

# WETLANDS DELINEATION REPORT

Bowerman Power Renewable Natural Gas  
Plant  
Frank R. Bowerman Landfill  
Orange County, CA

August 2023

Prepared by



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## EXECUTIVE SUMMARY

On behalf of Bowerman Power LFG, LLC (“Bowerman Power”) (Bowerman Power, Project Proponent), Tetra Tech has prepared this Wetlands Delineation Report for the proposed Renewable Natural Gas (RNG) Plant planned at the Frank R. Bowerman Landfill (Bowerman Landfill) in Orange County, California (Project). This Report describes the literature review, survey methodology, and results of the wetlands delineation conducted for the Project. This Project is being conducted under a partnership agreement between Bowerman Power and OC Waste & Recycling (OCWR) to process the landfill gas produced by the Bowerman Landfill and deliver it to Southern California Gas Company (SoCal Gas).

A wetlands delineation was performed to assess potential jurisdictional waters and wetland features within the Project survey area. Three features under U.S. Army Corps of Engineers (USACE) and Regional Water Quality Control Board (RWQCB) jurisdiction were identified in the survey area. Four areas under California Department of Fish and Wildlife (CDFW) jurisdiction were also identified in the survey area. Portions of each feature overlap with the proposed Project site (i.e., RNG Plant footprint). Avoidance or minimization of impacts to areas under the jurisdiction of the USACE, RWQCB, and CDFW is recommended. Coordination with these agencies is recommended to determine if the previously obtained permits still apply or if a modification or new permits are required, including a Section 404 permit from the USACE, a Water Quality Certification from the RWQCB, and a Lake and Streambed Alteration Agreement from the CDFW (County of Orange Integrated Waste Management Department 2006). The previously permitted or new jurisdictional features that occur in the survey area are as follows:

- Feature 1 – previously permitted from USACE and RWQCB, CDFW area is new.
- Feature 2 – not permitted.
- Feature 3 – not permitted.
- Feature 4 – previously permitted from USACE and RWQCB, CDFW area is new.

This Report is subject to verification by the USACE, RWQCB, and CDFW.

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## Acronyms and Abbreviations

Bowerman Landfill	Frank R. Bowerman Landfill
Bowerman Power	Bowerman Power LFG, LLC
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
EPA	U.S. Environmental Protection Agency
FAC	Facultative
FACU	Facultative Upland
FACW	Facultative Wetland
LFGTE	Landfill Gas to Energy
LSAA	Lake and Streambed Alteration Agreement
NWI	National Wetlands Inventory
OBL	Obligate Wetland
OCWR	OC Waste & Recycling
OHWM	ordinary high water mark
Porter-Cologne Act	Porter-Cologne Water Quality Control Act of 1969
Procedures	State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State
RNG	Renewable Natural Gas
RWQCB	Regional Water Quality Control Board
SoCal Gas	Southern California Gas Company
SWRCB	State Water Resources Control Board
UPL	Upland
USACE	U.S. Army Corps of Engineers
USDA NRCS	U.S. Department of Agriculture National Resources Conservation Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WDRs	waste discharge requirements

## 1.0 INTRODUCTION

Tetra Tech has prepared this Wetlands Delineation Report (Report) for the proposed Renewable Natural Gas (RNG) Plant planned at the Frank R. Bowerman Landfill (Bowerman Landfill) in Orange County, California (Project). This Project is being conducted under a partnership agreement between Bowerman Power LFG, LLC (Bowerman Power) and OC Waste & Recycling (OCWR) to process the landfill gas produced by the Bowerman Landfill and deliver it to Southern California Gas Company (SoCal Gas).

The purpose of this Wetlands Delineation Report is to:

- Summarize the major applicable federal and state laws that apply to protecting jurisdictional wetlands, waters, and water quality.
- Document the methods and results of the wetlands delineation conducted for the Project.
- Identify jurisdictional areas under the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and California Department of Fish and Wildlife (CDFW) criteria.

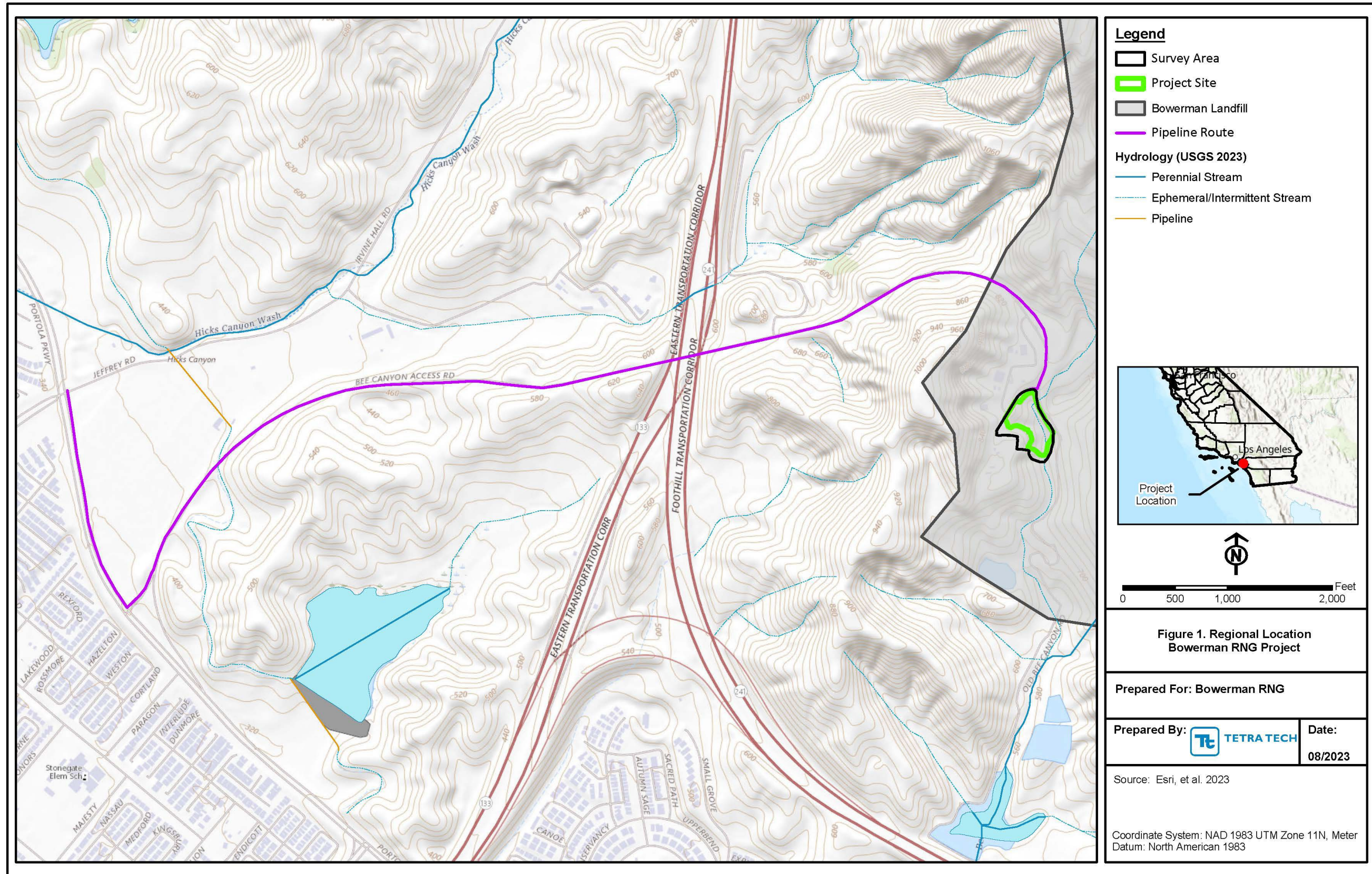
### 1.1 Project Location

The proposed Project is located at Bowerman Landfill in Orange County, California and consists of a proposed RNG Plant footprint (i.e., Project site) and proposed pipeline route (Figure 1). The Project site is generally bound by Bee Canyon Access Road to the north and northeast, the existing Landfill Gas to Energy (LFGTE) plant and flare station to the west, and open space and roads to the south (Figure 2). The proposed pipeline route connecting the proposed RNG Plant to the SoCal Gas interconnection goes north and west along Bee Canyon Access Road until the intersection of Jeffrey Road and Portola Parkway (Figure 1). The site is located within the U.S. Geological Survey (USGS) *El Toro* 7.5-Minute Topographic Quadrangle Map (Figure 3). Surrounding land uses consist of other areas of the Bowerman Landfill, open space, agricultural use, residential uses, and highways and roads.

