



Aquatic Resources Inventory Report for the Rancho Viejo Solar Project, Santa Fe County, New Mexico

JULY 2024

PREPARED FOR
Rancho Viejo Solar, LLC

PREPARED BY
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**AQUATIC RESOURCES INVENTORY REPORT
FOR THE RANCHO VIEJO SOLAR PROJECT, SANTE FE
COUNTY, NEW MEXICO**

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CONTENTS

1	Introduction	2
1.1	Purpose	2
2	Regulatory Considerations	2
2.1	Current Regulatory Environment for Waters of the U.S.	2
2.2	Relationship to Statutes and Regulations	3
3	Methodology.....	5
3.1	Existing Data Review	5
3.1.1	Watershed Data Review.....	5
3.2	Aquatic Resources Field Survey.....	7
3.2.1	Jurisdictional Three-Parameter Wetlands	7
3.2.2	Jurisdictional Non-Wetland Waters–Streams and Rivers	8
3.2.3	Mapping	8
4	Results.....	8
4.1	Existing Data Review Results	8
4.1.1	Watershed Data Review.....	8
4.1.2	Jurisdictional Three-Parameter Wetlands	10
4.1.3	Jurisdictional Non-Wetland Waters – Streams and Rivers	10
5	Literature Cited.....	13

Appendices

Appendix A	Aquatic Resources Inventory Maps
Appendix B	Photographs
Appendix C	OHWB Datasheets

Tables

Table 1.	Permits, Regulations, and Approvals Relevant to the Proposed Project.....	3
Table 2.	Off-Site Watersheds within the Analysis Area	9
Table 3.	Water Well and Water Diversion Information within Analysis area.....	10
Table 4.	Summary of Surface Water Features and Total Acreage of Features within the Analysis Area.....	11

1 INTRODUCTION

On behalf of Rancho Viejo Solar, LLC, SWCA Environmental Consultants (SWCA) completed an inventory of aquatic resources, including a potential jurisdictional delineation, for the Rancho Viejo Solar Project (project) in Santa Fe County, New Mexico (see Figure A-1 in Appendix A). The solar facility would be located on approximately 680 acres of undeveloped private land in Santa Fe County, New Mexico, approximately 4.2 miles east of La Cienega and 3 miles south of the city limits of Santa Fe.

The proposed project includes the construction and use of a include a 96-megawatt solar facility, an up to 48-MW (4-megawatt-hour storage energy capacity) battery energy storage system (BESS), a 1-acre substation, a 2.3-mile generation tie-in line, a 2.1-mile access road and associated switchyard, above ground water storage tanks, and an operations building (see Figure A-2). The proposed project could result in approximately 724 acres of surface disturbance including construction of the solar facility, access road, generation tie-in line, and switchyard.

1.1 Purpose

The aquatic resources survey completed for this report covers a 1,143-acre analysis area, which encompasses the proposed project components and a survey buffer (Figure A-3). This aquatic resources inventory report (ARIR) incorporates a watershed science framework for project planning considerations, including detailing the dynamics of environmental and regulatory management within a hydrologically defined geographic area (watershed and/or basins), while taking both groundwater and surface water flow, as well as ecological interactions (biotic and abiotic conditions), into consideration.

This ARIR summarizes aquatic resources desktop and field data, as well as potential future Clean Water Act (CWA) and Floodplain Management (Executive Order 11988) permitting considerations, to support project development. The approximate center point of the analysis area is at latitude 35.543748°, longitude -106.012632° (see Figure A-1).

2 REGULATORY CONSIDERATIONS

Section 2.1 discusses the current regulatory environment for waters of the U.S. (WOTUS). Section 2.2 documents the relationships to statutes and regulations for aquatic resources in New Mexico.

2.1 Current Regulatory Environment for Waters of the U.S.

On September 8, 2023, the “Revised Definition of ‘Waters of the United States’” rule, as amended, went into effect and is currently applicable in the state of New Mexico.

WOTUS regulations, including the current 2023 Final Revised WOTUS Amended Rule, do not clearly define the differences between flow duration regimes (ephemeral and intermittent and perennial). Because the 2023 Final Revised WOTUS Amended Rule removes the former significant nexus test, there is no longer a tool to assess connectivity for certain features where continuous connectivity is questionable. Currently, the U.S. Army Corps of Engineers (USACE) is developing guidance for how districts will assess non-relatively permanent waters (ephemeral and intermittent) and non-adjacent wetland waters.

In general, WOTUS include traditional navigable waters, wetlands adjacent to traditional navigable waters, and tributaries and wetlands adjacent to navigable waters that have a continuous surface connection and standing or continuously flowing water.

Wetlands are special aquatic sites defined by the USACE as “areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions” (USACE 1987:9). To meet the basic definition of a wetland, an area must contain the following three parameters under normal circumstances: 1) the presence of wetland hydrology indicators showing regular inundation, 2) a dominance of hydrophytic (water-loving) vegetation, and 3) soil characteristic and indicators of frequent saturation (i.e., hydric soils) (USACE 1987).

A USACE Department of the Army permit pursuant to CWA Section 404 is required for regulated impacts to WOTUS, unless an exemption applies. Depending on the scope and level of potential impacts, regulated impacts would require either a general permit or an individual permit prior to the discharge of fill material.

SWCA evaluated the delineation of aquatic resources to develop a professional opinion of WOTUS jurisdiction based on the 2023 Rule (and its published amendment) and current guidance received by the USACE Albuquerque District at the time this technical memorandum was prepared. The USACE has regulatory authority and discretion in determining the jurisdictional status of aquatic resources at a given site.

2.2 Relationship to Statutes and Regulations

Various federal, state, local, and tribal agencies regulate different aspects of aquatic resources, including WOTUS, stormwater discharges, and floodplains. Table 1 provides a list of relevant permits, regulations, and approvals, at the time of this report’s preparation, that could be required for the proposed project.

