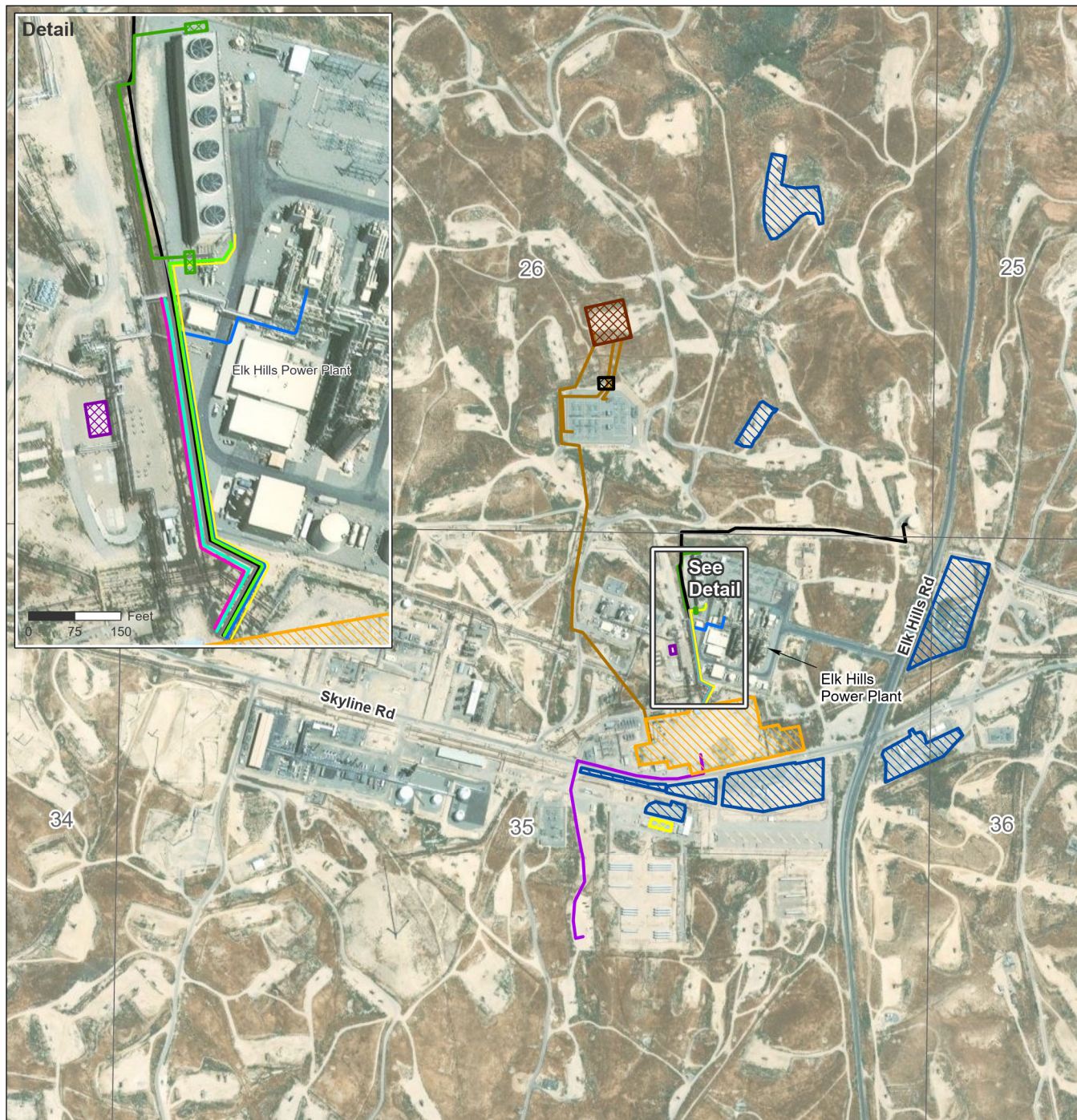
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 TR by CT 2025-06-26
 IR by ES on 2025-06-26
 Client/Project: 185806775

California Resources Corporation
 CalCapture Carbon Capture and Sequestration Project
 Figure No. 1

Title
 Regional Vicinity

Notes
 1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
 2. Data Sources: Stantec, USGS, 2025.
 3. Background: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org
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- Capture Facility
- Temporary Parking, Office, and Staging Areas
- Proposed Sub Location (250 x 250)
- Substation Extension Proposal
- New BPSTG & Transformer
- Warehouse
- Cooling Water Sump

Township, Range, Section*

- Section

*Entire map extent within Township 30S Range 23E.

- Electrical Lines
- CO2 Line
- CWR Line
- CWS Line
- Condensate Line
- HP Steam Line
- LP Steam Line
- Raw Water Line
- RO Permeate Stream Pipeline
- CWS Line Alternative

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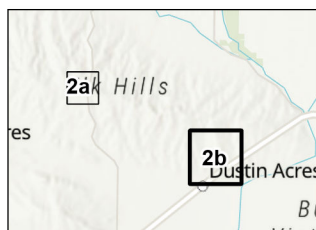


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Kern County, CA TR by CT 2025-07-31
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California Resources Corporation
CalCapture Carbon Capture and Sequestration Project
Figure No.
2a
Title
Site Plan

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 Temporary Parking, Office, and Staging Areas

Township, Range, Section*

 Section

*Entire map extent within Township 31S Range 24E.

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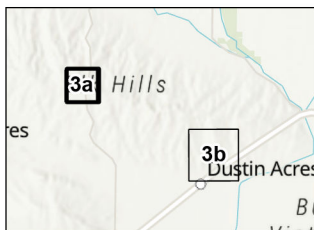
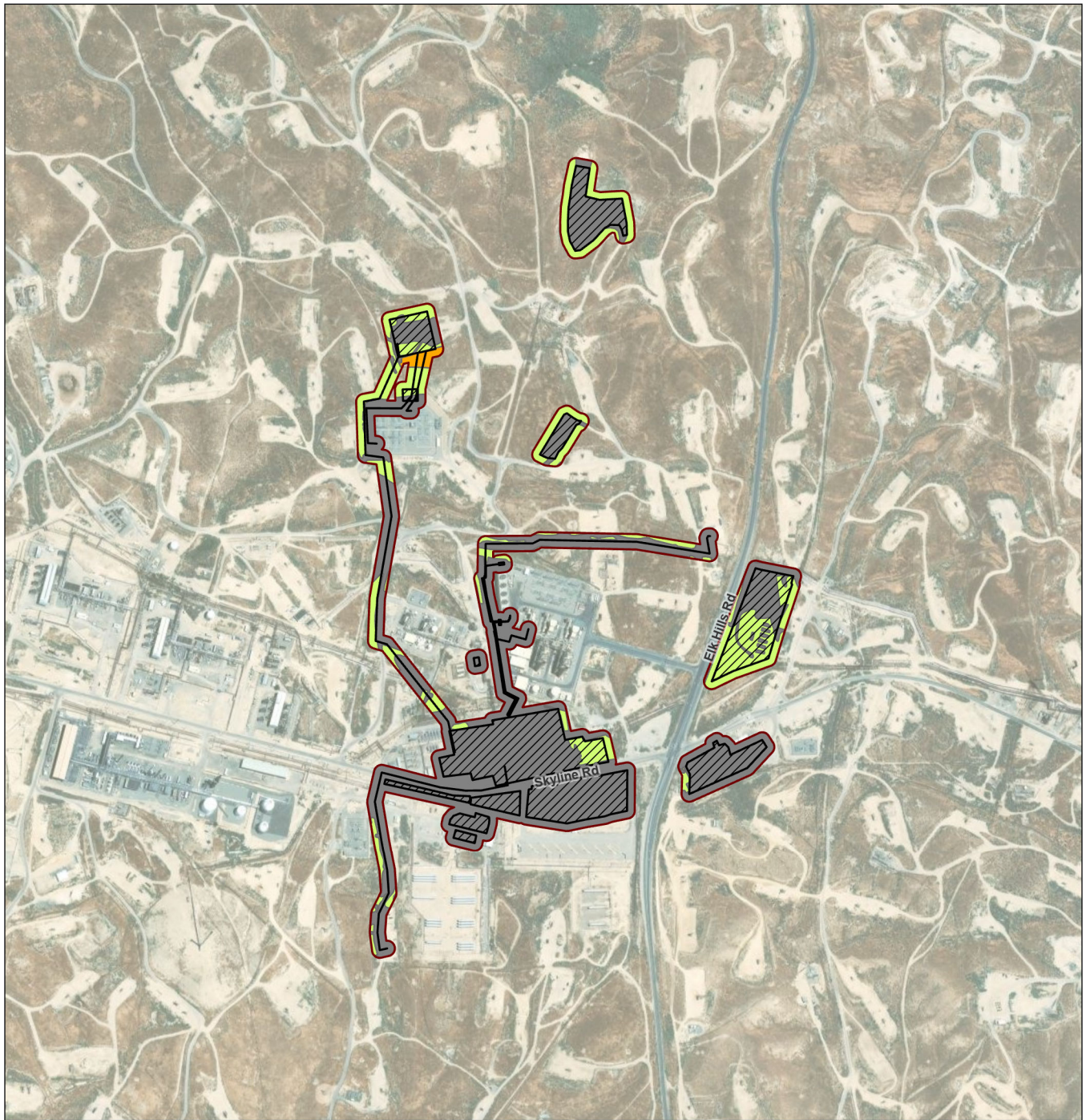
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CalCapture Carbon Capture and Sequestration Project
Figure No.

