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

MAY 2022

PREPARED FOR

Rancho Viejo Solar, LLC

PREPARED BY

SWCA Environmental Consultants

AQUATIC RESOURCES INVENTORY REPORT FOR THE RANCHO VIEJO SOLAR PROJECT IN SANTA FE COUNTY, NEW MEXICO

Prepared for

Rancho Viejo Solar, LLC
2180 South 1300 East Suite 600
Salt Lake City, Utah 84106

Prepared by

SWCA Environmental Consultants
5647 Jefferson Street NE,
Albuquerque, New Mexico 87109
(505) 254-1115
www.swca.com

SWCA Project Number 71537

May 2022

CONTENTS

Appendices

Tables

This page intentionally left blank.

1 INTRODUCTION

On behalf of Rancho Viejo Solar, LLC , SWCA Environmental Consultants (SWCA) completed an inventory of aquatic resources, commonly referred to as a jurisdictional delineation, for the Rancho Viejo Solar Project (project) in Santa Fe County, New Mexico (Figure A-1 in Appendix A). The aquatic resources inventory covered approximately 1,018.7 acres of undeveloped private property south of the city of Santa Fe, New Mexico, to support future Clean Water Act (CWA) Section 404 permitting associated with the development of a solar farm (study area). The approximate center point of the study area is located at latitude 35.543748°, longitude -106.012632° (see Figure A-1 in Appendix A). The goal of conducting an aquatic resources inventory is to identify the potential presence and extent of features that may be jurisdictional waters of the U.S. (WOTUS) under Section 404 of the CWA of 1972, as amended. The inventory of aquatic resources included the identification and recording of features that may be determined to be WOTUS by the U.S. Army Corps of Engineers (USACE).

2 METHODS

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

2.1 Existing Data Review

SWCA conducted a desktop review of existing spatial data prior to the field survey to identify areas with the greatest potential for aquatic resources. Sources used during the existing data review included U.S. Geological Survey (USGS) 7.5-minute quadrangles, U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps (USFWS 2022), the National Hydrography Dataset (NHD) (USGS 2016), Natural Resources Conservation Service (NRCS) soil survey maps (NRCS 2022), and historic and current aerial photographs of the study area (Google Earth 2022). SWCA used the data from the Western Regional Climate Center to evaluate the conditions leading up to and during the site visit relative to normal conditions, seasonality, and typical year considerations (Western Regional Climate Center 2022).

2.2 Field Survey

The aquatic resources field survey was conducted April 4 through 11, 2022, using the methods discussed in the following subsections.

2.2.1 Mapping

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

2.2.2 Photographs

During the delineation survey, ground-level photographs were taken of the surface water features within the proposed project area. Photographs are provided in Appendix C.

2.2.3 Wetlands

The presence/absence of wetlands was determined in the field using delineation 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 2010). Data at each potential wetland were recorded on the Regional Supplement wetland determination data forms – Arid West (datasheet). Determination of wetland habitat is based on the classification system developed by Cowardin et al. (1979). Wetland plant indicator statuses relied on the 2018 National Wetland Plant List (USACE 2020) for each species and are recorded on datasheets if the study area in review has any wetland features. Soil colors were identified using Munsell Soil Color Charts (Munsell Color 2010). Wetland boundaries were delineated where wetland hydrology, hydrophytic vegetation, and hydric soils are present. These features are recorded on USACE Wetland Determination Data Forms for the Arid West Region when applicable.

2.2.4 Non-Wetland Waters

The extent of non-wetland waters (e.g., creeks, rivers, arroyos, ponds, and constructed ditches) was determined in the field using the guidance and methods provided in USACE Regulatory Guidance Letter 05-05 (USACE 2005) and the USACE technical guidance *A Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the United States* (USACE 2008a). An ordinary high-water mark (OHWM) is the line on a shore 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 spatial extent of non-wetland waters is delineated using the identified OHWM for each feature. This process is recorded on an OHWM datasheet (see Appendix B) when applicable.