Table 2. Permits, Regulations, and Approvals Relevant to the Proposed Project

Permit/Regulation/Approval	Issuing Agency(ies)	Status
Federal Permit, Approval, or Clearance		
CWA Section 404 Permitting Discharges of Dredge or Fill Material into WOTUS (including wetlands and non-wetland waters [streams and rivers])	USACE	Section 404 of the CWA regulates any dredge and fill activities in WOTUS. Any development or construction in WOTUS requires an appropriate permit, either Nationwide (via a notifying permit action, or Pre-construction Notification [PCN], or non-notifying permit action, that may require a permit verification letter, pending the direction of the lead agency), Regional General (automatic notifying permit action via development of a PCN), or Individual Permit (additional permitting requirements) from the USACE. The proposed project may require CWA Section 404 permitting.
CWA Section 402 (National Pollutant Discharge Elimination System [NPDES])	EPA	The proposed project is exempt. Based on the 1987 Water Quality Act and Section 323 of the Energy Policy Act of 2005, Section 402 of the CWA does not require operators to obtain a NPDES permit for discharges of stormwater runoff from oil and gas exploration, production, processing, or treatment operations.

Permit/Regulation/Approval	Issuing Agency(ies)	Status
CWA Section 303(d): Impaired Waters and Total Maximum Daily Loads (TMDLs)	EPA; New Mexico Environment Department (NMED) Surface Water Quality Bureau (SWQB)	Section 303(d) of the CWA regulates the TMDL program. Under Section 303(d) of the CWA, states, territories, and authorized tribes, collectively referred to in the CWA as “states,” are required to develop lists of impaired waters. The NMED SWQB maintains the list of impaired waters in New Mexico via the 2022–2024 State of New Mexico CWA 303(d)/ 305(b) Integrated Report (NMED SWQB 2022). Compliance is required for any CWA 303d listed impaired water.
Endangered Species Act	U.S. Fish and Wildlife Service (USFWS)	Compliance is required for any CWA permitting action, including Section 401, 402, or 404.
Migratory Bird Treaty Act of 1918 (16 United States Code 703–712)	USFWS – Migratory Bird Permit Office Region 2	Compliance is required for any CWA permitting action, including Section 401, 402, or 404.
Section 106 of the National Historic Preservation Act	New Mexico Historic Preservation Division	Compliance is required for any CWA permitting action, including Section 401, 402, or 404.
State Permit, Approval, or Clearance		
CWA Section 401 Water Quality Certification	NMED SWQB, Authorized Tribes, or the EPA	Section 401 of the CWA regulates water quality of WOTUS via Water Quality Certification in New Mexico. The NMED SWQB, Authorized Tribes, or the EPA, pending land jurisdiction, is responsible for individual, expedited, or waived/exemption of Water Quality Certification per Section 401 of the CWA. The 401 Certification ensures that the federal permit complies with state or tribal water quality regulations. The proposed project could require CWA Section 401 water quality certification or an exemption pending the CWA Section 404 permitting action for impacts to WOTUS features in New Mexico.
NMAC 19.21.2 Incidental Take Permit	New Mexico’s Energy, Minerals, and Natural Resources Department	An Incidental take permit would be required for any projects where destruction, removal, or harm of a State endangered plant species is unavoidable, and any listed plant would be directly impacted. The ruling applies to all non-tribal lands within New Mexico.
Local Permit, Approval, or Clearance		
Executive Order 11988 (Floodplain Management)	Counties, local municipalities, and/or Authorized Tribes in New Mexico	Executive Order 11988 (Floodplain Management) requires compliance and/or permitting actions with the county, local municipality, and/or Tribal Floodplain Administrators for any impacts within floodplains prior to construction. The proposed project could require floodplain compliance and/or permitting with the responsible entities pending the potential presence of floodplains.

An aquatic resources inventory can be used to identify the potential presence and/or extent of features that may be jurisdictional WOTUS under Section 404 of the CWA of 1972, as amended, as well as provide a preliminary overview of aquatic resources functionality within the analysis area. The inventory of aquatic resources consists of identifying and recording features that may be determined to be WOTUS by the USACE. Any development or construction in WOTUS requires an appropriate permit from the USACE. Section 404 of the CWA regulates any dredge and fill activities in WOTUS (EPA 2023b). Section 401 of the CWA regulates the water quality of WOTUS (EPA 2023c), and the New Mexico Environment Department (NMED) Surface Water Quality Bureau (SWQB) is responsible for Water Quality Certification under CWA Section 401 (NMED SWQB 2019). If a jurisdictional determination (preliminary or approved) and/or CWA Section 401 and 404 permitting is required, this ARIR will be provided with the permit application(s) to the authorizing agencies: the USACE, NMED SWQB, and/or Authorized Tribe/ the EPA.

Section 402 of the CWA requires operators of energy development sites, including transmission and solar, to obtain National Pollutant Discharge Elimination System (NPDES) permit coverage for stormwater runoff. These permits require operators to take steps to prevent stormwater runoff from washing sediment and other pollutants from their project site(s) into local surface waters. A NPDES permit is required for stormwater discharges from any construction activity that will disturb 1 acre or more of land or disturb less than 1 acre of land but that is a part of a common plan of development that will disturb a total of more than 1 acre.

Section 303(d) of the CWA regulates the Impaired Waters and Total Maximum Daily Load (TMDL) program (EPA 2022). Under Section 303(d) of the CWA, states, territories, and authorized tribes, collectively referred to in the CWA as “states,” are required to develop lists of impaired waters. The NMED SWQB maintains the list of impaired waters in New Mexico via the *2022–2024 State of New Mexico Clean Water Act §303(d)/§305(b) Integrated Report* (NMED SWQB 2022). Compliance is required for any construction or development in, as well as discharges to, CWA 303(d) listed impaired waters.

Executive Order 11988 of May 24, 1977 (Floodplain Management), as amended, intends to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative. The Federal Emergency Management Agency (FEMA) has mapped regulatory flood zones, defined as areas inundated by 1% (100-year) or 0.2% (500-year) annual chance flood, meaning the flood has a 1% or 0.2% chance of being equaled or exceeded in any given year (the 1% annual chance flood zone is designated as Zone A or AE; the 0.2% annual chance flood zone is designated as Zone B, C, or shaded Zone X on older maps). Modifications and development occurring in a floodplain require analysis under Executive Order 11988. Floodplains are regulated by the local ordinance and the FEMA flood map changes are approved by FEMA. The county and/or local municipality would then adopt the community-wide map updates.

Additionally, compliance with the Endangered Species Act, the Migratory Bird Treaty Act of 1918, and Section 106 of the National Historic Preservation Act is required for any CWA Section 401, 402, or 404 permit.