2b
Title
Site Plan

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- Project Features**
- Aquatic Study Area
 - Project Areas
 - Project Linears
- Vegetation Communities and Land Cover Types**
- Allscale saltbush scrub
 - Disturbed/Developed
 - Red Brome Mediterranean Grassland

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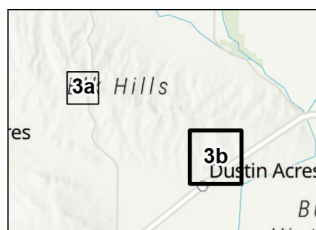
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Aquatic Resources Delineation Report

Figure No.

3a

Title
Vegetation Communities and Land Cover Types

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- Project Features**
- Aquatic Study Area
 - Project Areas
- Vegetation Communities and Land Cover Types**
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 - Disturbed/Developed

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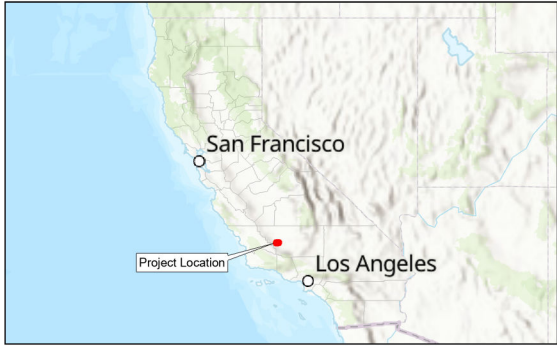
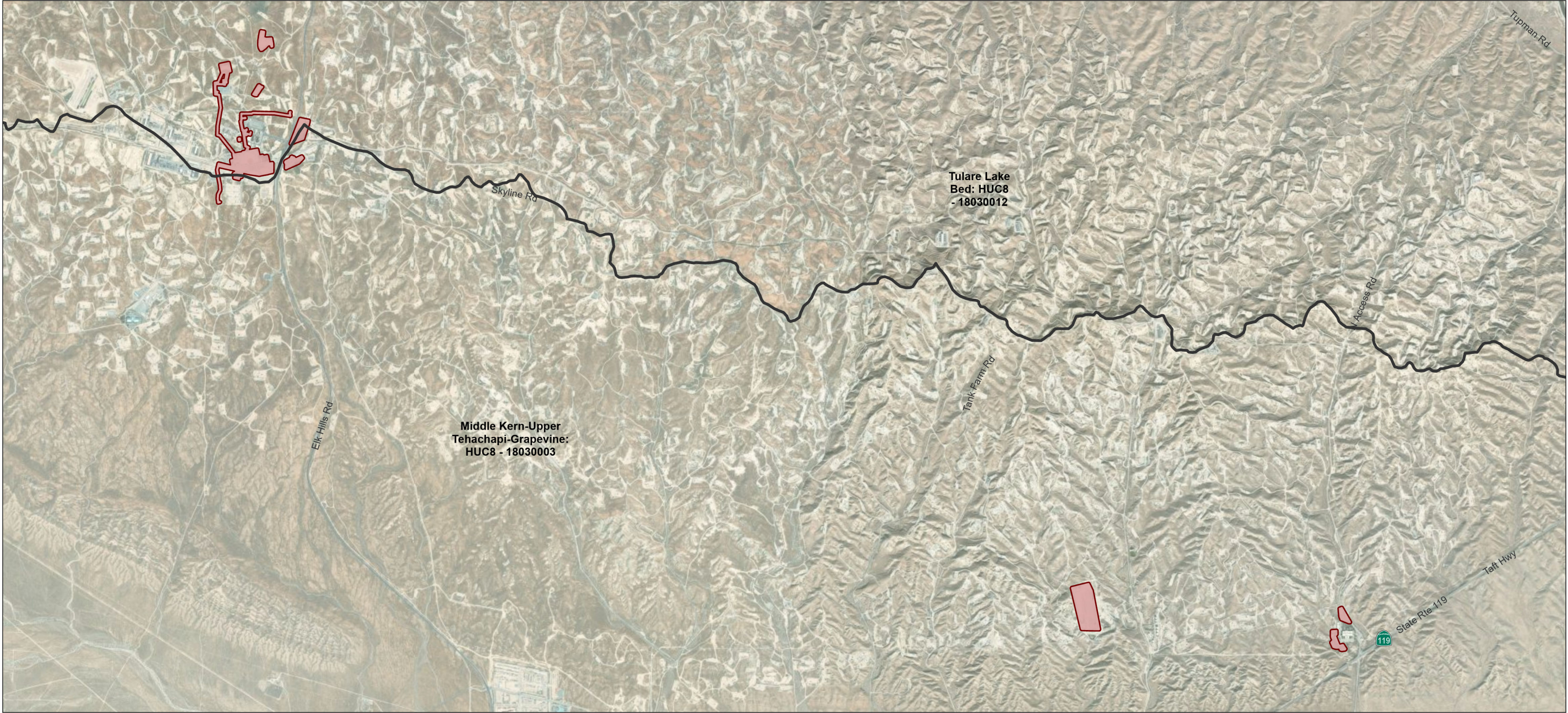
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CalCapture Carbon Capture and Sequestration Project
Aquatic Resources Delineation Report

Figure No.

