Appendix D.2

Aquatic Resources Delineation Report
E-Group PS Solar Project

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Aquatic Resources Delineation Report

E-Group PS Solar Project

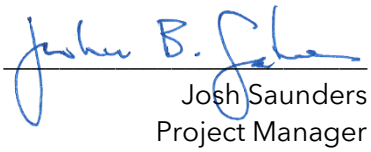
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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
APT	Antecedent Precipitation Tool
ARC	antecedent runoff condition
CDFW	California Department of Fish and Wildlife
NWW	non-wetland water
OHWM	ordinary high-water mark
PDSI	Palmer Drought Severity Index
Project	E-Group PS Solar Project
RWQCB	Regional Water Quality Control Board
USACE	U.S. Army Corps of Engineers
WOTUS	Waters of the United States

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1 Introduction

This Aquatic Resources Delineation Report was prepared in accordance with the Minimum Standards for Acceptance of Aquatic Resources Delineation Reports (USACE 2017). This report and supporting appendices provide the 20 items listed in the Minimum Standards for Acceptance of Aquatic Resources Delineation Reports and presents the results of the jurisdictional aquatic resources delineation conducted by Dudek for the proposed E-Group PS Solar Project (project) in the City of Twentynine Palms, San Bernardino County, California. The delineation was conducted to identify and map existing aquatic resources potentially subject to the regulatory jurisdiction of the U.S. Army Corps of Engineers (USACE) pursuant to Section 404 of the Clean Water Act (33 USC 1344), waters of the state potentially subject to the regulatory jurisdiction of the Regional Water Quality Control Board (RWQCB) pursuant to Section 401 of the Clean Water Act and the Porter-Cologne Water Quality Control Act, and stream and riparian habitats potentially subject to the jurisdiction of the California Department of Fish and Wildlife (CDFW) pursuant to Section 1602 of the California Fish and Game Code (collectively referred to as jurisdictional aquatic resources).

1.1 Disclaimer Statement

This report presents Dudek's best efforts to quantify the extent of jurisdictional aquatic resources potentially regulated by USACE, RWQCB, and CDFW (i.e., regulatory agencies) within the identified review area using the current regulations, written policies, and guidance of these regulatory agencies. The potential jurisdictional resources described in this report are subject to verification by the regulatory agencies. Only the regulatory agencies can make a final determination on whether the features present are subject to USACE, RWQCB, and/or CDFW regulation. A Request for a USACE Jurisdictional Determination is provided in Appendix A.[1]

1.2 Contact Information

Contact information for the project applicant and agent are provided in Table 1.[2] Access to the review area is not restricted, but if a site visit is requested, the project applicant or agent will accompany regulatory staff to the review area.[3] E-Group PS, LLC is the project applicant and lessee of the project area.

Table 1. Contact Information

Project Applicant	E-Group PS, LLC	**Agent**	Dudek
Project Representative	Robert M. Smith	**Agent Representative**	Britney Schultz
Address	925 Fourth Avenue, Suite 2900, Seattle, Washington 98104	**Address**	78075 Main Street, Suite G, La Quinta, California 92253
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1 Minimum Standards Item 1 (Request for Jurisdictional Determination)
2 Minimum Standards Item 2 (Contact Information)
3 Minimum Standards Item 3 (Site Access Statement)

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2 Review Area Description and Landscape Setting[4]

The approximately 241.3-acre review area for the proposed project is within the City of Twentynine Palms, San Bernardino County, California. The review area consists of the project site (Assessor's Parcel Numbers 0612-201-01-0000 and 0612-201-05-0000) plus a 100-foot surrounding buffer, the off-site gen-tie/road alignment from the project site south to Two Mile Road plus a 100-foot surrounding buffer, and road dedication areas (i.e., Amboy Road, Samarkand Drive, and Noels Knoll Road). Note that a portion of Samarkand Drive road dedication is located outside of the review area as depicted on Figure 1 (Project Location). A jurisdictional aquatic resources delineation was not conducted for this area. Should this future road dedication be constructed by the City of Twenty-Nine Palms, a formal jurisdictional aquatic resources delineation shall be conducted and an updated Aquatic Resources Delineation Report shall be prepared in accordance with the Minimum Standards for Acceptance of Aquatic Resources Delineation Reports (USACE 2017).

The review area is on the western side of Twentynine Palms at 34.160458°N and -116.115977°W (Figure 1, Project Location).[5] The review area is within Section 23, Township 1 North, and Range 8 East as depicted on the U.S. Geological Survey Twentynine Palms, California 7.5-minute topographic quadrangle maps (Figure 2, USGS Topographic). Regional access to the review area is provided via California State Route 62, approximately 0.5 miles south of the review area. Directions to the review area are as follows: from Interstate 10 east, take exit 117 onto State Route 62 heading northeast toward Twentynine Palms/Yucca Valley, then turn left onto Sunrise Road. The review area is west of Sunrise Road, north of Two Mile Road, south of Hilltop Drive, and east of Timothy Avenue.

2.1 Topography

Topography within the review area is a gently sloping plane to the north and northeast. Elevation ranges from approximately 2,350 feet above mean sea level in the southern portion of the review area to 2,062 feet above mean sea level in the northern portion of the review area. Adjacent land uses include undeveloped land to the north, south, and west, and residential areas to the east.

2.2 Soils[6]

According to the U.S. Department of Agriculture Natural Resources Conservation Service Web Soil Survey, no existing soil data was available for the review area (USDA 2023a). Soils observed within the review area during the aquatic resources delineation conducted by Dudek were generally sandy/gravelly.

2.3 Vegetation

Six vegetation communities or land cover types were mapped within the review area: creosote bush - white bursage – ratany scrub, creosote bush - white bursage scrub, cheesebush – sweetbush scrub, desert-willow – smoketree

4 Minimum Standards Item 10 (Description of Existing Field Conditions)
5 Minimum Standard Item 14 (Site Location Map)
6 Minimum Standards Item 13 (Soil Descriptions)

wash woodland, urban/developed, and disturbed habitat. The review area is dominated by creosote bush - white bursage scrub, with smaller patches of desert-willow – smoketree wash woodland and cheesebush – sweetbush scrub. A small amount of disturbed habitat is mapped as the portion of Samarkand Drive that overlaps the central portion of the review area and the urban/developed land cover type is mapped as the portion of Two Mile Road that overlaps the southern portion of the review area.

2.4 Watershed

The review area is within the Southern Mojave Subbasin, Hydrologic Unit Code 8 (18100100), and within Indian Cove – Rattlesnake Canyon sub-watershed Hydrologic Unit Code 12 (181001001802) of the Mesquite Lake watershed Hydrologic Unit Code 10 (1810010018) (Figure 3, Hydrologic Setting). The Southern Mojave subbasin comprises approximately 8,867 square miles and spans both San Bernardino and Riverside Counties. The primary geographic and surface hydrologic feature of the watershed is the Mojave River, which flows northeast from the San Bernardino Mountains for approximately 100 miles until it reaches its terminus at Soda Lake near the community of Baker. Some reaches of the Mojave River flow underground in the confined riverbed channel. The Mojave River is approximately 70 miles southeast of the review area. No drainages within the review area flow to the Mojave River. The Mesquite Lake watershed comprises 60 square miles (63,450.75 acres) and is partially within the City of Twentynine Palms in San Bernardino County (USGS 2023).

There are no perennial streams within the Mesquite Lake watershed, and most water features only flow ephemerally in response to storms. Runoff is primarily generated in the surrounding mountains, but is quickly lost as recharge to the mountain front alluvial deposits, leading to very little surface flow leaving this area (Troxell 1954). A substantial amount of runoff that does pass the mountain front area and reaches the basins is then lost to evaporation (Kennedy/Jenks/Todd LLC 2007). The San Bernardino and Little San Bernardino Mountains represent a large surface water divide, with channels on the north and east sides of the ranges tributary to the Great Basin, and channels on the south and west sides tributary to the Pacific Ocean (Troxell 1954). The review area contains several ephemeral drainages that ultimately end in the various playa lakes, meaning that surface water is confined within the basins. In the event of an extraordinary stormflow, water may reach Dale Dry Lake, a dry playa just east of Twentynine Palms (Thompson 1929).

The review area occurs within an alluvial fan, a landform typically associated with episodic sediment transport and deposition within a system of braided channels. Geologic mapping (Dibblee 1968) shows that the review area is underlain by “Older Alluvium” which is an erosion resistant unit exposed in a topographically higher position than the thin, discontinuous veneer of recently transported “Recent Alluvium” deposits observed on aerial photographs as an apparent network of braided channels. However, field surveys found a number of swale features created from sheet flow runoff that lack evidence of sediment deposition, continuous fluvial features such as channel banks, floodplain or bar surfaces, and/or bankfull. Many of these swale features appear on aerial photographs but are actually sandy off-highway vehicle tracks. Therefore, due to the presence of the older alluvium and lack of fluvial indicators, these relic swale features were not mapped as watercourses.

2.5 Review Area Alterations, Current and Past Land Use

The review area is undeveloped open space in Twentynine Palms and has not undergone any major land use changes since the mid-1990s. Active off-road-vehicle use by unknown third parties was observed at the time of the jurisdictional delineation within the ephemeral washes within the review area.

3 Precipitation Data and Analysis[7]

The USACE-developed Antecedent Precipitation Tool (APT) was used to assess whether the delineation date occurred in a drier, average, or wetter than normal period (USACE 2023). To determine what constitutes a "typical year," USACE developed the APT. The information generated from the APT can help to determine whether normal hydrologic and/or climatic conditions were present during the site visit, and assist with completing the Wetland Determination Data Form.

The APT provides three climatological parameters: Palmer Drought Severity Index (PDSI), season, and antecedent precipitation condition. The PDSI is a standardized index calculated on a monthly basis, with PDSI value outputs ranging from -4 (extreme drought) to +4 (very wet) (NOAA 2021) to assess drought conditions (i.e., PDSI Class). The APT determines wet vs. dry season based on related procedures provided in the applicable regional supplement for the review area (in this case, the Arid West Region supplement [USACE 2008a]). If the antecedent runoff condition (ARC) score is less than 10, then the antecedent precipitation condition is classified as drier than normal; normal conditions are present with an ARC score of 10 to 14; conditions are wetter than normal when an ARC score is greater than 14 (USACE 2023).

Table 2 summarizes the key data extrapolated from the APT output: estimated drought conditions (PDSI Class), wet or dry season determination, ARC score, and antecedent precipitation condition. Based on the APT output provided in Appendix B and summarized in Table 2, the precipitation and climatic conditions for the review area were within the normal range during the time of the delineation.

Table 2. Antecedent Precipitation Tool Data for the Review Area

Main Field Survey Date[1]	PDSI Class	Season	ARC Score	Antecedent Precipitation Condition
04/28/2023	Moderate wetness	Dry Season	14	Normal
08/09/2023	Moderate wetness	Dry Season	12	Normal

Notes: PDSI = Palmer Drought Severity Index; ARC = antecedent runoff condition; APT = Antecedent Precipitation Tool.

1 Only data collection occurred during the June 17, 2024 survey; no additional mapping of aquatic resources occurred during this survey. Therefore, APT output is not provided in Table 2.

Additionally, according to the U.S. Department of Agriculture's Agricultural Applied Climate Information System (USDA 2023b), the area around the review area receives an average of 4.72 inches of precipitation annually.

7 Minimum Standards Item 11 (Discussion of Hydrology)

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4 Investigation Methods[8]

The jurisdictional delineation was conducted by Dudek biologists Katie Dayton and Zarina Pringle on April 28, 2023 and by Dudek biologists Britney Schultz, Sarah Greely, and Luz Badillo on August 9, 2023 (Table 3). An additional survey occurred in June 2024 for data collection purposes. Prior to conducting the jurisdictional delineation, U.S. Fish and Wildlife Service's National Wetland Inventory data (USFWS 2023) was reviewed to determine if the review area contained any features mapped by the U.S. Fish and Wildlife Service. Site-specific topographical data was reviewed in conjunction with aerials, both current and historical, to determine the potential presence of non-wetland waters. Current vegetation mapping was reviewed to assess whether the review area supported hydrophytic vegetation and potential wetlands. No areas within the review area supported hydrophytic vegetation, and therefore wetland data station forms were not completed. Jurisdictional boundaries were mapped in the field using ESRI Collector on a mobile device with submeter accuracy. Remote sensing was not used for the delineation.

Table 3. Schedule of the Aquatic Resources Delineation

Date	Hours	Personnel	Conditions
04/28/2023	6:57 a.m.– 2:50 p.m.	Katie Dayton, Zarina Pringle	68–92°F; 0% cloud cover; 0–4 mph wind
08/09/2023	6:05 a.m.– 11:55 a.m.	Britney Schultz, Sarah Greely, Luz Badillo	79–95°F; 10-60% cloud cover; 0–1 mph wind
06/17/2024	8:38 a.m.–3:21 p.m.	Britney Schultz, Callie Amoaku	81°F–98°F; 0% cloud cover; 0–9 mph wind

Notes: F = Fahrenheit; mph = miles per hour. Only data collection occurred during the June 17, 2024, survey; no additional mapping of aquatic resources occurred during this survey.

4.1 U.S. Army Corps of Engineers

The USACE wetlands delineation was conducted in accordance with the 1987 USACE Wetlands Delineation Manual (USACE 1987) and the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 2008a). A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual (USACE 2008b) was used to determine the limits of non-wetland waters. Non-wetland waters were delineated on topographical maps in conjunction with ESRI Collector on a mobile device. The widths of each non-wetland water were determined in the field according to the OHWM manual.

Due to the absence of hydrophytic vegetation, Wetland Determination Forms were not taken. USACE OHWM Forms were completed at representative cross-sections of non-wetland waters to capture their characteristics and widths. In addition, each of the potential non-wetland waters within the review area was evaluated to determine that all features are ephemeral using the Beta Streamflow Duration Assessment Method for the Arid West (SDAM) (Mazor et al. 2023) and the Mapping Episodic Stream Activity (MESA) guidelines (Brady 2013). All data forms can be found in Appendix C. Representative photos are included in Appendix D.

[8] Minimum Standards Item 8 (Dates of Field Work), Item 5 (Use of 1987 Manual, Regional Supplement, and OHWM guide), Item 12 (Statement Regarding Use of Remote Sensing), Item 18 (Data Forms) and Item 19 (Methods)

4.2 Regional Water Quality Control Board

Waters of the state regulated by the RWQCB were mapped in accordance with the State Wetland Definition and Procedures for Discharges of Dredged or Fill Material to Waters of the State (SWRCB 2021). As described in these procedures, wetland waters of the state are mapped based on the procedures in USACE's 1987 Corps of Engineers Wetlands Delineation Manual (USACE 1987) and its 2008 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (USACE 2008a). Non-wetland waters are mapped at the OHWM based on the procedures defined in USACE's A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual (USACE 2008b).

4.3 California Department of Fish and Wildlife

CDFW jurisdictional areas were mapped to include the bank of the stream/channel and outer dripline of adjacent riparian vegetation, as set forth under California Fish and Game Code Section 1602. Streambeds under the jurisdiction of CDFW were delineated using the Cowardin method of waters classification, which defines waters boundaries by a single parameter (i.e., hydric soils, hydrophytic vegetation, or hydrology) (Cowardin et al. 1979). Each of the potential non-wetland waters within the review area was evaluated using the MESA guidelines (Brady 2013) and the data forms can be found in Appendix C. CDFW also regulates riparian vegetation communities that occur beyond the limits of regulated streambeds.

5 Aquatic Resource Narrative[9]

5.1 Waters of the United States (USACE)

The Supreme Court recently clarified what waters are considered "Waters of the United States" (WOTUS) under the Clean Water Act. In *Sackett v. EPA*, the Supreme Court held that WOTUS refers only to "those relatively permanent, standing or continuously flowing bodies of water forming geographic[al] features that are described in ordinary parlance as streams, oceans, rivers, and lakes."[10] In determining wetlands subject to Clean Water Act jurisdiction, the majority opinion presents a two-step process under which federal jurisdiction may be asserted over a wetland. The agency must establish "first, that the adjacent [body of water constitutes] … 'water[s] of the United States' (i.e., a relatively permanent body of water connected to traditional interstate navigable waters); and second, that the wetland has a continuous surface connection with that water, making it difficult to determine where the 'water' ends and the 'wetland' begins."[11] While the USACE is in the process of updating its regulations and its definition of WOTUS to be consistent with this decision, the Supreme Court's guidance is used here to determine federal jurisdictional waters.

There are no non-wetland waters (NWW), culverts, or wetlands potentially regulated by USACE present in the review area (Figure 4, Potential Jurisdictional Aquatic Resources – USACE).[12] A copy of the ORM Bulk Upload Aquatic Resources or Consolidated Excel spreadsheet is not submitted with this report because Table 4 in this chapter provides all the information requested.[13]

The non-wetland waters in the review area are presumed to be non-jurisdictional by USACE because they are ephemeral and not relatively permanent, standing, or continuously flowing bodies of water. Further, they are isolated features with no downstream connection to traditional interstate navigable waters. Each of these features dissipates into the landscape at or before they reach Mesquite Lake to the northeast, a dry lake playa which is not considered a traditional navigable water. Mesquite Lake is an enclosed basin with no outlet, and has previously been determined by USACE to be an isolated (non-federal) water (SPL201200589; see Appendix E, Approved Jurisdictional Determination Form).

NWW 1 through NWW-1d are similar; all are natural, ephemeral drainages, between approximately 9 to 58 feet wide at their OHWM.

Non-Wetland Water 1

NWW-1 is a feature recorded on Transect OHWM 6 (OHWM-T-6) during the April 28, 2023, site visit and is in the northwest corner of the review area. Transects SDAM-T-02 and MESA-T-02 were also taken within this feature. NWW-1 ranges from approximately 4 feet to approximately 50 feet wide. The drainage is an ephemeral desert feature with no wetland vegetation cover. A cross-section of NWW-1 shows the following OHWM indicators: change in average sediment texture, change in vegetation cover, and break in bank slope. NWW-1a through NWW-1c are tributaries of NWW-1 that flow north to northwest within the review area before joining NWW-1. NWW-1 enters in

9 Minimum Standards Item 6 (Aquatic Resource Narrative)
10 *Sackett v. Env't Prot. Agency*, No. 21-454, 2023 WL 3632751, at *2 (U.S. May 25, 2023)
11 *Id*. at *3 (quoting *Rapanos, v. United States*, 547 U.S. 715, 755 (2006)).
12 Minimum Standards Items 7 and 16 (Delineation Maps)
13 Minimum Standards Item 15 (ORM Bulk Upload Aquatic Resources or Consolidated Excel spreadsheet)

the northwest corner of the review area and flows northeast where it dissipates south of Mesquite Lake. This ephemeral feature does not drain to a WOTUS, and is presumed to be non-jurisdictional by USACE.

Non-Wetland Water 1a

NWW-1a is a feature recorded on OHWM Transect 3 (OHWM-T-3) during the April 28, 2023, site visit and is in the western half of the review area. Transects SDAM-T-03 and MESA-T-03 were also taken within this feature. NWW-1a is 19 feet wide at its OHWM. The drainage is an ephemeral drainage feature with a small amount of upland species shrub cover. NWW-1a flows northwest and joins NWW-1, a larger feature. A cross-section of NWW-1a shows the following OHWM indicators: change in average sediment texture, change in vegetation cover, break in bank slope, sediment sorting, scour, and inconsistent bed and bank definition. This feature flows north to join with NWW-1, which flows northeast to where it dissipates south of Mesquite Lake. This ephemeral feature does not drain to a WOTUS, and is presumed to be non-jurisdictional by USACE.

Non-Wetland Water 1b

NWW-1b is a feature recorded on OHWM Transect 1 (OHWM-T-1) during the April 28, 2023, site visit within the northeast portion of the review area, and recorded on OHWM Transect 10 (OHWM-T-10) during the August 9, 2023, site visit within the southern portion of the review along the gen-tie/road alignment. Transects SDAM-T-04 and MESA-T-05 were also taken within this feature. NWW-1b is 9 to 10 feet wide at its OHWM. The drainage is an ephemeral feature with no wetland vegetation cover. A cross-section of NWW-1b shows the following OHWM indicators: change in average sediment texture, change in vegetation cover, and break in bank slope. NWW-1b flows north to join with NWW-1, which flows northeast to where it dissipates south of Mesquite Lake. This ephemeral feature does not drain to a WOTUS, and is presumed to be non-jurisdictional by USACE.

Non-Wetland Water 1c

NWW-1c is a feature recorded on OHWM Transect 2 (OHWM-T-2) during the April 28, 2023, site visit and is within the far northeast portion of the review area. NWW-1c is 59 feet wide at its OHWM. The drainage is an ephemeral feature with a small amount of upland species shrub and herbaceous cover. A cross-section of NWW-1b shows the following OHWM indicators: change in average sediment texture, change in vegetation cover, break in bank slope, sediment sorting, and scour. NWW-1b flows north to join with NWW-1, which flows northeast to where it dissipates south of Mesquite Lake. This ephemeral feature does not drain to a WOTUS, and is presumed to be non-jurisdictional by USACE.

Non-Wetland Water 1d

NWW-1d is a feature recorded on OHWM Transect 9 (OHWM-T-9) during the August 9, 2023, site visit and is within the western portion of the review area. Transects SDAM-T-01 and MESA-T-01 were also taken within this feature. NWW-1d is 32 feet wide at its OHWM. The drainage is an ephemeral feature with a small amount of upland species shrub and herbaceous cover. A cross-section of NWW-1d shows the following OHWM indicators: change in average sediment texture, change in vegetation cover, break in bank slope, deposition, and wracking. NWW-1d flows north to join with NWW-1, which flows northeast to where it dissipates south of Mesquite Lake. This ephemeral feature does not drain to a WOTUS, and is presumed to be non-jurisdictional by USACE.

Table 4. Potential USACE Aquatic Resource Summary for the Review Area[14]

Feature Name	Cowardin[1]	OHWM Indicators	Stream Order[2]	Location (Latitude/ Longitude; Decimal Degrees)	Acres/ Linear Feet[3]
Non-Wetland Waters					
NWW-1	R6	CAST, CVC, BBS	1st	34.164207, -116.119126	3.24/6,820
NWW-1a	R6	CAST, CVC, BBS, SS, S, BB	1st	34.160442, -116.117752	1.18/3,181
NWW-1b	R6	CAST, CVC BBS, SS, S	1st	34.162596, -116.113601	0.72/2,141
NWW-1c	R6	CAST, CVC, BBS, SS, S	1st	34.161645, -116.111256	1.52/2,047
NWW-1d	R6	CAST, CVC, BBS, D, W	1st	34.159391, -116.121441	0.74/2,614
				Grand Total	**7.39/16,804**

Notes: OHWM = ordinary high-water mark; NWW = non-wetland water; R6 = Riverine, ephemeral; CAST = change in average sediment texture; BBS = break in bank slope; CVC = change in vegetation cover; BB = bed and bank; D = deposition; SS = sediment sorting; S = scour; W = wracking

1 Pursuant to Classification of Wetlands and Deepwater Habitats of the United States (Cowardin et al. 1979) and USACE Cowardin Codes for ORM Data Entry (USACE 2022).

2 Stream order for each feature is based on Strahler 1957.

3 Totals may not sum due to rounding.

5.2 Waters of the State (RWQCB)

The jurisdiction of the RWQCB under Section 401 of the Clean Water Act is based upon a nexus with a federal permitting or action.[15] As discussed above, none of the waters identified within the project area qualify as WOTUS and the project will therefore likely not require a permit from USACE or any other federal agency. However, the RWQCB retains jurisdiction over the project if any of the waters would be considered Waters of the State under the Porter-Cologne Water Quality Control Act. "Waters of the State" are defined broadly to include "any surface water or groundwater . . . within the boundaries of the state."[16]

There are five features subject to regulation by the RWQCB under the Porter-Cologne Water Quality Control Act (Figure 5, Potential Jurisdictional Aquatic Resources – RWQCB/CDFW). Table 5 lists all features within the review area that are subject to RWQCB regulation.

Table 5. RWQCB Aquatic Resource Summary for the Review Area

Feature Name	Location (Latitude/Longitude; Decimal Degrees)	Acreage/Linear Feet[1]
Non-Wetland Waters		
NWW-1	34.164207, -116.119126	3.24/6,820
NWW-1a	34.160442 -116.117752	1.18/3,181
NWW-1b	34.162596, -116.113601	0.72/2,141
NWW-1c	34.161645, -116.111256	1.52/2,047

14 Minimum Standards Item 9 (Table Listing All Aquatic Resources)

15 33 U.S.C. § 1341.

16 Cal. Water Code § 13050(e).

Table 5. RWQCB Aquatic Resource Summary for the Review Area

Feature Name	Location (Latitude/Longitude; Decimal Degrees)	Acreage/Linear Feet[1]
Non-Wetland Waters		
NWW-1d	34.159391, -116.121441	0.74/2,614
	Grand Total	**7.39/16,804**

Notes: RWQCB = Regional Water Quality Control Board; NWW = non-wetland water.
[1] Totals may not sum due to rounding.

5.3 CDFW Jurisdiction

The features described above in the USACE and RWQCB resource sections were also evaluated as potential CDFW aquatic resources. There are five features subject to regulation by CDFW (Figure 5). Areas of streambeds that overlap the desert-willow – smoketree wash woodland vegetation community were classified as CDFW riparian habitat. Table 6 lists all features within the review area that are subject to CDFW regulation.