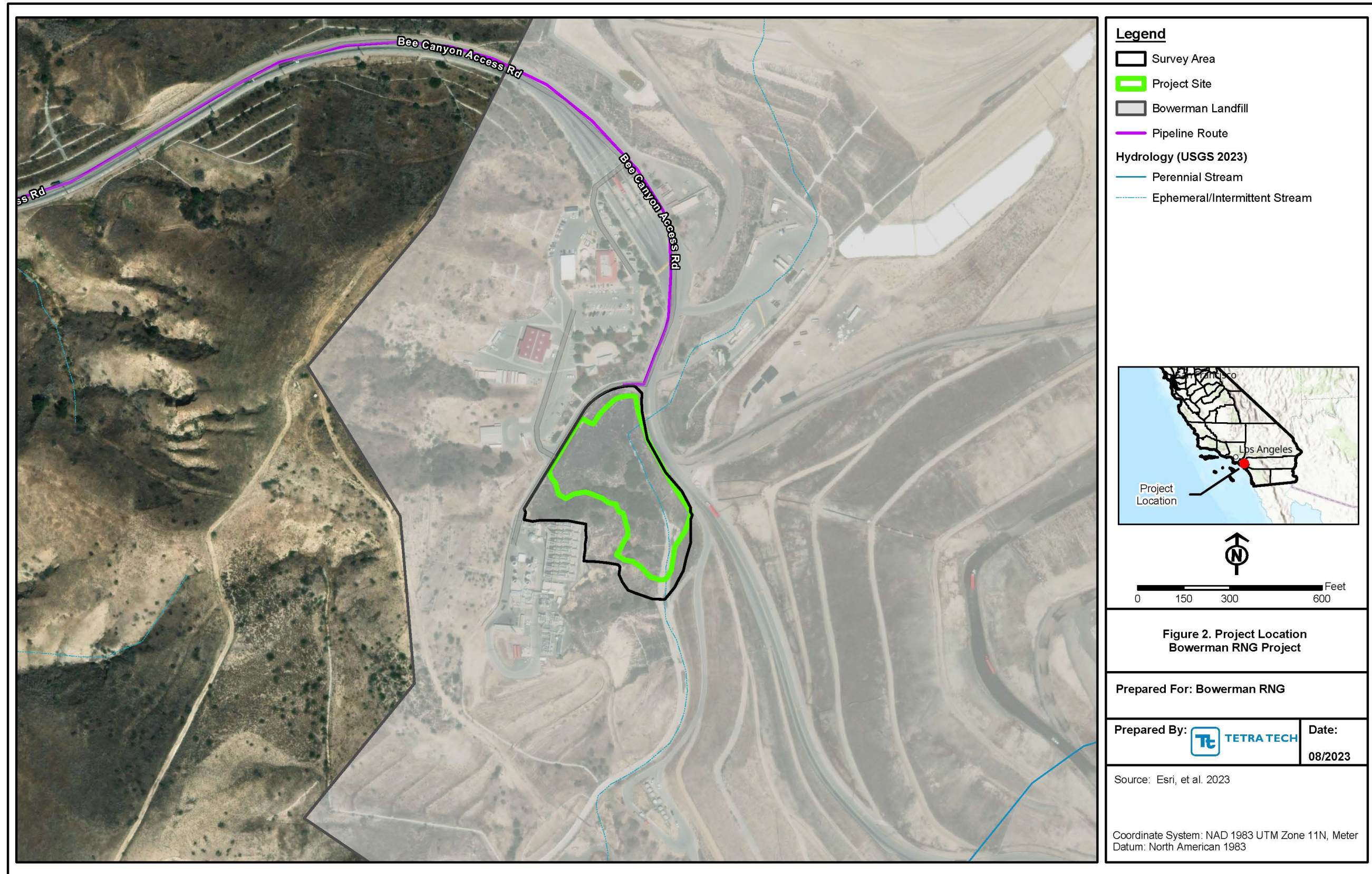
The survey area for the wetlands delineation is shown in the figures, which approximates the Project Lease Boundary. The Project site consists of the proposed RNG footprint. The pipeline route was not surveyed for wetlands since construction would only occur within the existing roadway.

### 1.2 Environmental Setting

One unnamed ephemeral/intermittent stream runs through the survey area and ultimately leads off-site into Bee Canyon Wash, San Diego Creek, and then the Pacific Ocean (Figures 1 to 3). The data shown in Figures 1 to 3 is based on USGS blue-line streams, which are defined as perennial or ephemeral flowing waters. As described in the results section below, the waters that occur within the survey area were investigated during Tetra Tech surveys. A majority of the survey area is very steep hillside terrain and elevation ranges from approximately 690 to 800 feet above sea level. The survey area is undeveloped and vegetation throughout the survey area is a mixture of sagebrush scrub and coast live oak. Rainfall in 2023 has been higher than normal. From July 1, 2022 through June 30, 2023, rainfall for the Irvine area was estimated to be about 163 percent of normal (Golden Gate Weather Services 2023).



Not for Construction




**Legend**


- Survey Area
- Project Site
- Bowerman Landfill
- Pipeline Route


**Hydrology (USGS 2023)**

- Perennial Stream
- Ephemeral/Intermittent Stream



Project Location





**Figure 2. Project Location  
Bowerman RNG Project**

Prepared For: Bowerman RNG

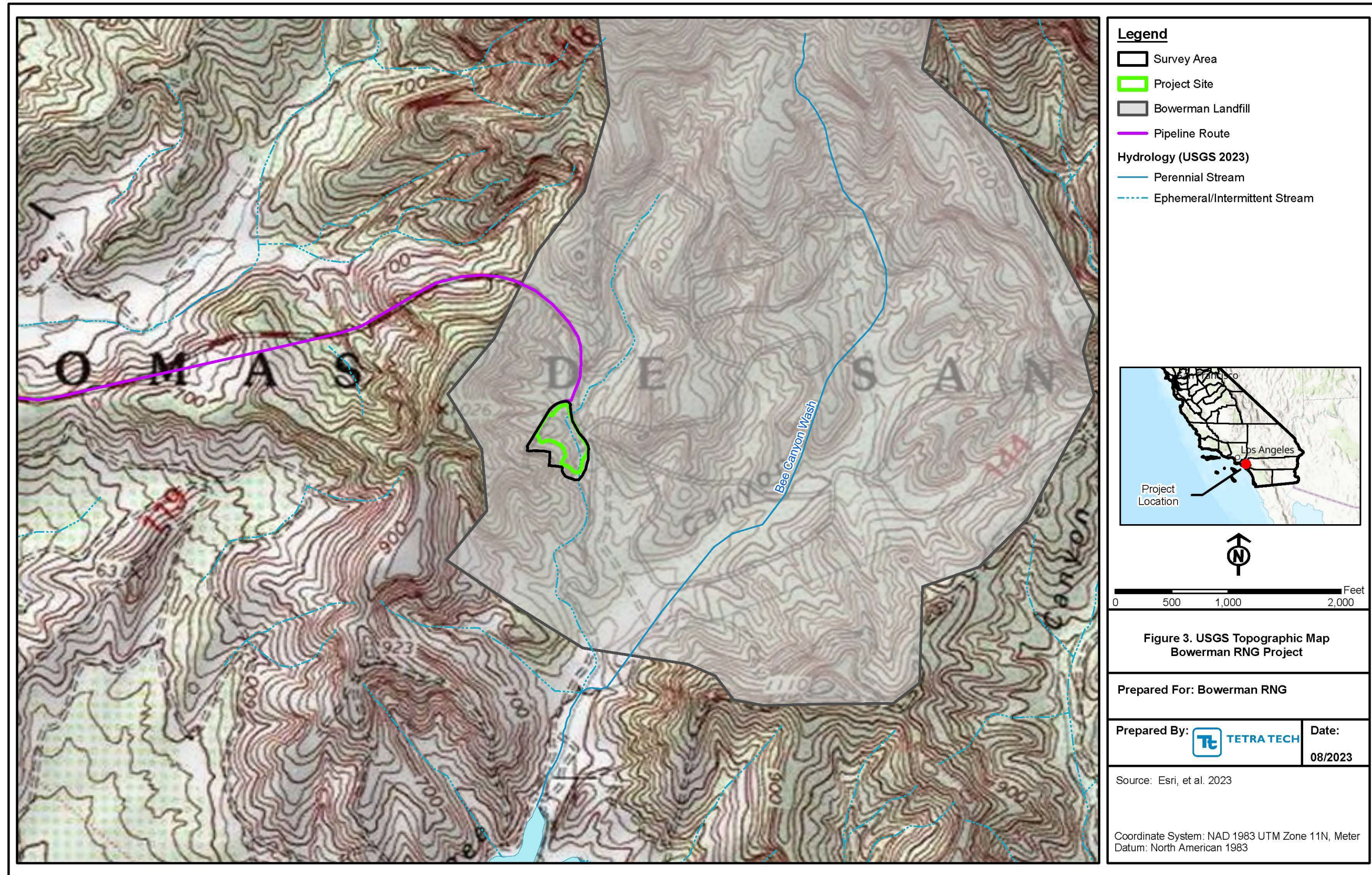
Prepared By: 	Date: 08/2023
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Source: Esri, et al. 2023

Coordinate System: NAD 1983 UTM Zone 11N, Meter  
Datum: North American 1983

Not for Construction





Not for Construction

## 2.0 REGULATORY OVERVIEW AND DEFINITIONS

### 2.1 U.S. Army Corps of Engineers

Section 404 of the Clean Water Act provides the U.S. Environmental Protection Agency (EPA) and the USACE regulatory and permitting authority over activities that result in the discharge of dredged or fill material into “navigable Waters of the U.S.” Section 502(7) of the Clean Water Act defines navigable waters as “Waters of the U.S., including territorial seas.” Section 328 of Chapter 33 in the Code of Federal Regulations (CFR) defines the term Waters of the U.S. as it applies to the jurisdictional limits of the authority of the USACE under the Clean Water Act. A summary of this definition of Waters of the U.S. in 33 CFR Section 328.3 includes (1) waters which are: (i) currently used, or were used in the past, or may be susceptible to use in commerce, including all waters which are subject to tides; (ii) the territorial seas; or (iii) interstate waters, including interstate wetlands; (2) impoundments of waters; (3) tributaries of waters; (4) wetlands adjacent to waters; (5) intrastate lakes and ponds, streams, or wetlands (USACE and EPA 2023). Therefore, for the purpose of determining USACE jurisdiction under the Clean Water Act, “navigable waters” as defined in the Clean Water Act are the same as Waters of the U.S. defined in the CFR above.