2.3 Regulatory Considerations

At the time of this report's preparation, the USACE interprets WOTUS using the pre-2015 definition and practice, which relies on the Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States and Carabell v. United States regulatory guidance letter (USACE 2008b). It should be noted that two separate pending developments could result in future regulatory scenarios that are either more or less expansive with respect to the extent of jurisdictional WOTUS. These developments include a scheduled Fall 2022 Supreme Court hearing for the Sackett v. United States Environmental Protection Agency case (which could potentially further limit the extent of jurisdiction) and a scheduled USACE and U.S. Environmental Protection Agency rulemaking (which could potentially expand jurisdiction, depending on the final rule). Neither of these developments would be expected to result in changes to how the USACE and U.S. Environmental Protection Agency assert jurisdiction before the first half of 2023.

Under the regulations in place at the time of this report's preparation (i.e., the pre-2015 WOTUS definition) and as relevant to the project, WOTUS include traditional navigable waters, wetlands adjacent to traditional navigable waters, and tributaries and wetlands adjacent to navigable waters that have continuous flow at least seasonally. Non-navigable tributaries that have less than seasonal flow, wetlands adjacent to tributaries that have less than seasonal flow, and wetlands that are adjacent to but do not abut tributaries that have less than seasonal flow are evaluated for jurisdiction based on a fact-specific analysis. The majority of reviewed wetlands and non-wetland waters are expected to be non-jurisdictional under the recent regulatory approaches for approved jurisdictional determinations due to their apparent lack of a regular surface or shallow subsurface hydrology connection to downstream receiving waters.

3 RESULTS

3.1 Existing Data Review Results

The study area is located approximately 6,420 feet above mean sea level. Approximately 88.2% of the proposed project area occurs within the Santa Fe River watershed (Hydrologic Unit Code 1302020101), and approximately 11.8% occurs within the Outlet Galisteo Creek watershed (Hydrologic Unit Code 1302020104) (USGS 2022). According to the existing data review, there is one NHD-mapped waterbody and one NWI-mapped riverine wetland within the study area; these two features overlap and occur in the same drainage that intersects the permanent easement for the transmission line (USFWS 2022; USGS 2016) (see Figure A-2 in Appendix A). Additionally in the same drainage area as the NHD-mapped waterbody and NWI-mapped riverine wetland, the study area crosses through a Federal Emergency Management Agency (FEMA) mapped Zone A floodplain which is defined as areas with a 1% annual chance flood event for approximately 0.5 acres (see Figure A-2 in Appendix A) (FEMA 2022). 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). Weather during the aquatic resources inventory ranged between 41°F and 71°F with clear to partly cloudy skies and winds between 5 to 35 miles per hour, typically from the west.

3.2 Soils

According to the NRCS (2022), there are 12 mapped soil types in the proposed project area (Table 2). These soils are well drained to excessively drained and are non-hydric.

Table 1. Mapped Soil Types in the Proposed Project Area

Soil Map Unit	Soil Type Symbol	Drainage Class	Project Area (acres)	Project Area (%)
Alire loam, 2 to 6 percent slopes	202	Well drained	2.3	0.2
Arents-Urban land-Orthents complex, 1 to 60 percent slopes	116	Well drained	<0.1	<0.1
Buckhorse-Altazano complex, 2 to 8 percent slopes, flooded	203	Well drained	1.0	0.1
Dondiego loam, 1 to 3 percent slopes	216	Well drained	0.5	0.1
Khapo sandy loam, 3 to 8 percent slopes	102	Well drained	261.9	25.7
Levante-Riverwash complex, 1 to 3 percent slopes, flooded	213	Excessively drained	0.1	<0.1
Ohke sandy loam, 1 to 3 percent slopes	217	Somewhat excessively drained	0.3	<0.1
Panky loam, 1 to 4 percent slopes	100	Well drained	665.4	65.3
Predawn loam, 1 to 4 percent slopes	200	Well drained	0.2	<0.1
Tanoan-Encantado complex, 5 to 25 percent slopes	201	Somewhat excessively drained	2.0	0.2
Zepol silt loam, 0 to 2 percent slopes, flooded	103	Well drained	40.0	3.9

Soil Map Unit	Soil Type Symbol	Drainage Class	Project Area (acres)	Project Area (%)
Zozobra-Jaconita complex, 5 to 25 percent slopes	101	Somewhat excessively drained	45.0	4.4
	Total		**1,018.7**	**100**