Table 6. CDFW Aquatic Resource Summary for the Review Area

Feature Name	Location (Latitude/Longitude; Decimal Degrees)	Acreage [1]
Streambed		
NWW-1	34.164207, -116.119126	0.91
NWW-1a	34.160442 -116.117752	1.18
NWW-1b	34.162596, -116.113601	0.72
NWW-1c	34.161645, -116.111256	0.80
NWW-1d	34.159391, -116.121441	0.74
	Streambed Subtotal	*4.35*
Riparian Habitat (Desert-Willow – Smoketree Wash Woodland)		
NWW-1	34.164207, -116.119126	2.33
NWW-1c	34.163471, -116.111509	0.71
	Riparian Habitat Subtotal	*3.04*
	Grand Total	**7.39**

Notes: CDFW = California Department of Fish and Wildlife; NWW = non-wetland water.
[1] Totals may not sum due to rounding.

5.4 National Wetlands Inventory

The review area has four mapped resources from the U.S. Fish and Wildlife Service's National Wetlands Inventory (USFWS 2023; see Figure 3). Riverine (R4SBJ per Cowardin classification) habitat is mapped overlapping NWW-1, NWW-1a, NWW-1b, NWW-1c, and NWW-1d. These connecting features continue generally northeast of the review area, but terminate before entering a waterbody.

6 Results and Conclusions

Based on the jurisdictional delineation and review of relevant information provided in this Aquatic Resources Delineation Report, no features within the review area are regulated by USACE given (1) that they are ephemeral and temporary in nature and are not permanent, standing, or continuously flowing bodies of water, and (2) their lack of downstream connection to a traditional navigable waters. These features are still likely regulated by the RWQCB and CDFW pursuant to state regulations. In total, 7.39 acres of non-wetland waters under RWQCB jurisdiction, and 4.35 acres of CDFW streambed and 3.04 acres of CDFW riparian occur in the review area. As stated in Section 1.1 above, only the regulatory agencies can make a final determination on whether the features present are subject to USACE, RWQCB, and/or CDFW regulation.

As previously stated, within the review area there are a number of swale features evident on aerial photography, which are actually sandy off-highway vehicle tracks that lack evidence of sediment deposition, continuous fluvial features such as channel banks, floodplain or bar surfaces, and/or bankfull. Therefore, due to the presence of the older alluvium geologic mapping and lack of fluvial indicators, these relic swale features were not mapped as a jurisdictional aquatic resource.

As stated in Section 2 above, a portion of Samarkand Drive road dedication is located outside of the review area as depicted on Figures 1-5. A jurisdictional aquatic resources delineation was not conducted for this area. Should this future road dedication be constructed by the City of Twenty-Nine Palms, a formal jurisdictional aquatic resources delineation shall be conducted, and an updated Aquatic Resources Delineation Report shall be prepared in accordance with the Minimum Standards for Acceptance of Aquatic Resources Delineation Reports (USACE 2017).

This report can be used by those agencies to determine if they would regulate the features described herein. The GIS data for the delineation is provided digitally.[17]

[17] Minimum Standards Item 20 (Digital Data)

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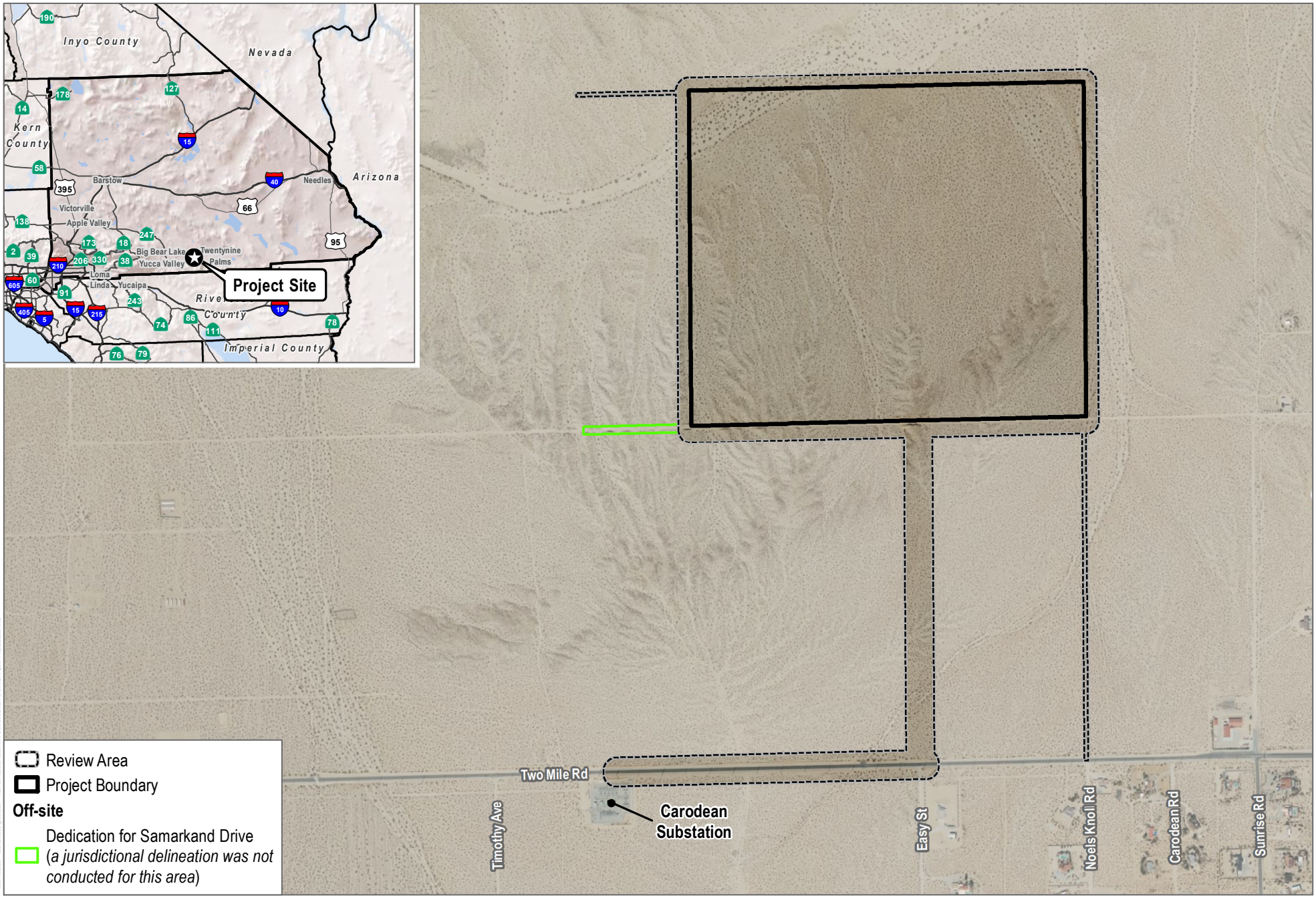
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SOURCE: NEXT Engineering Group, 2024; County of San Bernardino; Open Street Map; Bing Maps

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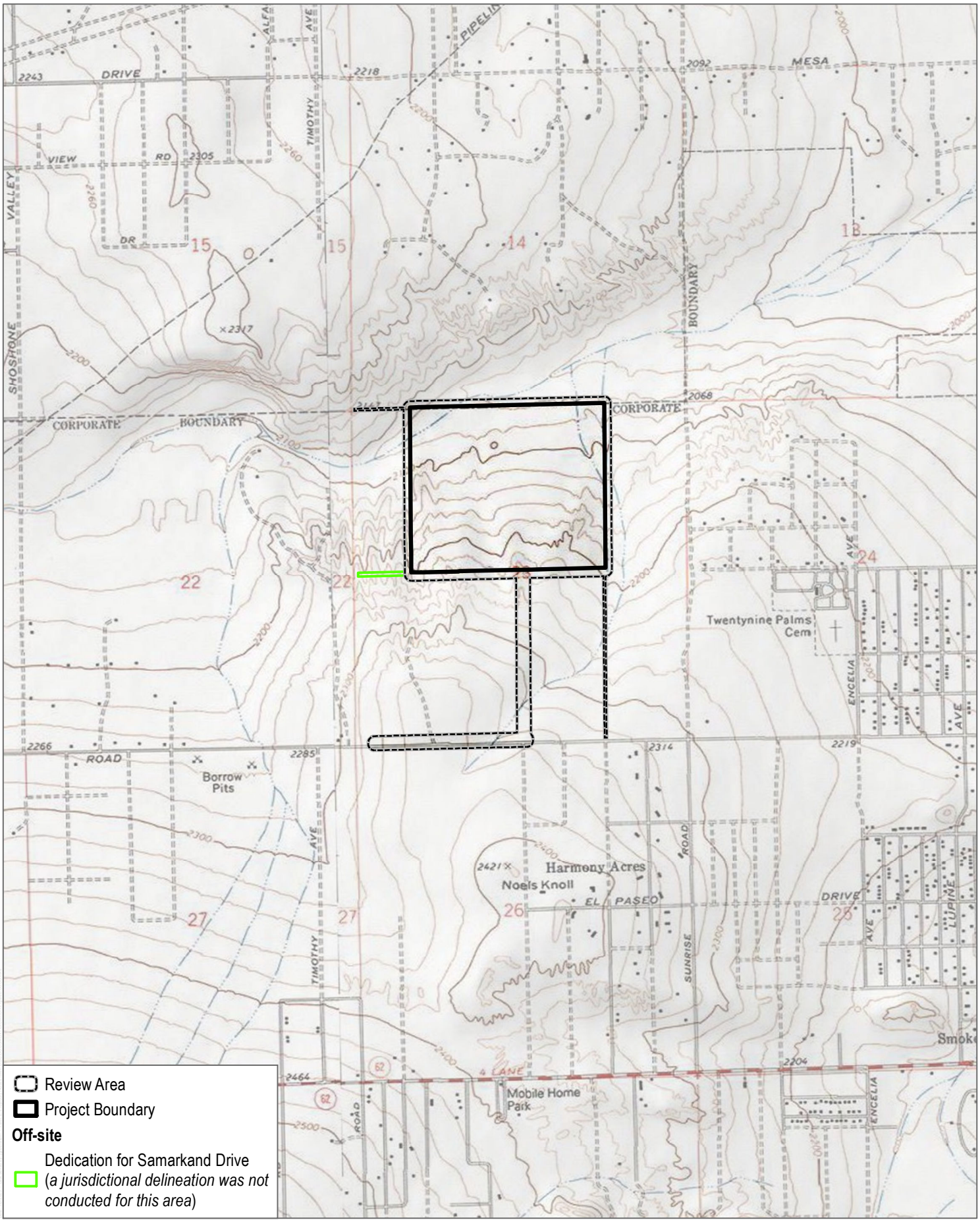
0 500 1,000 Feet

FIGURE 1

Project Location

Aquatic Resources Delineation Report for the E-Group PS Solar Project

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SOURCE: USGS 7.5-Minute Series Twentynine Palms Quadrangle

DUDEK

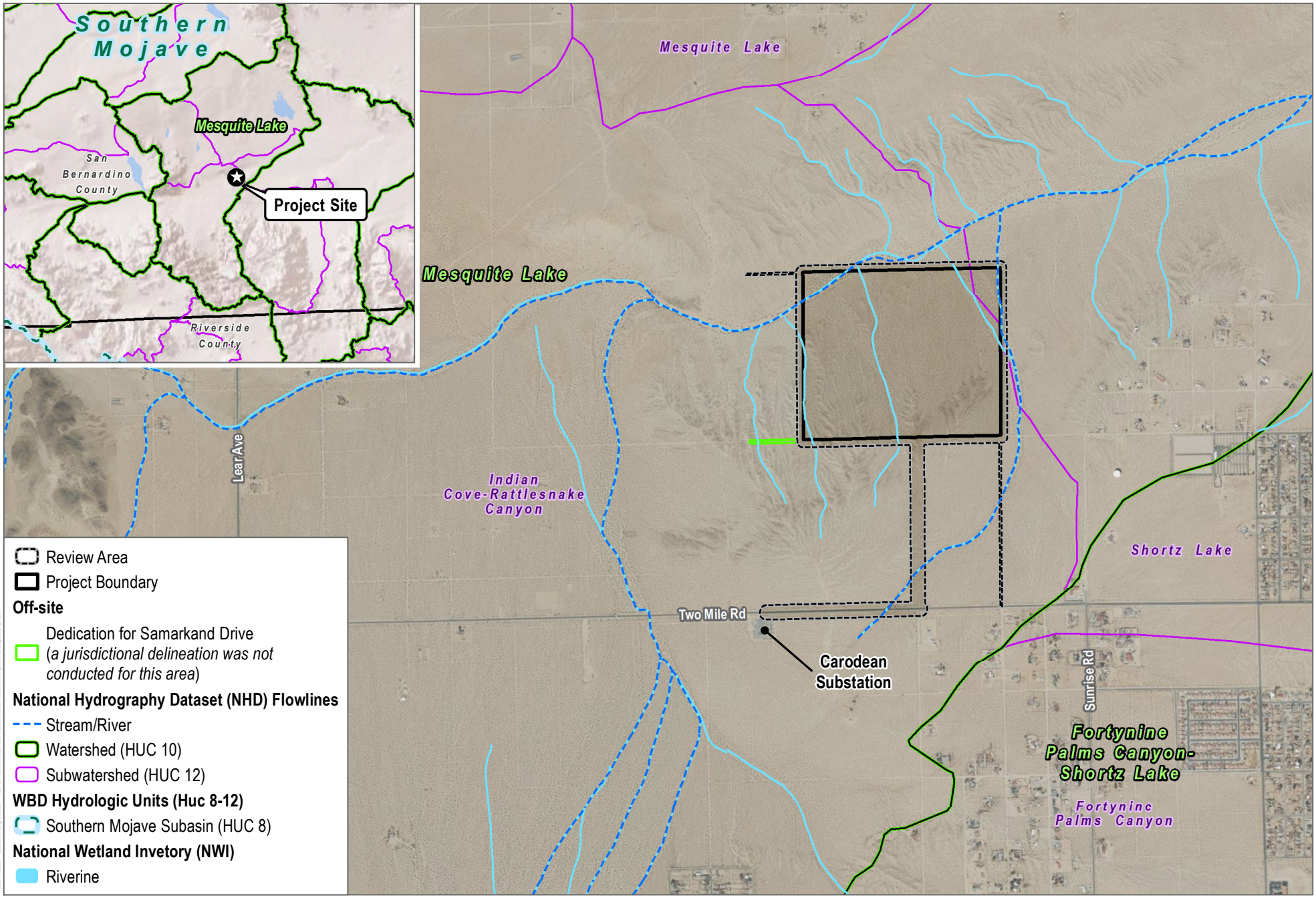
0 1,000 2,000 Feet

FIGURE 2

USGS Topographic

Aquatic Resources Delineation Report for the E-Group PS Solar Project

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SOURCE: USFWS NWI; USGS NHD; County of San Bernardino; Open Street Map; Bing Maps

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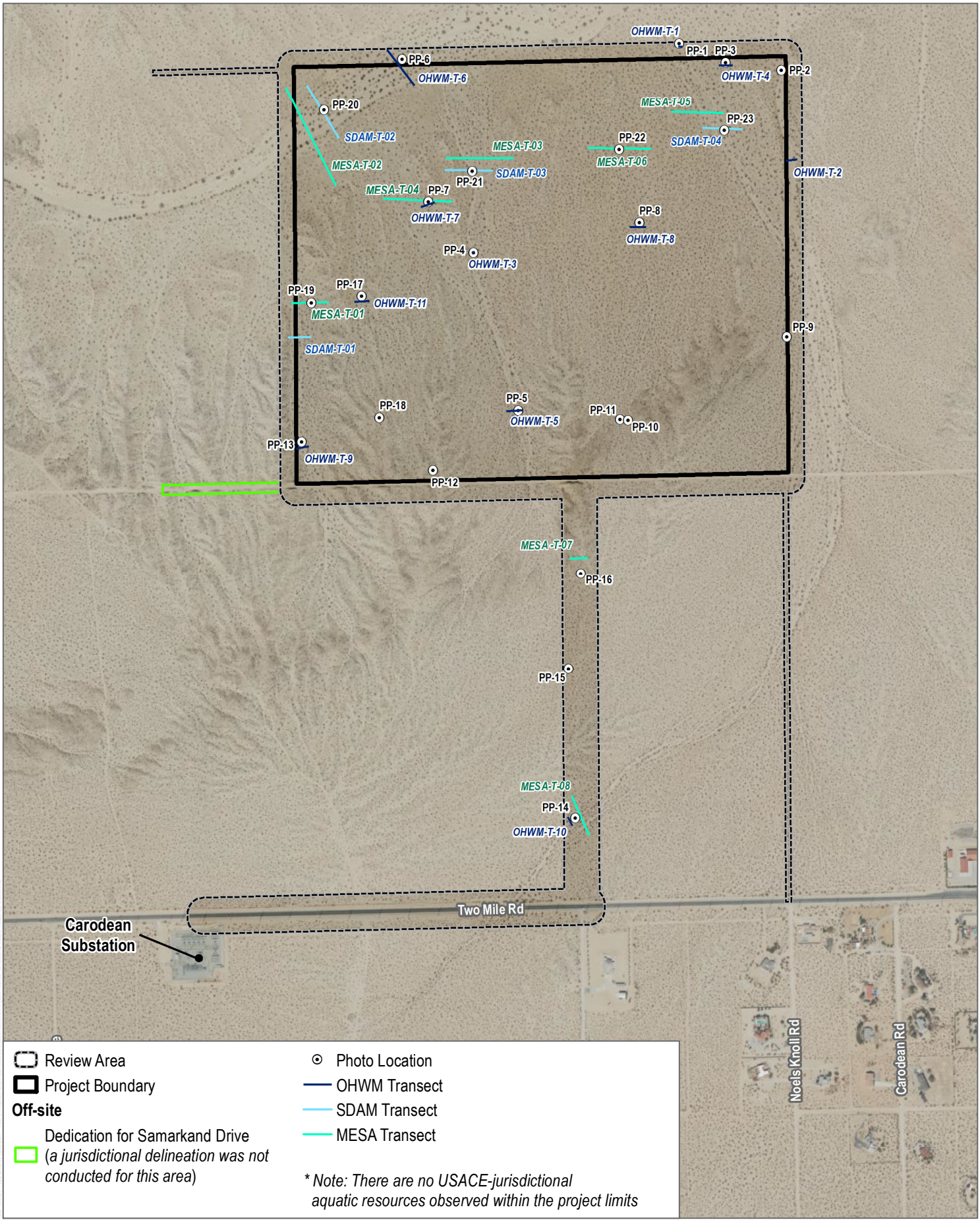
0 1,000 2,000 Feet

FIGURE 3

Hydrologic Setting

Aquatic Resources Delineation Report for the E-Group PS Solar Project

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SOURCE: County of San Bernardino; Open Street Map; Bing Maps

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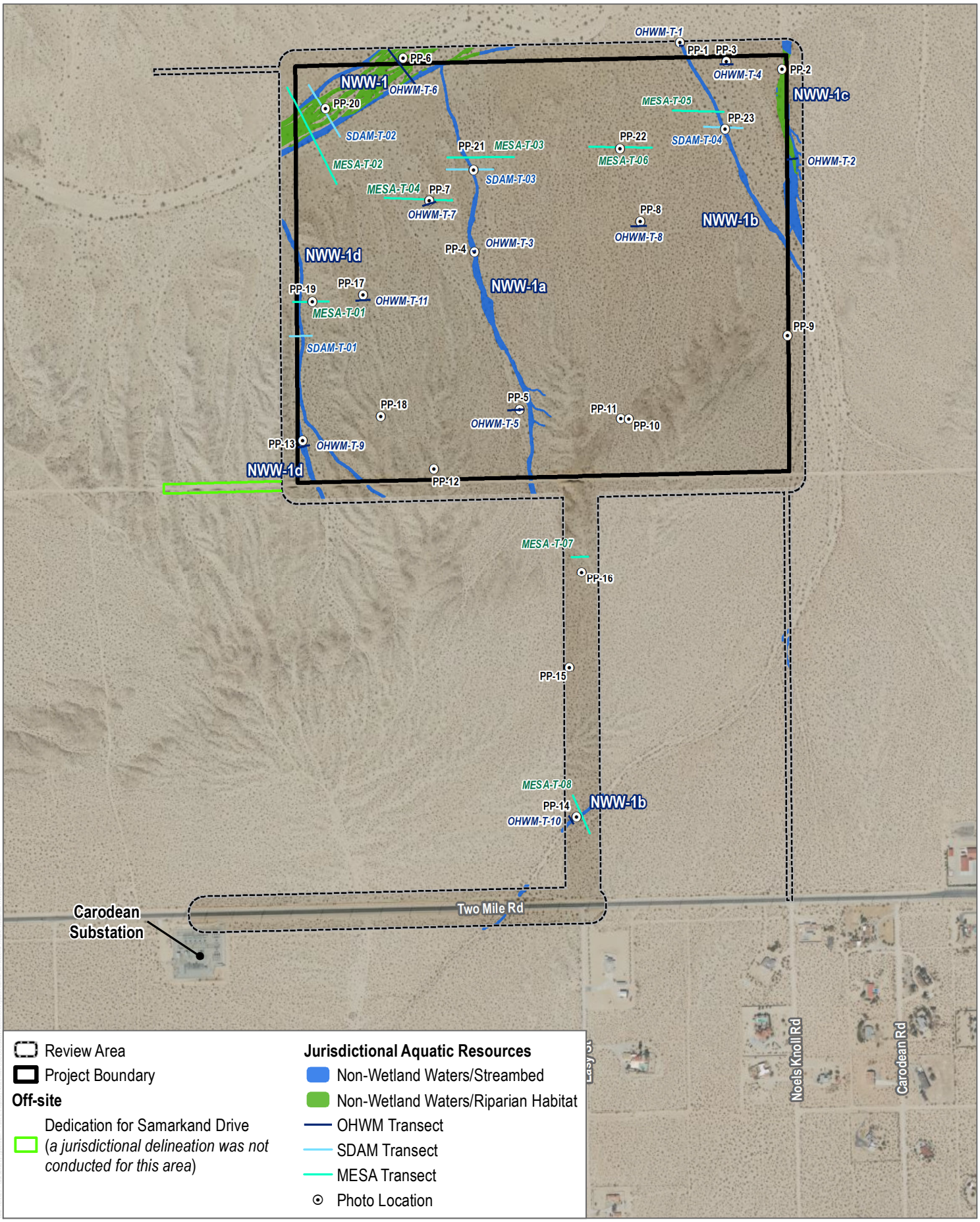
0 500 1,000 Feet

FIGURE 4

Potential Jurisdictional Aquatic Resources - USACE

Aquatic Resources Delineation Report for the E-Group PS Solar Project

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SOURCE: County of San Bernardino; Open Street Map; Bing Maps

DUDEK

0 500 1,000 Feet

FIGURE 5

Potential Jurisdictional Aquatic Resources - RWQCB/CDFW

Aquatic Resources Delineation Report for the E-Group PS Solar Project

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Appendix A

Request for Jurisdictional Determination

Appendix 1 - REQUEST FOR CORPS JURISDICTIONAL DETERMINATION (JD)

To: District Name Here

- I am requesting a JD on property located at: West of Sunrise Road, north of 2 Mile Road, south of Hilltop Drive, and east of Timothy Avenue
  (Street Address)
  City/Township/Parish: Twentynine Palms County: San Bernardino State: CA
  Acreage of Parcel/Review Area for JD: 161.4
  Section: 14, 23 Township: 1N Range: 8E
  Latitude (decimal degrees): 34.160556 Longitude (decimal degrees): -116.115278
  (For linear projects, please include the center point of the proposed alignment.)
- Please attach a survey/plat map and vicinity map identifying location and review area for the JD.
- ☐ I currently own this property. ☐ I plan to purchase this property.
  ☑ I am an agent/consultant acting on behalf of the requestor.
  ☐ Other (please explain): _____.
- Reason for request: (check as many as applicable)
  ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all aquatic resources.
  ☐ I intend to construct/develop a project or perform activities on this parcel which would be designed to avoid all jurisdictional aquatic resources under Corps authority.
  ☑ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps, and the JD would be used to avoid and minimize impacts to jurisdictional aquatic resources and as an initial step in a future permitting process.
  ☐ I intend to construct/develop a project or perform activities on this parcel which may require authorization from the Corps; this request is accompanied by my permit application and the JD is to be used in the permitting process.
  ☐ I intend to construct/develop a project or perform activities in a navigable water of the U.S. which is included on the district Section 10 list and/or is subject to the ebb and flow of the tide.
  ☐ A Corps JD is required in order to obtain my local/state authorization.
  ☐ I intend to contest jurisdiction over a particular aquatic resource and request the Corps confirm that jurisdiction does/does not exist over the aquatic resource on the parcel.
  ☐ I believe that the site may be comprised entirely of dry land.
  ☐ Other: _____
- Type of determination being requested:
  ☐ I am requesting an approved JD.
  ☑ I am requesting a preliminary JD.
  ☐ I am requesting a "no permit required" letter as I believe my proposed activity is not regulated.
  ☐ I am unclear as to which JD I would like to request and require additional information to inform my decision.

By signing below, you are indicating that you have the authority, or are acting as the duly authorized agent of a person or entity with such authority, to and do hereby grant Corps personnel right of entry to legally access the site if needed to perform the JD. Your signature shall be an affirmation that you possess the requisite property rights to request a JD on the subject property.