3 METHODOLOGY

The aquatic resources inventory consists of a desktop review of existing data and a field survey, as described below.

3.1 Existing Data Review

SWCA conducted a desktop review of existing publicly available data prior to the aquatic resources field survey to identify regions within the survey area, which includes all project component footprints and a 100-foot buffer (analysis area).

3.1.1 Watershed Data Review

The following sources were used to evaluate the watershed and subsequent aquatic resources data:

- Surface watershed data, including U.S. Geological Survey (USGS) Hydrologic Unit Code (HUC)–10 data

- USGS 7.5-minute quadrangles
- Natural Resources Conservation Service soils data, including hydrologic soil groups (Natural Resources Conservation Service 2023)
- Historic and current aerial photographs of the analysis area (Google Earth Pro 2023)

3.1.1.1 SURFACE AQUATIC FEATURES

3.1.1.1.1 Wetlands, Streams, and Rivers

The following sources were used to evaluate existing surface aquatic resources, including potentially jurisdictional WOTUS:

- USGS National Hydrography Dataset (NHD) (surface water streams, rivers, canals, ditches, ponds, lakes, reservoirs) (USGS 2016)
- U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) data (characterizes freshwater wetlands, including emergent wetland, forested/shrub wetland, freshwater pond, lake, riverine, and other) (USFWS 2023)

3.1.1.1.2 Preliminary Hydrologic Parameters

The following source was used to evaluate the hydrologic parameters of a watershed:

- USGS StreamStats Version 4 within a HUC-10 basin(s). StreamStats is a web-based tool that uses the National Streamflow Statistics program and the 30-meter digital elevation model database to estimate the hydrologic parameters of ungauged sites, including basin characteristics and estimates of flow statistics (USGS 2018).

3.1.1.1.3 Floodplains

The following sources were used to evaluate the presence of floodplains:

- FEMA flood maps (FEMA 2023)

3.1.1.1.4 Preliminary Stormwater Discharges

The following sources were used to evaluate the analysis area stormwater discharges:

- EPA's Stormwater Discharge Mapping Tool (EPA 2023e). The discharge mapping tool is a web-based tool used to determine nearby surface waters to which a project site may discharge, and whether those waters have been reported to EPA as being impaired or have a TMDL. The Discharge Mapping Tool uses the NHDPlus, Section 303(d) listing, and TMDL information for the analysis of whether a site is located within the catchment of an impaired water (EPA 2023f).
- EPA's Seasonally Dry Period Locator Tool (EPA 2023g). This tool helps determine whether a project site is in an arid or semi-arid climate and the seasonally dry months for the site location.

3.1.1.2 GROUNDWATER

The following source was used to evaluate existing groundwater aquatic resources:

- USGS and New Mexico Office of the State Engineer (NMOSE) database for groundwater well and point of diversion (POD) information (NMOSE 2017)

The NMOSE's diversion layer of the database includes well locations, surface declarations, and surface permits updated monthly. These data are obtained from the NMOSE's Water Administration Technical Engineering Resource System database, and the data are geolocated or mapped. These data have various degrees of accuracy and have not been validated; thus, the information in this report is considered preliminary.

3.2 Aquatic Resources Field Survey

The aquatic resources field survey was conducted over six days between April 4th and April 11th, using the methods discussed in the following sections.

SWCA used data from the Western Regional Climate Center to evaluate the conditions leading up to and during the field survey relative to normal conditions, seasonality, and typical year considerations (Western Regional Climate Center 2023).

3.2.1 Jurisdictional Three-Parameter Wetlands

Wetlands are defined jointly by the EPA (*Federal Register* 1980) and the USACE (USACE 1987; *Federal Register* 1982) as “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” (USACE 1987:9). The *Corps of Engineers Wetlands Delineation Manual* includes in its technical approach for identification and delineation of wetlands that “except in certain situations, evidence of a minimum of one positive wetland indicator from each parameter (hydrology, soil, and vegetation) must be found in order to make a positive wetland determination” (USACE 1987:9).

The presence/absence of three-parameter wetlands (hydrology, hydric soils, and hydrophytic vegetation) was verified in the field using wetland determination methods provided in the *Corps of Engineers Wetlands Delineation Manual* (USACE 1987) and the *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Arid West Region (Version 2.0) (Regional Supplement)* (USACE 2008a). These methods require a comprehensive determination method to obtain sufficient quantitative aquatic resources data. Quantitative data were collected in the *Regional Supplement's* wetland determination data forms (datasheet) using indicators for the three-parameter wetlands at observation points representative of the immediate vegetation community (USACE 2008a) where applicable. A formal wetland determination was completed where NWI-mapped wetlands intersected the analysis area or where other indicators were present and wetland determinations were considered necessary.

SWCA used the following resources to identify the indicators associated with three-parameter wetlands (hydrology, hydric soils, and hydrophytic vegetation): the *Regional Supplement* for hydrology indicators (USACE 2008a), Munsell Soil Color Charts (Munsell Color 2010) for soil colors and associated indicators, Wetland Training Institute, Inc.'s *Pocket Guide to Hydric Soil Field Indicators* (Wetland Training Institute, Inc. 2022) and soil texture by feel chart for hydric soil indicators, and the 2020 National Wetland Plant List (USACE 2020) with wetland indicator status for each plant species to determine hydrophytic vegetation.

Wetland boundaries were delineated where wetland hydrology, hydrophytic vegetation, and hydric soils were present, or where wetland indicators were disturbed or problematic (USACE 2008a:Chapter 5). If NWI-mapped features were present during the desktop survey, they were evaluated using datasheets during the field survey.

3.2.2 Jurisdictional Non-Wetland Waters—Streams and Rivers

Potentially jurisdictional non-wetland waters, such as ephemeral and intermittent streams, as well as perennial rivers are determined by identifying the ordinary high-water mark (OHWM). An OHWM is the line on a shore or bank established by fluctuations of water and is typically identified 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. The extent of non-wetland waters was determined in the field using the guidance and methods provided in USACE Regulatory Guidance Letter No. 05-05 (USACE 2005) and the USACE technical guidance *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the United States* (USACE 2008b) and *Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (USACE 2010). If non-wetland waters are to be determined after the USACE final draft of the proposed National OHWM Manual is published, which is anticipated in 2024, the National OHWM Manual and accompanying datasheets will be used (USACE 2022a, 2022b).