3b

Title

Vegetation Communities and Land Cover Types



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2. Data Sources: Stantec, USGS 2025.
3. Background: Esri, GEBCO, NOAA, National Geographic, Garin, HERE, Geonames.org
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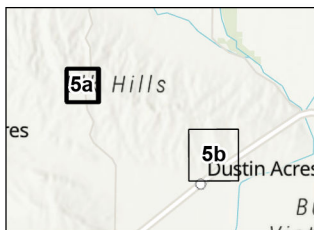
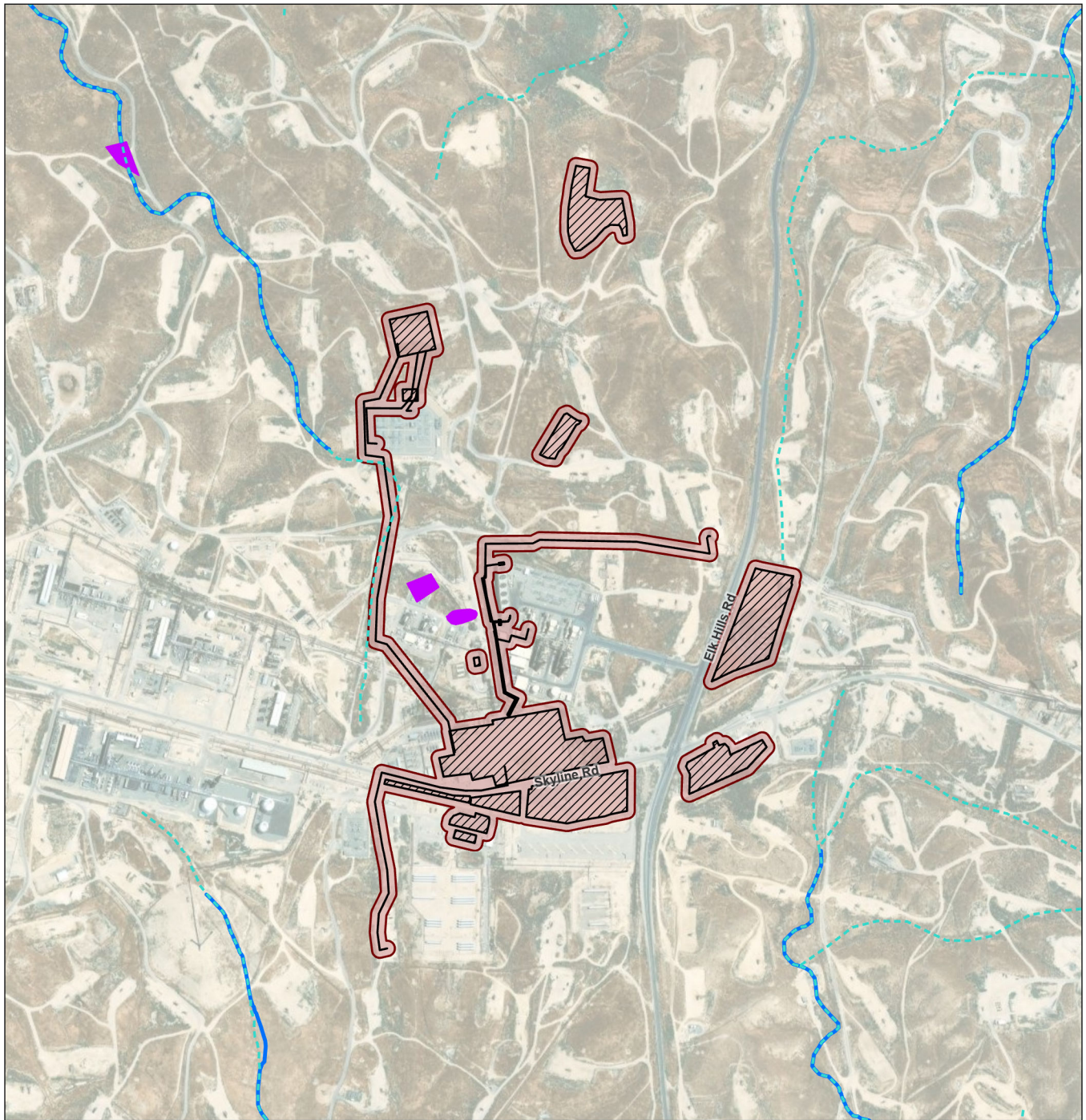
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Client/Project California Resources Corporation
CalCapture Carbon Capture and Sequestration Project
Aquatic Resources Delineation Report

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IR by ES on 2025-07-08
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Figure No.
4

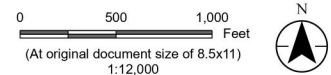
Title
Hydrologic Unit Code [HUC] Watershed

V:\185806775_Active\185806775_CRC_CalCapture03_data\gis_cad\gisproARD\ARDR_Figures_20250625.aprx Revised: 2025-07-08 By: mdeseco



Notes
1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
2. Data Sources: Stantec, USFWS NWI, USGS NHD, 2025.
3. Background: Esri, GEBCO, NOAA, National Geographic, Garin, HERE, Geonames.org
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- Aquatic Study Area
- Project Features**
 - Project Areas
 - Project Linears
- National Hydrography Dataset**
 - Stream/River
- National Wetlands Inventory**
 - Freshwater Pond
 - Riverine



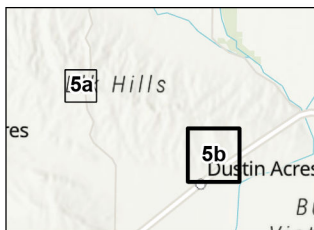
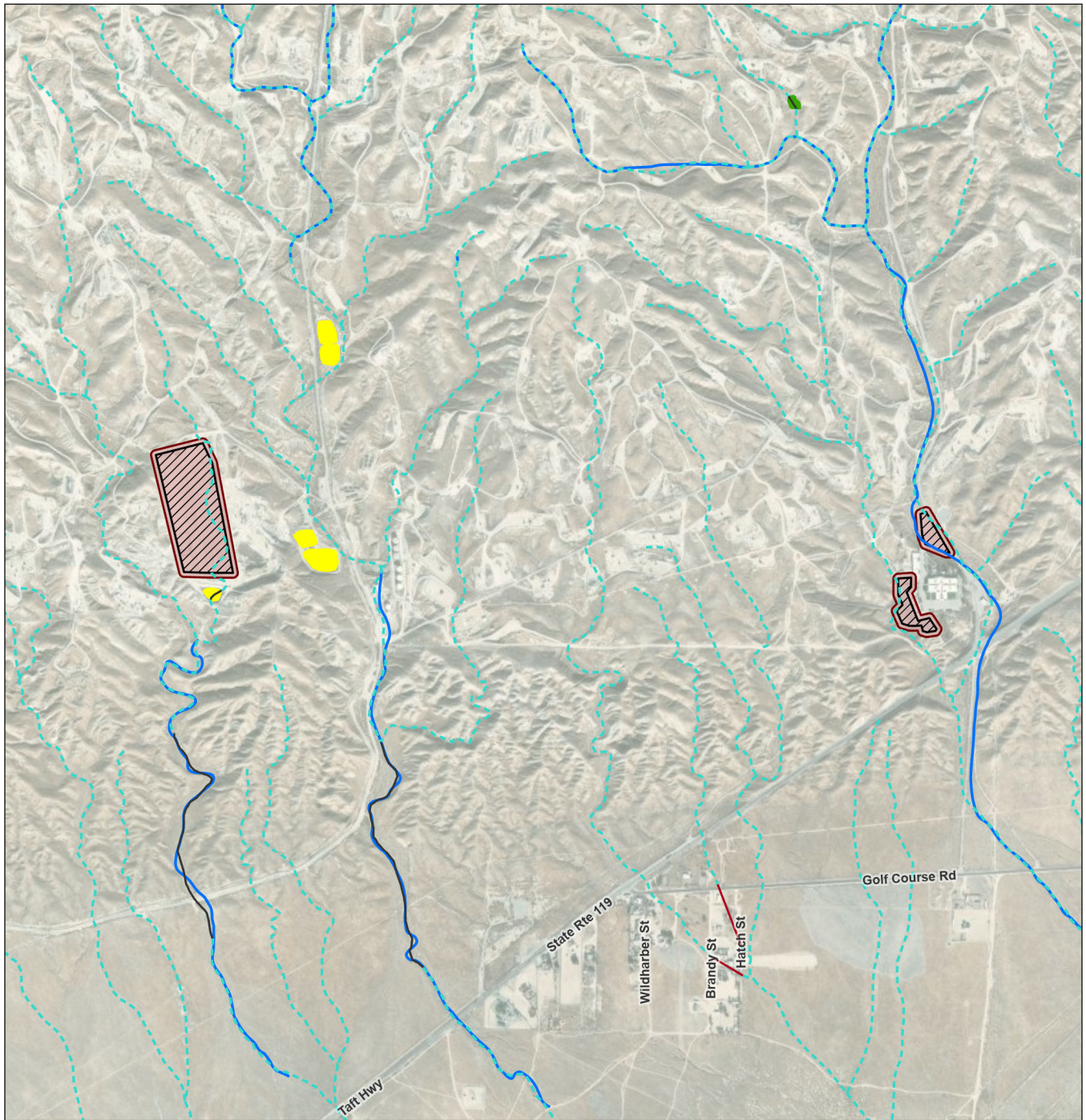
Project Location Prepared by MMD on 2025-07-08
Kern County, CA TR by CT 2025-07-08
IR by ES on 2025-07-08