Source: NRCS (2022)

3.3 Field Results

3.3.1 Wetlands

According to NWI data (USFWS 2022), approximately 0.02 acre of an NWI-mapped intermittent riverine wetland feature (R4SBJ) occurs in the study area within a drainage that intersects the permanent easement for the transmission line. The SWCA biologists conducted an aquatic resources delineation to investigate the nature of potential wetlands in the study area. Based on field observations, the SWCA biologists determined that the NWI-mapped feature does not include the characteristics (wetland hydrology, hydrophytic vegetation, hydric soils) necessary to be classified as a wetland (see Figure A-2 in Appendix A).

3.3.2 Non-Wetland Waters

According to the NHD, one surface water feature, the Gallina Arroyo, is mapped within the study area, which overlaps with the NWI-mapped riverine discussed above in Section 3.3.1 (USGS 2016). During SWCA's field visit, this feature was found to contain an OHWM where it intersects the study area (see Figure A-2 in Appendix A; OHWM Form in Appendix B; Figures C-5–C-10 in Appendix C). The proposed project area intersects the drainage feature for approximately 0.05 acre (Table 2).

Table 2. SWCA's Mapped Surface Water Features within the Proposed Project Area

Feature ID	Corresponding NHD/NWI	Jurisdictional Determination	Average OHWM Width (feet)	Length (feet)	Cowardin Classification	Potentially Jurisdictional Waters within the Proposed Project Area (acres)
Gallina Arroyo	Ephemeral Drainage	Potentially Jurisdictional	43.0	38.4	R4SBJ	0.05

4 SUMMARY AND RECOMMENDATIONS

Based on the results of SWCA's April 2022 evaluation, the study area does not contain any wetland features but does contain a non-wetland ephemeral drainage (Gallina Arroyo) with an OHWM, that may be a potentially jurisdictional WOTUS. Impacts to this drainage would likely be below the threshold impacts of less than 0.1 acre required under Nationwide Permit 57 (Electric Utility Line and Telecommunications Activities) and Nationwide Permit 14 (Linear Transportation Projects).

It is SWCA's professional opinion that Gallina Arroyo may be considered a jurisdictional WOTUS; however, this report is not a legal delineation of the boundaries of "waters of the U.S." or a determination of their jurisdictional status. Only the USACE has final and/or legal authority in determining the presence of jurisdictional WOTUS and the extent of their boundaries.

This page intentionally left blank

5 LITERATURE CITED

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States*. FWS/OBS-79/31. Washington, D.C.: U.S. Fish and Wildlife Service.

Federal Emergency Management Agency (FEMA). 2022. National Flood Hazard Layer. Available at: https://www.fema.gov/national-flood-hazard-layer-nfhl. Accessed April 2022.

Google Earth. 2022. Source: Santa Fe, New Mexico. Available at: https://www.google.com/earth/. Accessed April 2022.

Munsell Color. 2010. Munsell Soil Color Charts: With Genuine Munsell Color Chips. Grand Rapids, Michigan: Munsell Color.

Natural Resources Conservation Service (NRCS). 2022. Natural Resources Conservation Service, National Lists of Hydric Soils (December 2015). Available at: http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/. Accessed April 2022.

U.S. Army Corps of Engineers (USACE). 1987. *Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1.* Vicksburg, Mississippi: U.S. Army Engineers Waterways Experiment Station.

———. 2005. *Regulatory Guidance Letter No. 05-05, Subject: Ordinary High Water Mark Identification.* Signed by Major General Don T. Riley, Director of Civil Works.

———. 2008a. *A Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the United States.* Available at: https://www.spk.usace.army.mil/Portals/12/documents/regulatory/pdf/Ordinary_High_Watermark_Manual_Aug_2008.pdf. Accessed April 2022.

———. 2008b. *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States & Carabell v. United States.* Available at: https://www.epa.gov/sites/default/files/2016-02/documents/cwa_jurisdiction_following_rapanos120208.pdf. Accessed April 2022.

———. 2010. *Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Arid West Region (Version 2.0),* edited by J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-12. Vicksburg, Mississippi: U.S. Army Engineer Research and Development Center.