For any OHWMs identified within the survey area, field delineation crews completed the USACE OHWM data form (USACE 2010). The field delineation crews also recorded OHWM indicators on the *Rapid Ordinary High Water Mark Field Identification Data Sheet* (USACE 2022c). Non-wetland waters (stream and river) data were documented using the methodology described above for any OHWMs identified in the field but not included in the publicly available datasets.

3.2.3 Mapping

A handheld geographical positioning system receiver with submeter accuracy was used to record the spatial extent of features, geographically reference data points, and wetland and waterbody boundaries during the field survey. Geographic information system software was used to analyze recorded features, calculate areas, and generate the analysis area maps.

4 RESULTS

4.1 Existing Data Review Results

4.1.1 Watershed Data Review

The analysis area is located between 6,292 feet and 6,681 feet above mean sea level and is within the Santa Fe River Watershed (Hydrologic Unit Code 1302020101) and the Outlet Galisteo Creek Watershed (Hydrologic Unit Code 1302020104).

4.1.1.1 SURFACE AQUATIC FEATURES

4.1.1.1.1 Wetlands, Streams, and Rivers

According to the existing data review, one NHD-mapped flowline intersects the analysis area along the permanent easement for the gen-tie corridor (see Figure A-3). One NWI-mapped riverine wetland coinciding with the one NHD-mapped flowline crosses into the analysis area once along the gen-tie corridor and three stand-alone NWI-mapped riverine wetlands intersect the solar facility (see Figure A-3) (USFWS 2023; USGS 2016).

4.1.1.1.2 Preliminary Hydrologic Parameters

Based on the desktop review of StreamStats, there are potentially four off-site watersheds that enter the analysis area and flow mostly from north to south at an average slope of 4.75 percent. The drainage area is approximately 11.96 square mile, and the 100-year peak flow is 6,214 cubic feet per second (USGS 2018). This indicates there could be impacts to surface water hydrology and flow across the analysis area. Details about off-site watersheds are provided in Table 2.

Table 2. Off-Site Watersheds within the Analysis Area

Site Identification	SWCA Unique Identifier	Drainage Area (square miles)	Slope (%)	100-Year Peak Flow (ft ³ /s*)
NM20231012213024422000	StreamStats 1	0.32	1.7	913
NM20231012214238589000	StreamStats 2	1.21	2.5	1470
N M20231012214559208000	StreamStats 3	0.13	3.8	661
NM20231012215141134000	StreamStats 4	10.3	11	3170
		Total: 11.96	Average: 4.75	Total: 6,214

*Standard river flow measurements are measured in cubic feet per second, otherwise known as cfs or ft³/s

Disclaimer: SWCA did not perform any hydrologic analysis for the site and does not recommend using the hydrologic parameters in this section (results based on StreamStats) as the basis for a hydrologic investigation or to inform design criteria.

4.1.1.1.3 Floodplains

The analysis area is partially located within a special flood hazard area (Zone A) and is therefore subject to flooding by a 1% annual chance flood meaning the flood has a 1% chance of being equaled or exceeded in any given year (FEMA 2023) (See Figure A-3). Mapped FEMA flood zones associated with surface aquatic features identified in the survey area are provided in Table 4.

4.1.1.1.4 Preliminary Stormwater Discharges

The analysis area discharges to thirteen catchments of four waters (EPA 2023e), none of which are considered impaired waters (NMED SWQB 2022).

The project site is in a semi-arid area, and no months are considered seasonally dry at the project site (EPA 2023g).

The climatic records for the Santa Fe 2 station in Santa Fe County, New Mexico (COOP Station No. 298085) indicate that the study area has an average annual maximum temperature of 64.9 degrees Fahrenheit (°F) and an average annual minimum temperature of 36.0°F. The average annual rainfall in the study area is 13.7 inches, most of it occurring between May and October, while the average annual snowfall, which largely occurs between November and March, is 21.0 inches (Western Regional Climate Center 2022).

4.1.1.2 GROUNDWATER

4.1.1.2.1 Wells and Points of Diversion

According to the NMOSE, there are two diversions to surface water and/or groundwater resources within a 300-foot radius of the analysis area (NMOSE 2017). This indicates that there is the potential for impacts to groundwater wells and PODs from surface disturbances. Diversions are displayed in Table 3 below.

Table 3. Water Well and Water Diversion Information within Analysis area

Type: Well or POD	Well or Groundwater/ POD Number	Latitude	Longitude	Use	Owner	Distance from Project Site (miles)
POD	RG 38073	35.560053	-105.981683	Irrigation	Rancho Viejo	Within project area
POD	RG 37083	36.005664	-105.950004	Domestic Household	Ysrael Montoya	<0.1

View POD site for more information:
<http://nmwrrs.ose.state.nm.us/ReportDispatcher?type=WRHTML&name=WaterRightSummaryHTML.jrxml&basin=RG&nbr=03501&suffix=AquaticResourcesFieldSurveyResults>

Weather conditions during the April 2022 field delineation survey consisted of temperatures of approximately 41°F to 71°F, with clear to partly cloudy skies and a light breeze between 5 and 35 miles per hour. The field delineation results are described below.

4.1.2 Jurisdictional Three-Parameter Wetlands

According to NWI data (USFWS 2023), there is one NWI-mapped wetland feature intersecting the gen-tie corridor and three NWI-mapped riverine wetlands intersecting the solar facility. These features are classified as R4SBJ (Figure A-3, Table 4). The SWCA field crew conducted an aquatic resources survey to investigate the nature of potential three-parameter wetlands and floodplains in the survey area. Based on field observations, the SWCA field crew determined that no NWI-mapped features met the three-parameter wetland criteria: hydrophytic vegetation, hydric soils, and hydrology. No additional potential three-parameter wetland areas were observed within the survey areas. One erosional feature (EF01) was recorded along an NWI-mapped riverine feature within the solar facility (Figure A-3).

4.1.3 Jurisdictional Non-Wetland Waters – Streams and Rivers

According to the NHD, one surface water feature, the Gallina Arroyo, is mapped intersecting the gen-tie corridor area. During SWCA’s field survey, this mapped surface water feature exhibited strong, relevant, and reliable OHWM indicators (ST01) (see Figure A-3; Photographs B-1 through B-8 in Appendix B; and OHWM datasheets in Appendix C). The surface water feature details are provided in Table 4.