Client/Project 185806775
California Resources Corporation
CalCapture Carbon Capture and Sequestration Project
Aquatic Resources Delineation Report

Figure No.
5a
Title
National Wetlands Inventory & National Hydrography Dataset

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Notes
1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
2. Data Sources: Stantec, USFWS NWI, USGS NHD, 2025.
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- Aquatic Study Area
- Project Features**
 - Project Areas
- National Hydrography Dataset**
 - Artificial/Path
 - Connector
 - Stream/River
 - Lake/Pond
 - Reservoir
- National Wetlands Inventory**
 - Freshwater Pond
 - Riverine

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(At original document size of 8.5x11)
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Project Location Prepared by MMD on 2025-07-08
Kern County, CA TR by CT 2025-07-08
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185806775

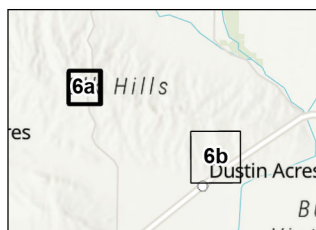
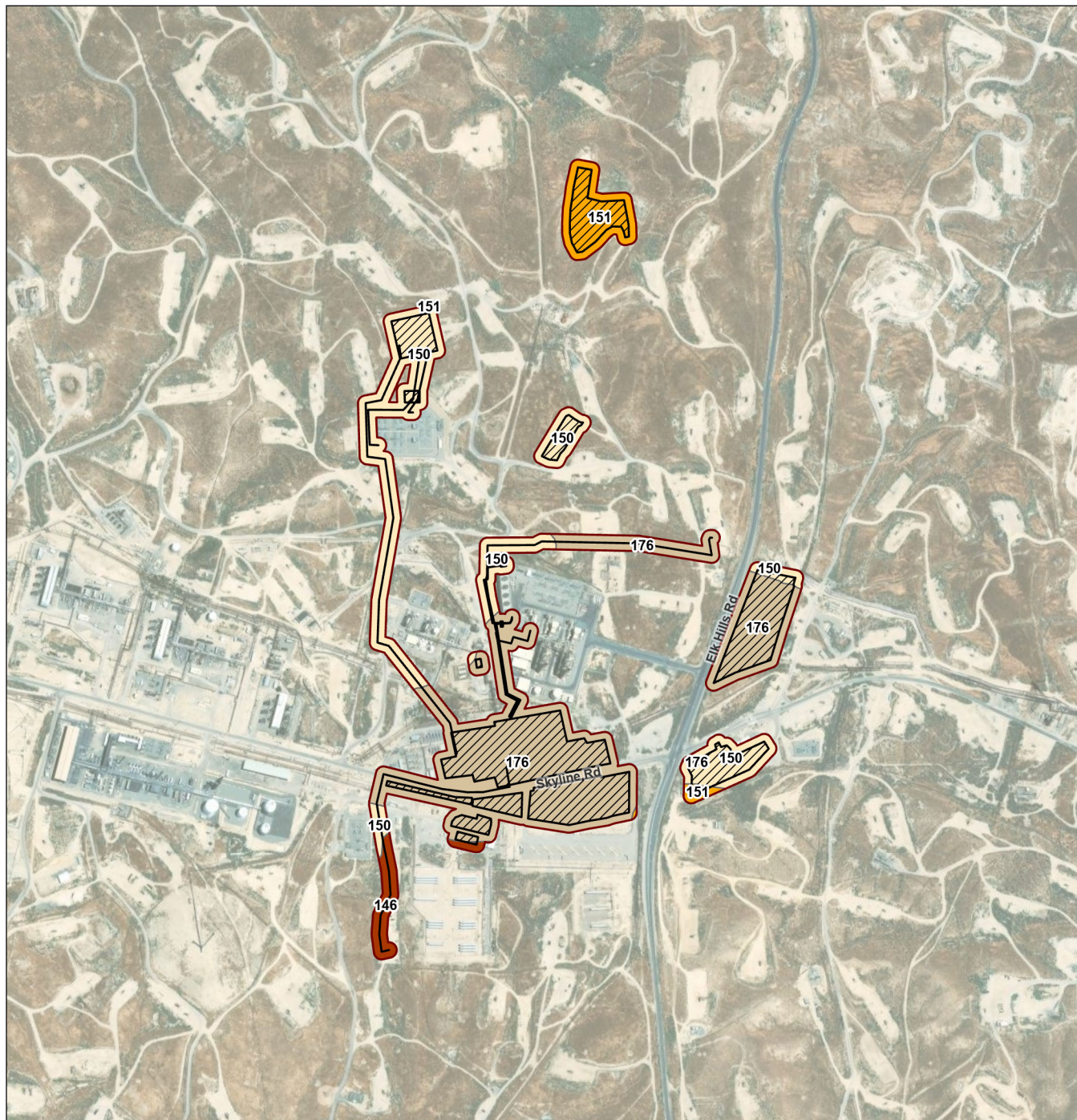
Client/Project
California Resources Corporation
CalCapture Carbon Capture and Sequestration Project
Aquatic Resources Delineation Report

Figure No.