*Signature: _____ Date: _____

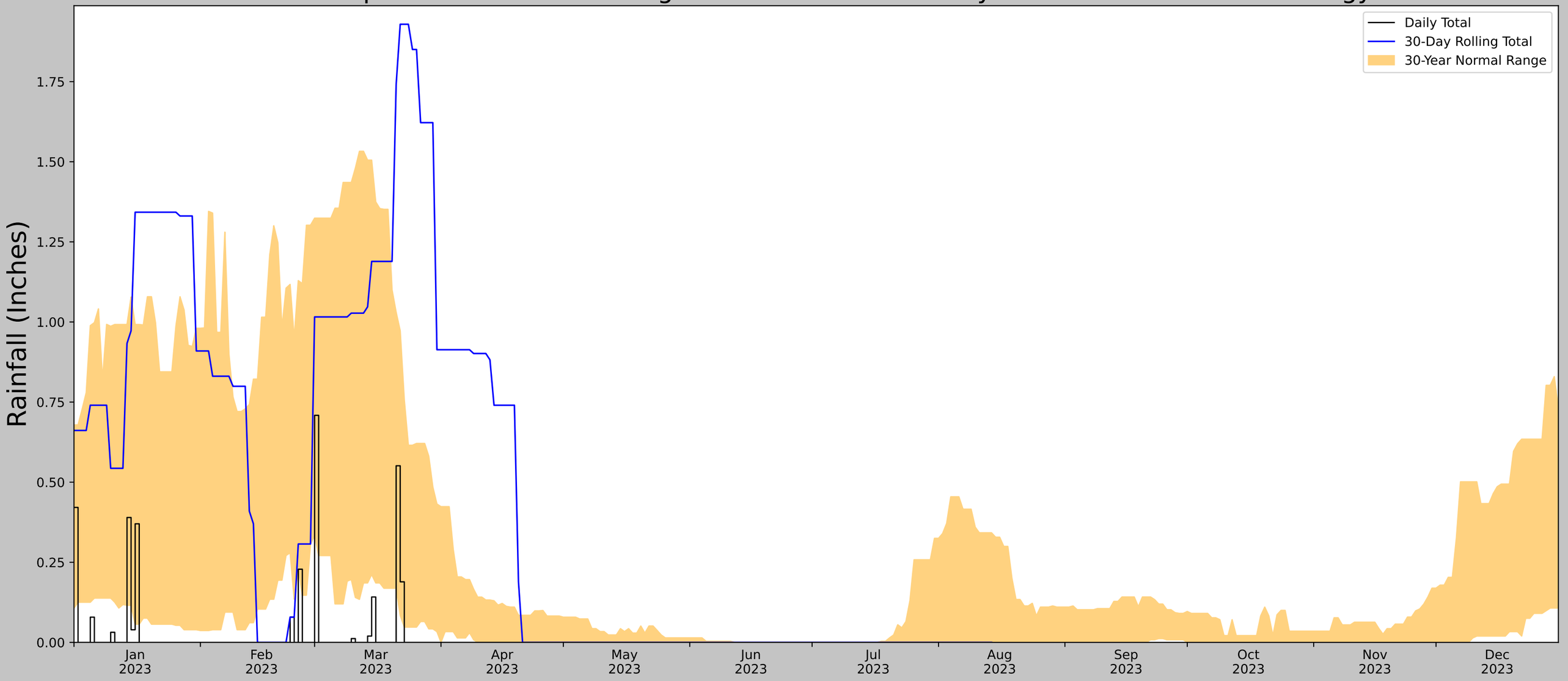
- Typed or printed name: Britney Schultz
  Company name: Dudek
  Address: 78-075 Main Street, Suite G
  La Quinta, CA 92253
  Daytime phone no.: 760-601-3416
  Email address: bschultz@dudek.com

***Authorities:** Rivers and Harbors Act, Section 10, 33 USC 403; Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research, and Sanctuaries Act, Section 103, 33 USC 1413; Regulatory Program of the U.S. Army Corps of Engineers; Final Rule for 33 CFR Parts 320-332.
Principal Purpose: The information that you provide will be used in evaluating your request to determine whether there are any aquatic resources within the project area subject to federal jurisdiction under the regulatory authorities referenced above.
Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies, and the public, and may be made available as part of a public notice as required by federal law. Your name and property location where federal jurisdiction is to be determined will be included in the approved jurisdictional determination (AJD), which will be made available to the public on the District's website and on the Headquarters USACE website.
Disclosure: Submission of requested information is voluntary; however, if information is not provided, the request for an AJD cannot be evaluated nor can an AJD be issued.

Appendix B

Antecedent Precipitation Tool Output

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	34.160260, -116.116617
Observation Date	2023-08-09
Elevation (ft)	2154.489
Drought Index (PDSI)	Moderate wetness (2023-07)
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2023-08-09	0.0	0.415748	0.0	Normal	2	3	6
2023-07-10	0.0	0.0	0.0	Normal	2	2	4
2023-06-10	0.0	0.003543	0.0	Normal	2	1	2
Result							Normal Conditions - 12

Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
PALM SPRINGS ASOS	33.8222, -116.5044	409.121	32.235	1745.368	70.767	8939	90
PALM SPRINGS	33.8275, -116.5097	424.869	0.476	15.748	0.222	2375	0
THOUSAND PALMS 0.7 W	33.8212, -116.3978	253.937	6.119	155.184	3.703	1	0
INDIO FIRE STN	33.7086, -116.2153	-20.997	18.367	430.118	16.165	30	0
DEEP CANYON LAB	33.6514, -116.3764	1200.131	13.905	791.01	17.256	8	0

Appendix C
Data Forms

OHWM DATA SHEET

Project: 29 Palms Solar Date: 4-28-23 Feature ID: NWW-1b

Investigator(s): K. Dayton and Z. Pringle Transect ID: T-1

Site Location:
North of Two Mile Rd. and west of Hillcrest Dr. in Twentynine Palms.

Feature Type: ☒ Ephemeral ☐ Intermittent ☐ Perennial ☐ Other

Transect (cross-section) drawing(s): View Facing: S



☑ Transect length
☑ OHWM width
☑ Channel depth
☐ Photo

OHWM Indicators (at OHWM; primary indicators indicated with *)

- ☐ Natural line impressed on the bank
- ☐ Shelving
- ☑ Changes in the character of soil (texture)*
- ☐ Destruction of terrestrial vegetation
- ☐ Presence of litter and debris
- ☐ Wracking
- ☑ Vegetation matted down, bent, or absent
- ☑ Sediment sorting
- ☐ Leaf litter disturbed or washed away
- ☑ Scour
- ☐ Deposition
- ☐ Bed and banks
- ☐ Water staining
- ☑ Change in plant community and/or cover*

☑ Break in Slope at OHWM*: ☐ Sharp (>60°) ☐ Moderate (30-60°) ☑ Gentle (<30°)

Soil Texture

	Clay/Silt	Sand	Gravel	Cobbles	Boulders
Above OHWM		95%	5%		
Below OHWM		100%			

Total Vegetation Cover

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	—	25	2	73
Below OHWM	—	—	—	100

Veg Stage: ☐ Early (herbs & seedlings) ☑ Mid (herbs, shrubs, saplings) ☐ Late (herbs, shrubs, mature trees)

Upland Species:	*Bank Species:*	*Emergent Species:*
Larrea tridentata Senna armata Ambrosia dumosa Cylindropuntia echinocarpa	same as upland	None

OHWM DATA SHEET

Condition/Disturbances/Anthropogenic Influences (e.g., erosion, grazing, culverts, etc.):

Disturbed by ohw activity.

Hydrology

☐ Flowing water	Avg. depth:	Min. depth:
☐ Standing water	Temp:	Max. depth:
☐ Saturated		
☑ Dry		

Checklist of resources (if available):

☑ Aerial photography	☐ Vegetation maps	☑ GPS unit
☐ Remotely-sensed images	☑ Soil maps	☐ Stream gage data
☑ Topographic maps	☑ Rainfall/precipitation data	☐ Other studies:
☑ Geologic maps	☐ Existing delineation(s) for site	

Other drawings (aerial view), notes:

Other forms related to this feature: ☐ Yes ☑ No

☐ Terrace, fringe, or floodplain wetland (wetland datasheet)

☐ Low flow channel or other representative section (OHWM datasheet)

OHWM DATA SHEET

Project: 29 Palms Solar **Date:** 4-28-23 **Feature ID:** NWW-1c

Investigator(s): K. Dayton + Z. Pringle **Transect ID:** T-2

Site Location:
North of Two Mile Rd. and west of Hillcrest Dr. in Twentynine Palms.

Feature Type: ☑ Ephemeral ☐ Intermittent ☐ Perennial ☐ Other

Transect (cross-section) drawing(s): View Facing: N



☑ Transect length
☑ OHWM width
☑ Channel depth
☑ Photo

OHWM Indicators (at OHWM; primary indicators indicated with *)

- ☐ Natural line impressed on the bank
- ☐ Shelving
- ☑ Changes in the character of soil (texture)*
- ☐ Destruction of terrestrial vegetation
- ☐ Presence of litter and debris
- ☑ Wracking
- ☑ Vegetation matted down, bent, or absent
- ☑ Sediment sorting
- ☐ Leaf litter disturbed or washed away
- ☑ Scour
- ☐ Deposition
- ☑ Bed and banks
- ☐ Water staining
- ☑ Change in plant community and/or cover*

☑ Break in Slope at OHWM*: ☑ Sharp (>60°) ☑ Moderate (30-60°) ☐ Gentle (<30°)

Soil Texture

	Clay/Silt	Sand	Gravel	Cobbles	Boulders
Above OHWM		95%	5%		
Below OHWM		100%			

Total Vegetation Cover

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	—	25%	2%	73%
Below OHWM	5%	2%	<1%	92%

Veg Stage: ☐ Early (herbs & seedlings) ☐ Mid (herbs, shrubs, saplings) ☐ Late (herbs, shrubs, mature trees)

Upland Species:	*Bank Species:*	*Emergent Species:*
Larrea tridentata Senna armata Ambrosia dumosa Cylindropuntia echinocarpa	same as upland	Psorothamnos spinosus Ambrosia salsola Senna armata Asclepias sp.

OHWM DATA SHEET

Condition/Disturbances/Anthropogenic Influences (e.g., erosion, grazing, culverts, etc.):

Disturbed by OHV use

Hydrology

☐ Flowing water	Avg. depth:	Min. depth:
☐ Standing water	Temp:	Max. depth:
☐ Saturated		
☑ Dry		

Checklist of resources (if available):

☑ Aerial photography	☐ Vegetation maps	☑ GPS unit
☐ Remotely-sensed images	☑ Soil maps	☐ Stream gage data
☑ Topographic maps	☑ Rainfall/precipitation data	☐ Other studies:
☑ Geologic maps	☐ Existing delineation(s) for site	

Other drawings (aerial view), notes:

Other forms related to this feature: ☐ Yes ☑ No

☐ Terrace, fringe, or floodplain wetland (wetland datasheet)

☐ Low flow channel or other representative section (OHWM datasheet)

OHWM DATA SHEET

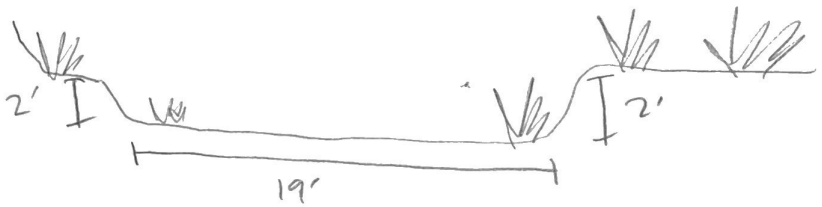
Project: 29 Palms Solar **Date:** 4-28-23 **Feature ID:** NWW-1a

Investigator(s): K. Dayton and Z. Pringle **Transect ID:** T-3

Site Location:
North of Two Mile Rd. and west of Hillcrest Dr. in Twentynine Palms.

Feature Type: ☐ Ephemeral ☐ Intermittent ☐ Perennial ☐ Other

Transect (cross-section) drawing(s): View Facing: N



☑ Transect length
☑ OHWM width
☑ Channel depth
☑ Photo

OHWM Indicators (at OHWM; primary indicators indicated with *)

- ☐ Natural line impressed on the bank
- ☐ Shelving
- ☑ Changes in the character of soil (texture)*
- ☐ Destruction of terrestrial vegetation
- ☐ Presence of litter and debris
- ☐ Wracking
- ☑ Vegetation matted down, bent, or absent
- ☑ Sediment sorting
- ☐ Leaf litter disturbed or washed away
- ☑ Scour
- ☐ Deposition
- ☑ Bed and banks (inconsistent)
- ☐ Water staining
- ☑ Change in plant community and/or cover*

☑ Break in Slope at OHWM*: ☐ Sharp (>60°) ☑ Moderate (30-60°) ☑ Gentle (<30°)

Soil Texture

	Clay/Silt	Sand	Gravel	Cobbles	Boulders
Above OHWM		95%	5%		
Below OHWM		100%			

Total Vegetation Cover

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	—	25	2	73
Below OHWM	—	2	—	98

Veg Stage: ☐ Early (herbs & seedlings) ☐ Mid (herbs, shrubs, saplings) ☐ Late (herbs, shrubs, mature trees)

Upland Species:	*Bank Species:*	*Emergent Species:*
Larrea tridentata Senna armata Ambrosia dumosa Cylindropuntia echinocarpa	Same as upland	Ambrosia salsola Petalonyx thurberi

OHWM DATA SHEET

Condition/Disturbances/Anthropogenic Influences (e.g., erosion, grazing, culverts, etc.):

Disturbed by ORV activity.

Hydrology

☐ Flowing water	Avg. depth:	Min. depth:
☐ Standing water	Temp:	Max. depth:
☐ Saturated		
☑ Dry		

Checklist of resources (if available):

☑ Aerial photography	☐ Vegetation maps	☑ GPS unit
☐ Remotely-sensed images	☑ Soil maps	☐ Stream gage data
☑ Topographic maps	☑ Rainfall/precipitation data	☐ Other studies:
☑ Geologic maps	☐ Existing delineation(s) for site	

Other drawings (aerial view), notes:

Other forms related to this feature: ☐ Yes ☑ No

☐ Terrace, fringe, or floodplain wetland (wetland datasheet)

☐ Low flow channel or other representative section (OHWM datasheet)

OHWM DATA SHEET

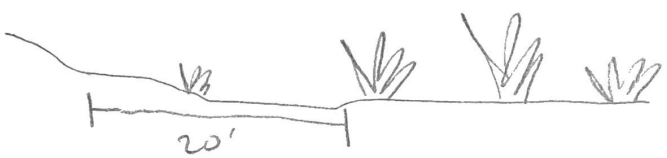
Project: 29 Palms Solar **Date:** 4-28-23 **Feature ID:** N/A -

Investigator(s): K. Dayton and Z. Pringle **Transect ID:** T-4

Site Location:
North of Two Mile Rd. and west of Hillcrest Dr. in Twentynine Palms.

Feature Type: ☐ Ephemeral ☐ Intermittent ☐ Perennial ☒ Other non-jurisidictional

Transect (cross-section) drawing(s): View Facing: E



☒ Transect length
☐ OHWM width N/A
☐ Channel depth N/A
☒ Photo

OHWM Indicators (at OHWM; primary indicators indicated with *) No substantial OHWM indicators.

- ☐ Natural line impressed on the bank
- ☐ Shelving
- ☐ Changes in the character of soil (texture)*
- ☐ Destruction of terrestrial vegetation
- ☐ Presence of litter and debris
- ☐ Wracking
- ☐ Vegetation matted down, bent, or absent
- ☐ Sediment sorting
- ☐ Leaf litter disturbed or washed away
- ☐ Scour
- ☐ Deposition
- ☐ Bed and banks
- ☐ Water staining
- ☐ Change in plant community and/or cover*

☐ Break in Slope at OHWM*: ☐ Sharp (>60°) ☐ Moderate (30-60°) ☐ Gentle (<30°)

Soil Texture

	Clay/Silt	Sand	Gravel	Cobbles	Boulders
Above OHWM		95%	5%		
Below OHWM		95%	5%		

Total Vegetation Cover

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	—	25%	2%	73%
Below OHWM	—	25%	2%	73%

Veg Stage: ☐ Early (herbs & seedlings) ☒ Mid (herbs, shrubs, saplings) ☐ Late (herbs, shrubs, mature trees)

Upland Species:	*Bank Species:*	*Emergent Species:*
Larrea tridentata Senna armata Ambros. d dumosa Cylindropuntia echinocarpa	N/A	N/A

OHWM DATA SHEET

Condition/Disturbances/Anthropogenic Influences (e.g., erosion, grazing, culverts, etc.):

Disturbed by OHV use.

Hydrology

☐ Flowing water	Avg. depth:	Min. depth:
☐ Standing water	Temp:	Max. depth:
☐ Saturated		
☒ Dry		

Checklist of resources (if available):

☒ Aerial photography	☐ Vegetation maps	☒ GPS unit
☐ Remotely-sensed images	☒ Soil maps	☐ Stream gage data
☒ Topographic maps	☒ Rainfall/precipitation data	☐ Other studies:
☒ Geologic maps	☐ Existing delineation(s) for site	

Other drawings (aerial view), notes:

Other forms related to this feature: ☐ Yes ☒ No

☐ Terrace, fringe, or floodplain wetland (wetland datasheet)

☐ Low flow channel or other representative section (OHWM datasheet)

OHWM DATA SHEET

Project: 29 Palms Solar **Date:** 4-28-23 **Feature ID:** N/A

Investigator(s): K. Dayton and Z. Pringle **Transect ID:** T-5

Site Location:
North of Two Mile Rd. and west of Hillcrest Dr. in Twentynine Palms.

Feature Type: ☐ Ephemeral ☐ Intermittent ☐ Perennial ☒ Other non-jurisdictional

Transect (cross-section) drawing(s): View Facing: E



☒ Transect length
☐ OHWM width N/A
☐ Channel depth N/A
☒ Photo

OHWM Indicators (at OHWM; primary indicators indicated with *) No substantial OHWM indicators.

- ☐ Natural line impressed on the bank
- ☐ Shelving
- ☐ Changes in the character of soil (texture)*
- ☐ Destruction of terrestrial vegetation
- ☐ Presence of litter and debris
- ☐ Wracking
- ☐ Vegetation matted down, bent, or absent
- ☐ Sediment sorting
- ☐ Leaf litter disturbed or washed away
- ☐ Scour
- ☐ Deposition
- ☐ Bed and banks
- ☐ Water staining
- ☐ Change in plant community and/or cover*

☐ Break in Slope at OHWM*: ☐ Sharp (>60°) ☐ Moderate (30-60°) ☐ Gentle (<30°)

Soil Texture

	Clay/Silt	Sand	Gravel	Cobbles	Boulders
Above OHWM		95%	5%		
Below OHWM		95%	5%		

Total Vegetation Cover

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	—	25%	2%	73%
Below OHWM	—	25%	2%	73%

Veg Stage: ☐ Early (herbs & seedlings) ☒ Mid (herbs, shrubs, saplings) ☐ Late (herbs, shrubs, mature trees)

Upland Species:	***Bank Species:***	***Emergent Species:***
Larrea tridentata Ambrosia dumosa	N/A	N/A

OHWM DATA SHEET

Condition/Disturbances/Anthropogenic Influences (e.g., erosion, grazing, culverts, etc.):

No anthropogenic disturbances noted at this particular location though OHV activity is prevalent elsewhere.

Hydrology

☐ Flowing water	Avg. depth:	Min. depth:
☐ Standing water	Temp:	Max. depth:
☐ Saturated		
☒ Dry		

Checklist of resources (if available):

☒ Aerial photography	☐ Vegetation maps	☒ GPS unit
☐ Remotely-sensed images	☒ Soil maps	☐ Stream gage data
☒ Topographic maps	☒ Rainfall/precipitation data	☐ Other studies:
☒ Geologic maps	☐ Existing delineation(s) for site	

Other drawings (aerial view), notes:

Other forms related to this feature: ☐ Yes ☒ No

☐ Terrace, fringe, or floodplain wetland (wetland datasheet)

☐ Low flow channel or other representative section (OHWM datasheet)

OHWM DATA SHEET

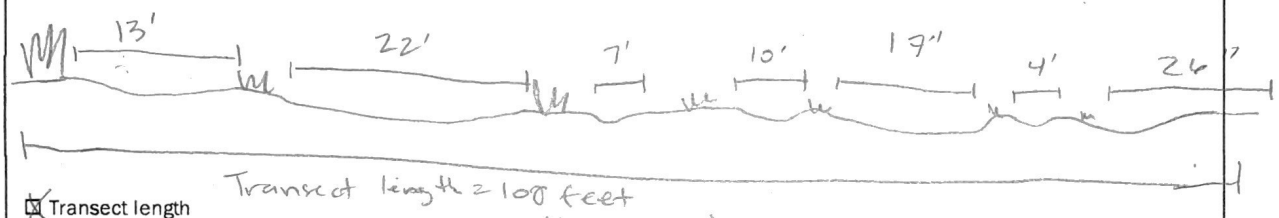
Project: 29 Palms Solar **Date:** 4-28-23 **Feature ID:** NWW-1

Investigator(s): K. Dayton and Z. Pringle **Transect ID:** T-6

Site Location:
North of Two Mile Rd. and west of Hillcrest Dr. in Twenty nine Palms

Feature Type: ☐ Ephemeral ☐ Intermittent ☐ Perennial ☐ Other

Transect (cross-section) drawing(s): View Facing: SW



☒ Transect length
☒ OHWM width multiple labeled on diagram above
☒ Channel depth 6-12"
☒ Photo

OHWM Indicators (at OHWM; primary indicators indicated with *)

- ☐ Natural line impressed on the bank
- ☐ Shelving
- ☒ Changes in the character of soil (texture)*
- ☐ Destruction of terrestrial vegetation
- ☐ Presence of litter and debris
- ☐ Wracking
- ☒ Vegetation matted down, bent, or absent
- ☐ Sediment sorting
- ☐ Leaf litter disturbed or washed away
- ☐ Scour
- ☐ Deposition
- ☐ Bed and banks
- ☐ Water staining
- ☐ Change in plant community and/or cover*

☒ Break in Slope at OHWM*: ☐ Sharp (>60°) ☐ Moderate (30-60°) ☒ Gentle (<30°)

Soil Texture

	Clay/Silt	Sand	Gravel	Cobbles	Boulders
Above OHWM		96%	4%		
Below OHWM		100%			

Total Vegetation Cover

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	—	30%	1%	69%
Below OHWM	—	—	—	100%

Veg Stage: ☐ Early (herbs & seedlings) ☒ Mid (herbs, shrubs, saplings) ☐ Late (herbs, shrubs, mature trees)

Upland Species:	***Bank Species:***	***Emergent Species:***
Larrea tridentata Ambrosia salsola Ambrosia dumosa	same as upland	None

OHWM DATA SHEET

Condition/Disturbances/Anthropogenic Influences (e.g., erosion, grazing, culverts, etc.):

Off activity strongly disturbs this area.

Hydrology

☐ Flowing water	Avg. depth:	Min. depth:
☐ Standing water	Temp:	Max. depth:
☐ Saturated		
☒ Dry		

Checklist of resources (if available):

☒ Aerial photography	☐ Vegetation maps	☒ GPS unit
☐ Remotely-sensed images	☒ Soil maps	☐ Stream gage data
☒ Topographic maps	☒ Rainfall/precipitation data	☐ Other studies:
☒ Geologic maps	☐ Existing delineation(s) for site	

Other drawings (aerial view), notes:

Other forms related to this feature: ☐ Yes ☒ No

☐ Terrace, fringe, or floodplain wetland (wetland datasheet)

☐ Low flow channel or other representative section (OHWM datasheet)

OHWM DATA SHEET

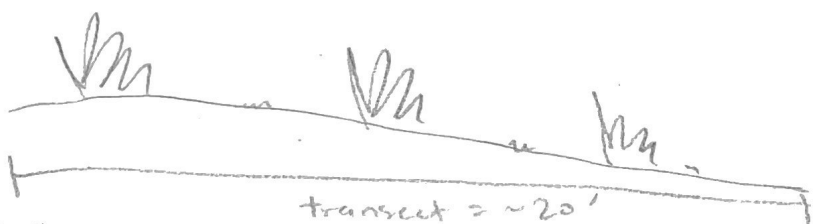
Project: 29 Palms Solar **Date:** 4-28-23 **Feature ID:** N/A

Investigator(s): K. Dayton and Z. Pringle **Transect ID:** T-7

Site Location:
North of Two Mile Rd. and west of Hillcrest Dr. in Twentynine Palms.

Feature Type: ☐ Ephemeral ☐ Intermittent ☐ Perennial ☒ Other non-jurisdictional

Transect (cross-section) drawing(s): View Facing: SE



☒ Transect length
☐ OHWM width N/A
☐ Channel depth N/A
☒ Photo

OHWM Indicators (at OHWM; primary indicators indicated with *) No substantial OHWM indicators.

- ☐ Natural line impressed on the bank
- ☐ Shelving
- ☐ Changes in the character of soil (texture)*
- ☐ Destruction of terrestrial vegetation
- ☐ Presence of litter and debris
- ☐ Wracking
- ☐ Vegetation matted down, bent, or absent
- ☐ Sediment sorting
- ☐ Leaf litter disturbed or washed away
- ☐ Scour
- ☐ Deposition
- ☐ Bed and banks
- ☐ Water staining
- ☐ Change in plant community and/or cover*

☐ Break in Slope at OHWM*: ☐ Sharp (>60°) ☐ Moderate (30-60°) ☐ Gentle (<30°)

Soil Texture

	Clay/Silt	Sand	Gravel	Cobbles	Boulders
Above OHWM		60%	40%		
Below OHWM		60%	40%		

Total Vegetation Cover

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	—	20%	2%	77%
Below OHWM	—	20%	2%	77%

Veg Stage: ☐ Early (herbs & seedlings) ☒ Mid (herbs, shrubs, saplings) ☐ Late (herbs, shrubs, mature trees)

Upland Species:	*Bank Species:*	*Emergent Species:*
Larrea tridentata	N/A	N/A

OHWM DATA SHEET

Condition/Disturbances/Anthropogenic Influences (e.g., erosion, grazing, culverts, etc.):

No anthropogenic disturbances noted at this particular location though OHV activity is prevalent elsewhere.