The limits of USACE jurisdiction under Section 404 as defined in 33 CFR Section 328.4 are as follows: (a) Territorial seas: three nautical miles in a seaward direction from the baseline; (b) Tidal waters of the U.S.: high tide line or to the limit of adjacent non-tidal waters; (c) Non-tidal waters of the U.S.: ordinary high water mark (OHWM) or to the limit of adjacent wetlands, or when the water of the U.S. consists only of wetlands to the limit of the wetland.

#### 2.1.1 Section 404 Jurisdictional Wetlands

The USACE has defined the term “wetlands” as follows (33 CFR 328.3):

*Those areas that are inundated or saturated by surface or ground water 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 three parameters that are used to determine the presence of wetlands are: (1) hydrophytic vegetation, (2) wetland hydrology, and (3) hydric soils. Evidence of a minimum of one positive wetland indicator from each of the three parameters must be found in order to make a positive wetland delineation (USACE 2008).

Wetland areas which do not have a surface or groundwater connection to, and are not adjacent to, navigable Waters of the U.S. may be considered isolated and not subject to USACE jurisdiction.

#### Vegetation

Hydrophytic vegetation is defined as areas where the frequency and duration of inundation or soil saturation exerts a controlling influence on the plant species present. Plant species are assigned wetland indicator status according to the probability of their occurrence in a wetland. More than fifty percent of the dominant plant species must have a wetland indicator status to meet the hydrophytic vegetation criterion. The USACE has published the *Arid West 2020 Regional Wetland Plant List*

(USACE 2020) which separates vascular plants into the following categories based on plant species frequency of occurrence in wetlands:

- Obligate Wetland (OBL). Occur almost always (estimated probability greater than 99 percent) under natural conditions in wetlands.
- Facultative Wetland (FACW). Usually occur in wetlands (estimated probability 67-99 percent), but occasionally found in non-wetlands.
- Facultative (FAC). Equally likely to occur in wetlands or non-wetlands (estimated probability 34-66 percent).
- Facultative Upland (FACU). Usually occur in non-wetlands (estimated probability 67-99 percent), but occasionally found in wetlands (estimated probability 1-33 percent).
- Obligate Upland (UPL). Occur almost always (estimated probability greater than 99 percent) under natural conditions in non-wetlands.

The USACE considers OBL, FACW, and FAC species to be indicators of a wetland. An area is considered to have hydrophytic vegetation when greater than 50 percent of the dominant species in each vegetative stratum (tree, shrub, and herb) fall within these categories. Any species not listed in the USACE wetland plant list is assumed to be an upland species, almost never occurring in wetlands.

A secondary hydrophytic vegetation identifier is a prevalence index of 3.0 or less. The prevalence index is a weighted-average wetland indicator status of all plant species at the sample point, where each indicator status category is given a numeric code (OBL=1, FACW=2, FAC=3, FACU=4, and UPL=5) and weighting is by abundance (percent cover). This method is a more comprehensive analysis of the hydrophytic status of the community than one based on just a few dominant species. The prevalence index is used as a supplement to determine whether hydrophytic vegetation is present on sites where indicators of hydric soil and wetland hydrology are present, but the vegetation initially fails the dominance test.

## Hydrology

Wetland hydrology is inundation or soil saturation with a frequency and duration long enough to cause the development of hydric soils and vegetation communities dominated by hydrophytic vegetation. If direct observation of wetland hydrology is not possible (as in seasonal wetlands), or records of wetland hydrology are not available (such as stream gauges), assessment of wetland hydrology is frequently supported by indicators, such as watermarks, surface soil cracks, sediment deposits, or a high water table.

OHWM is a 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 area.

## Soils

Hydric soils are saturated or inundated for a sufficient duration during the growing season to develop anaerobic or reducing conditions that favor the growth and regeneration of hydrophytic vegetation.

Field indicators of wetland soils include sulfidic odor, observations of ponding, inundation or saturation, dark (low chroma) soil colors, bright mottles (concentrations of oxidized minerals such as iron), or gleying (reduced conditions indicated by a blue- or green-grey color). Additional supporting information includes documentation of soil as hydric or reference to wet conditions in the local soil survey, both of which must be verified in the field.

Field indicators for hydric soils are particularly difficult to observe in sandy soils, which are often recently deposited soils of floodplains. These soils usually lack sufficient fines (clay and silt) and organic material to allow use of color as a reliable indicator of hydric soil. Hydric soil indicators in sandy soils include accumulations of organic matter and organic pan (soil layer in which organic matter and aluminum accumulate where the top of the water table most often occurs).

### **2.1.2 Section 404 Jurisdictional Waters of the U.S.**

In April 2020, the USACE and EPA published the Navigable Waters Protection Rule in the Federal Register, which became effective on June 22, 2020. Following a federal district court decision on August 30, 2021, the USACE and EPA halted implementation of the Navigable Waters Protection Rule and began interpreting Waters of the U.S. consistent with the “pre-2015” regulatory regime (USACE and EPA 2021). On December 7, 2021, the USACE and EPA announced a Proposed Rule, published in the Federal Register, to revise the definition of Waters of the U.S. to formalize the Supreme Court’s decisions and put back into place the “pre-2015” definition of Waters of the U.S. (USACE and EPA 2021). The final Revised Definition of Waters of the United States rule was published in the Federal Register on January 18, 2023, and took effect on March 20, 2023 (USACE and EPA 2023). Although the Supreme Court reached a decision on May 25, 2023 (Sackett vs EPA), which found that only wetlands that are “indistinguishable” from adjacent jurisdictional waterbodies can be covered by the law, the implications of this decision on enforcement of the final rule are currently not determined. Therefore, the analysis in this Report is based on the final rule from March 2023. Under the final rule (33 CFR 328.3):

(a) **Waters of the United States** means:

- (1) Waters which are:
  - (i) Currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
  - (ii) The territorial seas; or
  - (iii) Interstate waters, including interstate wetlands;
- (2) Impoundments of waters otherwise defined as waters of the United States under this definition, other than impoundments of waters identified under paragraph (a)(5) of this section;
- (3) Tributaries of waters identified in paragraph (a)(1) or (2) of this section:
  - (i) That are relatively permanent, standing or continuously flowing bodies of water; or

- (ii) That either alone or in combination with similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of waters identified in paragraph (a)(1) of this section;
- (4) Wetlands adjacent to the following waters:
  - (i) (i) Waters identified in paragraph (a)(1) of this section; or
  - (ii) Relatively permanent, standing or continuously flowing bodies of water identified in paragraph (a)(2) or (a)(3)(i) of this section and with a continuous surface connection to those waters; or
  - (iii) Waters identified in paragraph (a)(2) or (3) of this section when the wetlands either alone or in combination with similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of waters identified in paragraph (a)(1) of this section;
- (5) Intrastate lakes and ponds, streams, or wetlands not identified in paragraphs (a)(1) through (4) of this section:
  - (i) That are relatively permanent, standing or continuously flowing bodies of water with a continuous surface connection to the waters identified in paragraph (a)(1) or (a)(3)(i) of this section; or
  - (ii) That either alone or in combination with similarly situated waters in the region, significantly affect the chemical, physical, or biological integrity of waters identified in paragraph (a)(1) of this section.

(c)(6) **Significantly affect** means a material influence on the chemical, physical, or biological integrity of waters identified in paragraph (a)(1) of this section. To determine whether waters, either alone or in combination with similarly situated waters in the region, have a material influence on the chemical, physical, or biological integrity of waters identified in paragraph (a)(1) of this section, the functions identified in paragraph (c)(6)(i) of this section will be assessed and the factors identified in paragraph (c)(6)(ii) of this section will be considered:

- (i) Functions to be assessed:
  - (A) Contribution of flow;
  - (B) Trapping, transformation, filtering, and transport of materials (including nutrients, sediment, and other pollutants);
  - (C) Retention and attenuation of floodwaters and runoff;
  - (D) Modulation of temperature in waters identified in paragraph (a)(1) of this section; or
  - (E) Provision of habitat and food resources for aquatic species located in waters identified in paragraph (a)(1) of this section;
- (ii) Factors to be considered:
  - (A) The distance from a water identified in paragraph (a)(1) of this section;
  - (B) Hydrologic factors, such as the frequency, duration, magnitude, timing, and rate of hydrologic connections, including shallow subsurface flow;

- (C) The size, density, or number of waters that have been determined to be similarly situated;
- (D) Landscape position and geomorphology; and
- (E) Climatological variables such as temperature, rainfall, and snowpack.