5b

Title
**National Wetlands Inventory &
National Hydrography Dataset**

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Notes
 1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
 2. Data Sources: Stantec, Soils from USDA NRCS, 2025.
 3. Background: Esri, GEBCO, NOAA, National Geographic, Garmin, HERE, Geonames.org
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□ Aquatic Study Area

Project Features

▨ Project Areas

— Project Lines

Soil Map Unit Symbol

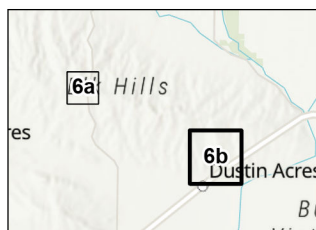
- 146: Elkhills sandy loam, 9 to 50 percent slopes, eroded
- 150: Elkhills-Torriorthents stratified complex, 9 to 15 percent slopes
- 151: Elkhills-Torriorthents stratified, eroded complex, 15 to 50 percent slopes
- 176: Kimberlina sandy loam, 5 to 9 percent slopes

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 (At original document size of 8.5x11)
 1:12,000



Project Location Kern County, CA
Client/Project California Resources Corporation
 CalCapture Carbon Capture and Sequestration Project
 Aquatic Resources Delineation Report
Figure No. 6a
Title Soils

Prepared by MMD on 2025-07-08
 TR by CT 2025-07-08
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 185806775



Notes
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2. Data Sources: Stantec. Soils from USDA NRCS, 2025.
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Aquatic Study Area

Project Features

Project Areas

Soil Map Unit Symbol

- 217: Kimberlina-Urban land complex, 0 to 5 percent slopes
- 729: Sodic Haplocambids, thick-Torriorthents, thin-Torriorthents, very thin, eroded, complex, 30 to 60 percent slopes
- 733: Sodic Haplocambids, thick-Torriorthents, thin, complex, 15 to 30 percent slopes
- 735: Sodic Haplocambids, thick-Elkhills-Torriorthents, thin, complex, 30 to 60 percent slopes

0 500 1,000 Feet
(At original document size of 8.5x11)
1:19,200



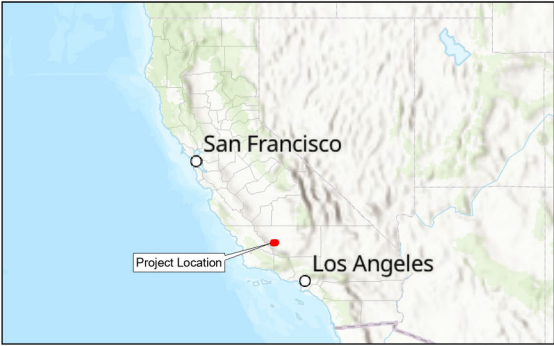
Project Location Prepared by MMD on 2025-07-08
Kern County, CA TR by CT 2025-07-08
IR by ES on 2025-07-08

Client/Project 185806775
California Resources Corporation
CalCapture Carbon Capture and Sequestration Project
Aquatic Resources Delineation Report

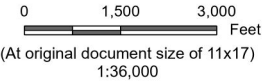
Figure No.

6b

Title
Soils



Aquatic Study Area



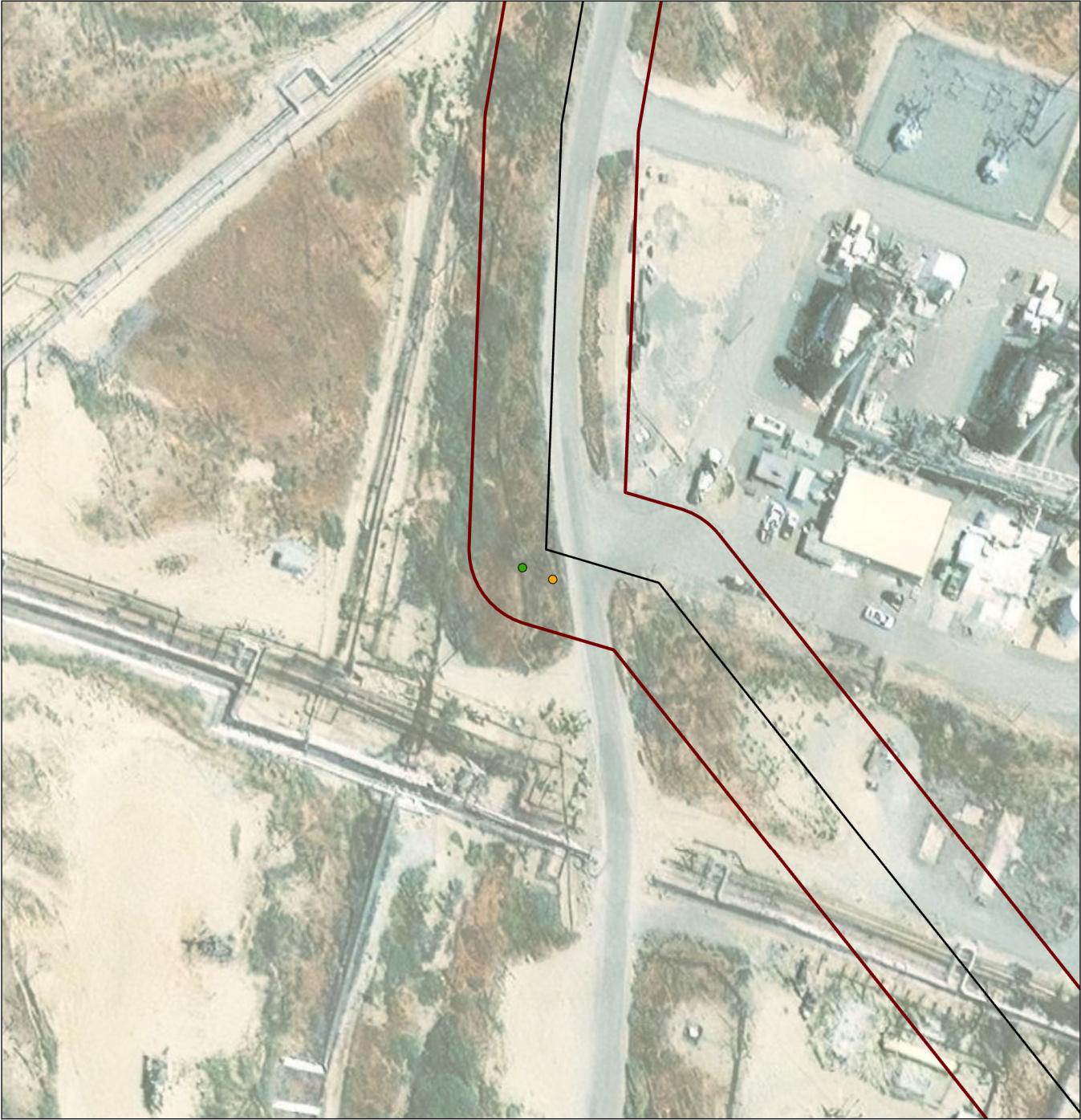
Project Location Kern County, CA
Client/Project California Resources Corporation
CalCapture Carbon Capture and Sequestration Project
Aquatic Resources Delineation Report

Prepared by MMD on 2025-07-09
TR by CT 2025-07-09
IR by ES on 2025-07-09
185806775

Figure No.
7-1
Title
Potential Jurisdictional Waters

Notes
1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
2. Data Sources: Stantec, 2025.
3. Background: Esri, GEBCO, NOAA, National Geographic, Garin, HERE, Geonames.org
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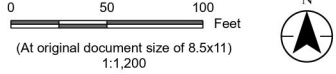


- Aquatic Study Area**

Project Features

 - Project Lines
 - Project Areas
 - Sample Point (SP)**
 - Upland
 - Non-Wetland
- Jurisdictional Features**

 - RWQCB
 - CDFW
 - Underground Pipe
 - Culvert



**Stantec**

Project Location Kern County, CA

Client/Project California Resources Corporation
CalCapture Carbon Capture and Sequestration Project
Aquatic Resources Delineation Report