Hydrology

☐ Flowing water	Avg. depth:	Min. depth:
☐ Standing water	Temp:	Max. depth:
☐ Saturated		
☒ Dry		

Checklist of resources (if available):

☒ Aerial photography	☐ Vegetation maps	☒ GPS unit
☐ Remotely-sensed images	☒ Soil maps	☐ Stream gage data
☒ Topographic maps	☒ Rainfall/precipitation data	☐ Other studies:
☒ Geologic maps	☐ Existing delineation(s) for site	

Other drawings (aerial view), notes:

Other forms related to this feature: ☐ Yes ☒ No

☐ Terrace, fringe, or floodplain wetland (wetland datasheet)

☐ Low flow channel or other representative section (OHWM datasheet)

OHWM DATA SHEET

Project: 29 Palms Solar **Date:** 4-28-23 **Feature ID:** N/A

Investigator(s): K. Dayton and Z. Pringle **Transect ID:** T-8

Site Location:
North of Two Mile Rd. and west of Hillcrest Dr. in Twentynine Palms.

Feature Type: ☐ Ephemeral ☐ Intermittent ☐ Perennial ☒ Other non-jurisdictional

Transect (cross-section) drawing(s): View Facing: N



☒ Transect length
☐ OHWM width N/A
☐ Channel depth N/A
☒ Photo

OHWM Indicators (at OHWM; primary indicators indicated with *) No substantial OHWM indicators.

- ☐ Natural line impressed on the bank
- ☐ Shelving
- ☐ Changes in the character of soil (texture)*
- ☐ Destruction of terrestrial vegetation
- ☐ Presence of litter and debris
- ☐ Wracking
- ☐ Vegetation matted down, bent, or absent
- ☐ Sediment sorting
- ☐ Leaf litter disturbed or washed away
- ☐ Scour
- ☐ Deposition
- ☐ Bed and banks
- ☐ Water staining
- ☐ Change in plant community and/or cover*

☐ Break in Slope at OHWM*: ☐ Sharp (>60°) ☐ Moderate (30-60°) ☐ Gentle (<30°)

Soil Texture

	Clay/Silt	Sand	Gravel	Cobbles	Boulders
Above OHWM		98%	2%		
Below OHWM		98%	2%		

Total Vegetation Cover

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	—	20%	2%	77%
Below OHWM	—	20%	2%	77%

Veg Stage: ☐ Early (herbs & seedlings) ☒ Mid (herbs, shrubs, saplings) ☐ Late (herbs, shrubs, mature trees)

Upland Species:	*Bank Species:*	*Emergent Species:*
Larrea tridentata Ambrosia salsola	N/A	N/A

OHWM DATA SHEET

Condition/Disturbances/Anthropogenic Influences (e.g., erosion, grazing, culverts, etc.):

Disturbed by OHV activity.

Hydrology

☐ Flowing water	Avg. depth:	Min. depth:
☐ Standing water	Temp:	Max. depth:
☐ Saturated		
☒ Dry		

Checklist of resources (if available):

☒ Aerial photography	☐ Vegetation maps	☒ GPS unit
☐ Remotely-sensed images	☒ Soil maps	☐ Stream gage data
☒ Topographic maps	☒ Rainfall/precipitation data	☐ Other studies:
☒ Geologic maps	☐ Existing delineation(s) for site	

Other drawings (aerial view), notes:

Other forms related to this feature: ☐ Yes ☒ No

☐ Terrace, fringe, or floodplain wetland (wetland datasheet)

☐ Low flow channel or other representative section (OHWM datasheet)

OHWM DATA SHEET

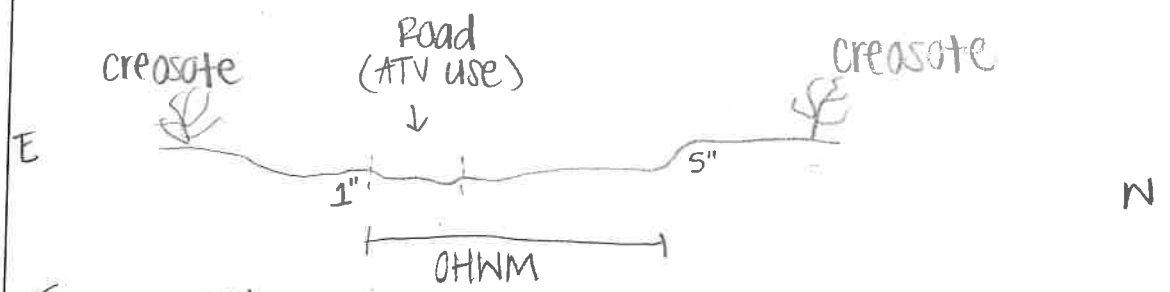
Project: 29 Palms Date: 8-9-23 Feature ID: NWW-1d

Investigator(s): Britney Schultz, Sarah Green, Luz Badillo Transect ID: T-9

Site Location:

Feature Type: ☐ Ephemeral ☐ Intermittent ☐ Perennial ☐ Other

Transect (cross-section) drawing(s): View Facing: S



☑ Transect length 68'
☑ OHWM width 32'
☑ Channel depth
☑ Photo

OHWM Indicators (at OHWM; primary indicators indicated with *)

- ☐ Natural line impressed on the bank
- ☑ Shelving
- ☑ Changes in the character of soil (texture)*
- ☐ Destruction of terrestrial vegetation
- ☐ Presence of litter and debris
- ☑ Wracking
- ☐ Vegetation matted down, bent, or absent
- ☐ Sediment sorting
- ☐ Leaf litter disturbed or washed away
- ☐ Scour
- ☑ Deposition
- ☑ Bed and banks
- ☐ Water staining
- ☐ Change in plant community and/or cover*

☑ Break in Slope at OHWM*: ☐ Sharp (>60°) ☐ Moderate (30-60°) ☑ Gentle (<30°)

Soil Texture

	Clay/Silt	Sand	Gravel	Cobbles	Boulders
Above OHWM		~5%	>75%	25%	
Below OHWM		>75%	25%	~5%	

Total Vegetation Cover

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM		15-25%	1-5%	>75%
Below OHWM		1-5%	<1%	>75%

Veg Stage: ☐ Early (herbs & seedlings) ☐ Mid (herbs, shrubs, saplings) ☐ Late (herbs, shrubs, mature trees)

Upland Species:	*Bank Species:*	~~*Emergent*~~ *Species:*
lartra ambrosia dumosa Cylech Kragra ephedra		Below OH AMBSAL EPH sp.

OHWM DATA SHEET

Condition/Disturbances/Anthropogenic Influences (e.g., erosion, grazing, culverts, etc.):
Eastern portion of feature has significant tire tracks going through.

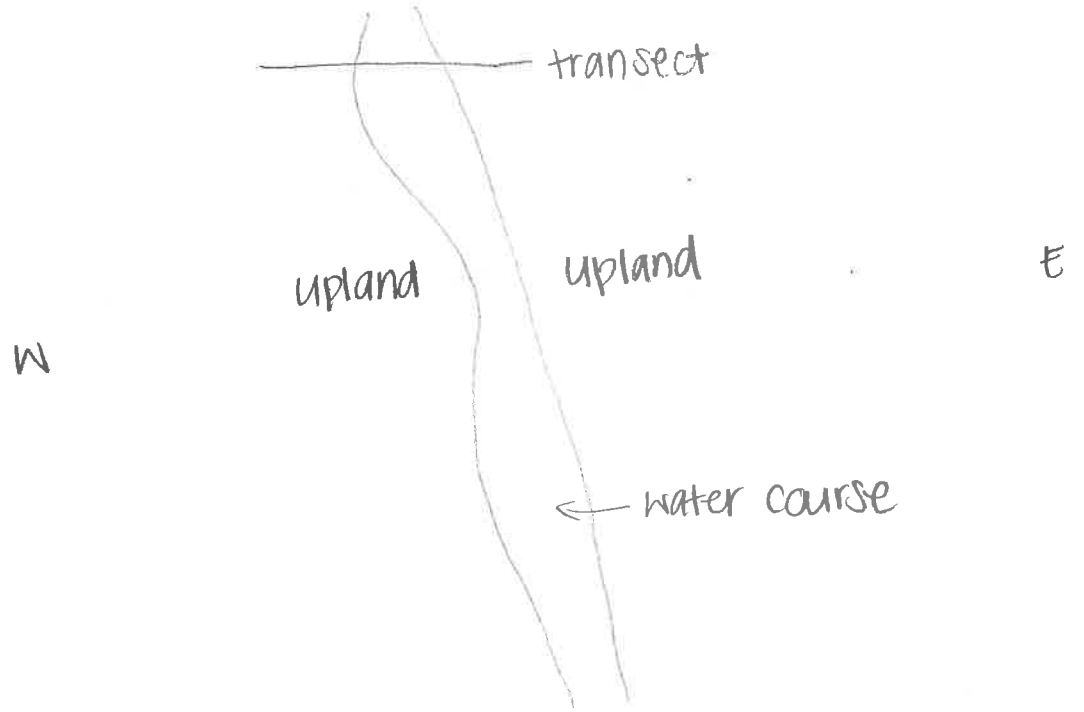
Hydrology

☐ Flowing water	Avg. depth:	Min. depth:
☐ Standing water	Temp:	Max. depth:
☐ Saturated		
☑ Dry		

Checklist of resources (if available):

☑ Aerial photography	☑ Vegetation maps	☑ GPS unit
☐ Remotely-sensed images	☑ Soil maps	☐ Stream gage data
☑ Topographic maps	☑ Rainfall/precipitation data	☐ Other studies:
☐ Geologic maps	☐ Existing delineation(s) for site	

Other drawings (aerial view), notes:



Other forms related to this feature: ☐ Yes ☐ No

☐ Terrace, fringe, or floodplain wetland (wetland datasheet)
☐ Low flow channel or other representative section (OHWM datasheet)

OHWM DATA SHEET

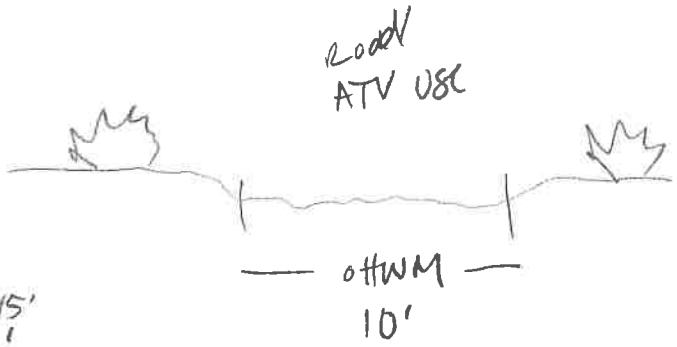
Project: 29 Palms Date: 8-9-23 Feature ID: NWW-16

Investigator(s): B. Schultz, S Greely, L. Badillo Transect ID: T-10

Site Location: off-site area w/in gen-tie alignment, North of two-mile Rd.

Feature Type: ☑ Ephemeral ☐ Intermittent ☐ Perennial ☐ Other

Transect (cross-section) drawing(s): View Facing: SW



☑ Transect length ~45'
☐ OHWM width 10'
☐ Channel depth 2-4''
☑ Photo

OHWM Indicators (at OHWM; primary indicators indicated with *)

- ☐ Natural line impressed on the bank
- ☐ Shelving
- ☑ Changes in the character of soil (texture)*
- ☐ Destruction of terrestrial vegetation
- ☐ Presence of litter and debris
- ☐ Wracking
- ☐ Vegetation matted down, bent, or absent
- ☐ Sediment sorting
- ☐ Leaf litter disturbed or washed away
- ☐ Scour
- ☐ Deposition
- ☐ Bed and banks
- ☐ Water staining
- ☑ Change in plant community and/or cover*

☑ Break in Slope at OHWM*: ☐ Sharp (>60°) ☐ Moderate (30-60°) ☑ Gentle (<30°)

Soil Texture

	Clay/Silt	Sand	Gravel	Cobbles	Boulders
Above OHWM	—	75-85	10-15	5-15	—
Below OHWM	—	100%	—	—	—

Total Vegetation Cover

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	—	15-25	1-5	50-75
Below OHWM	—	—	—	100

Veg Stage: ☐ Early (herbs & seedlings) ☐ Mid (herbs, shrubs, saplings) ☐ Late (herbs, shrubs, mature trees)

Upland Species:	*Bank Species:*	*Emergent Species:*
lar tri Amb dum		

OHWM DATA SHEET

Condition/Disturbances/Anthropogenic Influences (e.g., erosion, grazing, culverts, etc.):

Disturbed by OHV/ATV uses

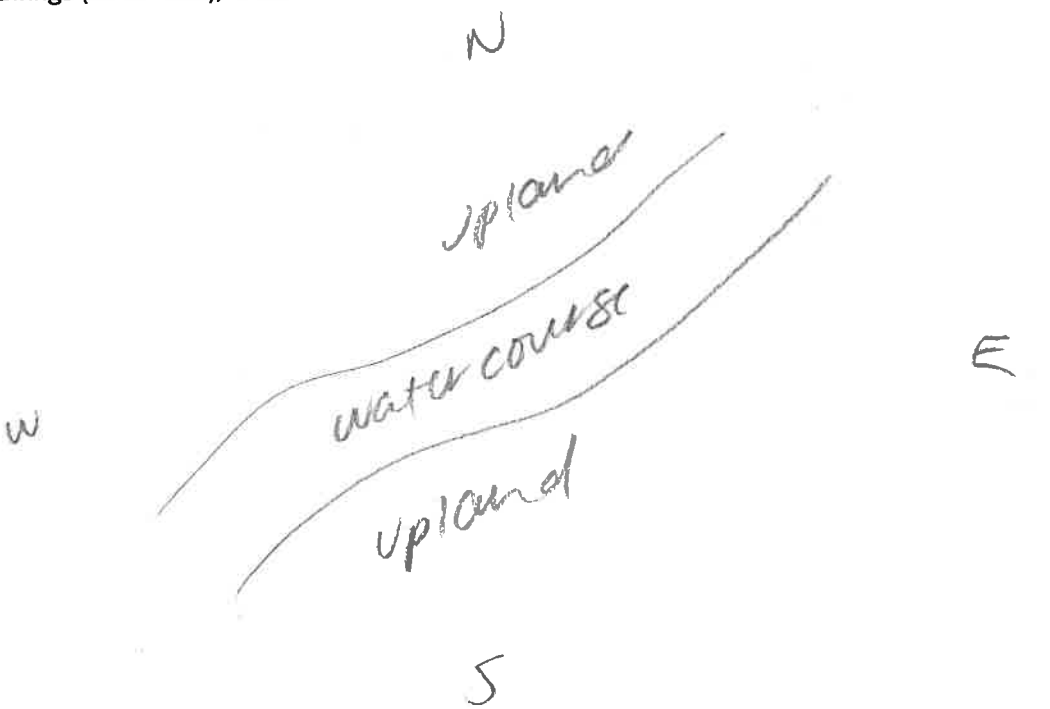
Hydrology

☐ Flowing water	Avg. depth:	Min. depth:
☐ Standing water	Temp:	Max. depth:
☐ Saturated		
☑ Dry		

Checklist of resources (if available):

☑ Aerial photography	☑ Vegetation maps	☑ GPS unit
☐ Remotely-sensed images	☑ Soil maps	☐ Stream gage data
☑ Topographic maps	☑ Rainfall/precipitation data	☐ Other studies:
☑ Geologic maps	☐ Existing delineation(s) for site	

Other drawings (aerial view), notes:



Other forms related to this feature: ☐ Yes ☑ No

☐ Terrace, fringe, or floodplain wetland (wetland datasheet)

☐ Low flow channel or other representative section (OHWM datasheet)

OHWM DATA SHEET

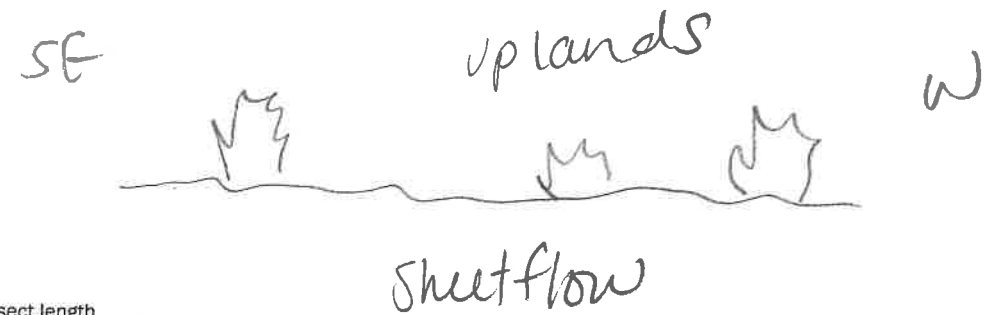
Project: 29 Palms Date: 8-9-23 Feature ID: N/A

Investigator(s): B. Schultz, S. Greely, L. Badillo Transect ID: T-11

Site Location: west central portion of review area

Feature Type: ☐ Ephemeral ☐ Intermittent ☐ Perennial ☒ Other Non-jurisdictional

Transect (cross-section) drawing(s): View Facing: ____



☐ Transect length
☐ OHWM width N/A
☐ Channel depth N/A
☐ Photo

OHWM Indicators (at OHWM; primary indicators indicated with *) No OHWM indicators

- ☐ Natural line impressed on the bank
- ☐ Shelving
- ☐ Changes in the character of soil (texture)*
- ☐ Destruction of terrestrial vegetation
- ☐ Presence of litter and debris
- ☐ Wracking
- ☐ Vegetation matted down, bent, or absent
- ☐ Sediment sorting
- ☐ Leaf litter disturbed or washed away
- ☐ Scour
- ☐ Deposition
- ☐ Bed and banks
- ☐ Water staining
- ☐ Change in plant community and/or cover*

☐ Break in Slope at OHWM*: ☐ Sharp (>60°) ☐ Moderate (30-60°) ☐ Gentle (<30°)

Soil Texture

	Clay/Silt	Sand	Gravel	Cobbles	Boulders
Above OHWM	—	60	30	10	—
Below OHWM		60	30	10	—

Total Vegetation Cover

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	—	30	—	70
Below OHWM		30	—	70

Veg Stage: ☐ Early (herbs & seedlings) ☐ Mid (herbs, shrubs, saplings) ☐ Late (herbs, shrubs, mature trees)

Upland Species:	*Bank Species:*	*Emergent Species:*
Lar tri Amb sal	N/A	N/A

OHWM DATA SHEET

Condition/Disturbances/Anthropogenic Influences (e.g., erosion, grazing, culverts, etc.):

N/A

Hydrology N/A – sheetflow due to topography

☐ Flowing water	Avg. depth:	Min. depth:
☐ Standing water	Temp:	Max. depth:
☐ Saturated		
☐ Dry		

Checklist of resources (if available):

☐ Aerial photography	☑ Vegetation maps	☐ GPS unit
☐ Remotely-sensed images	☐ Soil maps	☐ Stream gage data
☐ Topographic maps	☐ Rainfall/precipitation data	☐ Other studies:
☐ Geologic maps	☐ Existing delineation(s) for site	

Other drawings (aerial view), notes:

Other forms related to this feature: ☐ Yes ☑ No

☐ Terrace, fringe, or floodplain wetland (wetland datasheet)

☐ Low flow channel or other representative section (OHWM datasheet)

SDAM-T-01

Field form for the beta Arid Streamflow Duration Assessment Method
Revision Date November 2023

Beta Arid West Streamflow Duration Assessment Method

General site information

Project name or number: 29 Palms Solar Project		
Site code or identifier: 14392	Assessor(s): B. Schultz, C. Amoaku	
Waterway name: SDAM-T-01		Visit date: 6/17/24
Current weather conditions (check one) ☐ Storm/heavy rain ☐ Steady rain ☐ Intermittent rain ☐ Snowing ☐ Cloudy (___ % cover) ☑ Clear/Sunny	Notes on current or recent weather conditions (e.g., precipitation in previous week):	Coordinates at downstream end (decimal degrees): Lat (N): 34°9'30" N Long (W): 116°7'17" W Datum:
Surrounding land-use within 100 m (check one or two): ☐ Urban/industrial/residential ☐ Agricultural (farmland, crops, vineyards, pasture) ☐ Developed open-space (e.g., golf course) ☐ Forested ☑ Other natural ☐ Other: _____	Describe reach boundaries: middle reach of western stream channel (flow N/NE)	
Mean channel width (m) 3.38 m	Reach length (m): 40x width; min 40 m; max 200 m. 120 m	Enter photo ID, or check if completed Top down: ✓ Mid down: ✓ Mid up: ✓ Bottom up: ✓
Disturbed or difficult conditions (check all that apply): ☐ Recent flood or debris flow ☐ Stream modifications (e.g., channelization) ☐ Diversions ☐ Discharges ☐ Drought ☐ Vegetation removal/limitations ☑ Other (explain in notes) ☐ None	Notes on disturbances or difficult site conditions: ATV off-road use w/in stream channel	
Observed hydrology: 0 % of reach with surface flow 0 % of reach with sub-surface or surface flow 0 # of isolated pools	Comments on observed hydrology:	

Site sketch:



1. Hydrophytic plant species

Record up to 5 hydrophytic plant species (FACW or OBL in the **Arid West** regional wetland plant list) within the assessment area: **within the channel or up to one half-channel width**. Explain in notes if species has an odd distribution (e.g., covers less than 2% of assessment area, long-lived species solely represented by seedlings, or long-lived species solely represented by specimens in decline), or if there is uncertainty about the identification. Enter photo ID, or check if photo is taken.

Check if applicable: ☑ No vegetation in assessment area ☑ No hydrophytes in assessment area

Species	Odd distribution?	Notes	Photo ID
N/A			

Notes on hydrophytic vegetation:

2 and 3. Aquatic invertebrates

2. How many aquatic invertebrates are quantified in a 15-minute search?

Number of individuals quantified:
- ☑ None
- ☐ 1 to 19
- ☐ 20 +

(Do not count mosquitos)

Photo ID: _____

3. Is there evidence of aquatic stages of EPT (Ephemeroptera, Plecoptera and Trichoptera)?

Yes / No



Ephemeroptera larva
Image credit: Dieter Tracey



Plecoptera larva
Tracey Saxby



Trichoptera larva
Tracey Saxby

Notes on aquatic invertebrates:

4. Algal Cover

Are algae found on the streambed?		Notes on algae cover:	Photo ID:
☐ Check if *all* observed algae appear to be deposited from an upstream source.	☑ Not detected ☐ Yes, < 10% cover ☐ Yes, ≥ 10% (check Yes in single indicator below)		

5. Are single indicators observed?

Indicator	Present	Notes	Photo ID
Fish	☐ Yes ☑ No, no fish ☐ No, only non-native mosquitofish		
Algae cover ≥ 10%	☐ Yes ☑ No		

Supplemental information E.g., aquatic or semi-aquatic amphibians, snakes, or turtles; iron-oxidizing bacteria and fungi; etc.

N/A

Photo log

Indicate if any other photos taken during the assessment

Photo ID	Description
See Field maps / SoLocator	- Top down - mid up - mid down - Bottom up

Additional notes about the assessment:

Classification: Ephemeral

1. Hydrophytic plant species	2. Aquatic invertebrates	3. EPT taxa	4. Algae	5. Single indicators • fish present • algae cover ≥ 10%	Classification
None	None	Absent	Absent	Absent	**Ephemeral**
				Present	**At least intermittent**
			Present		**Intermittent**
	Few (1-19)	Absent	Absent	Absent	**Less than Perennial**
				Present	**At least intermittent**
			Present		**At least intermittent**
		Present	Absent		**Intermittent**
			Present		**Perennial**
	Many (20+)	Absent	Absent	Absent	**Ephemeral**
				Present	**At least intermittent**
			Present	Absent	**Ephemeral**
				Present	**At least intermittent**
		Present			**Intermittent**
Few (1-2)	None				**Intermittent**
	Few (1-19)	Absent			**Intermittent**
		Present	Absent		**Intermittent**
			Present		**Perennial**
	Many (20+)	Absent			**Intermittent**
		Present	Absent		**Perennial**
			Present		**Intermittent**
Many (3+)	None				**Intermittent**
	Few (1-19)	Absent	Absent		**Intermittent**
			Present		**Perennial**
		Present			**Perennial**
	Many (20+)				**Perennial**

Shading provided to enhance readability by increasing the contrast between neighboring cells; empty cells indicate the classification will not change with additional information however it is recommended that all five indicators be measured and recorded during every assessment.

SDAM-T-02

Field form for the beta Arid Streamflow Duration Assessment Method
Revision Date November 2023

Beta Arid West Streamflow Duration Assessment Method

General site information

Project name or number: 29 Palms Solar		
Site code or identifier: 14392	Assessor(s): B Scholtz, C. Amoak U	
Waterway name: SDAM-T-02		Visit date: 6/17/24
Current weather conditions (check one) ☐ Storm/heavy rain ☐ Steady rain ☐ Intermittent rain ☐ Snowing ☐ Cloudy (___ % cover) ☑ Clear/Sunny	Notes on current or recent weather conditions (e.g., precipitation in previous week):	Coordinates at downstream end (decimal degrees): Lat (N): 34°9'49" N Long (W): 116°7'11" W Datum:
Surrounding land-use within 100 m (check one or two): ☐ Urban/industrial/residential ☐ Agricultural (farmland, crops, vineyards, pasture) ☐ Developed open-space (e.g., golf course) ☐ Forested ☑ Other natural ☐ Other: _____	Describe reach boundaries: upstream reach w/in northwestern corner of project.	
Mean channel width (m): 75 m	Reach length (m): 40x width; min 40 m; max 200 m. 200 m	Enter photo ID, or check if completed Top down: ✓ Mid down: ✓ Mid up: ✓ Bottom up: ✓
Disturbed or difficult conditions (check all that apply): ☐ Recent flood or debris flow ☐ Stream modifications (e.g., channelization) ☐ Diversions ☐ Discharges ☐ Drought ☐ Vegetation removal/limitations ☑ Other (explain in notes) ☐ None	Notes on disturbances or difficult site conditions: ATV off-road use	
Observed hydrology: 0 % of reach with surface flow 0 % of reach with sub-surface or surface flow 0 # of isolated pools	Comments on observed hydrology:	

Site sketch:



1. Hydrophytic plant species

Record up to 5 hydrophytic plant species (FACW or OBL in the **Arid West** regional wetland plant list) within the assessment area: **within the channel or up to one half-channel width.** Explain in notes if species has an odd distribution (e.g., covers less than 2% of assessment area, long-lived species solely represented by seedlings, or long-lived species solely represented by specimens in decline), or if there is uncertainty about the identification. Enter photo ID, or check if photo is taken.