Table 4. Summary of Surface Water Features and Total Acreage of Features within the Analysis Area

SWCA Unique Identifier	Coinciding Mapped NHD Feature Hydrographic Category	NHD Aquatic Feature Name	OHWM Present?	Coinciding Mapped NWI Wetland Classification Code	Three-Parameter Wetland Present?	FEMA Flood Zone	Latitude, Longitude	Total Acres of OHWM within Project Area
ST01	Ephemeral	Gallina Arroyo	Yes	R4SBJ	No	Zone A	35.561822, -105.975003	0.1

Note: N/A = not applicable.

* Classification code definitions:

R = Riverine; includes all wetlands and deepwater habitats contained within a channel, with two exceptions: (1) wetlands dominated by trees, shrubs, persistent emergents, emergent mosses, or lichens, and (2) habitats with water containing ocean-derived salts of 0.5 ppt or greater. A channel is an open conduit either naturally or artificially created which periodically or continuously contains moving water, or which forms a connecting link between two bodies of standing water.

4 = Intermittent subsystem; includes channels that contain flowing water only part of the year. When the water is not flowing, it may remain in isolated pools or surface water may be absent.

SB = Class Streambed; Includes all wetlands contained within the Intermittent Subsystem of the Riverine System and all channels of the Estuarine System or of the Tidal Subsystem of the Riverine System that are completely dewatered at low tide.

J: Water Regime Intermittently Flooded; Nontidal; The substrate is usually exposed, but surface water is present for variable periods without detectable seasonal periodicity. Weeks, months, or even years may intervene between periods of inundation. The dominant plant communities under this Water Regime Summary and Recommendations

Based on the results of SWCA’s April 2022 evaluation, SWCA recommends the following:

Surface Water

- Wetlands, Streams, and Rivers:** SWCA identified one potentially jurisdictional aquatic surface water feature (WOTUS) intersecting the gen-tie corridor, and no potentially jurisdictional three-parameter wetland features within the analysis area (see Section 4.2.1). One erosional feature was recorded along an NWI-mapped mapped riverine wetlands intersecting the solar facility (Figure A-3). No other potential wetlands or aquatic surface water features are potentially jurisdictional.

Only the USACE has final and legal authority for determining the presence of jurisdictional WOTUS and the extent of their boundaries. SWCA recommends avoidance and/or minimization of impacts to potentially jurisdictional WOTUS features to the greatest extent possible. If avoidance, including temporary or permanent impacts from proposed project activities, is not possible, SWCA recommends minimizing disturbance within potentially jurisdictional WOTUS features by developing clear project design plans and mitigation measures. Once the final project design and mitigation measures have been determined, SWCA recommends meeting with the USACE to discuss the potential CWA Section 404 (dredge and fill) permit pathway and options, including a letter of compliance if all impacts to WOTUS features can be avoided. If complete avoidance to potentially jurisdictional WOTUS features is not possible, the potential CWA Sections 404 and 401 permit pathways would depend on final design, WOTUS impact thresholds (acreage and/or linear feet), specific project implementation activities, and land jurisdiction. The CWA Section 404 permit options could include the following options:

- Regional General Permit 16-01 (Utility Line Construction, Maintenance, Repair or Removal activities)
- Nationwide Permit (NWP) 57 (Electric Utility Line and Telecommunications activities)
- NWP 14 (Linear Transportation activities)
- NWP 51 (Land-Based Renewable Energy Generation Facilities)

SWCA can create a single Pre-Construction Notification (PCN) application package for the above permit options as necessary; however, the USACE Albuquerque District is the responsible agency for determining the appropriate CWA Section 404 permit.

- **Preliminary Hydrologic Parameters:** There are potentially four off-site watersheds. SWCA did not perform any hydrologic analysis for the site and does not recommend using the hydrologic parameters in this section (results based on StreamStats) as the basis for a hydrologic investigation or to inform design criteria.
- **Floodplains:** The proposed project is partially located within a FEMA-mapped regulatory flood zone such as areas within the 1% or 0.2% annual chance of flood; therefore, approval by the local Floodplain Administrator to ensure that the proposed project meets the requirements of the National Flood Insurance Program and any local floodplain management ordinances per Executive Order 11988 is required.
- **Preliminary Stormwater Discharges:** NPDES permitting is recommended for stormwater runoff in accordance with CWA Section 402.

Groundwater

- **Wells and PODs:** There are two groundwater wells or PODs within or immediately adjacent to the project. If there are impacts to the other aquatic resources, including groundwater wells and PODs, then additional coordination and mitigation may be needed.