Figure No. 7-2

Title Potential Jurisdictional Waters

Prepared by MMD on 2025-07-09
TR by CT 2025-07-09
IR by ES on 2025-07-09

185806775

Notes
1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet
2. Data Sources: Stantec 2025.
3. Background: World Imagery: Maxar

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 Aquatic Study Area

Project Features

 Project Linears

 Project Areas

Sample Point (SP)

 Upland

 Non-Wetland

Jurisdictional Features

 RWQCB

 CDFW

 Underground Pipe

 Culvert

0 50 100 Feet
(At original document size of 8.5x11)
1:1,200



Project Location Prepared by MMD on 2025-07-09

Kern County, CA TR by CT 2025-07-09

Client/Project 185806775

California Resources Corporation

CalCapture Carbon Capture and Sequestration Project

Aquatic Resources Delineation Report

Figure No. 7-3

Title

Potential Jurisdictional Waters

Notes

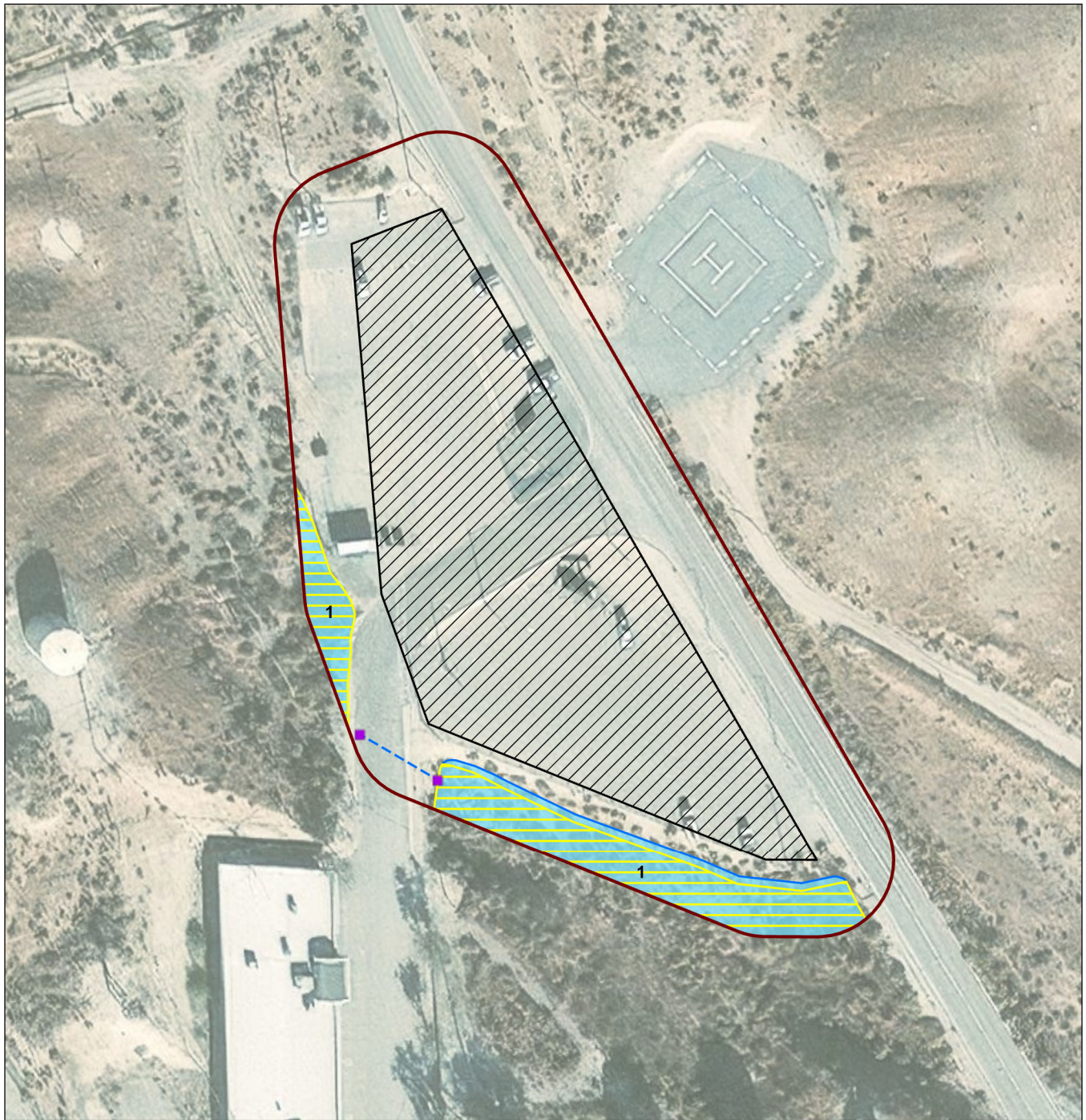
1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet

2. Data Sources: Stantec 2025.

3. Background: World Imagery: Maxar

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Aquatic Study Area

Project Features

— Project Linears

▨ Project Areas

Sample Point (SP)

● Upland

● Non-Wetland

Jurisdictional Features

▨ RWQCB

▨ CDFW

--- Underground Pipe

■ Culvert

0 50 100 Feet
(At original document size of 8.5x11)
1:1,200



Project Location Prepared by MMD on 2025-07-09

Kern County, CA TR by CT 2025-07-09

Client/Project 185806775

California Resources Corporation

CalCapture Carbon Capture and Sequestration Project

Aquatic Resources Delineation Report

Figure No. 7-4

Title

Potential Jurisdictional Waters

Notes

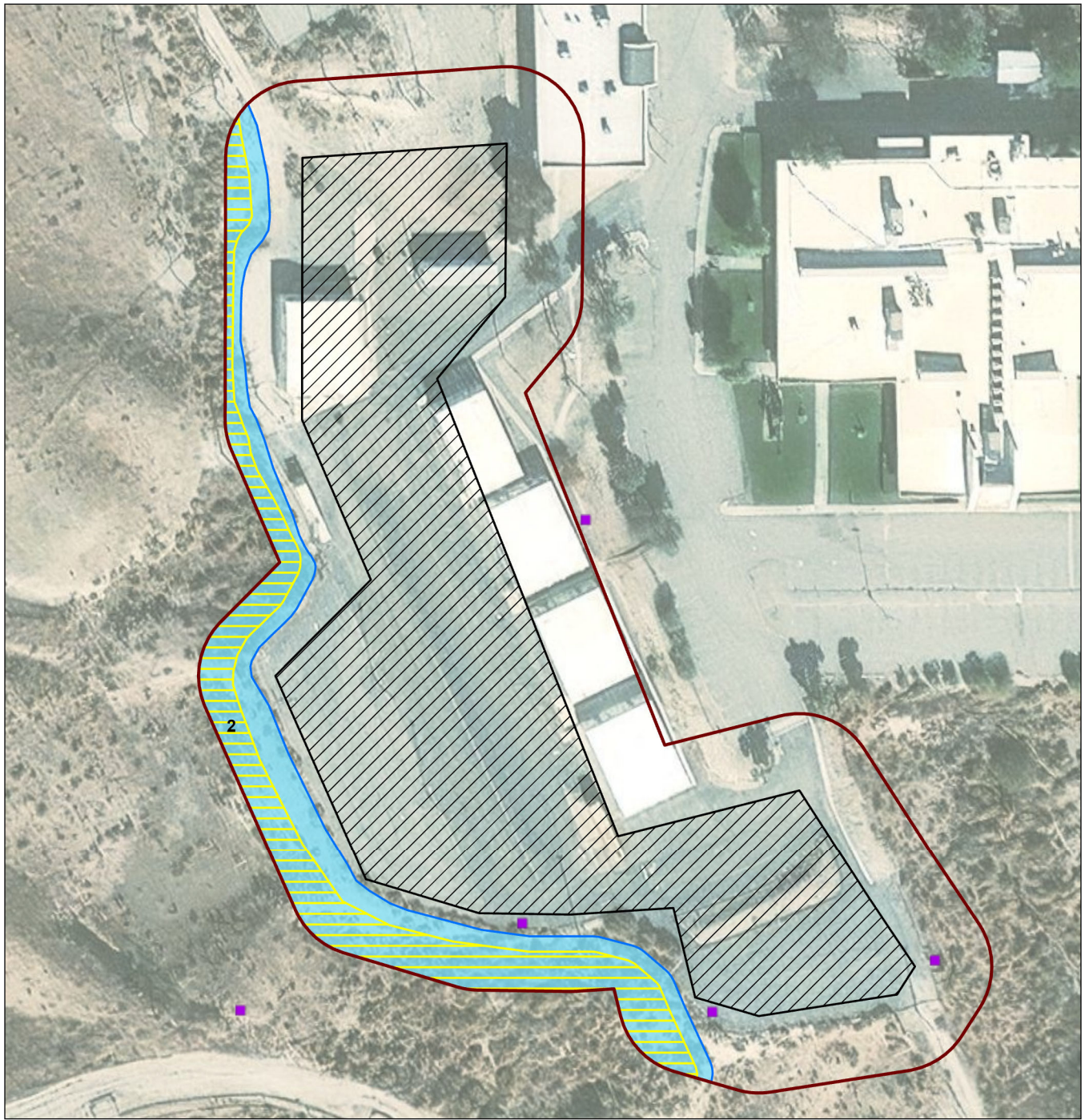
1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet

2. Data Sources: Stantec 2025.

3. Background: World Imagery: Maxar, Microsoft

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Aquatic Study Area

Project Features

Project Linears

Project Areas

Sample Point (SP)

Upland

Non-Wetland

Jurisdictional Features

RWQCB

CDFW

Underground Pipe

Culvert

0 50 100 Feet
(At original document size of 8.5x11)
1:1,200



Project Location

Kern County, CA

Prepared by MMD on 2025-07-09

TR by CT 2025-07-09

IR by ES on 2025-07-09

Client/Project

California Resources Corporation

CalCapture Carbon Capture and Sequestration Project

Aquatic Resources Delineation Report

Figure No.

7-5

Title

Potential Jurisdictional Waters

Notes

1. Coordinate System: NAD 1983 StatePlane California V FIPS 0405 Feet

2. Data Sources: Stantec 2025.

3. Background: World Imagery: Maxar, Microsoft

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Appendix B Photographic Log



Client: California Resources Corporation	Project: CalCapture Carbon Capture Sequestration Project
Site Location: Elk Hills Oil Field, Kern County California	Report Type: Aquatic Resources Delineation Report
Photograph ID: 1	
Photograph Location: 35.2820, -119.4814	
Directions: North	
Survey Date: February 11, 2025	
Comments: Aquatic Resource 1. Concrete lined portion of the potential CDFW and RWQCB jurisdictional waters, south of the adjacent gas pipelines.	
Photograph ID: 2	
Photograph Location: 35.2822, -119.4813	
Direction: East	
Survey Date: February 11, 2025	
Comments: Aquatic Resource 1. Culvert with steel plate protection and natural bottom portion of potential CDFW and RWQCB jurisdictional waters, south of the adjacent gas pipelines.	

Client: California Resources Corporation	Project: CalCapture Carbon Capture Sequestration Project
Site Location: Elk Hills Oil Field, Kern County California	Report Type: Aquatic Resources Delineation Report
Photograph ID: 3	
Photograph Location: 35.2821, -119.4810	
Direction: Northwest	
Survey Date: February 11, 2025	
Comments: Aquatic Resource 1. Culvert with steel plate protection and natural bottom portion of potential CDFW and RWQCB jurisdictional waters, south of the adjacent gas pipelines.	
Photograph ID: 4	
Photograph Location: 35.2824, -119.4810	
Direction: Southwest	
Survey Date: February 11, 2025	
Comments: Aquatic Resource 1. Natural bottom portion of potential CDFW and RWQCB jurisdictional waters, north of the adjacent gas pipelines.	

Client: California Resources Corporation	Project: CalCapture Carbon Capture Sequestration Project
Site Location: Elk Hills Oil Field, Kern County California	Report Type: Aquatic Resources Delineation Report
Photograph ID: 5	
Photograph Location: 35.2766, -119.4728	
Direction: Southeast	
Survey Date: February 11, 2025	
Comments: Aquatic Resource 2. Stormwater runoff retention basin.	
Photograph ID: 6	
Photograph Location: 35.2767, -119.4717	
Direction: South	
Survey Date: February 19, 2025	
Comments: Aquatic Resource 3. Stormwater runoff retention basin.	

Client: California Resources Corporation		Project: CalCapture Carbon Capture Sequestration Project	
Site Location: Elk Hills Oil Field, Kern County California		Report Type: Aquatic Resources Delineation Report	
Photograph ID: 7			
Photograph Location: 35.2742, -119.4720			
Direction: North			
Survey Date: February 19, 2025			
Comments: Aquatic Resource 4. Concrete lined drainage ditch carries site and stormwater runoff into stormwater runoff retention basin.			
Photograph ID: 8			
Photograph Location: 35.2748, -119.4684			
Direction: Northwest			
Survey Date: February 20, 2025			
Comments: Aquatic Resource 5. Concrete lined drainage ditch carries site and stormwater runoff into stormwater runoff retention basin.			

Client: California Resources Corporation		Project: CalCapture Carbon Capture Sequestration Project	
Site Location: Elk Hills Oil Field, Kern County California		Report Type: Aquatic Resources Delineation Report	
Photograph ID: 9			
Photograph Location: 35.2803, -119.4738			
Direction: North			
Survey Date: February 11, 2025			
Comments: Location of Sample Pit 1.			
Photograph ID: 10			
Photograph Location: 35.2803, -119.4738			
Direction: N/A			
Survey Date: February 11, 2025			
Comments: Sample Pit 1. In channel point.			

Client: California Resources Corporation	Project: CalCapture Carbon Capture Sequestration Project
Site Location: Elk Hills Oil Field, Kern County California	Report Type: Aquatic Resources Delineation Report
Photographic ID: 11	
Photographic Location: 35.2803, -119.4737	
Direction: South	
Survey Date: February 11, 2025	
Comments: Location of Sample Pit 2.	
Photographic ID: 12	
Photograph Location: 35.2803, -119.4737	
Direction: N/A	
Survey Date: February 11, 2025	
Comments: Sample Pit 2. Upland point.	