Check if applicable: ☐ No vegetation in assessment area ☑ No hydrophytes in assessment area

Species	Odd distribution?	Notes	Photo ID

Notes on hydrophytic vegetation:

vegetation w/in channel is dominated by PSOSP1 (which is upland)

2 and 3. Aquatic invertebrates

2. How many aquatic invertebrates are quantified in a 15-minute search?

Number of individuals quantified:
- ☑ None
- ☐ 1 to 19
- ☐ 20 +

(Do not count mosquitos)

Photo ID: _____

3. Is there evidence of aquatic stages of EPT (Ephemeroptera, Plecoptera and Trichoptera)?

Yes / No



Ephemeroptera larva
Image credit: Dieter Tracey



Plecoptera larva
Tracey Saxby



Trichoptera larva
Tracey Saxby

Notes on aquatic invertebrates:

4. Algal Cover

Are algae found on the streambed?		Notes on algae cover:	Photo ID:
☐ Check if *all* observed algae appear to be deposited from an upstream source.	☑ Not detected ☐ Yes, < 10% cover ☐ Yes, ≥ 10% (check Yes in single indicator below)		

5. Are single indicators observed?

Indicator	Present	Notes	Photo ID
Fish	☐ Yes ☑ No, no fish ☐ No, only non-native mosquitofish		
Algae cover ≥ 10%	☐ Yes ☑ No		

Supplemental information E.g., aquatic or semi-aquatic amphibians, snakes, or turtles; iron-oxidizing bacteria and fungi; etc.

Photo log

Indicate if any other photos taken during the assessment

Photo ID	Description
See Field maps / Solocator	
	Top down
	mid up
	mid down
	Bottom up

Additional notes about the assessment:

Classification: Ephemeral

1. Hydrophytic plant species	2. Aquatic invertebrates	3. EPT taxa	4. Algae	5. Single indicators • fish present • algae cover ≥ 10%	Classification
None	None	Absent	Absent	Absent	**Ephemeral**
				Present	**At least intermittent**
			Present		**Intermittent**
	Few (1-19)	Absent	Absent	Absent	**Less than Perennial**
				Present	**At least intermittent**
			Present		**At least intermittent**
		Present	Absent		**Intermittent**
			Present		**Perennial**
	Many (20+)	Absent	Absent	Absent	**Ephemeral**
				Present	**At least intermittent**
			Present	Absent	**Ephemeral**
				Present	**At least intermittent**
		Present			**Intermittent**
Few (1-2)	None				**Intermittent**
	Few (1-19)	Absent			**Intermittent**
		Present	Absent		**Intermittent**
			Present		**Perennial**
	Many (20+)	Absent			**Intermittent**
		Present	Absent		**Perennial**
			Present		**Intermittent**
Many (3+)	None				**Intermittent**
	Few (1-19)	Absent	Absent		**Intermittent**
			Present		**Perennial**
		Present			**Perennial**
	Many (20+)				**Perennial**

Shading provided to enhance readability by increasing the contrast between neighboring cells; empty cells indicate the classification will not change with additional information however it is recommended that all five indicators be measured and recorded during every assessment.

SDAM-T-03

Field form for the beta Arid Streamflow Duration Assessment Method
Revision Date November 2023

Beta Arid West Streamflow Duration Assessment Method

General site information

Project name or number: 29 Palms Solar		
Site code or identifier: 14392	Assessor(s): B. Schultz, C. Amoaku	
Waterway name: SDAM-T-03		Visit date: 6/17/24
Current weather conditions (check one) ☐ Storm/heavy rain ☐ Steady rain ☐ Intermittent rain ☐ Snowing ☐ Cloudy (___ % cover) ☑ Clear/Sunny	Notes on current or recent weather conditions (e.g., precipitation in previous week):	Coordinates at downstream end (decimal degrees): Lat (N): 34°9'47.11" N Long (W): 116°7'5" W Datum:
Surrounding land-use within 100 m (check one or two): ☐ Urban/industrial/residential ☐ Agricultural (farmland, crops, vineyards, pasture) ☐ Developed open-space (e.g., golf course) ☐ Forested ☑ Other natural ☐ Other: _____	Describe reach boundaries: Downstream reach w/in north-central portion of site.	
Mean channel width (m) 4.77	Reach length (m): 40x width; min 40 m; max 200 m. 190.8	Enter photo ID, or check if completed Top down: ✓ Mid down: ✓ Mid up: ✓ Bottom up: ✓
Disturbed or difficult conditions (check all that apply): ☐ Recent flood or debris flow ☐ Stream modifications (e.g., channelization) ☐ Diversions ☐ Discharges ☐ Drought ☐ Vegetation removal/limitations ☑ Other (explain in notes) ☐ None	Notes on disturbances or difficult site conditions: ATV off-road use	
Observed hydrology: 0 % of reach with surface flow 0 % of reach with sub-surface or surface flow 0 # of isolated pools	Comments on observed hydrology:	

Site sketch:



1. Hydrophytic plant species

Record up to 5 hydrophytic plant species (FACW or OBL in the **Arid West** regional wetland plant list) within the assessment area: **within the channel or up to one half-channel width**. Explain in notes if species has an odd distribution (e.g., covers less than 2% of assessment area, long-lived species solely represented by seedlings, or long-lived species solely represented by specimens in decline), or if there is uncertainty about the identification. Enter photo ID, or check if photo is taken.

Check if applicable: ☐ No vegetation in assessment area ☐ No hydrophytes in assessment area

Species	Odd distribution?	Notes	Photo ID

Notes on hydrophytic vegetation:

2 and 3. Aquatic invertebrates

2. How many aquatic invertebrates are quantified in a 15-minute search?

Number of individuals quantified:
- ☐ None
- ☐ 1 to 19
- ☐ 20 +

(Do not count mosquitos)

Photo ID:_____

3. Is there evidence of aquatic stages of EPT (Ephemeroptera, Plecoptera and Trichoptera)?

Yes / No



Ephemeroptera larva
Image credit: Dieter Tracey



Plecoptera larva
Tracey Saxby



Trichoptera larva
Tracey Saxby

Notes on aquatic invertebrates:

4. Algal Cover

Are algae found on the streambed? ☐ Check if *all* observed algae appear to be deposited from an upstream source.	☐ Not detected ☐ Yes, < 10% cover ☐ Yes, ≥ 10% (check Yes in single indicator below)	Notes on algae cover:	Photo ID:

5. Are single indicators observed?

Indicator	Present	Notes	Photo ID
Fish	☐ Yes ☐ No, no fish ☐ No, only non-native mosquitofish		
Algae cover ≥ 10%	☐ Yes ☐ No		

Supplemental information E.g., aquatic or semi-aquatic amphibians, snakes, or turtles; iron-oxidizing bacteria and fungi; etc.

Photo log

Indicate if any other photos taken during the assessment

Photo ID	Description
See Fieldmaps / Solocator	
Top down	
mid up	
mid down	
Bottom up	

Additional notes about the assessment:

Classification: Ephemeral

1. Hydrophytic plant species	2. Aquatic invertebrates	3. EPT taxa	4. Algae	5. Single indicators • fish present • algae cover ≥ 10%	Classification
None	None	Absent	Absent	Absent	**Ephemeral**
				Present	**At least intermittent**
			Present		**Intermittent**
	Few (1-19)	Absent	Absent	Absent	**Less than Perennial**
				Present	**At least intermittent**
			Present		**At least intermittent**
		Present	Absent		**Intermittent**
			Present		**Perennial**
	Many (20+)	Absent	Absent	Absent	**Ephemeral**
				Present	**At least intermittent**
			Present	Absent	**Ephemeral**
				Present	**At least intermittent**
		Present			**Intermittent**
Few (1-2)	None				**Intermittent**
	Few (1-19)	Absent			**Intermittent**
		Present	Absent		**Intermittent**
			Present		**Perennial**
	Many (20+)	Absent			**Intermittent**
		Present	Absent		**Perennial**
			Present		**Intermittent**
Many (3+)	None				**Intermittent**
	Few (1-19)	Absent	Absent		**Intermittent**
			Present		**Perennial**
		Present			**Perennial**
	Many (20+)				**Perennial**

Shading provided to enhance readability by increasing the contrast between neighboring cells; empty cells indicate the classification will not change with additional information however it is recommended that all five indicators be measured and recorded during every assessment.

SDAM-T-04

Field form for the beta Arid Streamflow Duration Assessment Method
Revision Date November 2023

Beta Arid West Streamflow Duration Assessment Method

General site information

Project name or number: 29 Palms Solar		
Site code or identifier: 14392	Assessor(s): B. Schultz, C. Amoaku	
Waterway name: SDAM-T-04		Visit date: 6-17-24

Current weather conditions (check one)
- ☐ Storm/heavy rain
- ☐ Steady rain
- ☐ Intermittent rain
- ☐ Snowing
- ☐ Cloudy (___ % cover)
- ☑ Clear/Sunny

Notes on current or recent weather conditions (e.g., precipitation in previous week):

Coordinates at downstream end (decimal degrees):
Lat (N):
Long (W):
Datum:

Surrounding land-use within 100 m (check one or two):
- ☐ Urban/industrial/residential
- ☐ Agricultural (farmland, crops, vineyards, pasture)
- ☐ Developed open-space (e.g., golf course)
- ☐ Forested
- ☐ Other natural
- ☐ Other: _____

Describe reach boundaries:
Middle reach - eastern portion of site.

Mean channel width (m)	Reach length (m): 40x width; min 40 m; max 200 m.	Enter photo ID, or check if completed
3.5 m	130 m	Top down: ✓ Mid down: ✓ Mid up: ✓ Bottom up: ✓

Disturbed or difficult conditions (check all that apply):
- ☐ Recent flood or debris flow
- ☐ Stream modifications (e.g., channelization)
- ☐ Diversions
- ☐ Discharges
- ☐ Drought
- ☐ Vegetation removal/limitations
- ☑ Other (explain in notes)
- ☐ None

Notes on disturbances or difficult site conditions:
OHV use in channel.

Observed hydrology:
- 0 % of reach with surface flow
- 0 % of reach with sub-surface or surface flow
- 0 # of isolated pools

Comments on observed hydrology:

Site sketch:



1. Hydrophytic plant species

Record up to 5 hydrophytic plant species (FACW or OBL in the **Arid West** regional wetland plant list) within the assessment area: **within the channel or up to one half-channel width**. Explain in notes if species has an odd distribution (e.g., covers less than 2% of assessment area, long-lived species solely represented by seedlings, or long-lived species solely represented by specimens in decline), or if there is uncertainty about the identification. Enter photo ID, or check if photo is taken.

Check if applicable: ☐ No vegetation in assessment area ☑ No hydrophytes in assessment area

Species	Odd distribution?	Notes	Photo ID

Notes on hydrophytic vegetation:

2 and 3. Aquatic invertebrates

2. How many aquatic invertebrates are quantified in a 15-minute search?

Number of individuals quantified:
☑ None
☐ 1 to 19
☐ 20 +

(Do not count mosquitos)

Photo ID:_____

3. Is there evidence of aquatic stages of EPT (Ephemeroptera, Plecoptera and Trichoptera)?

Yes / No



Ephemeroptera larva
Image credit: Dieter Tracey



Plecoptera larva
Tracey Saxby



Trichoptera larva
Tracey Saxby

Notes on aquatic invertebrates:

4. Algal Cover

Are algae found on the streambed?		Notes on algae cover:	Photo ID:
☐ Check if *all* observed algae appear to be deposited from an upstream source.	☑ Not detected ☐ Yes, < 10% cover ☐ Yes, ≥ 10% (check Yes in single indicator below)		

5. Are single indicators observed?

Indicator	Present	Notes	Photo ID
Fish	☐ Yes ☑ No, no fish ☐ No, only non-native mosquitofish		
Algae cover ≥ 10%	☐ Yes ☑ No		

Supplemental information E.g., aquatic or semi-aquatic amphibians, snakes, or turtles; iron-oxidizing bacteria and fungi; etc.

Dry, sandy wash.

Photo log

Indicate if any other photos taken during the assessment

Photo ID	Description
In Field Maps	

Additional notes about the assessment:

Classification: Ephemeral

1. Hydrophytic plant species	2. Aquatic invertebrates	3. EPT taxa	4. Algae	5. Single indicators • fish present • algae cover ≥ 10%	Classification
None	None	Absent	Absent	Absent	**Ephemeral**
				Present	**At least intermittent**
			Present		**Intermittent**
	Few (1-19)	Absent	Absent	Absent	**Less than Perennial**
				Present	**At least intermittent**
			Present		**At least intermittent**
		Present	Absent		**Intermittent**
			Present		**Perennial**
	Many (20+)	Absent	Absent	Absent	**Ephemeral**
				Present	**At least intermittent**
			Present	Absent	**Ephemeral**
				Present	**At least intermittent**
		Present			**Intermittent**
Few (1-2)	None				**Intermittent**
	Few (1-19)	Absent			**Intermittent**
		Present	Absent		**Intermittent**
			Present		**Perennial**
	Many (20+)	Absent			**Intermittent**
		Present	Absent		**Perennial**
			Present		**Intermittent**
Many (3+)	None				**Intermittent**
	Few (1-19)	Absent	Absent		**Intermittent**
			Present		**Perennial**
		Present			**Perennial**
	Many (20+)				**Perennial**

Shading provided to enhance readability by increasing the contrast between neighboring cells; empty cells indicate the classification will not change with additional information however it is recommended that all five indicators be measured and recorded during every assessment.

MESA-T-01

Episodic Stream Indicator Data Sheet

ID: 29 Palms Solar	Stream ID: MESA-T-01		Date: 10/17/24
Nearest Town: 29 Palms		County: San Bernardino	
Investigators: B. Schultz, C. Amoaku			

Base Map

Aerial Photo #:	Date:	Topographic Map Name:	Date:

GPS Data

GPS Name:	Datum:	Transect Elevation:	Zone 10 / 11	GPS Error: ± ft / m
GPS co-ords start of transect:		GPS co-ords end of transect:		

Geomorphic Province (✓one)	✓ Mojave	Sonoran/Colorado	Great Basin	Other:

Landform (✓ all that apply)

	Headwater		Upper fan	✓ Middle fan		Lower fan		Alluvial plain		Axial valley		Playa

Channel Form (✓ one)

✓ Single thread		Braided		Compound		Distributary		Discontinuous	Other:

Transect was selected to:

✓	Document fluvial activity & boundaries		Document channel elevations & boundaries
	Document habitat associations		Document a change in watercourse morphology
	Other:		

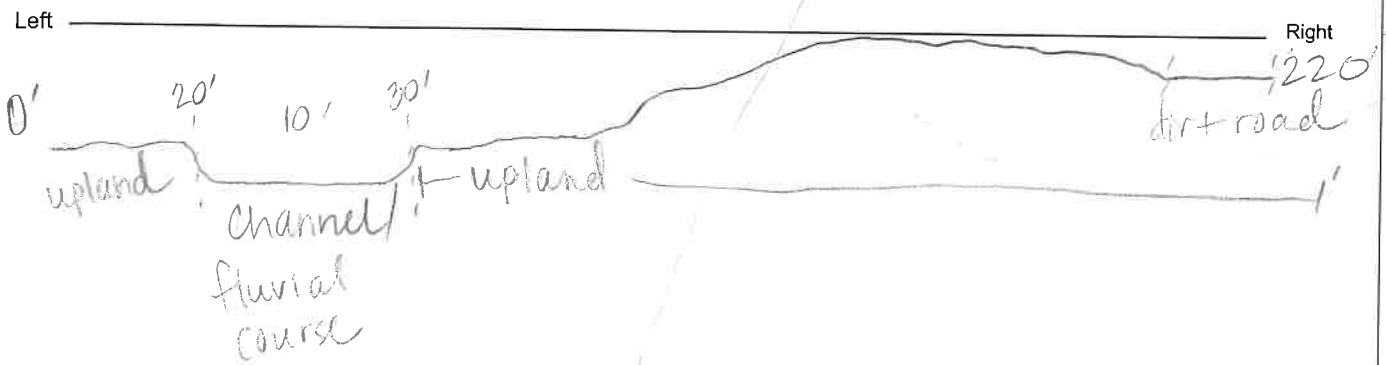
Date of most recent runoff event (if known):

Physical Setting: Briefly describe geomorphic processes and surficial materials and conditions, including the degree of disturbance relative to an intact dryland stream ecosystem, and any anthropogenic influences on the channel form and function:

Stream channel receives runoff from surrounding hillsides. Soil in channel disturbed by OHV use.

Summary Site Description and Cross-section Sketch: View across the channel from watercourse-edge to watercourse-edge. Identify channel(s), banks, islands, interfluves, floodplains, terraces, and uplands where present. Note approximate width and elevation differences between features indicated.

Facing North



Site ID: 29 Palms	Stream ID: MESA-T-01	page 2 of 4

Note presence or absence of each indicator within a minimum distance of 50 feet upstream and 50 feet downstream of the representative channel cross section. Mark each box with a plus (+) for those indicators observed, and a minus (–) for indicators not observed. For examples see the Photo Atlas in MESA ~ Mapping Episodic Stream Indicators.

UPLAND

Terrestrial Indicators

	Av soil horizon	✓	Relict bars & swales
	Biotic soil crusts		Rock fractured in place
✓	Bioturbation	✓	Rock varnish
	Caliche: coatings / layers / rubble		Rock weathering
	Carbonate etching		Rubified rock undersides
	Coppice dunes: active / relict		Soil development
	Deflated surface		Surface rounding of landform
	Pavement	✓	Woody debris in place
	Other:		

Substrate Particle Size

Estimated percentages

	% Bedrock / Cemented substrate	
50	% Boulder	≥ 256 mm
30	% Cobble	≥ 64 – 256mm
5	% Pebble	≥ 4 – 64 mm
5	% Granule	≥ 2 – 4 mm
5	% Sand	≤ 2 mm
5	% Silt/Clay	Fines

Indicators of areas depicted as "upland" on cross section.

Fluvial Indicators

	Bars: sand / gravel		Mud: cracks / curls / drapes		Sediment tails: sand / gravel
	Cut banks		Organic drift		Vegetation-channel alignment
	Drainage swales		Overturned rocks		Water-cut benches
	Exposed roots	✓	Scour		Wrack
	First-order streams		Sediment ramps: sand / gravel		Wrinkle marks
	Flow lineations		Sediment sorting		
	Other:				

Some scour/rills in the hills east of Channel that do not exhibit consistent fluvial indicators indicative of normal flow.

Vegetation

Estimated % perennial plant cover: 5-25% Perennial plant size compared to watercourse veg: smaller / same / larger

Estimate species composition of shrubs and perennial plants by % of total:

Creosote, Ambrosia spp., and Cylindropuntia spp are throughout upland areas and absent from watercourse.

Site ID: 29 Palms	Stream ID: MESA - T-01	page 3 of 4

Note presence or absence of each indicator within a minimum distance of 50 feet upstream and 50 feet downstream of a representative channel cross section. Mark each box with a plus (+) for those indicators observed, and a minus (–) for those not observed. For examples see the Photo Atlas in MESA ~ Mapping Episodic Stream Indicators.

WATERCOURSE or WATERCOURSE COMPLEX

Transportation, Deposition & Flow Transition Indicators

	Bar forms: sand / gravel		Secondary channels
	Bifurcated flow		Sediment plastering
	Drainage swales		Sediment ramps: sand / gravel
	Flow lineations		Sediment sheets: sand / gravel
	Imbricated gravel	✓	Sediment sorting
	Levee ridges: sand / gravel		Sediment tails: sand / gravel
	Mud: cracks / curls / drapes	✓	Vegetation-channel alignments
	Organic drift		Wrack
	Overturned rocks		Wrinkle marks
	Out-of-channel flow: Lateral floodplain / Terminal floodplain		
	Ripples		
	Other:		

Substrate Particle Size

Estimated percentages

5	% Bedrock / Cemented substrate	
5	% Boulder	≥ 256 mm
5	% Cobble	≥ 64 – 256 mm
20	% Pebble	≥ 4 – 64 mm
20	% Granule	≥ 2 – 4 mm
40	% Sand	≤ 2 mm
5	% Silt/Clay	Fines

Indicators in watercourse.

Erosion Indicators

✓	Cut banks		Rills		Water-cut benches
	Exposed roots		Scour		Water level mark
	Headcuts		Secondary channels		
	Other:				

Shelving inconsistent b/c used as road.

Vegetation

Estimated % perennial plant cover: 0

Perennial plant size relative to uplands vegetation: smaller / same / larger

Estimate species composition of perennial plants by % of total:

no perennial plants in channel.

INDICATORS of PONDING & EVAPORATION and EOLIAN TRANSPORT & DEPOSITION

	Algal crusts		Sand-filled channels		
	Beach ridges		Springs		
	Coppice dunes: active / relict		Substrate staining		
	Crusts: carbonate / salt / soda		Vegetation-landscape alignments		
	Mud: cracks / curls / polygons				
	Other:				

none.

Site ID 29 palms	Stream ID MESA-T-01	page 4 of 4

Diagrams and Notes

Photographs

Photographs should document the representative landscape units, vegetation, and the presence or absence of representative stream indicators.

Photo ID #	Description	GPS location	
In Field maps			

MESA-T-02

Episodic Stream Indicator Data Sheet				page 1 of 4
Site ID: 29 Palms	Stream ID: MESA-T-02			Date: 6-17-24
Nearest Town: 29 Palms		County: San Bernardino		
Investigators: B. Strittmatter, C. Amoaku				

Base Map

Aerial Photo #:	Date:	Topographic Map Name:	Date:

GPS Data

GPS Name:	Datum:	Transect Elevation:	Zone 10 / 11	GPS Error: ± ft / m
GPS co-ords start of transect:		GPS co-ords end of transect:		

Geomorphic Province (✓one)	✓ Mojave	Sonoran/Colorado	Great Basin	Other:

Landform (✓ all that apply)

Headwater	Upper fan	✓ Middle fan	Lower fan	Alluvial plain	Axial valley	Playa

Channel Form (✓ one)

Single thread	✓ Braided	Compound	Distributary	Discontinuous	Other:

Transect was selected to:

✓ Document fluvial activity & boundaries	Document channel elevations & boundaries
Document habitat associations	Document a change in watercourse morphology
Other:	

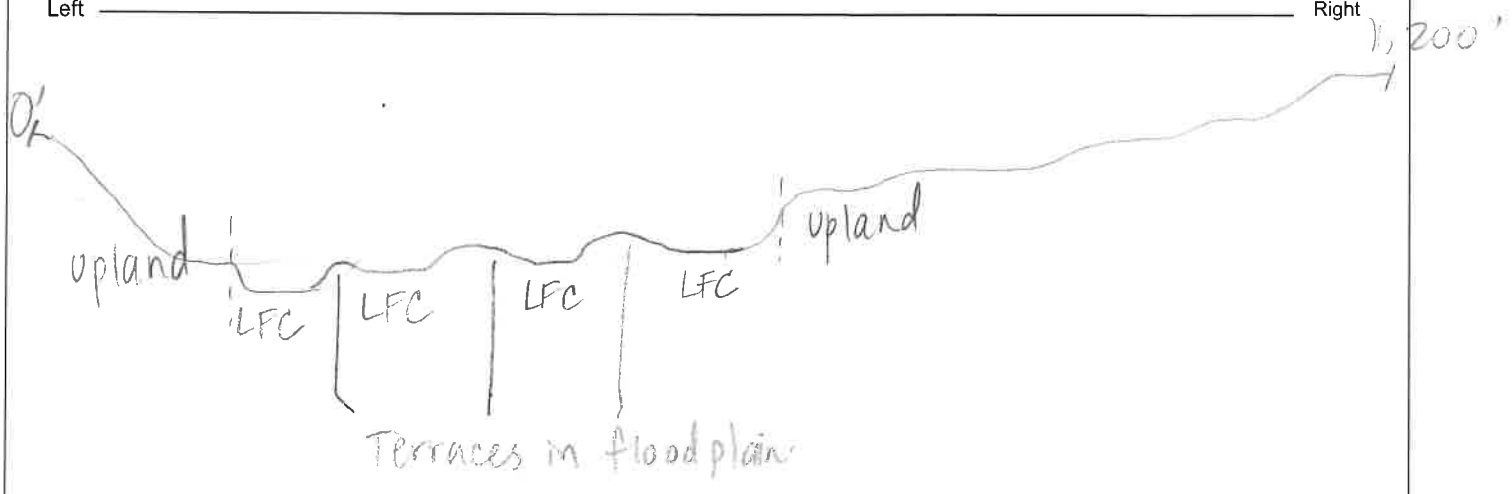
Date of most recent runoff event (if known):

Physical Setting: Briefly describe geomorphic processes and surficial materials and conditions, including the degree of disturbance relative to an intact dryland stream ecosystem, and any anthropogenic influences on the channel form and function:

Braided channel complex w/ low flow channels and terraces. Low flow channels have OHV use.