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APPENDIX A

Aquatic Resources Inventory Maps

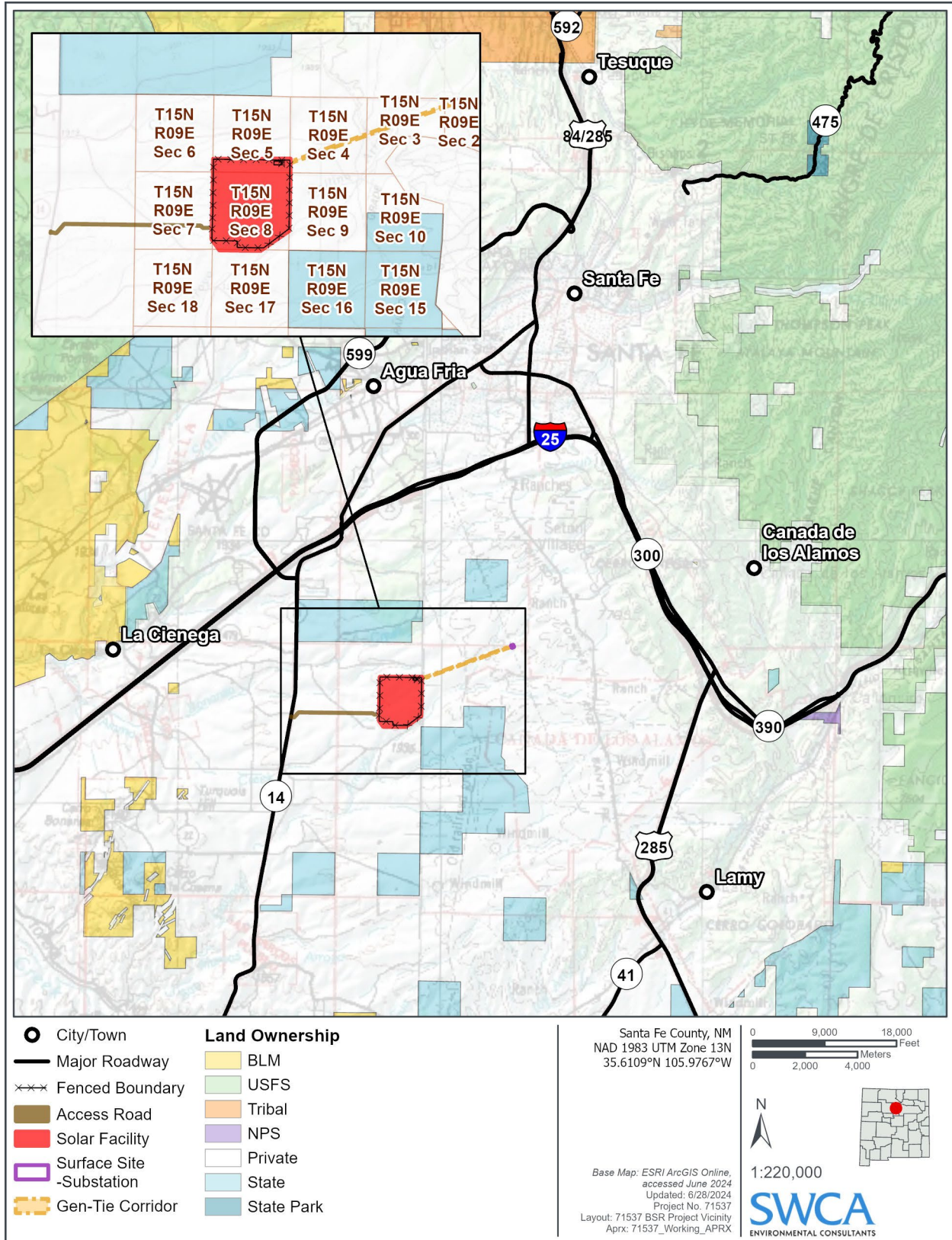


Figure A-1. Project vicinity map.

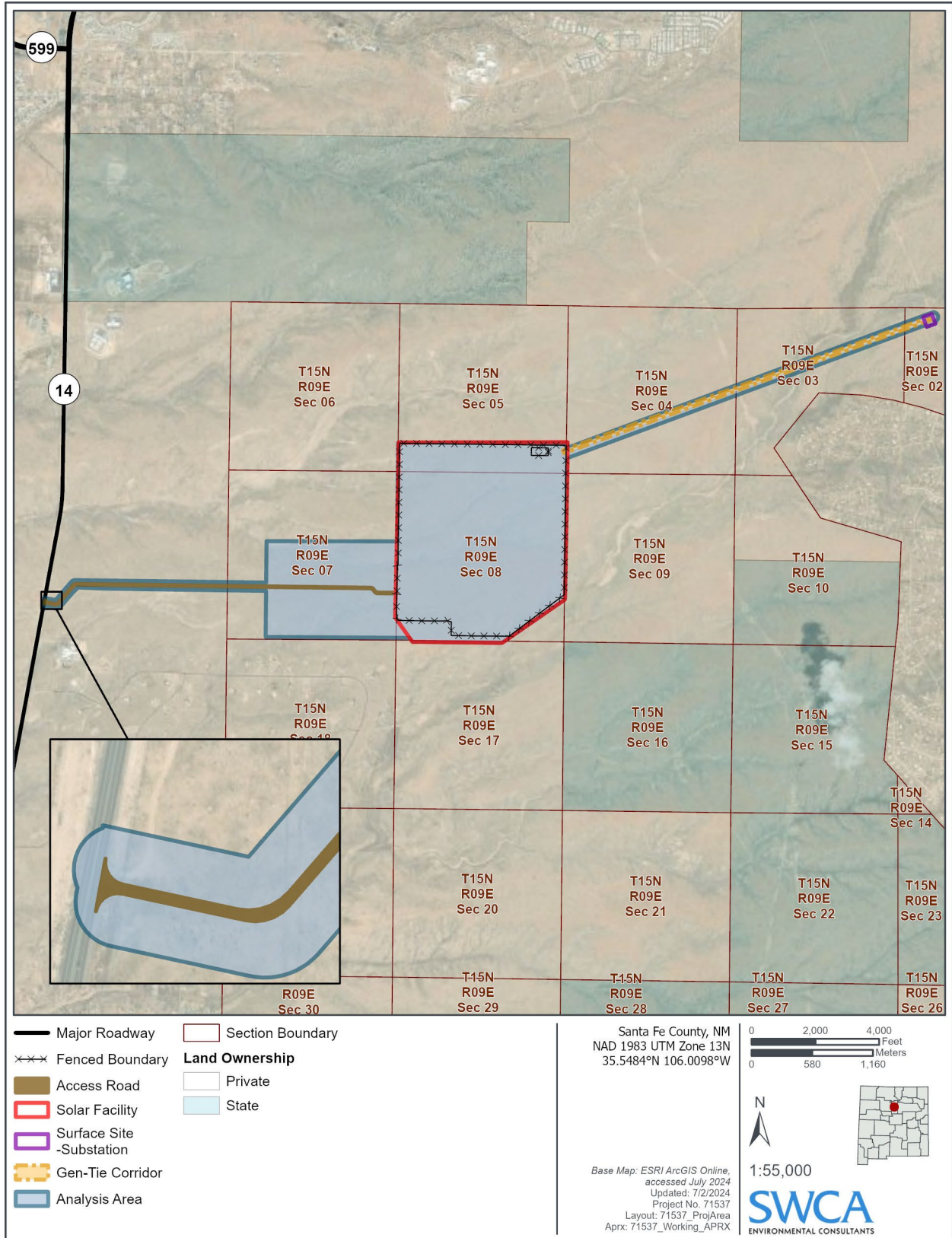


Figure A-2. Analysis area map.