### 2.1.3 Areas Exempt from Section 404 Jurisdiction

Under the final Revised Definition of Waters of the United States rule (33 CFR 328.3):

(b) The following are not “waters of the United States” even where they otherwise meet the terms of paragraphs (a)(2) through (5) of this section:

- (1) Waste treatment systems, including treatment ponds or lagoons, designed to meet the requirements of the Clean Water Act;
- (2) Prior converted cropland designated by the Secretary of Agriculture. The exclusion would cease upon a change of use, which means that the area is no longer available for the production of agricultural commodities. Notwithstanding the determination of an area's status as prior converted cropland by any other Federal agency, for the purposes of the Clean Water Act, the final authority regarding Clean Water Act jurisdiction remains with EPA;
- (3) Ditches (including roadside ditches) excavated wholly in and draining only dry land and that do not carry a relatively permanent flow of water;
- (4) Artificially irrigated areas that would revert to dry land if the irrigation ceased;
- (5) Artificial lakes or ponds created by excavating or diking dry land to collect and retain water and which are used exclusively for such purposes as stock watering, irrigation, settling basins, or rice growing;
- (6) Artificial reflecting or swimming pools or other small ornamental bodies of water created by excavating or diking dry land to retain water for primarily aesthetic reasons;
- (7) Waterfilled depressions created in dry land incidental to construction activity and pits excavated in dry land for the purpose of obtaining fill, sand, or gravel unless and until the construction or excavation operation is abandoned and the resulting body of water meets the definition of waters of the United States; and
- (8) Swales and erosional features (e.g., gullies, small washes) characterized by low volume, infrequent, or short duration flow.

## 2.2 Regional Water Quality Control Board

The Dickey Water Pollution Act of 1949 and the Porter-Cologne Water Quality Control Act of 1969 (Porter-Cologne Act) established the State Water Resources Control Board (SWRCB) and nine RWQCBs in California. The SWRCB and each RWQCB regulate activities in Waters of the State which include Waters of the U.S. “Waters of the State” are defined by the Porter-Cologne Act as “any surface water or groundwater, including saline waters, within the boundaries of the state.” These may include intermittent or ephemeral waters as well as isolated waters. SWRCB/RWQCB jurisdiction extends to the OHWM for non-wetland Waters of the State, or for wetlands, to the limit of the wetland.

The SWRCB/RWQCB regulates the “discharge of waste,” including discharges of fill and dredged material, into Waters of the State. All parties proposing to discharge waste that could affect Waters of the State must file a report of waste discharge with the appropriate RWQCB. The RWQCB will then respond to the report of waste discharge by issuing waste discharge requirements (WDRs) in a public hearing, or by waiving WDRs (with or without conditions) for that proposed discharge.

Pursuant to Section 401 of the Clean Water Act, the SWRCB/RWQCB established the State Water Quality Certification Program. This program issues certifications for projects which propose to discharge fill or dredged material into Waters of the State. Water Quality Certification is necessary for all projects that require a USACE Section 404 permit, or fall under other federal jurisdiction, and have the potential to impact Waters of the State. A Water Quality Certification issued by the SWRCB/RWQCB certifies that project activities will not violate water quality standards individually or cumulatively over the term of the action. A Water Quality Certification must be consistent with the requirements of the Federal Clean Water Act, the California Environmental Quality Act (CEQA), the California Endangered Species Act, and the Porter-Cologne Act.

If a proposed project, or portion of a proposed project, does not require a federal permit but does involve dredge or fill activities that may result in a discharge to Waters of the State, the RWQCB has the option to regulate the dredge and fill activity under its state authority in the form of WDRs or Certification of WDRs. In these cases, a Water Quality Certification is not necessary under Section 401 of the Clean Water Act because federal jurisdiction does not apply.

The SWRCB has adopted the *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (Procedures)*, which became effective on May 28, 2020 (SWRCB 2019). The Procedures consist of the following four components: (1) a statewide wetland definition; (2) a framework for determining if a feature that meets the wetland definition is a Water of the State; (3) wetland delineation procedures; and (4) supplemental procedures for application submittal, and the review and approval of Water Quality Certifications, WDRs, and waivers of WDRs for dredge or fill activities, including the *State Supplemental Dredge or Fill Guidelines* (Appendix A of the Procedures).

The Procedures define an area as a wetland as follows: an area is a 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. This definition does not affect the meaning of Waters of the State as it pertains to SWRCB/RWQCB jurisdiction pursuant to the Porter-Cologne Act, nor does it modify the current authorities of the SWRCB/RWQCB to protect water quality. In accordance with the Procedures, the wetland delineation method outlined by the USACE has been utilized to map wetlands and Waters of the State, which extend to the limit of the wetland or to the OHWM for non-wetland waters. Jurisdiction has been evaluated in the regulatory context of the RWQCB, who may regulate intermittent or ephemeral waters as well as isolated waters.

### **2.2.1 Waters of the State**

The SWRCB Procedures consider natural wetlands, wetlands created by modification of surface Waters of the State, and areas that meet the current or historic definitions of Waters of the U.S., to be

Waters of the State (SWRCB 2019). In addition, the Procedures considers artificial wetlands (i.e., wetlands that result from human activity) that meet specific criteria to be Waters of the State (SWRCB 2019). The Procedures incorporate the established wetland delineation procedures set forth by the USACE (USACE 2008), which were used to map wetlands and Waters of the State. However, contrary to the USACE wetland definition, the State's wetland definition also protects non-vegetated wetlands. In addition, Waters of the State may also include intermittent or ephemeral waters as well as isolated waters that are not under federal jurisdiction.

### **2.2.2 Areas Exempt from State Jurisdiction**

Areas exempt from SWRCB/RWQCB jurisdiction include all artificial wetlands that are less than 1 acre in size and do not satisfy the following criteria: (1) created by modification of a surface Water of the State; (2) 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; (3) specifically identified in a water quality control plan as a wetland or other Water of the State; or (4) resulted from historic human activity, is not subject to ongoing operation and maintenance, and has become a relatively permanent part of the natural landscape.

In addition, artificial wetlands greater than or equal to one acre in size are exempt from SWRCB/RWQCB jurisdiction if the artificial wetland was constructed, and is currently used and maintained, primarily for one or more of the following purposes: (1) industrial or municipal wastewater treatment or disposal; (2) settling of sediment; (3) 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; (4) treatment of surface waters; (5) agricultural crop irrigation or stock watering; (6) fire suppression; (7) industrial processing or cooling; (8) active surface mining – even if the site is managed for interim wetlands functions and values; (9) log storage; (10) treatment, storage, or distribution of recycled water; (11) maximizing groundwater recharge (this does not include wetlands that have incidental groundwater recharge benefits); or (12) fields flooded for rice growing.

### **2.3 California Department of Fish and Wildlife**

The CDFW is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. Streams and lakes, as habitat for fish, wildlife, and native plant species, are subject to jurisdiction by CDFW under Sections 1600-1616 of the California Fish and Game Code. Section 1602 requires any person, state or local governmental agency, or public utility to notify CDFW before beginning any activity that will do one or more of the following: (1) substantially obstruct or divert the natural flow of a river, stream, or lake; (2) substantially change or use any material from the bed, channel, or bank of a river, stream, or lake; or (3) deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into a river, stream, or lake. These regulated activities require a Section 1602 Lake and Streambed Alteration Agreement (LSAA) from CDFW. Removal of riparian vegetation also requires a LSAA.

The Fish and Game Code, Sections 1600-1616, regulates activities that would alter the flow, bed, banks, channel, or associated riparian areas of a river, stream, or lake. CDFW jurisdiction over lakes



and streams is to the top of bank, or edge of riparian vegetation as determined by edge of dripline, whichever is further (CDFW 1994).

## 2.4 Summary of Regulations and Jurisdiction Definitions

The jurisdiction of each agency (i.e., USACE, RWQCB, and CDFW) is summarized in Table 1 based on the information provided in the sections above. Key differences are highlighted in the table.

**Table 1. USACE, RWQCB, and CDFW Jurisdiction**

Agency (Regulation)	Jurisdiction Type	Jurisdiction Extent	Notes
USACE (Section 404 of Clean Water Act)	Wetlands, non-wetland Waters of the U.S.	Boundary of wetland, or OHWM for non-wetland Waters of the U.S.	The feature must be either relatively permanent or significantly affect specific Waters of the U.S. to be considered jurisdictional.
RWQCB (Section 401 of Clean Water Act)	Wetlands, non-wetland Waters of the State	Boundary of wetland, or OHWM for non-wetland Waters of the State	Jurisdiction includes ephemeral waters as well as isolated waters that may not be under USACE jurisdiction, significant affect is not required.
CDFW (Section 1600-1616 of Fish and Game Code)	River, stream, or lake	Top of bank or edge of riparian vegetation (whichever is further)	Requires bed, banks, and channel or riparian vegetation.