Summary Site Description and Cross-section Sketch: View across the channel from watercourse-edge to watercourse-edge. Identify channel(s), banks, islands, interfluves, floodplains, terraces, and uplands where present. Note approximate width and elevation differences between features indicated.

Facing E



Site ID: 29 Palms	Stream ID: MESA-T-02	page 2 of 4

Note presence or absence of each indicator within a minimum distance of 50 feet upstream and 50 feet downstream of the representative channel cross section. Mark each box with a plus (+) for those indicators observed, and a minus (–) for indicators not observed. For examples see the Photo Atlas in MESA ~ Mapping Episodic Stream Indicators.

UPLAND

Terrestrial Indicators				**Substrate Particle Size**		
	Av soil horizon	✓	Relict bars & swales	Estimated percentages		
	Biotic soil crusts		**Rock fractured in place**	10	% Bedrock / Cemented substrate	
✓	Bioturbation		Rock varnish	10	% Boulder	≥ 256 mm
	Caliche: coatings / layers / rubble		**Rock weathering**	20	% Cobble	≥ 64 – 256mm
	Carbonate etching		Rubified rock undersides	10	% Pebble	≥ 4 – 64 mm
	Coppice dunes: active / relict		**Soil development**	10	% Granule	≥ 2 – 4 mm
	Deflated surface	✓	Surface rounding of landform	30	% Sand	≤ 2 mm
	Pavement	✓	**Woody debris in place**	10	% Silt/Clay	Fines
	Other:					

Indicators in areas marked as "upland" on cross section.

Fluvial Indicators

	Bars: sand / gravel		**Mud: cracks / curls / drapes**		**Sediment tails: sand / gravel**
✓	Cut banks		Organic drift		Vegetation-channel alignment
	Drainage swales		**Overturned rocks**		**Water-cut benches**
	Exposed roots		Scour		Wrack
	First-order streams		**Sediment ramps: sand / gravel**		**Wrinkle marks**
	Flow lineations		Sediment sorting		
	Other:				

Some relict swales w/ no signs of recent flows and no connection to main channel.

Vegetation

Estimated % perennial plant cover 5-25 | Perennial plant size compared to watercourse veg: smaller / same / larger

Estimate species composition of shrubs and perennial plants by % of total:

Creosote, Ambrosia spp., Senna armata

Schismus + other herbs undisturbed in upland areas.

Site ID: 29 Palms	Stream ID: MESA-T-02	page 3 of 4

Note presence or absence of each indicator within a minimum distance of 50 feet upstream and 50 feet downstream of a representative channel cross section. Mark each box with a plus (+) for those indicators observed, and a minus (–) for those not observed. For examples see the Photo Atlas in MESA ~ Mapping Episodic Stream Indicators.

WATERCOURSE or WATERCOURSE COMPLEX

Transportation, Deposition & Flow Transition Indicators

	Bar forms: sand / gravel		Secondary channels	Substrate Particle Size			
	Bifurcated flow		Sediment plastering	Estimated percentages			
	Drainage swales		Sediment ramps: sand / gravel		% Bedrock / Cemented substrate		
	Flow lineations		Sediment sheets: sand / gravel	10	% Boulder	≥ 256 mm	
	Imbricated gravel	✓	Sediment sorting	10	% Cobble	≥ 64 – 256 mm	
	Levee ridges: sand / gravel		Sediment tails: sand / gravel	10	% Pebble	≥ 4 – 64 mm	
	Mud: cracks / curls / drapes	✓	Vegetation-channel alignments	40	% Sand	≤ 2 mm	
✓	Organic drift	✓	Wrack	20	% Silt/Clay	Fines	
	Overturned rocks		Wrinkle marks				
	Out-of-channel flow: Lateral floodplain / Terminal floodplain						
	Ripples						
	Other:						

Some indicators disturbed from OHV use. Terraces between low flow channels lack indicators.

Erosion Indicators

✓	Cut banks		Rills		Water-cut benches
	Exposed roots		Scour		Water level mark
	Headcuts		Secondary channels		
	Other:				

Shelving more prominent on northern LFCs.

Vegetation

Estimated % perennial plant cover: 5	Perennial plant size relative to uplands vegetation: smaller / same / larger

Estimate species composition of perennial plants by % of total:

PSOspi absent from low flow channels and present on terraces in floodplain.

INDICATORS of PONDING & EVAPORATION and EOLIAN TRANSPORT & DEPOSITION

	Algal crusts		Sand-filled channels		
	Beach ridges		Springs		
	Coppice dunes: active / relict		Substrate staining		
	Crusts: carbonate / salt / soda		Vegetation-landscape alignments		
	Mud: cracks / curls / polygons				
	Other:				

None

Site ID 29 Palms	Stream ID MESA-T-02	page 4 of 4

Diagrams and Notes

Photographs

Photographs should document the representative landscape units, vegetation, and the presence or absence of representative stream indicators.

Photo ID #	Description	GPS location	
	Field maps		

MESA-T-03

Episodic Stream Indicator Data Sheet

Site ID: 29 Palms | Stream ID: MESA-T-03 | Date: 6-17-24

Nearest Town: 29 Palms | County: San Bernardino

Investigators: C. Amoaku, B. Strittmater

Base Map

Aerial Photo #: | Date: | Topographic Map Name: | Date:

GPS Data

GPS Name: | Datum: | Transect Elevation: | Zone 10 / 11 | GPS Error: ± ft / m

GPS co-ords start of transect: | GPS co-ords end of transect:

Geomorphic Province (✓one)

	✓	Mojave		Sonoran/Colorado		Great Basin	Other:		

Landform (✓ all that apply)

	Headwater		Upper fan	✓	Middle fan		Lower fan		Alluvial plain		Axial valley		Playa		

Channel Form (✓ one)

✓	Single thread		Braided		Compound		Distributary		Discontinuous	Other:	

Transect was selected to:

✓	Document fluvial activity & boundaries		Document channel elevations & boundaries
	Document habitat associations		Document a change in watercourse morphology
	Other:		

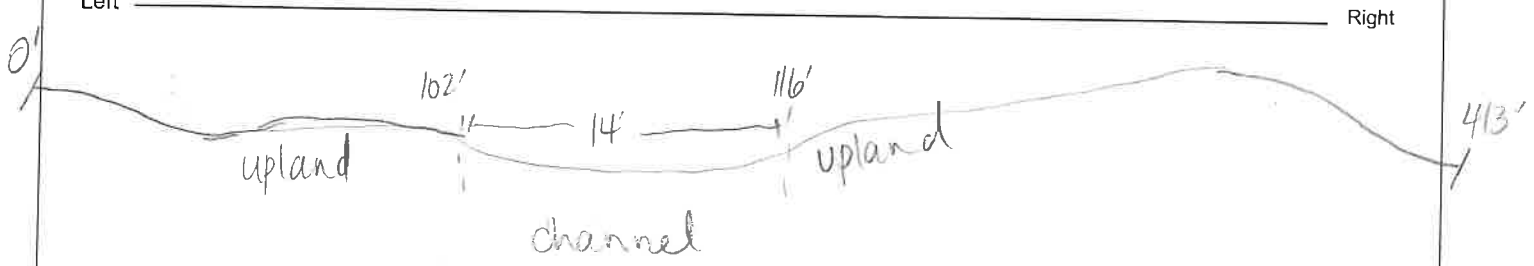
Date of most recent runoff event (if known):

Physical Setting: Briefly describe geomorphic processes and surficial materials and conditions, including the degree of disturbance relative to an intact dryland stream ecosystem, and any anthropogenic influences on the channel form and function:

Single thread channel that connects to the main northern channel. Currently used for OHV activity.

Summary Site Description and Cross-section Sketch: View across the channel from watercourse-edge to watercourse-edge. Identify channel(s), banks, islands, interfluves, floodplains, terraces, and uplands where present. Note approximate width and elevation differences between features indicated.

facing NW



Site ID: 29 Palms	Stream ID: MESA - T-03	page 2 of 4

Note presence or absence of each indicator within a minimum distance of 50 feet upstream and 50 feet downstream of the representative channel cross section. Mark each box with a plus (+) for those indicators observed, and a minus (–) for indicators not observed. For examples see the Photo Atlas in MESA ~ Mapping Episodic Stream Indicators.

UPLAND

Terrestrial Indicators

	Av soil horizon	✓	Relict bars & swales
	Biotic soil crusts		Rock fractured in place
✓	Bioturbation		Rock varnish
	Caliche: coatings / layers / rubble		Rock weathering
	Carbonate etching		Rubified rock undersides
	Coppice dunes: active / relict		Soil development
	Deflated surface	✓	Surface rounding of landform
	Pavement	✓	Woody debris in place
	Other:		

Substrate Particle Size

Estimated percentages

	% Bedrock / Cemented substrate	
10	% Boulder	≥ 256 mm
20	% Cobble	≥ 64 – 256mm
20	% Pebble	≥ 4 – 64 mm
20	% Granule	≥ 2 – 4 mm
20	% Sand	≤ 2 mm
10	% Silt/Clay	Fines

Fluvial Indicators

	Bars: sand / gravel		Mud: cracks / curls / drapes		Sediment tails: sand / gravel
	Cut banks		Organic drift		Vegetation-channel alignment
✓	Drainage swales		Overturned rocks		Water-cut benches
	Exposed roots		Scour		Wrack
	First-order streams		Sediment ramps: sand / gravel		Wrinkle marks
	Flow lineations		Sediment sorting		
	Other:				

upland relic swale

Vegetation

Estimated % perennial plant cover: 15-25 | Perennial plant size compared to watercourse veg: smaller / same / (larger)

Estimate species composition of shrubs and perennial plants by % of total:

Creosote, Cholla, Ambrosia spp. in upland areas. Absent from water course. Relict swales observed on western side of transect between slopes.

Site ID: 29 Palms	Stream ID: MESA-T-03	page 3 of 4

Note presence or absence of each indicator within a minimum distance of 50 feet upstream and 50 feet downstream of a representative channel cross section. Mark each box with a plus (+) for those indicators observed, and a minus (–) for those not observed. For examples see the Photo Atlas in MESA ~ Mapping Episodic Stream Indicators.

WATERCOURSE or WATERCOURSE COMPLEX

Transportation, Deposition & Flow Transition Indicators

	Bar forms: sand / gravel		Secondary channels
	Bifurcated flow		Sediment plastering
	Drainage swales		Sediment ramps: sand / gravel
	Flow lineations		Sediment sheets: sand / gravel
	Imbricated gravel	✓	Sediment sorting
	Levee ridges: sand / gravel		Sediment tails: sand / gravel
	Mud: cracks / curls / drapes	✓	Vegetation-channel alignments
	Organic drift		Wrack
	Overturned rocks		Wrinkle marks
	Out-of-channel flow: Lateral floodplain / Terminal floodplain		
	Ripples		
	Other:		

Substrate Particle Size

Estimated percentages

	% Bedrock / Cemented substrate	
5	% Boulder	≥ 256 mm
5	% Cobble	≥ 64 – 256 mm
10	% Pebble	≥ 4 – 64 mm
20	% Granule	≥ 2 – 4 mm
40	% Sand	≤ 2 mm
20	% Silt/Clay	Fines

Most indicators disturbed from OHV use.

Erosion Indicators

✓	Cut banks		Rills		Water-cut benches
	Exposed roots		Scour		Water level mark
	Headcuts		Secondary channels		
	Other:				

Vegetation

Estimated % perennial plant cover: 0

Perennial plant size relative to uplands vegetation: smaller / same / larger

Estimate species composition of perennial plants by % of total:

Perennial plant absent from channel.

INDICATORS of PONDING & EVAPORATION and EOLIAN TRANSPORT & DEPOSITION

	Algal crusts		Sand-filled channels		
	Beach ridges		Springs		
	Coppice dunes: active / relict		Substrate staining		
	Crusts: carbonate / salt / soda		Vegetation-landscape alignments		
	Mud: cracks / curls / polygons				
	Other:				

None

Site ID	Stream ID	page 4 of 4

Diagrams and Notes

Photographs

Photographs should document the representative landscape units, vegetation, and the presence or absence of representative stream indicators.

Photo ID #	Description	GPS location	

Episodic Stream Indicator Data Sheet				page 1 of 4
Site ID: 29 Palms	Stream ID: MESA-T-04			Date: 6/17/24
Nearest Town: 29 Palms		County:		
Investigators: B. Schultz, C. Amoaku				
Base Map				
Aerial Photo #:	Date:	Topographic Map Name:		Date:
GPS Data				
GPS Name:	Datum:	Transect Elevation:	Zone 10 / 11	GPS Error: ± ft / m
GPS co-ords start of transect:		GPS co-ords end of transect:		

Geomorphic Province (✓one)		Mojave		Sonoran/Colorado		Great Basin	Other:

Landform (✓ all that apply)

	Headwater		Upper fan		Middle fan	✓	Lower fan		Alluvial plain		Axial valley		Playa

Channel Form (✓ one)

	Single thread		Braided		Compound		Distributary		Discontinuous	Other:

Transect was selected to:

✓	Document fluvial activity & boundaries		Document channel elevations & boundaries
	Document habitat associations		Document a change in watercourse morphology
	Other:		

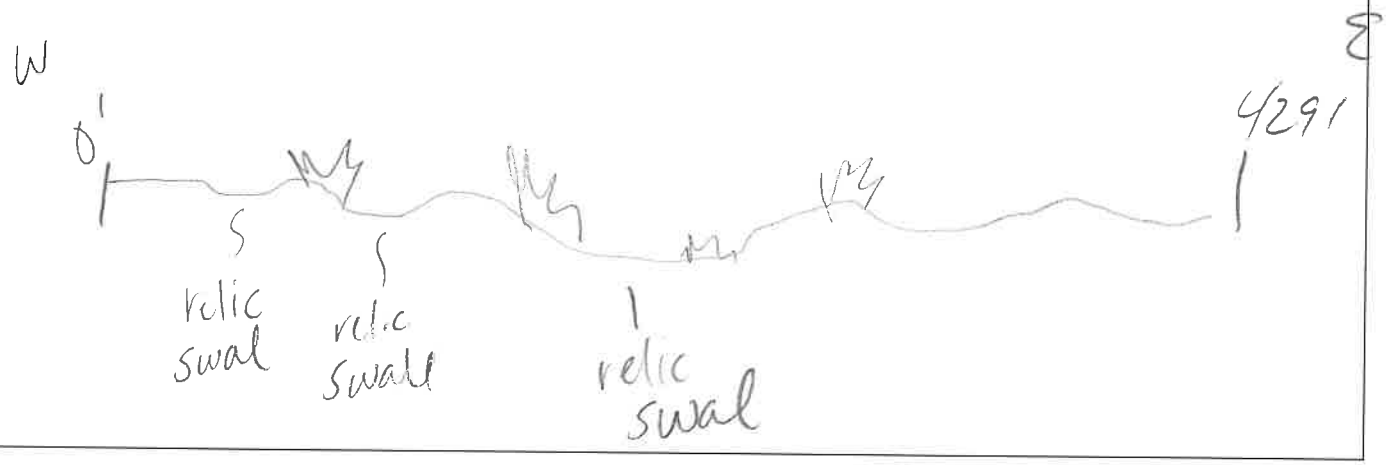
Date of most recent runoff event (if known):

Physical Setting: Briefly describe geomorphic processes and surficial materials and conditions, including the degree of disturbance relative to an intact dryland stream ecosystem, and any anthropogenic influences on the channel form and function:

Sheetflow influenced and relic swales present throughout. No recent fluvial activity (only relic alluvium scaring of landscape of past historical flows)

Summary Site Description and Cross-section Sketch: View across the channel from watercourse-edge to watercourse-edge. Identify channel(s), banks, islands, interfluves, floodplains, terraces, and uplands where present. Note approximate width and elevation differences between features indicated.

Left ——— Facing North ——— Right



Site ID: 29 Palms	Stream ID: MESA-T-04	page 2 of 4

Note presence or absence of each indicator within a minimum distance of 50 feet upstream and 50 feet downstream of the representative channel cross section. Mark each box with a plus (+) for those indicators observed, and a minus (–) for indicators not observed. For examples see the Photo Atlas in MESA ~ Mapping Episodic Stream Indicators.

UPLAND

Terrestrial Indicators				Substrate Particle Size		
	Av soil horizon	✓	Relict bars & swales	Estimated percentages		
	Biotic soil crusts		Rock fractured in place		% Bedrock / Cemented substrate	
✓	Bioturbation		Rock varnish	20	% Boulder	≥ 256 mm
	Caliche: coatings / layers / rubble		Rock weathering	20	% Cobble	≥ 64 – 256mm
	Carbonate etching		Rubified rock undersides	20	% Pebble	≥ 4 – 64 mm
	Coppice dunes: active / relict	✓	Soil development	10	% Granule	≥ 2 – 4 mm
	Deflated surface	✓	Surface rounding of landform	20	% Sand	≤ 2 mm
	Pavement	✓	Woody debris in place		% Silt/Clay	Fines
✓	Other: rocks in swales					

Fluvial Indicators

	Bars: sand / gravel		Mud: cracks / curls / drapes		Sediment tails: sand / gravel
✓	Cut banks		Organic drift		Vegetation-channel alignment
✓	Drainage swales		Overturned rocks		Water-cut benches
	Exposed roots	✓	Scour		Wrack
	First-order streams		Sediment ramps: sand / gravel		Wrinkle marks
	Flow lineations		Sediment sorting		
	Other:				

Relic swales throughout w/ discontinuous indicators – no signs of recent hydrology / fluvial activity

Vegetation

Estimated % perennial plant cover: 10-15 Perennial plant size compared to watercourse veg: smaller / same / larger

Estimate species composition of shrubs and perennial plants by % of total:

creosote, burrobush, big galleta, cholla

Site ID: 29 Palms	Stream ID: MESA-T-04	page 3 of 4

Note presence or absence of each indicator within a minimum distance of 50 feet upstream and 50 feet downstream of a representative channel cross section. Mark each box with a plus (+) for those indicators observed, and a minus (–) for those not observed. For examples see the Photo Atlas in MESA ~ Mapping Episodic Stream Indicators.

WATERCOURSE or WATERCOURSE COMPLEX

Transportation, Deposition & Flow Transition Indicators

	Bar forms: sand / gravel		Secondary channels
	Bifurcated flow		Sediment plastering
	Drainage swales		Sediment ramps: sand / gravel
	Flow lineations		Sediment sheets: sand / gravel
	Imbricated gravel		Sediment sorting
	Levee ridges: sand / gravel		Sediment tails: sand / gravel
	Mud: cracks / curls / drapes		Vegetation-channel alignments
	Organic drift		Wrack
	Overturned rocks		Wrinkle marks
	Out-of-channel flow: Lateral floodplain / Terminal floodplain		
	Ripples		
	Other:		

Substrate Particle Size

Estimated percentages

	% Bedrock / Cemented substrate	
	% Boulder	≥ 256 mm
	% Cobble	≥ 64 – 256 mm
	% Pebble	≥ 4 – 64 mm
	% Granule	≥ 2 – 4 mm
	% Sand	≤ 2 mm
	% Silt/Clay	Fines

N/A

Erosion Indicators

	Cut banks		Rills		Water-cut benches
	Exposed roots		Scour		Water level mark
	Headcuts		Secondary channels		
	Other:				

N/A

Vegetation

Estimated % perennial plant cover:	Perennial plant size relative to uplands vegetation: smaller / same / larger

Estimate species composition of perennial plants by % of total:

N/A

INDICATORS of PONDING & EVAPORATION and EOLIAN TRANSPORT & DEPOSITION

	Algal crusts		Sand-filled channels		
	Beach ridges		Springs		
	Coppice dunes: active / relict		Substrate staining		
	Crusts: carbonate / salt / soda		Vegetation-landscape alignments		
	Mud: cracks / curls / polygons				
	Other:				

none

Site ID	Stream ID	page 4 of 4

Diagrams and Notes

Photographs

Photographs should document the representative landscape units, vegetation, and the presence or absence of representative stream indicators.

Photo ID #	Description	GPS location	

MESA-T-05

Episodic Stream Indicator Data Sheet				page 1 of 4
Site ID: 29 Palms	Stream ID: MESA-T-05			Date: 6-17-24
Nearest Town: 29 Palms			County: San Bernardino	
Investigators: B. Schultz, C. Amoakue				
Base Map				
Aerial Photo #:	Date:	Topographic Map Name:		Date:
GPS Data				
GPS Name:	Datum:	Transect Elevation:	Zone 10 / 11	GPS Error: ± ft / m
GPS co-ords start of transect:		GPS co-ords end of transect:		

Geomorphic Province (✓one)											
	✓	Mojave		Sonoran/Colorado		Great Basin	Other:				

Landform (✓ all that apply)													
	Headwater		Upper fan	✓	Middle fan		Lower fan		Alluvial plain		Axial valley		Playa

Channel Form (✓ one)											
✓	Single thread		Braided		Compound		Distributary		Discontinuous	Other:	

Transect was selected to:			
✓	Document fluvial activity & boundaries		Document channel elevations & boundaries
	Document habitat associations		Document a change in watercourse morphology
	Other:		

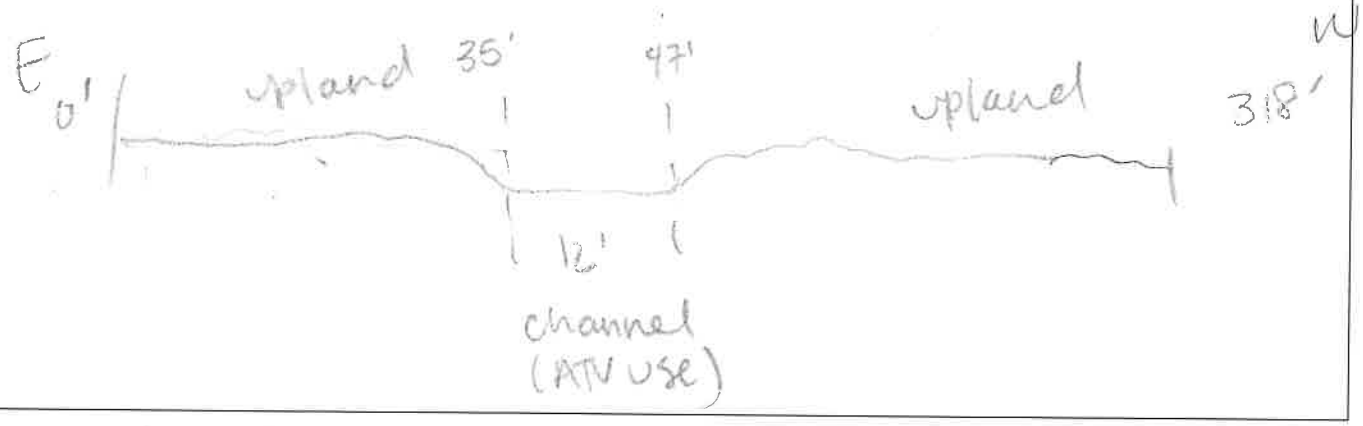
Date of most recent runoff event (if known):

Physical Setting: Briefly describe geomorphic processes and surficial materials and conditions, including the degree of disturbance relative to an intact dryland stream ecosystem, and any anthropogenic influences on the channel form and function:

Single thread channel that connects to main channel to north.

Summary Site Description and Cross-section Sketch: View across the channel from watercourse-edge to watercourse-edge. Identify channel(s), banks, islands, interfluves, floodplains, terraces, and uplands where present. Note approximate width and elevation differences between features indicated.

Left ——— Right



Site ID: 29 Palms	Stream ID: MESA-T-05	page 2 of 4

Note presence or absence of each indicator within a minimum distance of 50 feet upstream and 50 feet downstream of the representative channel cross section. Mark each box with a plus (+) for those indicators observed, and a minus (–) for indicators not observed. For examples see the Photo Atlas in MESA ~ Mapping Episodic Stream Indicators.

UPLAND

Terrestrial Indicators				Substrate Particle Size		
	Av soil horizon	✓	Relict bars & swales	Estimated percentages		
	Biotic soil crusts		Rock fractured in place	–	% Bedrock / Cemented substrate	
	Bioturbation		Rock varnish	10	% Boulder	≥ 256 mm
	Caliche: coatings / layers / rubble		Rock weathering	30	% Cobble	≥ 64 – 256mm
	Carbonate etching		Rubified rock undersides	30	% Pebble	≥ 4 – 64 mm
	Coppice dunes: active / relict		Soil development	20	% Granule	≥ 2 – 4 mm
	Deflated surface	✓	Surface rounding of landform	10	% Sand	≤ 2 mm
	Pavement	✓	Woody debris in place	0	% Silt/Clay	Fines
	Other:					

Fluvial Indicators					
	Bars: sand / gravel		Mud: cracks / curls / drapes		Sediment tails: sand / gravel
	Cut banks		Organic drift		Vegetation-channel alignment
✓	Drainage swales		Overturned rocks		Water-cut benches
	Exposed roots		Scour		Wrack
	First-order streams		Sediment ramps: sand / gravel		Wrinkle marks
	Flow lineations		Sediment sorting		
	Other:				

relic upland swales

Vegetation

Estimated % perennial plant cover: 5-25 | Perennial plant size compared to watercourse veg: smaller / same / larger

Estimate species composition of shrubs and perennial plants by % of total:

creosote, burrobush, big galleta, ephedra in upland areas. relict swales observed in western transect

Site ID: 29 Palms	Stream ID: MESA-T-05	page 3 of 4

Note presence or absence of each indicator within a minimum distance of 50 feet upstream and 50 feet downstream of a representative channel cross section. Mark each box with a plus (+) for those indicators observed, and a minus (–) for those not observed. For examples see the Photo Atlas in MESA ~ Mapping Episodic Stream Indicators.