———. 2020. National Wetland Plant List, Version 3.5. Available at: http://wetland-plants.usace.army.mil/. Accessed April 2022.

U.S. Fish and Wildlife Service (USFWS). 2022. National Wetlands Inventory. Available at: http://www.fws.gov/wetlands/Data/Mapper.html. Accessed April 2022.

U.S. Geological Survey (USGS). 2016. National Hydrography Dataset. Available at: http://nhd.usgs.gov/index.html. Accessed April 2022.

———. 2022. Watershed Boundary Dataset. Available at: https://water.usgs.gov/GIS/huc.html. Accessed April 2022.

Western Regional Climate Center. 2022. New Mexico Climate Summaries. Santa Fe 2, New Mexico (COOP Station No. 298085). Available at: https://wrcc.dri.edu/cgi-bin/cliMAIN.pl?nm8085. Accessed April 2022.

.

APPENDIX A

Aquatic Resources Inventory Maps

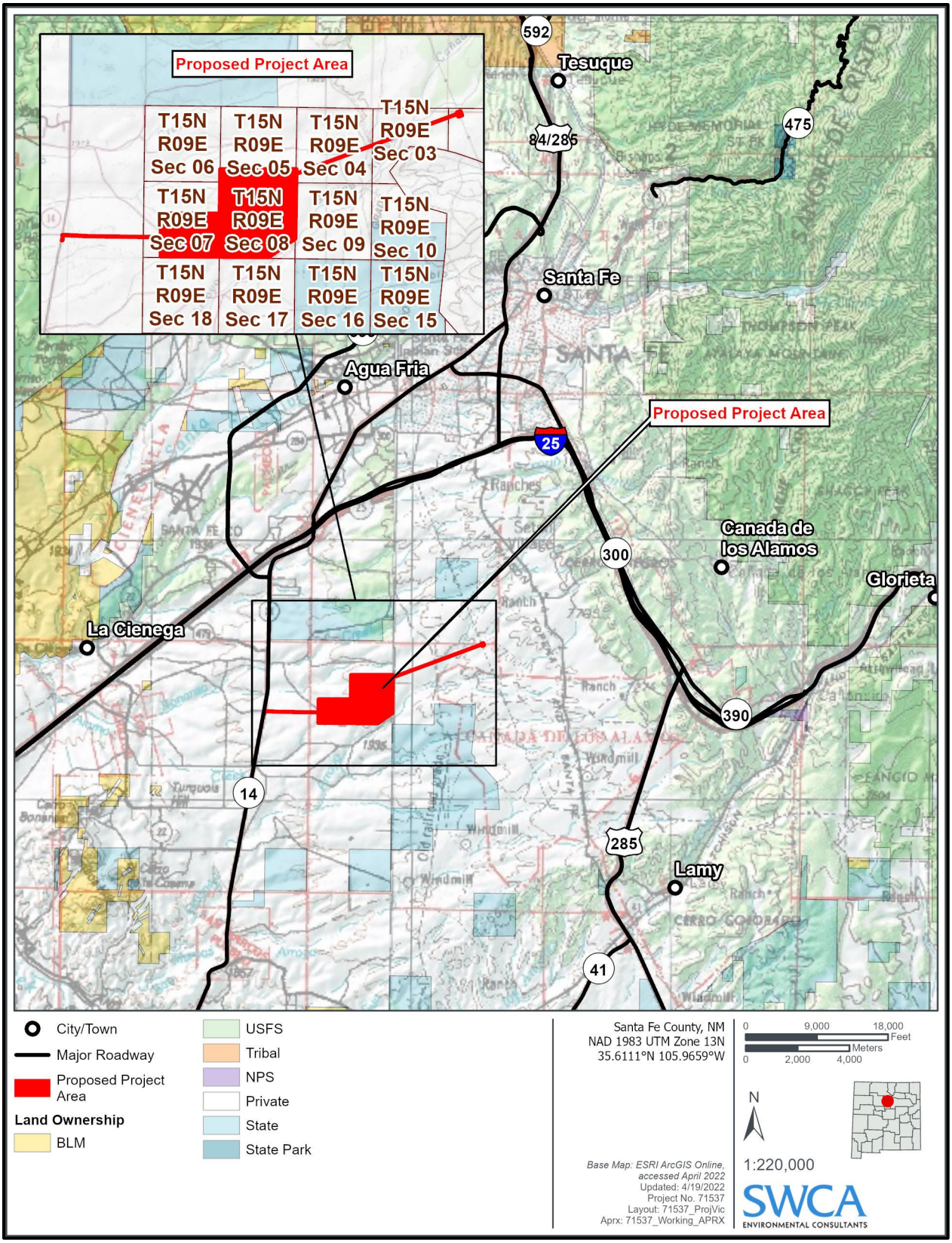


Figure A-1. Project location overview.

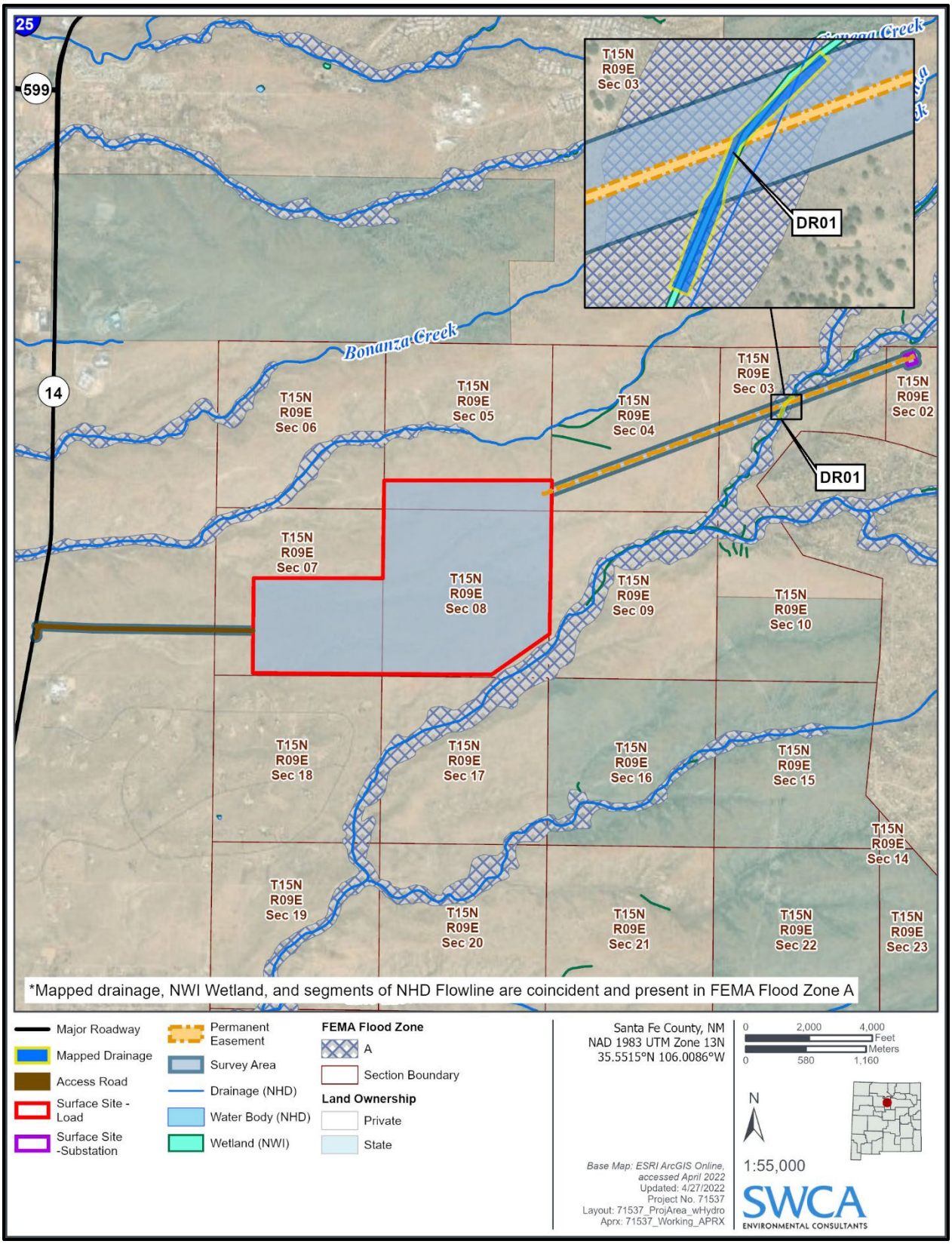


Figure A-2. Overview of aquatic resources within the project area.