Notes:

CDFW: California Department of Fish and Wildlife

OHWM: Ordinary high water mark

RWQCB: Regional Water Quality Control Board

USACE: U.S. Army Corps of Engineers

## 3.0 METHODS

### 3.1 Literature Review

Prior to the field survey, a literature review was conducted to evaluate potential jurisdictional areas within the survey area. The USGS 7.5-Minute Topographic Map *El Toro* Quadrangle, aerial and historical imagery (Google Earth®), the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) database (USFWS 2023), the U.S. Department of Agriculture National Resources Conservation Service (USDA NRCS) Web Soil Survey (USDA NRCS 2023), and previous site-specific studies were reviewed.

### 3.2 Jurisdictional Waters and Wetlands Delineation

A jurisdictional waters and wetlands delineation was performed within the survey area on June 19-20, 2023. The delineation was conducted at any potential jurisdictional wetlands, Waters of the U.S. and State, and areas potentially under CDFW jurisdiction. The procedures described in the *Interim Regional Supplement to the Corps of Engineering Wetland Delineation Manual: Arid West Region* (USACE 2008) were used to identify wetlands and Waters of the U.S. in the survey area that are potentially subject to regulation under Section 404 of the Clean Water Act. The potential jurisdictional features were also examined for an OHWM. The USACE delineation methodology was also used to map potential Waters of the State that were evaluated for RWQCB jurisdiction. Areas of CDFW jurisdiction were determined by the presence of defined bed, banks, and channel, or presence of a lake or pool, and were measured to the top of bank or the edge of riparian vegetation.

Sample points were taken to determine areas of potential jurisdiction and were mapped in the field using a Global Positioning System receiver with sub-meter accuracy. Field indicators were examined, and wetland data reporting forms were used to record three parameters: hydrophytic vegetation, wetland hydrology, and hydric soils. Completed wetland determination data forms are provided in Appendix A. Photographs taken during the field survey are provided in Appendix B.

Plant species present and the presence or absence of hydrophytic vegetation was recorded. Hydrophytic vegetation was determined to be present if greater than 50 percent of the dominant species at the sample point were OBL, FACW, or FAC (USACE 2020). If the hydrophytic vegetation dominance test was not greater than 50 percent, then the prevalence index was conducted if both hydric soils and hydrology were met unless disturbed or problematic. If the prevalence index was less than or equal to 3.0 then the vegetation was considered hydrophytic. Soil pits were excavated to a depth of at least 14 inches when feasible to examine soils for evidence of hydric indicators or saturation at the sample points. Soil pit locations are synonymous with sample points. Hydric soils and wetland hydrology were determined based on the presence of one or more of the applicable indicators.

Sample points were collected in each potential jurisdictional feature and as needed at upland points to determine the extent of the feature. A sample point is considered to be within a USACE wetland if the area met all three wetland parameters. If one or more of these parameters was not met in a typical situation, the point was considered to not be within a USACE wetland. In atypical or problematic situations (i.e., when vegetation, soil, or hydrology indicators are absent due to recent human disturbance or natural causes), all three parameters are not required to be a USACE wetland.

## 4.0 RESULTS

### 4.1 Literature Review

The survey area contains one ephemeral/intermittent blue-line stream as shown in the USGS topographic map (Figure 3). Blue-line streams are shown as either broken or solid blue lines and are defined as flowing waters that are ephemeral (broken lines) or perennial (solid lines). Two NWI riverine features also occur in the survey area (USFWS 2023). Previous site-specific studies also found jurisdictional features within the survey area (LSA 2022; County of Orange Integrated Waste Management Department 2006). All potential features were assessed during the jurisdictional delineation.

Soils mapped by the U.S. Department of Agriculture National Resources Conservation Service at the sample locations are Calleguas clay loam (USDA NRCS 2023). This soil type has 50 to 75 percent slopes, is non-saline to very slightly saline, and is not considered hydric soil (USDA NRCS 2023). The presence of hydric soils was assessed during the jurisdictional delineation.

### 4.2 Jurisdictional Delineation

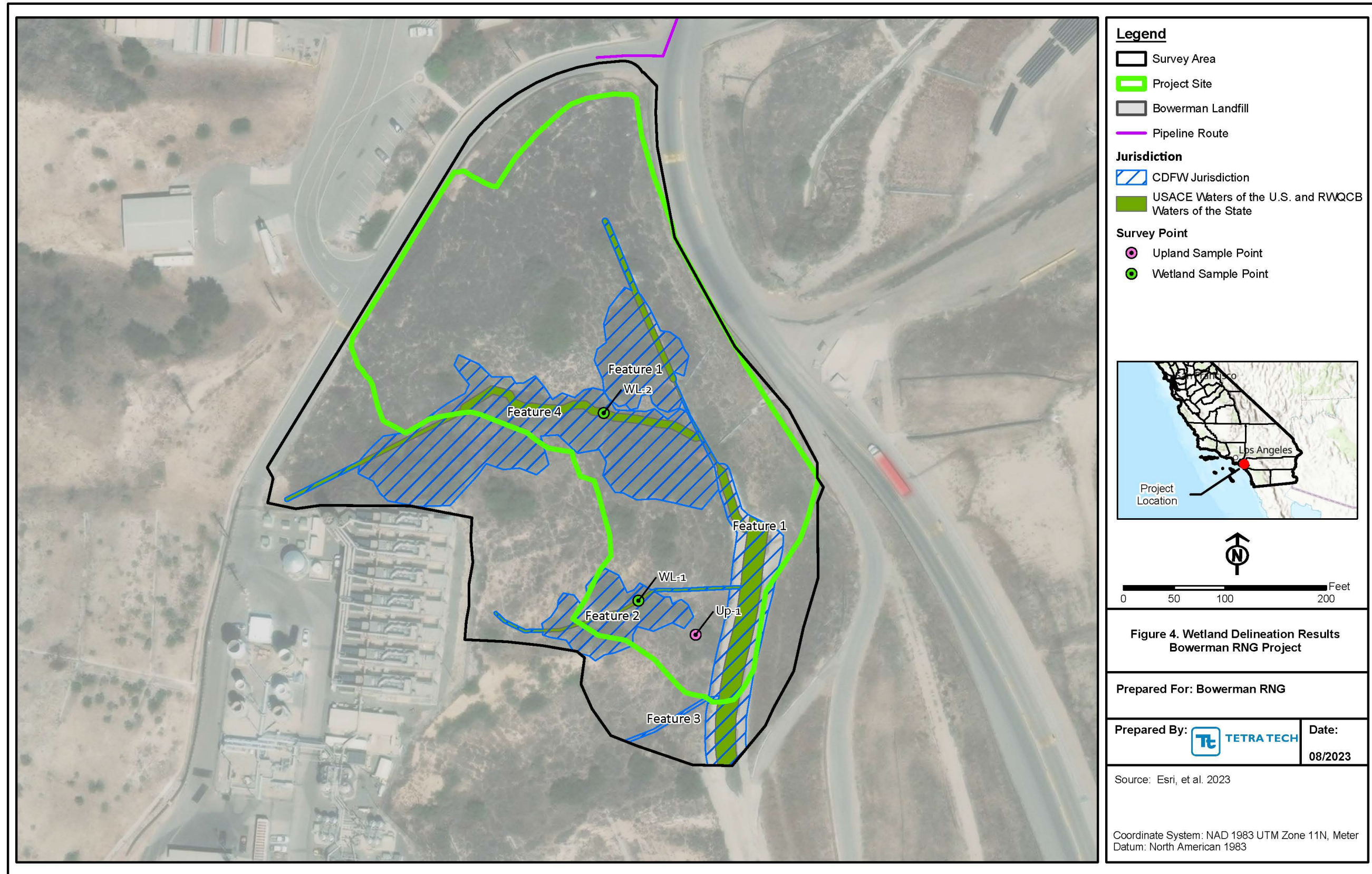
A total of four jurisdictional features were identified and mapped (Figure 4). These features were ephemeral soft- or hard-bottom (i.e., concrete) drainages. Areas of coast live oak (*Quercus agrifolia*) riparian vegetation was found around some of the features. A description of each feature is provided below. Saturated conditions and surface water were absent from the survey area besides one small portion of Feature 1, as described below. All features exhibited wetland hydrology but lacked hydric soils and hydrophytic vegetation. Results of the jurisdictional delineation conducted at these features are provided in Table 2.