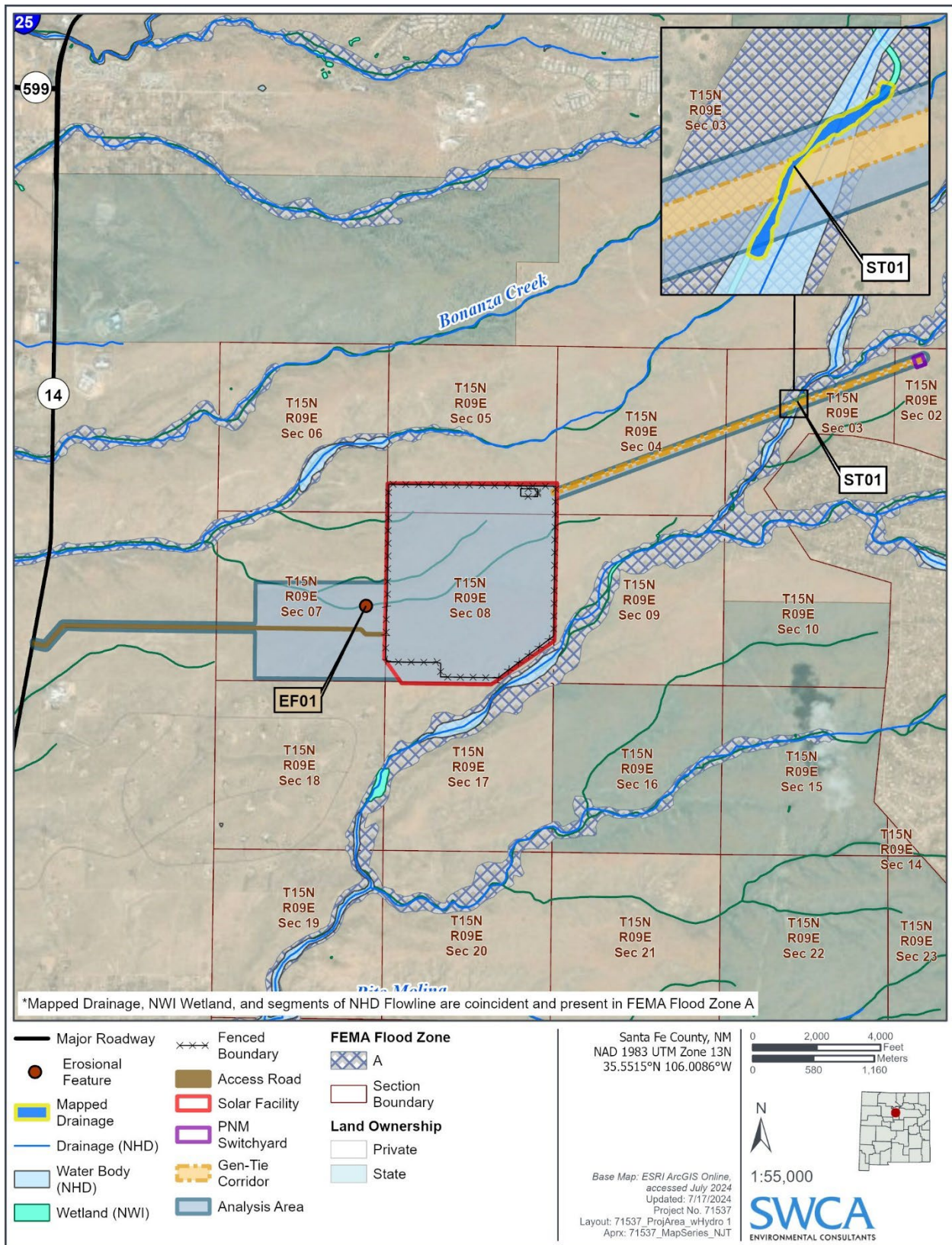


Figure A-3. Overview of aquatic resources within the analysis area.

APPENDIX B

Photographs



Photograph B-1. Overview of analysis area, facing south.



Photograph B-2. Overview of analysis area, facing north.



Photograph B-3. Overview of ST01, NHD-mapped water feature, Gallina Arroyo, from the northern boundary of the gen-tie corridor alignment containing an OHWM, facing upstream/northeast.



Photograph B-4. Overview of ST01, NHD-mapped water feature, Gallina Arroyo, from the northern boundary of the gen-tie corridor alignment containing an OHWM, facing downstream/southwest.



Photograph B-5. Overview of ST01, NHD-mapped water feature, Gallina Arroyo, from within the gen-tie corridor alignment containing an OHWM, facing upstream/northeast.



Photograph B-6. Overview of ST01, NHD-mapped water feature, Gallina Arroyo, from within the gen-tie corridor alignment containing an OHWM, facing downstream/southwest.



Photograph B-7. Overview of ST01, NHD-mapped water feature, Gallina Arroyo, from the southern boundary of the gen-tie corridor alignment containing an OHWM, facing upstream/northeast.