WATERCOURSE or WATERCOURSE COMPLEX

Transportation, Deposition & Flow Transition Indicators				Substrate Particle Size		
	Bar forms: sand / gravel		Secondary channels	Estimated percentages		
	Bifurcated flow		Sediment plastering		% Bedrock / Cemented substrate	
	Drainage swales		Sediment ramps: sand / gravel		% Boulder	≥ 256 mm
	Flow lineations		Sediment sheets: sand / gravel	10	% Cobble	≥ 64 – 256 mm
	Imbricated gravel	✓	Sediment sorting	10	% Pebble	≥ 4 – 64 mm
	Levee ridges: sand / gravel		Sediment tails: sand / gravel	20	% Granule	≥ 2 – 4 mm
	Mud: cracks / curls / drapes	✓	Vegetation-channel alignments	50	% Sand	≤ 2 mm
	Organic drift		Wrack	10	% Silt/Clay	Fines
	Overturned rocks		Wrinkle marks			
	Out-of-channel flow: Lateral floodplain / Terminal floodplain					
	Ripples					
	Other:					

Erosion Indicators

	Cut banks		Rills		Water-cut benches
	Exposed roots		Scour		Water level mark
	Headcuts		Secondary channels		
	Other:				

none

Vegetation

Estimated % perennial plant cover: 0

Perennial plant size relative to uplands vegetation: smaller / same / larger

Estimate species composition of perennial plants by % of total:

perennial plants absent from channel

INDICATORS of PONDING & EVAPORATION and EOLIAN TRANSPORT & DEPOSITION

	Algal crusts		Sand-filled channels		
	Beach ridges		Springs		
	Coppice dunes: active / relict		Substrate staining		
	Crusts: carbonate / salt / soda		Vegetation-landscape alignments		
	Mud: cracks / curls / polygons				
	Other:				

Site ID	29 palms	Stream ID	MESA-T-05	page 4 of 4

Diagrams and Notes

Photographs

Photographs should document the representative landscape units, vegetation, and the presence or absence of representative stream indicators.

Photo ID #	Description	GPS location	

MESA-T-06

Episodic Stream Indicator Data Sheet			page 1 of 4
Site ID: 29 Palms	Stream ID: MESA-T-06		Date: 9/17/24
Nearest Town: 29 Palms		County:	
Investigators:			

Base Map

Aerial Photo #:	Date:	Topographic Map Name:	Date:

GPS Data

GPS Name:	Datum:	Transect Elevation:	Zone 10 / 11	GPS Error: ± ft / m
GPS co-ords start of transect:		GPS co-ords end of transect:		

Geomorphic Province (✓one)	✓	Mojave		Sonoran/Colorado		Great Basin	Other:

Landform (✓ all that apply)

	Headwater		Upper fan		Middle fan		Lower fan		Alluvial plain		Axial valley		Playa

Channel Form (✓ one)

	Single thread		Braided		Compound		Distributary		Discontinuous	Other:

Transect was selected to:

	Document fluvial activity & boundaries		Document channel elevations & boundaries
	Document habitat associations		Document a change in watercourse morphology
✓	Other: relic swales		

Date of most recent runoff event (if known):

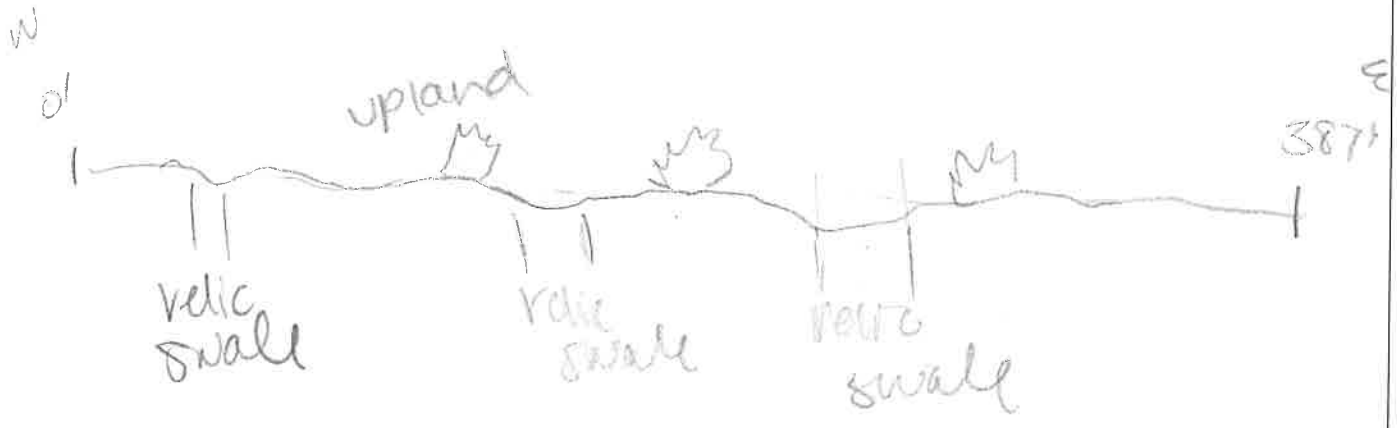
Physical Setting: Briefly describe geomorphic processes and surficial materials and conditions, including the degree of disturbance relative to an intact dryland stream ecosystem, and any anthropogenic influences on the channel form and function:

relic swales throughout

Summary Site Description and Cross-section Sketch: View across the channel from watercourse-edge to watercourse-edge. Identify channel(s), banks, islands, interfluves, floodplains, terraces, and uplands where present. Note approximate width and elevation differences between features indicated.

Facing North

Left ——— Right



Site ID: 29 Palms	Stream ID: MESA-T-06	page 2 of 4

Note presence or absence of each indicator within a minimum distance of 50 feet upstream and 50 feet downstream of the representative channel cross section. Mark each box with a plus (+) for those indicators observed, and a minus (–) for indicators not observed. For examples see the Photo Atlas in MESA ~ Mapping Episodic Stream Indicators.

UPLAND

Terrestrial Indicators				Substrate Particle Size		
	Av soil horizon	✓	Relict bars & swales	Estimated percentages		
	Biotic soil crusts		Rock fractured in place		% Bedrock / Cemented substrate	
✓	Bioturbation		Rock varnish	10	% Boulder	≥ 256 mm
	Caliche: coatings / layers / rubble		Rock weathering	10	% Cobble	≥ 64 – 256mm
	Carbonate etching		Rubified rock undersides	20	% Pebble	≥ 4 – 64 mm
	Coppice dunes: active / relict		Soil development	30	% Granule	≥ 2 – 4 mm
	Deflated surface	✓	Surface rounding of landform	30	% Sand	≤ 2 mm
	Pavement	✓	Woody debris in place	–	% Silt/Clay	Fines
	Other:					

Fluvial Indicators					
	Bars: sand / gravel		Mud: cracks / curls / drapes		Sediment tails: sand / gravel
	Cut banks		Organic drift		Vegetation-channel alignment
✓	Drainage swales		Overturned rocks		Water-cut benches
	Exposed roots		Scour		Wrack
	First-order streams		Sediment ramps: sand / gravel		Wrinkle marks
	Flow lineations		Sediment sorting		
	Other:				

Relic swales throughout but no fluvial activity indicators

Vegetation

Estimated % perennial plant cover:	Perennial plant size compared to watercourse veg: smaller / same / larger

Estimate species composition of shrubs and perennial plants by % of total:

creosote, burrobush, big galleta; cholla

Site ID: 29 Palms	Stream ID: MESA-T-04	page 3 of 4

Note presence or absence of each indicator within a minimum distance of 50 feet upstream and 50 feet downstream of a representative channel cross section. Mark each box with a plus (+) for those indicators observed, and a minus (–) for those not observed. For examples see the Photo Atlas in MESA ~ Mapping Episodic Stream Indicators.

WATERCOURSE or WATERCOURSE COMPLEX

Transportation, Deposition & Flow Transition Indicators

	Bar forms: sand / gravel		Secondary channels
	Bifurcated flow		Sediment plastering
	Drainage swales		Sediment ramps: sand / gravel
	Flow lineations		Sediment sheets: sand / gravel
	Imbricated gravel		Sediment sorting
	Levee ridges: sand / gravel		Sediment tails: sand / gravel
	Mud: cracks / curls / drapes		Vegetation-channel alignments
	Organic drift		Wrack
	Overturned rocks		Wrinkle marks
	Out-of-channel flow: Lateral floodplain / Terminal floodplain		
	Ripples		
	Other:		

Substrate Particle Size

Estimated percentages

	% Bedrock / Cemented substrate	
	% Boulder	≥ 256 mm
	% Cobble	≥ 64 – 256 mm
	% Pebble	≥ 4 – 64 mm
	% Granule	≥ 2 – 4 mm
	% Sand	≤ 2 mm
	% Silt/Clay	Fines

N/A

Erosion Indicators

	Cut banks		Rills		Water-cut benches
	Exposed roots		Scour		Water level mark
	Headcuts		Secondary channels		
	Other:				

N/A

Vegetation

Estimated % perennial plant cover:	Perennial plant size relative to uplands vegetation: smaller / same / larger

Estimate species composition of perennial plants by % of total:

N/A

INDICATORS of PONDING & EVAPORATION and EOLIAN TRANSPORT & DEPOSITION

	Algal crusts		Sand-filled channels		
	Beach ridges		Springs		
	Coppice dunes: active / relict		Substrate staining		
	Crusts: carbonate / salt / soda		Vegetation-landscape alignments		
	Mud: cracks / curls / polygons				
	Other:				

N/A

Site ID 29 Palms	Stream ID MESA-T-06	page 4 of 4

Diagrams and Notes

Photographs

Photographs should document the representative landscape units, vegetation, and the presence or absence of representative stream indicators.

Photo ID #	Description	GPS location	

MESA - T- 07

Episodic Stream Indicator Data Sheet				page 1 of 4
Site ID: 29 Palms	Stream ID: MESA - T - 07			Date: 6 - 17 - 24
Nearest Town: 29 Palms			County: San Bernardino	
Investigators: B. Schultz, C. Amoaku				

Base Map			
Aerial Photo #:	Date:	Topographic Map Name:	Date:

GPS Data				
GPS Name:	Datum:	Transect Elevation:	Zone 10 / 11	GPS Error: ± ft / m
GPS co-ords start of transect:		GPS co-ords end of transect:		

Geomorphic Province (✓one)							
	✓ Mojave		Sonoran/Colorado		Great Basin	Other:	

Landform (✓ all that apply)													
	Headwater		Upper fan		Middle fan	✓	Lower fan		Alluvial plain		Axial valley		Playa

Channel Form (✓ one)									
	Single thread		Braided		Compound		Distributary	✓	Discontinuous	Other:

Transect was selected to:			
✓	Document fluvial activity & boundaries		Document channel elevations & boundaries
	Document habitat associations		Document a change in watercourse morphology
	Other:		

Date of most recent runoff event (if known):

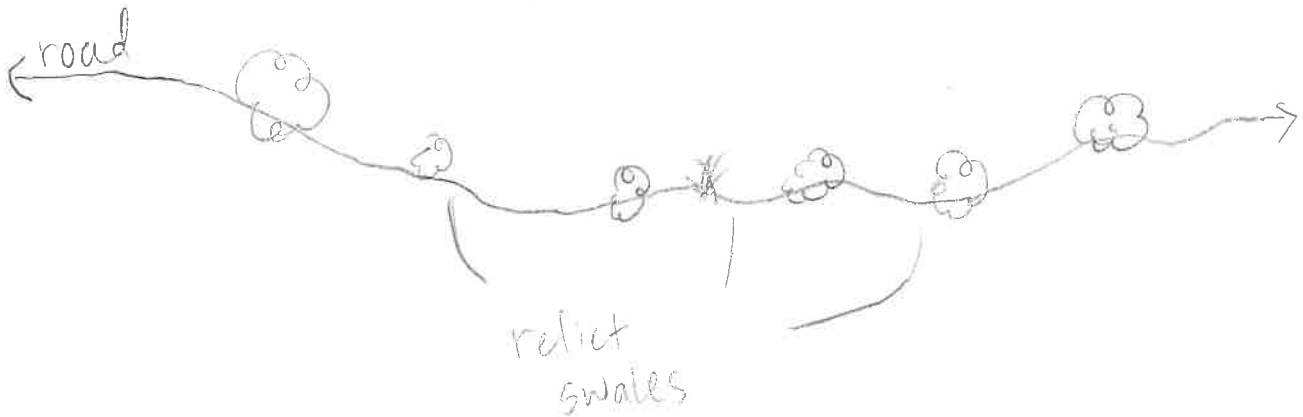
Physical Setting: Briefly describe geomorphic processes and surficial materials and conditions, including the degree of disturbance relative to an intact dryland stream ecosystem, and any anthropogenic influences on the channel form and function:

Alluvial fan north of transect/review area. Sheet-flow influenced, but no watercourse.

Summary Site Description and Cross-section Sketch: View across the channel from watercourse-edge to watercourse-edge. Identify channel(s), banks, islands, interfluves, floodplains, terraces, and uplands where present. Note approximate width and elevation differences between features indicated.

Facing South

Left ——— Right



Site ID: 29 Palms	Stream ID: MESA-T-07	page 2 of 4

Note presence or absence of each indicator within a minimum distance of 50 feet upstream and 50 feet downstream of the representative channel cross section. Mark each box with a plus (+) for those indicators observed, and a minus (–) for indicators not observed. For examples see the Photo Atlas in MESA ~ Mapping Episodic Stream Indicators.

UPLAND

Terrestrial Indicators				**Substrate Particle Size**		
	Av soil horizon	✓	Relict bars & swales	Estimated percentages		
	Biotic soil crusts		Rock fractured in place		% Bedrock / Cemented substrate	
✓	Bioturbation		Rock varnish	25	% Boulder	≥ 256 mm
	Caliche: coatings / layers / rubble		Rock weathering	15	% Cobble	≥ 64 – 256mm
	Carbonate etching		Rubified rock undersides	10	% Pebble	≥ 4 – 64 mm
	Coppice dunes: active / relict		Soil development	10	% Granule	≥ 2 – 4 mm
	Deflated surface	✓	Surface rounding of landform	20	% Sand	≤ 2 mm
	Pavement	✓	Woody debris in place	20	% Silt/Clay	Fines
✓	Other: rocks in swales					

Fluvial Indicators				
	Bars: sand / gravel		Mud: cracks / curls / drapes	Sediment tails: sand / gravel
	Cut banks		Organic drift	Vegetation-channel alignment
✓	Drainage swales		Overturned rocks	Water-cut benches
	Exposed roots	✓	Scour	Wrack
	First-order streams		Sediment ramps: sand / gravel	Wrinkle marks
	Flow lineations		Sediment sorting	
	Other:			

Relict swales w/ discontinuous indicators and no signs of recent fluvial activity

Vegetation

Estimated % perennial plant cover: 15-25 | Perennial plant size compared to watercourse veg: N/A smaller / same / larger

Estimate species composition of shrubs and perennial plants by % of total:

Creosote, Ephedra, Ambrosia, Cholla throughout

Site ID: 29 Palms	Stream ID: MESA-T-07	page 3 of 4

Note presence or absence of each indicator within a minimum distance of 50 feet upstream and 50 feet downstream of a representative channel cross section. Mark each box with a plus (+) for those indicators observed, and a minus (–) for those not observed. For examples see the Photo Atlas in MESA ~ Mapping Episodic Stream Indicators.

WATERCOURSE or WATERCOURSE COMPLEX

Transportation, Deposition & Flow Transition Indicators

	Bar forms: sand / gravel		Secondary channels
	Bifurcated flow		Sediment plastering
	Drainage swales		Sediment ramps: sand / gravel
	Flow lineations		Sediment sheets: sand / gravel
	Imbricated gravel		Sediment sorting
	Levee ridges: sand / gravel		Sediment tails: sand / gravel
	Mud: cracks / curls / drapes		Vegetation-channel alignments
	Organic drift		Wrack
	Overturned rocks		Wrinkle marks
	Out-of-channel flow: Lateral floodplain / Terminal floodplain		
	Ripples		
	Other:		

Substrate Particle Size

Estimated percentages	
% Bedrock / Cemented substrate	
% Boulder	≥ 256 mm
% Cobble	≥ 64 – 256 mm
% Pebble	≥ 4 – 64 mm
% Granule	≥ 2 – 4 mm
% Sand	≤ 2 mm
% Silt/Clay	Fines

N/A

Erosion Indicators

	Cut banks	Rills	Water-cut benches
	Exposed roots	Scour	Water level mark
	Headcuts	Secondary channels	
	Other:		

N/A

Vegetation

Estimated % perennial plant cover:	Perennial plant size relative to uplands vegetation: smaller / same / larger

Estimate species composition of perennial plants by % of total:

N/A

INDICATORS of PONDING & EVAPORATION and EOLIAN TRANSPORT & DEPOSITION

	Algal crusts	Sand-filled channels	
	Beach ridges	Springs	
	Coppice dunes: active / relict	Substrate staining	
	Crusts: carbonate / salt / soda	Vegetation-landscape alignments	
	Mud: cracks / curls / polygons		
	Other:		

none

Site ID	Stream ID	page 4 of 4

Diagrams and Notes

Photographs

Photographs should document the representative landscape units, vegetation, and the presence or absence of representative stream indicators.

Photo ID #	Description	GPS location	

MESA -T- 08

Episodic Stream Indicator Data Sheet			page 1 of 4
Site ID: 29 Palms	Stream ID: MESA-T-08		Date: 6-17-24
Nearest Town: 29 Palms		County: San Bernardino	
Investigators: B. Schultz, C. Amoaku			

Base Map

Aerial Photo #:	Date:	Topographic Map Name:	Date:

GPS Data

GPS Name:	Datum:	Transect Elevation:	Zone 10 / 11	GPS Error: ± ft / m
GPS co-ords start of transect:		GPS co-ords end of transect:		

Geomorphic Province (✓one)	✓	Mojave		Sonoran/Colorado		Great Basin	Other:

Landform (✓ all that apply)

	Headwater		Upper fan	✓	Middle fan		Lower fan		Alluvial plain		Axial valley		Playa

Channel Form (✓ one)

✓	Single thread		Braided		Compound		Distributary		Discontinuous	Other:

Transect was selected to:

✓	Document fluvial activity & boundaries		Document channel elevations & boundaries
	Document habitat associations		Document a change in watercourse morphology
	Other:		

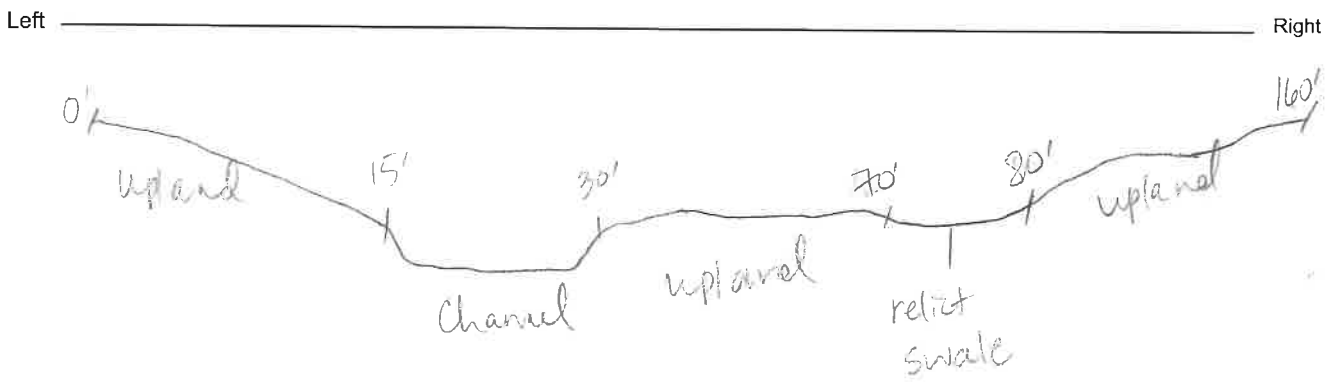
Date of most recent runoff event (if known):

Physical Setting: Briefly describe geomorphic processes and surficial materials and conditions, including the degree of disturbance relative to an intact dryland stream ecosystem, and any anthropogenic influences on the channel form and function:

Channel used as OHV. Sheetflow influenced.

Summary Site Description and Cross-section Sketch: View across the channel from watercourse-edge to watercourse-edge. Identify channel(s), banks, islands, interfluves, floodplains, terraces, and uplands where present. Note approximate width and elevation differences between features indicated.

Facing NE



Site ID: 29 Palms	Stream ID: MESA -T-08	page 2 of 4

Note presence or absence of each indicator within a minimum distance of 50 feet upstream and 50 feet downstream of the representative channel cross section. Mark each box with a plus (+) for those indicators observed, and a minus (–) for indicators not observed. For examples see the Photo Atlas in MESA ~ Mapping Episodic Stream Indicators.

UPLAND

Terrestrial Indicators				**Substrate Particle Size**	
	Av soil horizon	✓	Relict bars & swales	Estimated percentages	
	Biotic soil crusts		Rock fractured in place	% Bedrock / Cemented substrate	
	Bioturbation	✓	Rock varnish	% Boulder	≥ 256 mm
	Caliche: coatings / layers / rubble		Rock weathering	% Cobble	≥ 64 – 256mm
	Carbonate etching		Rubified rock undersides	% Pebble	≥ 4 – 64 mm
	Coppice dunes: active / relict		Soil development	% Granule	≥ 2 – 4 mm
	Deflated surface	✓	Surface rounding of landform	% Sand	≤ 2 mm
	Pavement	✓	Woody debris in place	% Silt/Clay	Fines
	Other:				

Relict swales present in review area.

Fluvial Indicators					
	Bars: sand / gravel		Mud: cracks / curls / drapes		Sediment tails: sand / gravel
	Cut banks		Organic drift		Vegetation-channel alignment
✓	Drainage swales		Overturned rocks		Water-cut benches
	Exposed roots		Scour		Wrack
	First-order streams		Sediment ramps: sand / gravel		Wrinkle marks
	Flow lineations		Sediment sorting		
	Other:				

Relict swales that do not show fluvial indicators were not mapped as watercourse.

Vegetation

Estimated % perennial plant cover: 15-25 | Perennial plant size compared to watercourse veg: smaller / same / larger

Estimate species composition of shrubs and perennial plants by % of total:

creosote, ephedra, Ambrosia, cholla

Site ID: 29 Palms	Stream ID: MESA-T-08	page 3 of 4

Note presence or absence of each indicator within a minimum distance of 50 feet upstream and 50 feet downstream of a representative channel cross section. Mark each box with a plus (+) for those indicators observed, and a minus (–) for those not observed. For examples see the Photo Atlas in MESA ~ Mapping Episodic Stream Indicators.

WATERCOURSE or WATERCOURSE COMPLEX

Transportation, Deposition & Flow Transition Indicators				Substrate Particle Size	
	Bar forms: sand / gravel		Secondary channels	Estimated percentages	
	Bifurcated flow		Sediment plastering	% Bedrock / Cemented substrate	
	Drainage swales		Sediment ramps: sand / gravel	% Boulder	≥ 256 mm
	Flow lineations		Sediment sheets: sand / gravel	% Cobble	≥ 64 – 256 mm
	Imbricated gravel	✓	Sediment sorting	% Pebble	≥ 4 – 64 mm
	Levee ridges: sand / gravel		Sediment tails: sand / gravel	% Granule	≥ 2 – 4 mm
	Mud: cracks / curls / drapes	✓	Vegetation-channel alignments	% Sand	≤ 2 mm
	Organic drift		Wrack	% Silt/Clay	Fines
	Overturned rocks		Wrinkle marks		
	Out-of-channel flow: Lateral floodplain / Terminal floodplain				
	Ripples				
	Other:				

Erosion Indicators

✓	Cut banks		Rills		Water-cut benches
	Exposed roots		Scour		Water level mark
	Headcuts		Secondary channels		
	Other:				

Indicators disturbed due to OHV use.

Vegetation

Estimated % perennial plant cover:	Perennial plant size relative to uplands vegetation: smaller / same / larger

Estimate species composition of perennial plants by % of total:

N/A

INDICATORS of PONDING & EVAPORATION and EOLIAN TRANSPORT & DEPOSITION

	Algal crusts		Sand-filled channels		
	Beach ridges		Springs		
	Coppice dunes: active / relict		Substrate staining		
	Crusts: carbonate / salt / soda		Vegetation-landscape alignments		
	Mud: cracks / curls / polygons				
	Other:				

none

Site ID 29 Palms	Stream ID MESA-T-08	page 4 of 4

Diagrams and Notes

Photographs

Photographs should document the representative landscape units, vegetation, and the presence or absence of representative stream indicators.

Photo ID #	Description	GPS location	

Appendix D
Review Area Photos



Photo 1. View of Transect (T)-1 collected at NWW-1b, facing southeast.



Photo 2. View of OHWM-T-2 collected at NWW-1c, facing south.