**Feature 1.** This feature is a concrete channel that ranged in width from 2 to 40 feet. Banks were gradual to steep. In the southern portion, the wide banks of the concrete channel extended beyond the channel OHWM as shown in Figure 4. In addition, coast live oak riparian vegetation associated with this feature occurred adjacent to the channel in the northern portion. This feature was unvegetated but had portions with dense overhang of plant species that occur in sagebrush scrub and coast live oak habitats, such as coast live oak, mule fat (*Baccharis salicifolia*), California encelia (*Encelia californica*), California sagebrush (*Artemisia californica*), laurel sumac (*Malosma laurina*), and lemonade berry (*Rhus integrifolia*). Small areas of standing water were observed within this feature at a maximum of about 1 foot deep.

**Feature 2.** This feature is a concrete channel that transitions to soft-bottom in the central and western portions of the feature and was 3 feet wide. This feature drains water from the existing LFGTE plant to the concrete channel in the southern portion of the survey area. Banks were steep in the concrete channel and gradual in the soft-bottom area. Coast live oak riparian vegetation associated with this feature occurred adjacent to the soft-bottom channel in the central portion (Figure 4). The concrete channel was unvegetated and the soft-bottom area supported plant species that occur in sagebrush scrub and coast live oak habitats, such as coast live oak, California sagebrush, lemonade berry, and toyon (*Heteromeles arbutifolia*) as well as non-natives short podded mustard (*Hirschfeldia incana*), false brome (*Brachypodium distachyon*), and foxtail chess (*Bromus madritensis*). All areas of this feature were dry during the survey.

**Feature 3.** This feature is a concrete channel that was 3 feet wide. This feature continues outside the survey area to the west and likely drains water from the existing LFGTE plant to the concrete channel in the southern portion of the survey area. Banks were steep throughout. This feature was unvegetated but had overhang of sagebrush scrub plants, such as California sagebrush and non-native short podded mustard. All areas of this feature were dry during the survey.

**Feature 4.** This feature is a soft-bottom drainage that was 8 feet wide and transitions into a concrete channel that was 4 feet wide in the western portion of the feature (Figure 4). This feature drains water from the existing LFGTE plant to the concrete channel in the southern portion of the survey area. Banks were gradual in the soft-bottom area and steep in the concrete channel. Coast live oak riparian vegetation associated with this feature occurred throughout a majority of the feature and was dominated by coast live oak trees. All areas of this feature were dry during the survey.



Not for Construction

**Table 2. Jurisdictional Delineation Results**

Feature Number	Sample Point	Hydrophytic Vegetation	Hydric Soil	Wetland Hydrology	USACE Wetlands / Waters of the U.S.	RWQCB Waters of the State	CDFW Jurisdiction	Notes
1*	UP1	-	-	-	Yes	Yes	Yes	Concrete channel that ranged in width from 2-40 feet. In some portions the concrete banks extended beyond the channel OHWM. Coast live oak riparian vegetation occurred in the northern portion.
2	UP-1	-	-	-	Yes	Yes	Yes	Concrete channel and soft-bottom drainage that was 3 feet wide. Coast live oak riparian vegetation occurred in the central portion.
	WL-1	-	-	X				
3*	UP-1	-	-	-	No	No	Yes	Concrete channel that was 3 feet wide.
4	UP-1	-	-	-	Yes	Yes	Yes	Soft-bottom drainage (8 feet wide) and concrete channel (4 feet wide). Coast live oak riparian vegetation occurred throughout.
	WL-2	-	-	X				

**Note:** \*Concrete-lined channels were mapped but sample points were not collected since soil pits cannot be dug.

"X" = indicator met; "-" = indicator not met.

No features met all three USACE wetland parameters required to be a wetland. However, three features within the survey area (Features 1, 2, and 4) are jurisdictional to the USACE since these features ultimately converge and connect into Bee Canyon Wash, which connects into San Diego Creek and then the Pacific Ocean. These features were determined to be USACE Waters of the U.S. since they significantly affect traditional navigable waters. One feature (Feature 3) was determined to be exempt from USACE jurisdiction since it is a ditch that drains only dry land. All areas determined to be Waters of the U.S. are also RWQCB Waters of the State. In addition, areas of CDFW jurisdiction were found, which includes all four features and the surrounding riparian vegetation in some areas.

Table 3 provides total acres of jurisdictional areas within the Project site, which includes the proposed RNG Plant footprint. Results of the delineation in the context of the USACE, RWQCB, and CDFW are discussed in Sections 4.2.1 to 4.2.3.

**Table 3. Jurisdictional Areas**

Feature Number	USACE Wetlands / Waters of the U.S. (acres) within Project Site	RWQCB Waters of the State (acres) within Project Site	CDFW Jurisdiction (acres) within Project Site
1	0.12	0.12	0.36
2	0.01	0.01	0.11
3	0	0	0.001
4	0.05	0.05	0.37
<b>Total</b>	<b>0.18</b>	<b>0.18</b>	<b>0.84</b>

#### 4.2.1 U.S. Army Corps of Engineers

##### Section 404 Jurisdictional Wetlands

As shown in Table 2, no features met hydrophytic vegetation or hydric soil. Features 2 and 4 met wetland hydrology, which was in the form of water-stained leaves, drift deposits, and drainage patterns. Features 1 and 3 were concrete-lined and were unvegetated. Therefore, no features met all three wetland parameters required to be a USACE Wetland. In addition, no atypical or problematic situations were encountered. However, as discussed in the section below, three features (Features 1, 2, and 4) are jurisdictional to the USACE since they ultimately connect into and significantly affect traditional navigable waters, and Feature 3 is exempt.

Data on vegetation, hydrology, and soils collected at sample points for each feature during the jurisdictional delineation are provided on the USACE wetland determination data forms in Appendix A. All sample points are shown in Figure 4.

##### Section 404 Jurisdictional Waters of the U.S.

Features 1, 2, and 4 are jurisdictional channels that ultimately lead into the Pacific Ocean. Features 2 and 4 connect into Feature 1 on-site, which leads off-site to the south into Bee Canyon Wash. Bee Canyon Wash then connects into San Diego Creek and the Pacific Ocean. Therefore, these three features are considered tributaries to traditional navigable waters. These features are ephemeral and likely receive water only in response to rainfall and are not considered relatively permanent waters.

Relatively permanent waters either flow year-round or have continuous flow at least seasonally, which is typically quantified as three months. However, in combination with similarly situated waters in the region, these waters may significantly affect the chemical, physical, or biological integrity of traditional navigable waters since there is a hydrologic connection. These features may contribute flow; trap, transform, filter, or transport materials (e.g., nutrients, sediments, and other pollutants); and provide retention and attenuation of floodwaters and runoff into traditional navigable waters. These features may also provide habitat and food resources for aquatic species. Therefore, Features 1, 2, and 4 are Section 404 Waters of the U.S.

#### **Areas Exempt from Section 404 Jurisdiction**

Feature 3 was determined to be exempt from USACE Section 404 jurisdiction because it is considered a ditch excavated wholly in and draining only dry land, and does not carry a relatively permanent flow of water. Although Feature 2 is a similar concrete feature in the eastern portion, it connects through and drains a riparian area and is connected to other Waters of the U.S. as described above, and therefore is not exempt.

#### **4.2.2 Regional Water Quality Control Board**

##### **Waters of the State**

RWQCB Waters of the State include USACE Section 404 jurisdictional wetlands and Waters of the U.S. Therefore, Waters of the State were identified within the survey area at Features 1, 2, and 4 since these three features are considered Waters of the U.S. (Figure 4). Feature 3 is not a Waters of the U.S. or wetland and is therefore also not a Waters of the State.

##### **Areas Exempt from State Jurisdiction**

No features in the survey area were determined to be exempt from RWQCB jurisdiction.

#### **4.2.3 California Department of Fish and Wildlife**

Features 1 through 4 have defined bed, banks, and channel or are connected directly upstream or downstream to an area that does. In addition, coast live oak riparian vegetation was found surrounding portions of Features 1, 2, and 4 (Figure 4). The features as well as the adjacent riparian vegetation are under CDFW jurisdiction.



## 5.0 CONCLUSION

Three features under USACE and RWQCB jurisdiction were identified in the survey area, which includes Features 1, 2, and 4. These features and Feature 3 are under CDFW jurisdiction. Portions of each feature overlap with the proposed Project site. It is recommended that impacts are avoided to areas under the jurisdiction of the USACE, RWQCB, and CDFW. Coordination with these agencies is recommended to determine if the previously obtained permits still apply or if a modification or new permits are required, including a Section 404 permit from the USACE, a Water Quality Certification from the RWQCB, and a Lake and Streambed Alteration Agreement from the CDFW (County of Orange Integrated Waste Management Department 2006). The previously permitted or new jurisdictional features that occur in the survey area are as follows:

- Feature 1 – previously permitted from USACE and RWQCB, CDFW area is new.
- Feature 2 – not permitted.
- Feature 3 – not permitted.
- Feature 4 – previously permitted from USACE and RWQCB, CDFW area is new.

This Report is subject to verification by the USACE, RWQCB, and CDFW.