APPENDIX C
OHWB Datasheet

Project: Rancho Viejo Solar Project Number: 71537 Stream: NHD 92 - Gallina Arroyo Investigator(s): K. Goering, J. Aard, W. Youmans	Date: 4/8/22 Town: Santa Fe Photo begin file# 244 Time: 10:26 AM State: NM Photo end file# 255																																																		
Y <input checked="" type="checkbox"/> / N <input type="checkbox"/> Do normal circumstances exist on the site? Y <input type="checkbox"/> / N <input checked="" type="checkbox"/> Is the site significantly disturbed?	Location Details: About 8 miles SW of Santa Fe, NM Projection: Datum: Coordinates:																																																		
Notes: Anthropogenic influences: cattle grazing																																																			
Brief site description: Gallina Arroyo. Habitat is piñon-juniper forest.																																																			
Checklist of resources (if available): <table style="width:100%; border: none;"> <tr> <td style="width:50%; border: none;"> <input checked="" type="checkbox"/> Aerial photography <input checked="" type="checkbox"/> Dates: <input checked="" type="checkbox"/> Topographic maps Scale: <input type="checkbox"/> Geologic maps <input type="checkbox"/> Vegetation maps <input checked="" type="checkbox"/> Soils maps <input type="checkbox"/> Rainfall/precipitation maps <input type="checkbox"/> Existing delineation(s) for site <input checked="" type="checkbox"/> Global positioning system (GPS) <input type="checkbox"/> Other studies </td> <td style="width:50%; border: none;"> <input type="checkbox"/> Stream gage data Gage number: Period of record: <input type="checkbox"/> Clinometer / level <input type="checkbox"/> History of recent effective discharges <input type="checkbox"/> Results of flood frequency analysis <input type="checkbox"/> Most recent shift-adjusted rating <input type="checkbox"/> Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event </td> </tr> </table>		<input checked="" type="checkbox"/> Aerial photography <input checked="" type="checkbox"/> Dates: <input checked="" type="checkbox"/> Topographic maps Scale: <input type="checkbox"/> Geologic maps <input type="checkbox"/> Vegetation maps <input checked="" type="checkbox"/> Soils maps <input type="checkbox"/> Rainfall/precipitation maps <input type="checkbox"/> Existing delineation(s) for site <input checked="" type="checkbox"/> Global positioning system (GPS) <input type="checkbox"/> Other studies	<input type="checkbox"/> Stream gage data Gage number: Period of record: <input type="checkbox"/> Clinometer / level <input type="checkbox"/> History of recent effective discharges <input type="checkbox"/> Results of flood frequency analysis <input type="checkbox"/> Most recent shift-adjusted rating <input type="checkbox"/> Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event																																																
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The dominant Wentworth size class that imparts a characteristic texture to each zone of a channel cross-section is recorded in the average sediment texture field under the characteristics section for the zone of interest.																																																			
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Millimeters (mm)</th> <th>Inches (in)</th> <th>Wentworth size class</th> <th></th> </tr> </thead> <tbody> <tr> <td>10.08</td> <td>256</td> <td>Boulder</td> <td rowspan="4" style="writing-mode: vertical-rl; text-orientation: mixed;">Gravel</td> </tr> <tr> <td>2.56</td> <td>64</td> <td>Cobble</td> </tr> <tr> <td>0.157</td> <td>4</td> <td>Pebble</td> </tr> <tr> <td>0.079</td> <td>2.00</td> <td>Granule</td> </tr> <tr> <td>0.039</td> <td>1.00</td> <td>Very coarse sand</td> <td rowspan="5" style="writing-mode: vertical-rl; text-orientation: mixed;">Sand</td> </tr> <tr> <td>0.020</td> <td>0.50</td> <td>Coarse sand</td> </tr> <tr> <td>1/2 0.0098</td> <td>0.25</td> <td>Medium sand</td> </tr> <tr> <td>1/4 0.005</td> <td>0.125</td> <td>Fine sand</td> </tr> <tr> <td>1/8 0.0025</td> <td>0.0625</td> <td>Very fine sand</td> </tr> <tr> <td>1/16 0.0012</td> <td>0.031</td> <td>Coarse silt</td> <td rowspan="4" style="writing-mode: vertical-rl; text-orientation: mixed;">Silt</td> </tr> <tr> <td>1/32 0.00061</td> <td>0.0156</td> <td>Medium silt</td> </tr> <tr> <td>1/64 0.00031</td> <td>0.0078</td> <td>Fine silt</td> </tr> <tr> <td>1/128 0.00015</td> <td>0.0039</td> <td>Very fine silt</td> </tr> <tr> <td></td> <td></td> <td>Clay</td> <td style="writing-mode: vertical-rl; text-orientation: mixed;">Mud</td> </tr> </tbody> </table>	Millimeters (mm)	Inches (in)	Wentworth size class		10.08	256	Boulder	Gravel	2.56	64	Cobble	0.157	4	Pebble	0.079	2.00	Granule	0.039	1.00	Very coarse sand	Sand	0.020	0.50	Coarse sand	1/2 0.0098	0.25	Medium sand	1/4 0.005	0.125	Fine sand	1/8 0.0025	0.0625	Very fine sand	1/16 0.0012	0.031	Coarse silt	Silt	1/32 0.00061	0.0156	Medium silt	1/64 0.00031	0.0078	Fine silt	1/128 0.00015	0.0039	Very fine silt			Clay	Mud	
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		Clay	Mud																																																

<input type="checkbox"/>	<p>Walk the channel and floodplain within the study area to get an impression of the vegetation and geomorphology present at the site. Record any potential anthropogenic influences on the channel system in "Notes" above.</p>
<input type="checkbox"/>	<p>Locate the low-flow channel (lowest part of the channel). Record observations.</p> <p><u>Characteristics of the low-flow channel:</u> Average sediment texture: <u>Sand</u> Total veg cover: <u>2</u> % Tree: <u>0</u> % Shrub: <u>1</u> % Herb: <u>1</u> %</p> <p><u>Community successional stage:</u> <input type="checkbox"/> NA <input type="checkbox"/> Mid (herbaceous, shrubs, saplings) <input type="checkbox"/> Early (herbaceous & seedlings) <input checked="" type="checkbox"/> Late (herbaceous, shrubs, mature trees)</p> <p><u>Dominant species present:</u> <u>Ericameria nauseosa, Bouteloua gracilis</u></p> <p>Other: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p>
<input type="checkbox"/>	<p>Walk away from the low-flow channel along cross-section. Record characteristics of the low-flow/active floodplain boundary.</p> <p><u>Characteristics used to delineate the low-flow/active floodplain boundary:</u> <input checked="" type="checkbox"/> Change in total veg cover <input checked="" type="checkbox"/> Tree <input checked="" type="checkbox"/> Shrub <input type="checkbox"/> Herb <input type="checkbox"/> Change in overall vegetation maturity <input type="checkbox"/> Change in dominant species present <input checked="" type="checkbox"/> Other <input checked="" type="checkbox"/> Presence of bed and bank <input checked="" type="checkbox"/> Drift and/or debris <input type="checkbox"/> Other: _____ <input type="checkbox"/> Other: _____</p>
<input type="checkbox"/>	<p>Continue walking the channel cross-section. Record observations below.</p> <p><u>Characteristics of the low-flow channel:</u> Average sediment texture: <u>sand/soil</u> Total veg cover: <u>21</u> % Tree: <u>1</u> % Shrub: <u>10</u> % Herb: <u>10</u> %</p> <p><u>Community successional stage:</u> <input type="checkbox"/> NA <input type="checkbox"/> Mid (herbaceous, shrubs, saplings) <input type="checkbox"/> Early (herbaceous & seedlings) <input checked="" type="checkbox"/> Late (herbaceous, shrubs, mature trees)</p> <p><u>Dominant species present:</u> <u>Ericameria nauseosa, Bouteloua gracilis</u></p> <p>Other: <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/></p>