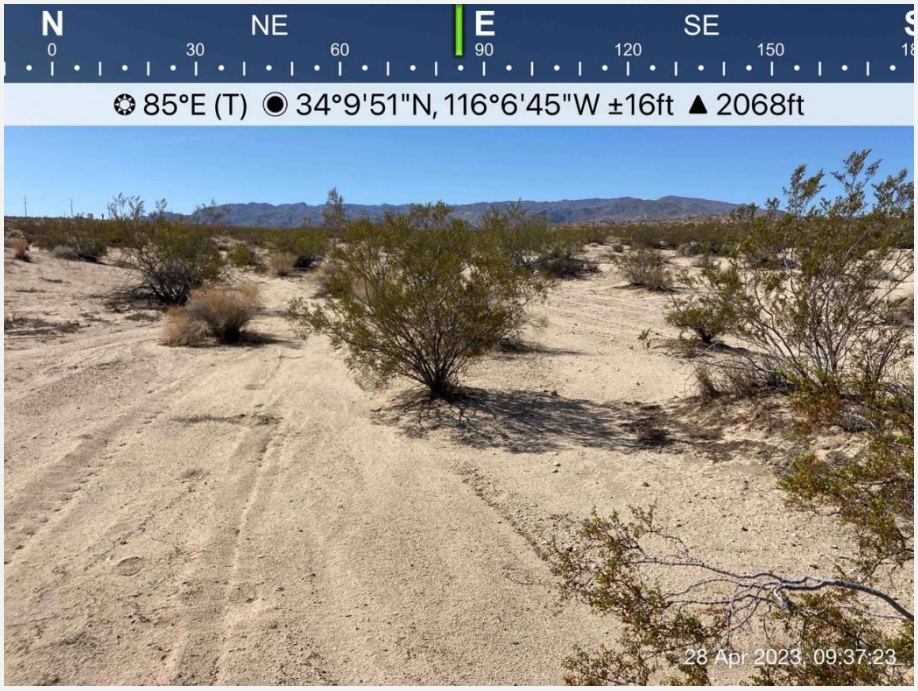


Photo 3. View of OHWM-T-4 collected at an OHV road, facing east.



Photo 4. View of OHWM-T-3 collected at NWW-1a, facing northwest.



Photo 5. View of OHWM-T-5 collected at a non-jurisdictional area, facing southwest.



Photo 6. View of OHWM-T-6 collected at NWW-1, facing southwest.



Photo 7. View of non-jurisdictional area along OHWM-T-7 and MESA-T-04 in the western portion of the site, facing southeast.



Photo 8. View of OHWM-T-8 collected at a non-jurisdictional area centrally located within the site, facing north.



Photo 9. View of a non-jurisdictional road in the eastern portion of the site, facing north.

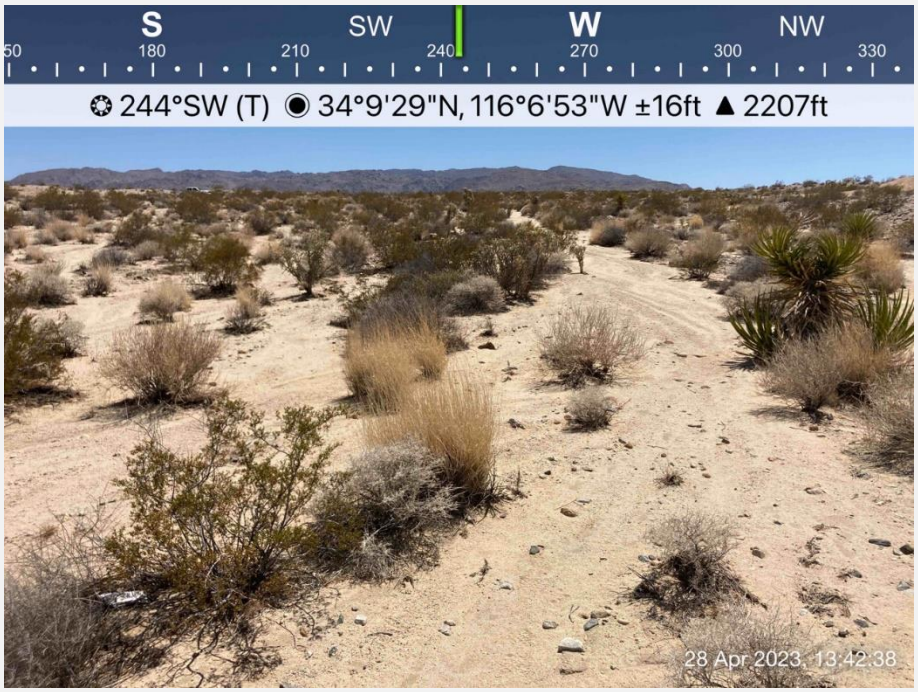


Photo 10. View of non-jurisdictional area within the southern portion of the site, facing southwest.



Photo 11. View of the southern portion of the site demonstrating no jurisdictional features, facing southwest.

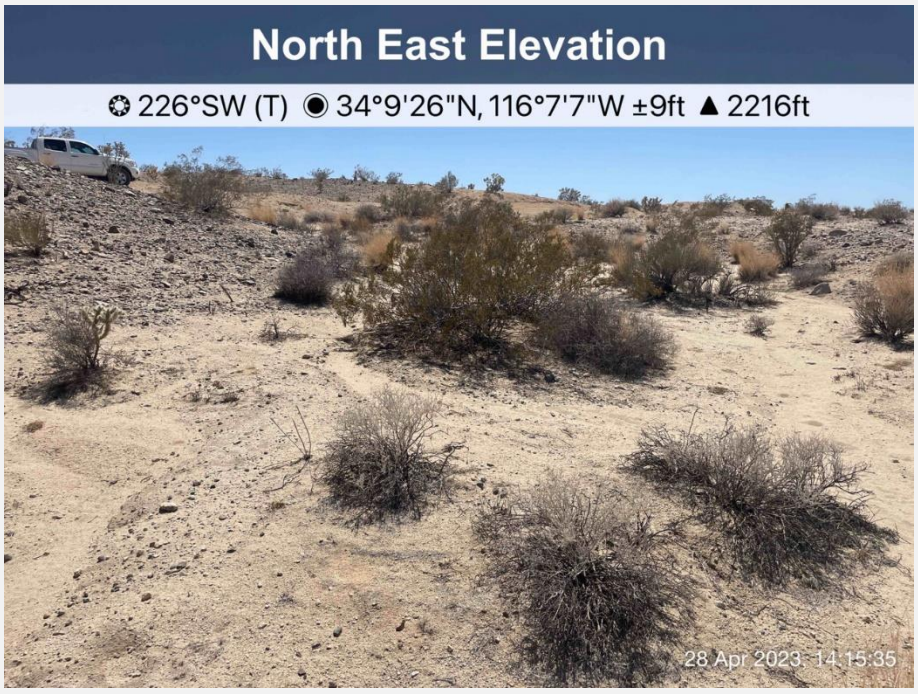


Photo 12. View of the southern portion of the site demonstrating no jurisdictional features, facing southwest.



Photo 13. View of OHWM-T-9 collected at NWW-1d, facing south.



Photo 14. View of OHWM-T-10 within the off-site gen-tie and road alignment at the upstream portion of NWW-1b, facing southwest.

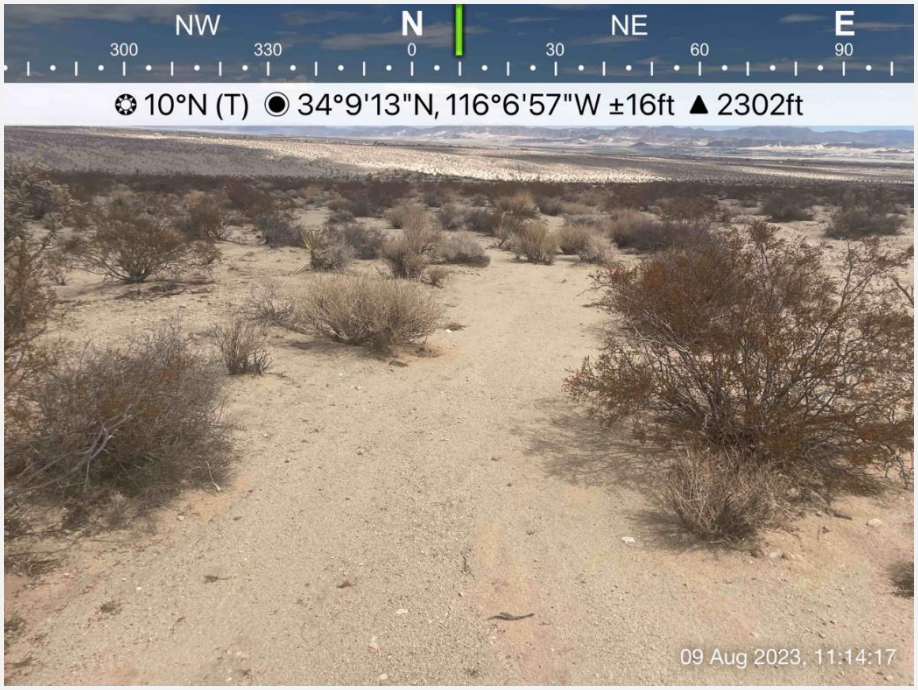


Photo 15. View of the off-site gen-tie alignment demonstrating no jurisdictional features, facing south.

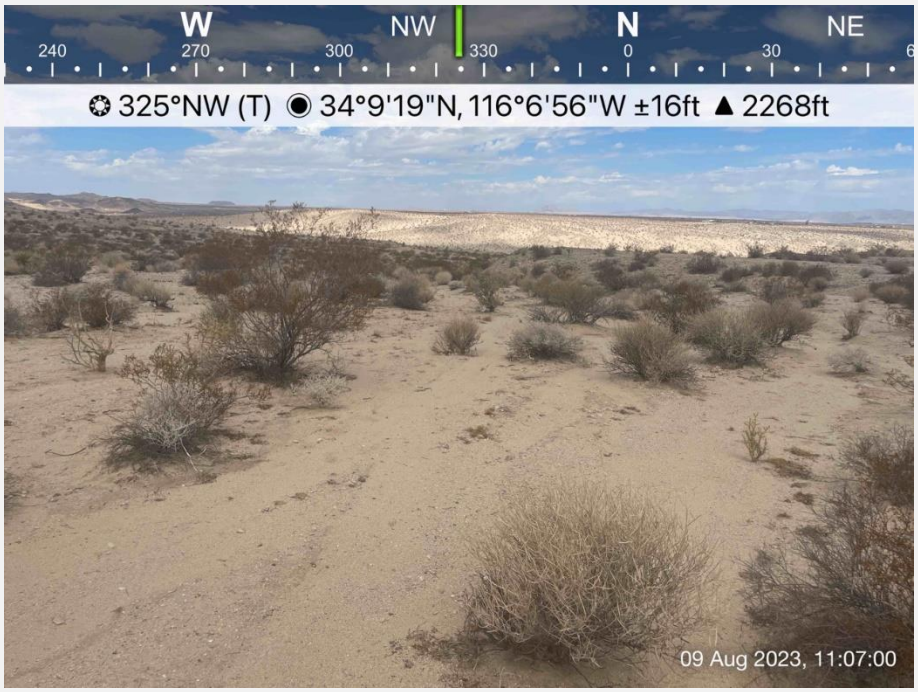


Photo 16. View of the off-site gen-tie alignment demonstrating no jurisdictional features, facing northwest.



Photo 17. View of OHWM-T-11 collected at a non-jurisdictional area within the western portion of the site, facing south/southwest. Sheet flows resulting from natural sloping topography.

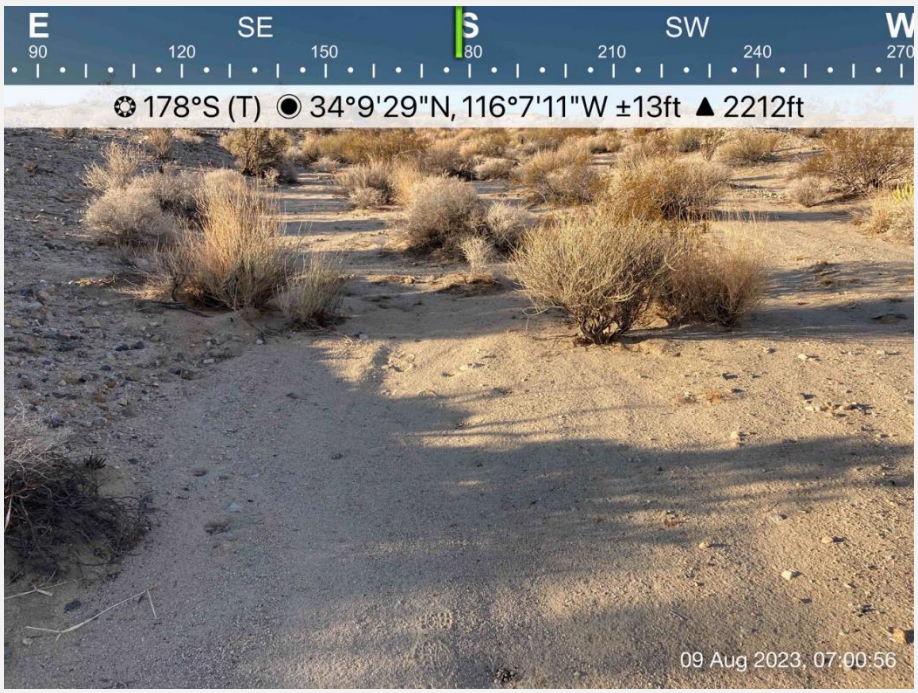


Photo 18. View of non-jurisdictional area within the southwestern portion of the site, facing south. Sheet flows resulting from natural sloping topography.

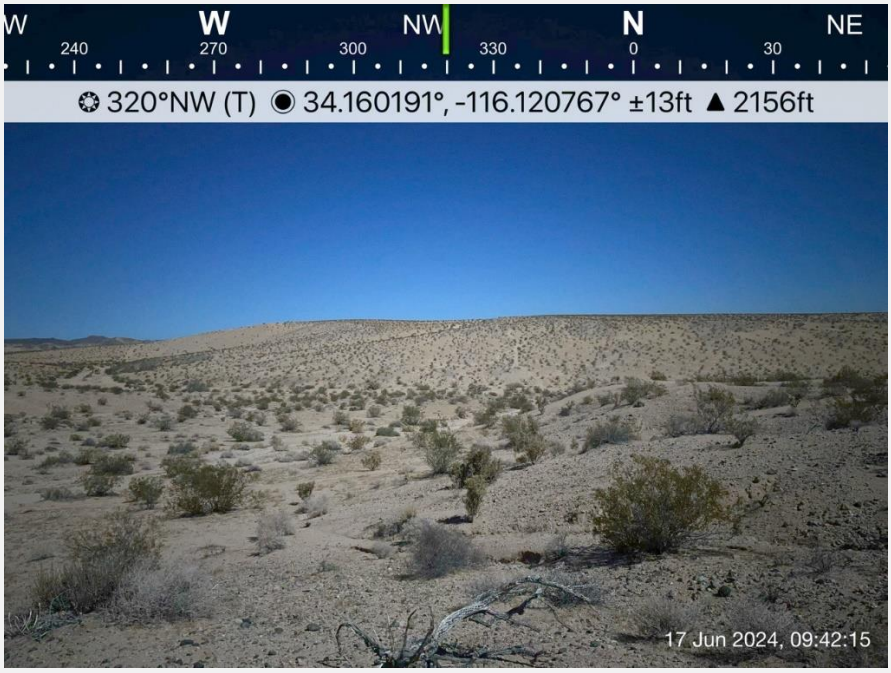


Photo 19. View of non-jurisdictional area along MESA-T-01 collected at an area adjacent to, but outside of NWW-1d within the western portion of the site, facing northwest.



Photo 20. View of SDAM-T-2 near NWW-1 from the top down within the northwestern portion of the site, facing northeast.



Photo 21. View of SDAM-T-3 taken within NWW-1a from the top down within the northwestern portion of the site, facing north/northeast.



Photo 22. View of MESA-T-6 taken in a non-jurisdictional area within the northern-central portion of the site, facing west/southwest.



Photo 23. View of SDAM-T-4 taken NWW-1b within the northeaster portion of the site, facing south/southeast.

Appendix E

Approved Jurisdictional Determination Form

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): October 10, 2012

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: LA District, Marine Air Ground Task Force Training Command, 2012-00589-CLH

C. PROJECT LOCATION AND BACKGROUND INFORMATION:

State: California County/parish/borough**:** San Bernardino City: near Amboy
Center coordinates of site (lat/long in degree decimal format): Lat. 34.47733° **N**, Long. -115.685° **W**.
Name of nearest waterbody: Mesquite Lake
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: N/A
Name of watershed or Hydrologic Unit Code (HUC): Southern Mojave, Lower Mojave Desert (HUC #18100100)

☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☒ Office (Desk) Determination. Date: October 10, 2012
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **Are no** *"navigable waters of the U.S."* within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]

☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain: .

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **Are no** "*waters of the U.S.*" within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. Waters of the U.S.

a. Indicate presence of waters of U.S. in review area (check all that apply):

☐ TNWs, including territorial seas
☐ Wetlands adjacent to TNWs
☐ Relatively permanent waters[1] (RPWs) that flow directly or indirectly into TNWs
☐ Non-RPWs that flow directly or indirectly into TNWs (no adjacent wetlands)
☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
☐ Wetlands adjacent to but not directly abutting RPWs (with a surface connection) that flow directlyor indirectly into TNWs
☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
☐ Impoundments of jurisdictional waters
☐ Isolated (interstate or intrastate) waters, including isolated wetlands

b. Identify (estimate) size of waters of the U.S. in the review area:

Non-wetland waters: linear feet: width (ft) and/or acres.
Wetlands: acres.

c. Limits (boundaries) of jurisdiction based on: **Pick List**

Elevation of established OHWM (if known): .

2. Non-regulated waters/wetlands (check if applicable):[2]

☒ **Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional. Explain:**

The Mesquite Lake Watershed is situated within the closed basin of the Southern Mojave Watershed. Mesquite Lake and its non-RPW tributaries function as an isolated intrastate system, which lacks the presence of a TNW. Moreover, Mesquite Lake and all tributaries to Mesquite Lake are NOT (a)(3) waters as defined by 33 CFR 328.3, as they do NOT meet criteria (a)(3)(i-iii) and since surface waters are

[1] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[2] Supporting documentation is presented in Section III.F.

NOT used for industrial or other commercial purposes by interstate commerce industries. Mesquite Lake is situated within California, San Bernardino County, near Amboy. Mesquite Lake covers an area exceeding 7,430-acres.

Typical rainfall average in this area ranges from 3- to 5-inches. The groundwater level is near the surface of Mesquite Lake. Currently, there are no published commercial uses of the surface waters of any tributaries to Mesquite Lake, and the review of aerial photographs (Google Earth) also did not depict surface water usage of any drainages tributary to Mesquite Lake. Therefore, all tributaries to Mesquite Lake are NOT (a)(3) waters as defined by 33 CFR 328.3 (a)(3)(iiii).

Mesquite Lake, as the terminus for all waters within the Mesquite Lake Watershed, is NOT a TNW. Moreover, Mesquite Lake is NOT an (a)(3)water as defined by 33 CFR 328.3. Mesquite Lake does NOT meet criteria (a)(3)(i-iii), as it: i) DOES NOT have use for surface water recreation or other purposes by foreign or interstate travelers, ii) DOES NOT have harvesting activities of fish or shellfish that may be sold in interstate or foreign commerce, and iii) DOES NOT have surface water industrial usage by industries in interstate commerce. Similar to the tributaries of Mesquite Lake, there are no published uses of Mesquite Lake surface waters, mining or otherwise, and there is lack of evidence of any commerce/commercial activity within Mesquite Lake based on the review of aerial photographs (Google Earth). Mesquite Lake has been determined to be an intrastate isolated water without a surface water connection to commerce, all tributaries to Mesquite Lake as part of the overall watershed system are also isolated and additionally have no nexus to commerce. Thus, the Mesquite Lake Watershed is an isolated watershed system that has no surface water connection to commerce.

Based on the information above, the Corps concludes that all tributaries to Mesquite Lake are NONJURISDICTIONAL waters of the United States, since the waters are NOT tributary to either a TNW or an (a)(3) water and are NOT (a)(3) waters themselves.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. TNW
Identify TNW: .

Summarize rationale supporting determination: .

2. Wetland adjacent to TNW
Summarize rationale supporting conclusion that wetland is "adjacent": .

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[3] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

[3] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: **Pick List**
Drainage area: **Pick List**
Average annual rainfall: inches
Average annual snowfall: inches

(ii) Physical Characteristics:
(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through **Pick List** tributaries before entering TNW.

Project waters are **Pick List** river miles from TNW.
Project waters are **Pick List** river miles from RPW.
Project waters are **Pick List** aerial (straight) miles from TNW.
Project waters are **Pick List** aerial (straight) miles from RPW.
Project waters cross or serve as state boundaries. Explain: .

Identify flow route to TNW[4]: .
Tributary stream order, if known: .

(b) General Tributary Characteristics (check all that apply):
Tributary is: ☐ Natural
☐ Artificial (man-made). Explain: .
☐ Manipulated (man-altered). Explain: .

Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: **Pick List.**

Primary tributary substrate composition (check all that apply):
☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain: .

Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain: .
Presence of run/riffle/pool complexes. Explain: .
Tributary geometry: **Pick List**
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: **Pick List**
Estimate average number of flow events in review area/year: **Pick List**
Describe flow regime: .
Other information on duration and volume: .

Surface flow is: **Pick List.** Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .
☐ Dye (or other) test performed: .

Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[5] (check all indicators that apply):
☐ clear, natural line impressed on the bank ☐ the presence of litter and debris
☐ changes in the character of soil ☐ destruction of terrestrial vegetation
☐ shelving ☐ the presence of wrack line
☐ vegetation matted down, bent, or absent ☐ sediment sorting

[4] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.
[5] A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.

☐ leaf litter disturbed or washed away
☐ sediment deposition
☐ water staining
☐ other (list):
☐ scour
☐ multiple observed or predicted flow events
☐ abrupt change in plant community

☐ Discontinuous OHWM.[6] Explain: .

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☐ High Tide Line indicated by:
- ☐ oil or scum line along shore objects
- ☐ fine shell or debris deposits (foreshore)
- ☐ physical markings/characteristics
- ☐ tidal gauges
- ☐ other (list):

☐ Mean High Water Mark indicated by:
- ☐ survey to available datum;
- ☐ physical markings;
- ☐ vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain: .

Identify specific pollutants, if known: .

(iv) Biological Characteristics. Channel supports (check all that apply):

☐ Riparian corridor. Characteristics (type, average width): .
☐ Wetland fringe. Characteristics: .
☐ Habitat for:
- ☐ Federally Listed species. Explain findings: .
- ☐ Fish/spawn areas. Explain findings: .
- ☐ Other environmentally-sensitive species. Explain findings: .
- ☐ Aquatic/wildlife diversity. Explain findings: .

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:

Wetland size: acres

Wetland type. Explain: .

Wetland quality. Explain: .

Project wetlands cross or serve as state boundaries. Explain: .

(b) General Flow Relationship with Non-TNW:

Flow is: **Pick List**. Explain: .

Surface flow is**: Pick List**

Characteristics: .

Subsurface flow: **Pick List**. Explain findings: .

☐ Dye (or other) test performed: .

(c) Wetland Adjacency Determination with Non-TNW:

☐ Directly abutting
☐ Not directly abutting
- ☐ Discrete wetland hydrologic connection. Explain: .
- ☐ Ecological connection. Explain: .
- ☐ Separated by berm/barrier. Explain: .

(d) Proximity (Relationship) to TNW

Project wetlands are **Pick List** river miles from TNW.

Project waters are **Pick List** aerial (straight) miles from TNW.

Flow is from: **Pick List.**

Estimate approximate location of wetland as within the **Pick List** floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain: .

Identify specific pollutants, if known: .

[6]Ibid.

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width): .
- ☐ Vegetation type/percent cover. Explain: .
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings: .
  - ☐ Fish/spawn areas. Explain findings: .
  - ☐ Other environmentally-sensitive species. Explain findings: .
  - ☐ Aquatic/wildlife diversity. Explain findings: .

3. Characteristics of all wetlands adjacent to the tributary (if any)

All wetland(s) being considered in the cumulative analysis: **Pick List**

Approximately ( ) acres in total are being considered in the cumulative analysis.

For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

Summarize overall biological, chemical and physical functions being performed: .

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   ☐ TNWs: linear feet width (ft), Or, acres.
   ☐ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   ☐ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   ☐ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally

   Provide estimates for jurisdictional waters in the review area (check all that apply):
   ☐ Tributary waters: linear feet width (ft).
   ☐ Other non-wetland waters: acres.
   Identify type(s) of waters: .

3. **Non-RPWs[7] that flow directly or indirectly into TNWs.**
   ☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional waters within the review area (check all that apply):
   ☐ Tributary waters: linear feet width (ft).
   ☐ Other non-wetland waters: acres.
   Identify type(s) of waters: .

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☐ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
   ☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW: .

   ☐ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:

   Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.

   Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
   ☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[8]**
   As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
   ☐ Demonstrate that impoundment was created from "waters of the U.S.," or
   ☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
   ☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

[7] See Footnote # 3.
[8] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[9]

☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain: .
☐ Other factors. Explain: .

Identify water body and summarize rationale supporting determination: .

Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters: .
☐ Wetlands: acres.

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
☐ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain: .
☐ Other: (explain, if not covered above): .

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):
☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
☐ Lakes/ponds: acres.
☐ Other non-wetland waters: acres. List type of aquatic resource: .
☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: **dated July 31, 2012**.
☐ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
☐ Office concurs with data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report.
☐ Data sheets prepared by the Corps: .
☐ Corps navigable waters' study: .
☒ U.S. Geological Survey Hydrologic Atlas: .
☐ USGS NHD data.
☒ USGS 8 and 12 digit HUC maps.
☐ U.S. Geological Survey map(s). Cite scale & quad name:.
☐ USDA Natural Resources Conservation Service Soil Survey. Citation: .
☒ National wetlands inventory map(s). Cite name: Online at http:// www.fws.gov/wetlands/Data/Mapper.html..
☐ State/Local wetland inventory map(s): .
☐ FEMA/FIRM maps: .
☐ 100-year Floodplain Elevation is:

[9] Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.*

☒ Photographs: ☒ Aerial (Name & Date): Google Earth September 2012
.
or ☐ Other (Name & Date): .
☐ Previous determination(s). File no. and date of response letter:
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .
☐ Other information (please specify):

B. ADDITIONAL COMMENTS TO SUPPORT JD: None.