## 6.0 REFERENCES

- CDFW (California Department of Fish and Wildlife). 1994. *A Field Guide to Lake and Streambed Alteration Agreements*. Sections 1600-1616, California Fish and Game Code. Environmental Services Division.
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- SWRCB (State Water Resources Control Board). 2019. *State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State*. April 2.
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- USACE (U.S. Army Corps of Engineers). 2020. *Arid West 2020 Regional Wetland Plant List*.
- USACE (U.S. Army Corps of Engineers) and EPA (U.S. Environmental Protection Agency). 2021. *Revised Definition of “Waters of the United States”*. Proposed Rule. December 7.
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- USFWS (U.S. Fish and Wildlife Service). 2023. National Wetlands Inventory. Wetlands Mapper. Website: <https://www.fws.gov/wetlands/data/Mapper.html>. Accessed June 2023.

# **APPENDIX A: WETLAND DETERMINATION DATA FORMS**

**WETLAND DETERMINATION DATA FORM - Arid West Region**

Project/Site: Bowerman RNG Project City/County: Orange County Sampling Date: 6/20/23  
 Applicant/Owner: Bowerman RNG State: CA Sampling Point: UP-1  
 Investigator(s): Berg Section, Township, Range: T5 South, R8 West  
 Landform (hillslope, terrace, etc.): Upland hillslope Local relief (concave, convex, none): None Slope (%): 3  
 Subregion (LRR): C - Mediterranean California Lat: 33.715941177 Long: -117.709244930833 Datum: WGS  
 Soil Map Unit Name: Calleguas clay loam, 50 to 75 percent slopes, eroded NWI classification: None

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 <input type="radio"/> No <input checked="" type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input type="radio"/> No <input checked="" type="radio"/>	<b>Is the Sampled Area within a Wetland?</b> Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks: <u>Shared upland sample point for all features.</u>	

**VEGETATION**

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>	
1. _____	_____	_____	_____	Number of Dominant Species That Are OBL, FACW, or FAC:	<u>0</u> (A)
2. _____	_____	_____	_____	Total Number of Dominant Species Across All Strata:	<u>3</u> (B)
3. _____	_____	_____	_____	Percent of Dominant Species That Are OBL, FACW, or FAC:	<u>0.0</u> % (A/B)
4. _____	_____	_____	_____		
Total Cover: _____ %					
Sapling/Shrub Stratum				<b>Prevalence Index worksheet:</b>	
1. <u>Artemisia californica</u>	<u>25</u>	<u>Yes</u>	<u>Not Listed</u>	Total % Cover of:	Multiply by:
2. <u>Eriogonum fasciculatum</u>	<u>5</u>	<u>No</u>	<u>Not Listed</u>	OBL species _____ x 1 =	<u>0</u>
3. <u>Acmispon glaber</u>	<u>1</u>	<u>No</u>	<u>Not Listed</u>	FACW species _____ x 2 =	<u>0</u>
4. <u>Heteromeles arbutifolia</u>	<u>1</u>	<u>No</u>	<u>Not Listed</u>	FAC species _____ x 3 =	<u>0</u>
5. <u>Opuntia littoralis</u>	<u>1</u>	<u>No</u>	<u>Not Listed</u>	FACU species _____ x 4 =	<u>0</u>
Total Cover: <u>33</u> %				UPL species <u>138</u> x 5 =	<u>690</u>
				Column Totals:	<u>138</u> (A) <u>690</u> (B)
				Prevalence Index = B/A = <u>5.00</u>	
Herb Stratum				<b>Hydrophytic Vegetation Indicators:</b>	
1. <u>Brachypodium distachyon</u>	<u>45</u>	<u>Yes</u>	<u>Not Listed</u>	<input checked="" type="checkbox"/> Dominance Test is >50%	
2. <u>Bromus madritensis</u>	<u>45</u>	<u>Yes</u>	<u>UPL</u>	<input checked="" type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup>	
3. <u>Hirschfeldia incana</u>	<u>15</u>	<u>No</u>	<u>Not Listed</u>	<input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
4. _____	_____	_____	_____	<input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
5. _____	_____	_____	_____		
6. _____	_____	_____	_____		
7. _____	_____	_____	_____		
8. _____	_____	_____	_____		
Total Cover: <u>105</u> %					
Woody Vine Stratum				<b>Hydrophytic Vegetation Present?</b>	
1. _____	_____	_____	_____	Yes <input type="radio"/>	No <input checked="" type="radio"/>
2. _____	_____	_____	_____		
Total Cover: _____ %					
% Bare Ground in Herb Stratum <u>0</u> %		% Cover of Biotic Crust _____ %			

Remarks:

**SOIL**

Sampling Point: UP-1

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

Depth (inches)	Matrix		Redox Features				Texture <sup>3</sup>	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-1								Organic debris (sticks, grass)
1-15	10YR 4/4	100					Clay loam	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix.    <sup>2</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix.  
<sup>3</sup>Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

<p><b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b></p> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <b>(LRR C)</b> <input type="checkbox"/> 1 cm Muck (A9) <b>(LRR D)</b> <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)	<p><b>Indicators for Problematic Hydric Soils:<sup>4</sup></b></p> <input type="checkbox"/> 1 cm Muck (A9) <b>(LRR C)</b> <input type="checkbox"/> 2 cm Muck (A10) <b>(LRR B)</b> <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)
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<sup>4</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present.

<p><b>Restrictive Layer (if present):</b></p> Type: _____ Depth (inches): _____ Remarks: _____	<p><b>Hydric Soil Present?</b>    Yes <input type="radio"/>    No <input checked="" type="radio"/></p>
--	--

**HYDROLOGY**

<p><b>Wetland Hydrology Indicators:</b></p> <p>Primary Indicators (any one indicator is sufficient)</p> <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <b>(Nonriverine)</b> <input type="checkbox"/> Sediment Deposits (B2) <b>(Nonriverine)</b> <input type="checkbox"/> Drift Deposits (B3) <b>(Nonriverine)</b> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6) <input type="checkbox"/> Other (Explain in Remarks)	<p><u>Secondary Indicators (2 or more required)</u></p> <input type="checkbox"/> Water Marks (B1) <b>(Riverine)</b> <input type="checkbox"/> Sediment Deposits (B2) <b>(Riverine)</b> <input type="checkbox"/> Drift Deposits (B3) <b>(Riverine)</b> <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)
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<p><b>Field Observations:</b></p> Surface Water Present?    Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present?    Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe)    Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	<p><b>Wetland Hydrology Present?</b>    Yes <input type="radio"/>    No <input checked="" type="radio"/></p>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**WETLAND DETERMINATION DATA FORM - Arid West Region**

Project/Site: Bowerman RNG Project City/County: Orange County Sampling Date: 6/20/23  
 Applicant/Owner: Bowerman RNG State: CA Sampling Point: WL-1  
 Investigator(s): Berg Section, Township, Range: T5 South, R8 West  
 Landform (hillslope, terrace, etc.): Hillslope channel Local relief (concave, convex, none): Concave Slope (%): 15  
 Subregion (LRR): C - Mediterranean California Lat: 33.71603155682665 Long: -117.70943791864217 Datum: WGS  
 Soil Map Unit Name: Calleguas clay loam, 50 to 75 percent slopes, eroded NWI classification: None

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 <input type="radio"/> No <input checked="" type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	<b>Is the Sampled Area within a Wetland?</b> Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks:	

**VEGETATION**

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	
1. <u>Quercus agrifolia</u>	40	Yes	Not Listed	<b>Dominance Test worksheet:</b> Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0.0</u> % (A/B)
2. _____				
3. _____				
4. _____				
Total Cover: <u>40</u> %				<b>Prevalence Index worksheet:</b> Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = <u>0</u> FACW species _____ x 2 = <u>0</u> FAC species _____ x 3 = <u>0</u> FACU species _____ x 4 = <u>0</u> UPL species <u>142</u> x 5 = <u>710</u> Column Totals: <u>142</u> (A) <u>710</u> (B) Prevalence Index = B/A = <u>5.00</u>
<b>Sapling/Shrub Stratum</b>				
1. <u>Malosma laurina</u>	1	Yes	Not Listed	
2. <u>Artemisia californica</u>	1	Yes	Not Listed	
3. _____				
4. _____				
5. _____				
Total Cover: <u>2</u> %				
<b>Herb Stratum</b>				
1. <u>Brachypodium distachyon</u>	90	Yes	Not Listed	
2. <u>Bromus madritensis</u>	10	No	UPL	
3. _____				
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
Total Cover: <u>100</u> %				
<b>Woody Vine Stratum</b>				
1. _____				
2. _____				
Total Cover: _____ %				
% Bare Ground in Herb Stratum <u>0</u> %		% Cover of Biotic Crust _____ %		<b>Hydrophytic Vegetation Indicators:</b> <input checked="" type="checkbox"/> Dominance Test is >50% <input checked="" type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup> <input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)  <sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.
<b>Hydrophytic Vegetation Present?</b> Yes <input type="radio"/> No <input checked="" type="radio"/>				

Remarks:

**SOIL**

Sampling Point: WL-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)							
Depth (inches)	Matrix		Redox Features			Texture <sup>3</sup>	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>		
0-2							Leaf litter
2-16	10YR 4/3	100				Sandy loam	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix.    <sup>2</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix.  
<sup>3</sup>Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) (LRR C) <input type="checkbox"/> 1 cm Muck (A9) (LRR D) <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)	<b>Indicators for Problematic Hydric Soils:<sup>4</sup></b> <input type="checkbox"/> 1 cm Muck (A9) (LRR C) <input type="checkbox"/> 2 cm Muck (A10) (LRR B) <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)
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<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____	<b>Hydric Soil Present?</b> Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks: Soil has many loose rocks and gravel fragments up to 8 inches in size.	