APPENDIX B

Wetland Determination and OHWM Data Forms

Project: Rancho Viejo Solar
Project Number: 71537
Stream: NHD 92 - Gallina Arroyo
Investigator(s): K. Goering, J. Aard, W. Yeomans

Date: 4/8/22 **Time:** 10:26 AM
Town: Santa Fe **State:** NM
Photo begin file# 244 **Photo end file#** 255

Y ☑ / N ☐ Do normal circumstances exist on the site?

Y ☐ / N ☑ 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.

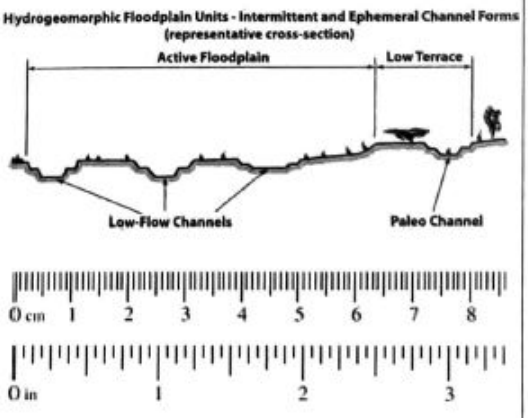
Checklist of resources (if available):

- ☑ Aerial photography
  Dates:
- ☑ Topographic maps
  Scale:
- ☐ Geologic maps
- ☐ Vegetation maps
- ☑ Soils maps
- ☐ Rainfall/precipitation maps
- ☐ Existing delineation(s) for site
- ☑ Global positioning system (GPS)
- ☐ Other studies

- ☐ Stream gage data
  Gage number:
  Period of record:
  - ☐ Clinometer / level
  - ☐ History of recent effective discharges
  - ☐ Results of flood frequency analysis
  - ☐ Most recent shift-adjusted rating
  - ☐ Gage heights for 2-, 5-, 10-, and 25-year events and the most recent event exceeding a 5-year event

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.

Millimeters (mm)	Inches (in)	Wentworth size class	
10.08	256	Boulder	
		Cobble	Gravel
2.56	64	Pebble	
0.157	4	Granule	
0.079	2.00	Very coarse sand	
0.039	1.00	Coarse sand	
0.020	0.50	Medium sand	Sand
1/2 0.0098	0.25	Fine sand	
1/4 0.005	0.125	Very fine sand	
1/8 0.0025	0.0625	Coarse silt	
1/16 0.0012	0.031	Medium silt	
1/32 0.00061	0.0156	Fine silt	Silt
1/64 0.00031	0.0078	Very fine silt	
1/128 0.00015	0.0039	Clay	Mud



☐ **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.**

☐ **Locate the low-flow channel (lowest part of the channel). Record observations.**

Characteristics of the low-flow channel:

Average sediment texture: Sand

Total veg cover: 2 % Tree: 0 % Shrub: 1 % Herb: 1 %

Community successional stage:

☐ NA ☐ Mid (herbaceous, shrubs, saplings)
☐ Early (herbaceous & seedlings) ☑ Late (herbaceous, shrubs, mature trees)

Dominant species present: Ericameria nauseosa, Bouteloua gracilis

Other: ☐ ☐ ☐ ☐

☐ **Walk away from the low-flow channel along cross-section. Record characteristics of the low-flow/active floodplain boundary.**

Characteristics used to delineate the low-flow/active floodplain boundary:

☑ Change in total veg cover ☑ Tree ☑ Shrub ☐ Herb
☐ Change in overall vegetation maturity
☐ Change in dominant species present
☑ Other ☑ Presence of bed and bank
☑ Drift and/or debris
☐ Other:
☐ Other:

☐ **Continue walking the channel cross-section. Record observations below.**

Characteristics of the low-flow channel:

Average sediment texture: sand/soil

Total veg cover: 21 % Tree: 1 % Shrub: 10 % Herb: 10 %

Community successional stage:

☐ NA ☐ Mid (herbaceous, shrubs, saplings)
☐ Early (herbaceous & seedlings) ☑ Late (herbaceous, shrubs, mature trees)

Dominant species present: Ericameria nauseosa, Bouteloua gracilis

Other: ☐ ☐ ☐ ☐

☐ **Continue walking the channel cross-section. Record indicators of the active floodplain/low terrace boundary.**

Characteristics used to delineate the active floodplain/ low terrace boundary:

- ☑ Change in average sediment texture
- ☑ Change in total veg cover ☑ Tree ☑ Shrub ☐ Herb
- ☐ Change in overall vegetation maturity
- ☐ Change in dominant species present
- ☐ Other ☑ Presence of bed and bank
  - ☑ Drift and/or debris
  - ☐ Other: _____
  - ☐ Other: _____

☐ **Walk the active floodplain/low terrace boundary both upstream and downstream of the cross-section to verify that the indicators used to identify the transition are consistently associated the transition in both directions.**

Consistency of indicators used to delineate the active floodplain/low terrace boundary:

- Y ☑ N ☐ Change in average sediment texture
- Y ☑ N ☐ Change in total veg cover ☑ Tree ☑ Shrub ☐ Herb
- Y ☐ N ☑ Change in overall vegetation maturity
- Y ☐ N ☑ Change in dominant species present
- Y ☐ N ☐ Other: Y ☑ N ☐ Presence of bed and bank
  - Y ☑ N ☐ Drift and/or debris
  - Y ☐ N ☐ Other: _____
  - Y ☐ N ☐ Other: _____

☐ **If the characteristics used to delineate the active floodplain/low terrace boundary were NOT consistently associated with the transition in both the upstream and downstream directions, repeat all steps above.**

☐ **Continue walking the channel cross-section. Record characteristics of the low terrace.**

Characteristics of the low terrace:

Average sediment texture: Sand/Soil

Total veg cover: 75 % Tree: 15 % Shrub: 20 % Herb: 40 %

Community successional stage:

- ☐ NA
- ☐ Early (herbaceous & seedlings)
- ☐ Mid (herbaceous, shrubs, saplings)
- ☑ Late (herbaceous, shrubs, mature trees)

Dominant species present: Ericameria nauseosa, Juniperus monosperma, Bouteloua gracilis, Cylindropuntia imbricata

Other:

- ☐ _____
- ☐ _____
- ☐ _____
- ☐ _____

☐ **If characteristics used to delineate the active floodplain/low terrace boundary were deemed reliable, acquire boundary.**

Active floodplain/low terrace boundary acquired via:

- ☐ Mapping on aerial photograph
- ☐ Digitized on computer
- ☑ GPS
- ☐ Other: _____

This page intentionally left blank

APPENDIX C

Photographs

Figure C-1. Overview of proposed project area, facing east.

Figure C-2. Overview of proposed project area, facing west.

Figure C-3. Overview of proposed project area, facing north.

Figure C-4. Overview of proposed project area, facing south.

Figure C-5. NHD-mapped water feature and NWI-mapped riverine wetland feature (Gallina Arroyo) from north of the proposed project area, facing northeast (upstream).

Figure C-6. NHD-mapped water feature and NWI-mapped riverine wetland feature (Gallina Arroyo) from north of the proposed project area, facing southwest (downstream).

Figure C-7. NHD-mapped water feature and NWI-mapped riverine wetland feature (Gallina Arroyo) from within the proposed project area, facing northeast (upstream).

Figure C-8. NHD-mapped water feature and NWI-mapped riverine wetland feature (Gallina Arroyo) from within the proposed project area, facing southwest (downstream).

Figure C-9. NHD-mapped water feature and NWI-mapped riverine wetland feature (Gallina Arroyo) from south of the proposed project area, facing northeast (upstream).

Figure C-10. NHD-mapped water feature and NWI-mapped riverine wetland feature (Gallina Arroyo) from south of the proposed project area, facing southwest (downstream).