Appendix C Data Sheets



WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CalCapture Carbon Capture Project City/County: Elk Hills / Kern Sampling Date: 2/11/2025
 Applicant/Owner: California Resources Corporation State: CA Sampling Point: 1
 Investigator(s): Stan Glowacki; Hannah Hart Section, Township, Range: Section 35; Township 30 south; Range 23 east
 Landform (hillslope, terrace, etc.): Drainage Ditch Local relief (concave, convex, none): concave Slope (%): 1
 Subregion (LRR): LRRC Lat: 35.280363 Long: -119.473847 Datum: NAD 83
 Soil Map Unit Name: Elk Hills-Torriothents Stratified Complex 9% to 15% slopes NWI classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☒, or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☒
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☐ No ☒	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present? Yes ☐ No ☒	
Wetland Hydrology Present? Yes ☐ No ☒	
Remarks: Dry ditch adjacent to oil field pipelines. Pipelines placed in ditch in vicinity of sample point location	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>20' by 20'</u>) 1. <u>California Buckwheat (Eriogonum fasciculatum)</u> <u>5</u> <u>Y</u> <u>NI</u> 2. <u>White Horehound (Marrubium vulgare)</u> <u>2</u> <u>Y</u> <u>FACU</u> 3. <u>Bladderpod (Cleomella arborea)</u> <u>1</u> <u>N</u> <u>NI</u> 4. _____ 5. _____ _____ = Total Cover				
Herb Stratum (Plot size: <u>10' by 10'</u>) 1. <u>Grass (Bromus sp.)</u> <u>80</u> <u>Y</u> <u>NI</u> 2. _____ 3. _____ 4. _____ 5. _____ 6. _____ 7. _____ 8. _____ _____ = Total Cover				
Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ = Total Cover				
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____				
Remarks: Ditch is vegetated with native and non-native plants				Hydrophytic Vegetation Indicators: ☐ Dominance Test is >50% ☐ Prevalence Index is ≤3.0 ¹ ☐ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ☐ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes ☐ No ☒

SOILSampling Point: 1**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-14	10YR 7/3	100					sandy loam	Soil is homogenous

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (**LRR C**)
☐ 1 cm Muck (A9) (**LRR D**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ Sandy Gleyed Matrix (S4)

☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

☐ 1 cm Muck (A9) (**LRR C**)
☐ 2 cm Muck (A10) (**LRR B**)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks:

Soil is sandy and tan colored. Same color throughout

HYDROLOGY**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1) (**Nonriverine**)
☐ Sediment Deposits (B2) (**Nonriverine**)
☐ Drift Deposits (B3) (**Nonriverine**)
☐ Surface Soil Cracks (B6)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)

☐ Salt Crust (B11)
☐ Biotic Crust (B12)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence of Reduced Iron (C4)
☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Thin Muck Surface (C7)
☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

☐ Water Marks (B1) (**Riverine**)
☐ Sediment Deposits (B2) (**Riverine**)
☐ Drift Deposits (B3) (**Riverine**)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:Surface Water Present? Yes _____ No ☒ Depth (inches): _____Water Table Present? Yes _____ No ☒ Depth (inches): _____Saturation Present? Yes _____ No ☒ Depth (inches): _____
(includes capillary fringe)**Wetland Hydrology Present?** Yes _____ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Channel is marked as blue line on National Hydrography Dataset (NHD)

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: CalCapture Carbon Capture Project City/County: Elk Hills / Kern Sampling Date: 2/11/2025
Applicant/Owner: California Resources Corporation State: CA Sampling Point: 2
Investigator(s): Stan Glowacki; Hannah Hart Section, Township, Range: Section 35; Township 30 south; Range 23 east
Landform (hillslope, terrace, etc.): Hillslope Local relief (concave, convex, none): concave Slope (%): 10
Subregion (LRR): LRRC Lat: 35.280218 Long: -119.473737 Datum: NAD 83
Soil Map Unit Name: Elk Hills-Torriothents Stratified Complex 9% to 15% slopes NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☒ No ☐ (If no, explain in Remarks.)
Are Vegetation ☒, Soil ☒, or Hydrology ☒ significantly disturbed? Are "Normal Circumstances" present? Yes ☐ No ☒
Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ☐ No ☒	Is the Sampled Area within a Wetland? Yes ☐ No ☒
Hydric Soil Present? Yes ☐ No ☒	
Wetland Hydrology Present? Yes ☐ No ☒	
Remarks: Hill slope adjacent to road and drainage channel about 25 feet from Sample point 1	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: _____)	Absolute % Cover	Dominant Species?	Indicator Status
1. _____	_____	_____	_____
2. _____	_____	_____	_____
3. _____	_____	_____	_____
4. _____	_____	_____	_____
_____ = Total Cover			
Sapling/Shrub Stratum (Plot size: <u>10' by 10'</u>)			
1. <u>California Buckwheat (Eriogonum fasciculatum)</u>	<u>40</u>	<u>Y</u>	<u>NI</u>
2. <u>Allscale saltbush (Atriplex polycarpa)</u>	<u>5</u>	_____	<u>FACU</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
<u>45</u> = Total Cover			
Herb Stratum (Plot size: <u>10' by 10'</u>)			
1. <u>Grass (Bromus sp.)</u>	<u>10</u>	<u>Y</u>	<u>NI</u>
2. <u>Stork's bill (Erodium cicutarium)</u>	<u>1</u>	_____	<u>NI</u>
3. _____	_____	_____	_____
4. _____	_____	_____	_____
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____
8. _____	_____	_____	_____
<u>11</u> = Total Cover			
Woody Vine Stratum (Plot size: _____)			
1. _____	_____	_____	_____
2. _____	_____	_____	_____
_____ = Total Cover			
% Bare Ground in Herb Stratum _____ % Cover of Biotic Crust _____			

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:
Total % Cover of: _____ Multiply by: _____
OBL species _____ x 1 = _____
FACW species _____ x 2 = _____
FAC species _____ x 3 = _____
FACU species _____ x 4 = _____
UPL species _____ x 5 = _____
Column Totals: _____ (A) _____ (B)
Prevalence Index = B/A = _____

Hydrophytic Vegetation Indicators:
____ Dominance Test is >50%
____ Prevalence Index is ≤3.0¹
____ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation¹ (Explain)

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ☐ No ☒

Remarks:
Bank along ditch vegetated with native and non-native plants

SOILSampling Point: 2**Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)**

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-14	10YR 7/3	100					sandy loam	Soil is homogenous

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)**

☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (**LRR C**)
☐ 1 cm Muck (A9) (**LRR D**)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ Sandy Gleyed Matrix (S4)

☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

☐ 1 cm Muck (A9) (**LRR C**)
☐ 2 cm Muck (A10) (**LRR B**)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks:

Soil looks like fill material with small rocks throughout

HYDROLOGY**Wetland Hydrology Indicators:**

Primary Indicators (minimum of one required; check all that apply)

☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1) (**Nonriverine**)
☐ Sediment Deposits (B2) (**Nonriverine**)
☐ Drift Deposits (B3) (**Nonriverine**)
☐ Surface Soil Cracks (B6)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)

☐ Salt Crust (B11)
☐ Biotic Crust (B12)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence of Reduced Iron (C4)
☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Thin Muck Surface (C7)
☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

☐ Water Marks (B1) (**Riverine**)
☐ Sediment Deposits (B2) (**Riverine**)
☐ Drift Deposits (B3) (**Riverine**)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:Surface Water Present? Yes _____ No ☒ Depth (inches): _____Water Table Present? Yes _____ No ☒ Depth (inches): _____Saturation Present? Yes _____ No ☒ Depth (inches): _____
(includes capillary fringe)**Wetland Hydrology Present?** Yes _____ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Sample location is hillslope adjacent to drainage channel



Stantec is a global leader in sustainable engineering, architecture, and environmental consulting. The diverse perspectives of our partners and interested parties drive us to think beyond what's previously been done on critical issues like climate change, digital transformation, and future-proofing our cities and infrastructure. We innovate at the intersection of community, creativity, and client relationships to advance communities everywhere, so that together we can redefine what's possible.