**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> Primary Indicators (any one indicator is sufficient) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) (Nonriverine) <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6) <input type="checkbox"/> Other (Explain in Remarks)	<b>Secondary Indicators (2 or more required)</b> <input type="checkbox"/> Water Marks (B1) (Riverine) <input type="checkbox"/> Sediment Deposits (B2) (Riverine) <input checked="" type="checkbox"/> Drift Deposits (B3) (Riverine) <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)
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<b>Field Observations:</b> Surface Water Present?    Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present?    Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe)    Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

**WETLAND DETERMINATION DATA FORM - Arid West Region**

Project/Site: Bowerman RNG Project City/County: Orange County Sampling Date: 6/20/23  
 Applicant/Owner: Bowerman RNG State: CA Sampling Point: WL-2  
 Investigator(s): Berg Section, Township, Range: T5 South, R8 West  
 Landform (hillslope, terrace, etc.): Hillslope channel Local relief (concave, convex, none): Concave Slope (%): 15  
 Subregion (LRR): C - Mediterranean California Lat: 33.7165406246667 Long: -117.709548249 Datum: WGS  
 Soil Map Unit Name: Calleguas clay loam, 50 to 75 percent slopes, eroded NWI classification: None

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 <input type="radio"/> No <input checked="" type="radio"/> Hydric Soil Present? Yes <input type="radio"/> No <input checked="" type="radio"/> Wetland Hydrology Present? Yes <input checked="" type="radio"/> No <input type="radio"/>	<b>Is the Sampled Area within a Wetland?</b> Yes <input type="radio"/> No <input checked="" type="radio"/>
Remarks:	

**VEGETATION**

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status	<b>Dominance Test worksheet:</b>	
1. <i>Quercus agrifolia</i>	75	Yes	Not Listed	Number of Dominant Species That Are OBL, FACW, or FAC:	0 (A)
2.				Total Number of Dominant Species Across All Strata:	4 (B)
3.				Percent of Dominant Species That Are OBL, FACW, or FAC:	0.0 % (A/B)
4.					
Total Cover:			75 %		
Sapling/Shrub Stratum	Absolute % Cover	Dominant Species?	Indicator Status	<b>Prevalence Index worksheet:</b>	
1. <i>Rhus integrifolia</i>	5	Yes	Not Listed	Total % Cover of:	Multiply by:
2. <i>Heteromeles arbutifolia</i>	5	Yes	Not Listed	OBL species	x 1 = 0
3. <i>Mimulus aurantiacus</i>	1	No	FACU	FACW species	x 2 = 0
4.				FAC species	x 3 = 0
5.				FACU species	1 x 4 = 4
Total Cover:			11 %	UPL species	86 x 5 = 430
				Column Totals:	87 (A) 434 (B)
				Prevalence Index = B/A =	4.99
Herb Stratum	Absolute % Cover	Dominant Species?	Indicator Status	<b>Hydrophytic Vegetation Indicators:</b>	
1. <i>Bromus madridtensis</i>	1	Yes	UPL	<input checked="" type="checkbox"/> Dominance Test is >50%	
2.				<input checked="" type="checkbox"/> Prevalence Index is ≤3.0 <sup>1</sup>	
3.				<input type="checkbox"/> Morphological Adaptations <sup>1</sup> (Provide supporting data in Remarks or on a separate sheet)	
4.				<input type="checkbox"/> Problematic Hydrophytic Vegetation <sup>1</sup> (Explain)	
5.					
6.					
7.					
8.					
Total Cover:			1 %		
Woody Vine Stratum	Absolute % Cover	Dominant Species?	Indicator Status	<sup>1</sup> Indicators of hydric soil and wetland hydrology must be present.	
1.					
2.					
Total Cover:			%	<b>Hydrophytic Vegetation Present?</b>	Yes <input type="radio"/> No <input checked="" type="radio"/>
% Bare Ground in Herb Stratum	0 %	% Cover of Biotic Crust	%		

Remarks: Ground cover is entirely leaf litter from oaks.



**SOIL**

Sampling Point: WL-2

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

Depth (inches)	Matrix		Redox Features				Texture <sup>3</sup>	Remarks
	Color (moist)	%	Color (moist)	%	Type <sup>1</sup>	Loc <sup>2</sup>		
0-3								Leaf litter
3-16	10YR 2/2	100					Loam	

<sup>1</sup>Type: C=Concentration, D=Depletion, RM=Reduced Matrix.    <sup>2</sup>Location: PL=Pore Lining, RC=Root Channel, M=Matrix.  
<sup>3</sup>Soil Textures: Clay, Silty Clay, Sandy Clay, Loam, Sandy Clay Loam, Sandy Loam, Clay Loam, Silty Clay Loam, Silt Loam, Silt, Loamy Sand, Sand.

<b>Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)</b> <input type="checkbox"/> Histosol (A1) <input type="checkbox"/> Histic Epipedon (A2) <input type="checkbox"/> Black Histic (A3) <input type="checkbox"/> Hydrogen Sulfide (A4) <input type="checkbox"/> Stratified Layers (A5) <b>(LRR C)</b> <input type="checkbox"/> 1 cm Muck (A9) <b>(LRR D)</b> <input type="checkbox"/> Depleted Below Dark Surface (A11) <input type="checkbox"/> Thick Dark Surface (A12) <input type="checkbox"/> Sandy Mucky Mineral (S1) <input type="checkbox"/> Sandy Gleyed Matrix (S4)		<input type="checkbox"/> Sandy Redox (S5) <input type="checkbox"/> Stripped Matrix (S6) <input type="checkbox"/> Loamy Mucky Mineral (F1) <input type="checkbox"/> Loamy Gleyed Matrix (F2) <input type="checkbox"/> Depleted Matrix (F3) <input type="checkbox"/> Redox Dark Surface (F6) <input type="checkbox"/> Depleted Dark Surface (F7) <input type="checkbox"/> Redox Depressions (F8) <input type="checkbox"/> Vernal Pools (F9)		<b>Indicators for Problematic Hydric Soils:<sup>4</sup></b> <input type="checkbox"/> 1 cm Muck (A9) <b>(LRR C)</b> <input type="checkbox"/> 2 cm Muck (A10) <b>(LRR B)</b> <input type="checkbox"/> Reduced Vertic (F18) <input type="checkbox"/> Red Parent Material (TF2) <input type="checkbox"/> Other (Explain in Remarks)	
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<sup>4</sup>Indicators of hydrophytic vegetation and wetland hydrology must be present.

<b>Restrictive Layer (if present):</b> Type: _____ Depth (inches): _____ Remarks: _____	<b>Hydric Soil Present?</b> Yes <input type="radio"/> No <input checked="" type="radio"/>
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**HYDROLOGY**

<b>Wetland Hydrology Indicators:</b> Primary Indicators (any one indicator is sufficient)		Secondary Indicators (2 or more required)	
<input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Water Marks (B1) <b>(Nonriverine)</b> <input type="checkbox"/> Sediment Deposits (B2) <b>(Nonriverine)</b> <input type="checkbox"/> Drift Deposits (B3) <b>(Nonriverine)</b> <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input checked="" type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Salt Crust (B11) <input type="checkbox"/> Biotic Crust (B12) <input type="checkbox"/> Aquatic Invertebrates (B13) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Recent Iron Reduction in Plowed Soils (C6) <input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Water Marks (B1) <b>(Riverine)</b> <input type="checkbox"/> Sediment Deposits (B2) <b>(Riverine)</b> <input checked="" type="checkbox"/> Drift Deposits (B3) <b>(Riverine)</b> <input checked="" type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> FAC-Neutral Test (D5)	

<b>Field Observations:</b> Surface Water Present?    Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Water Table Present?    Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____ Saturation Present? (includes capillary fringe)    Yes <input type="radio"/> No <input checked="" type="radio"/> Depth (inches): _____	<b>Wetland Hydrology Present?</b> Yes <input checked="" type="radio"/> No <input type="radio"/>
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Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

## **APPENDIX B: PHOTOGRAPHS**



<b>Photograph 3</b>	
<b>Location:</b> Feature 2	
<b>Notes:</b> Overview of Feature 2 and Sample Point WL-1.	

<b>Photograph 4</b>	
<b>Location:</b> Feature 3	
<b>Notes:</b> Overview of Feature 3.	

<b>Photograph 5</b>	
<b>Location:</b> Feature 4	
<b>Notes:</b> Overview of Feature 4 and sample point WL-2.	

<b>Photograph 6</b>	
<b>Location:</b> Upland	
<b>Notes:</b> Sample Point UP-1.	