Appendix D

Jurisdictional Delineation of Arid Streams for the Proposed Ash Hill Communication Site

Jurisdictional Delineation of Arid Streams for the Proposed Ash Hill Communication Site San Bernardino County, CA

Unnamed wash, San Bernardino County, CA

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1.0 EXECUTIVE SUMMARY

InterConnect Towers, LLC (Proponent) proposes to construct, operate, and maintain a multi-carrier communication site and ancillary components, including an access road and above-ground electric power easement, on Bureau of Land Management (BLM)-administered land (Project). The proposed Project would consist of the following proposed components:

- A single three-legged, 196-foot freestanding, self-supporting lattice communication tower on top of a 21-foot triangular base with a 28-foot by 28-foot foundation
- A 20-foot by 40-foot equipment shelter.
- Two 100-kilowatt (kW) backup generators with three 2,000-gallon propane tanks.
- Three 15-foot by 40-foot solar arrays.
- A 12.5-foot-wide entrance gate at the southerly entrance to the lease site and a chain-link fence (Motorola R56 Design Standard or equivalent) measuring 8 to10 feet in height, with three strands of barbed wire on the top, bringing the total height of the fencing to 9 to11 feet around the lease area perimeter. Galvanized hardware mesh with dimensions of 1 inch by 2 inches, would be attached to the lower 18 inches of the chain-link fencing and buried to a 12-inch depth, in accordance with standard specifications for fencing in desert tortoise habitat.

The proposed Project is generally located in San Bernardino County, California, approximately 7.8 miles east of Ludlow, California, just south of the Interstate 40 (I-40) right-of-way (ROW). The proposed Project location is in the NW 1/4 of Section 11, Township 7N, Range 9E, San Bernardino Meridian. The proposed Project is also approximately 340 feet within the boundaries of the Mojave Trails National Monument (MTNM) (Figures 1 and 2; see Appendix A for all figures).

AECOM conducted a jurisdictional delineation (JD) of ephemeral (or episodic) streams within the proposed Project Study Area using standard delineation methodologies: (a) Mapping the Ordinary High Water Mark (OHWM), which is used by the U.S. Army Corps of Engineers (USACE) for determining waters of the U.S. and indirectly used by the Regional Water Quality Control Board (RWQCB) for determining waters of the State; and (b) Mapping Episodic Stream Activity (MESA) (where applicable) as utilized by the California Department of Fish and Wildlife (CDFW). The Study Area for jurisdictional waters includes the proposed communications facilities as well as the proposed existing access route plus a 25-foot buffer in any direction out from the road and the communications tower site. The results presented in Section 6 herein include the description of 11 jurisdictional features, all unnamed, as well as an associated non-jurisdictional swale situated along the access route to the south of I-40 and mapped within the Study Area. Within the Study Area, the JD resulted in 0.862 acre of non-wetland waters of the State and acres of CDFW streambeds for a total of 3,350 approximate width (across channel) feet (Table 1-1). All of the jurisdictional features are considered isolated features and therefore are not regulated by the USACE as waters of the U.S. The JD also presents an impact analysis for the Study Area.

Table 1-1. Ephemeral Drainage Features within Study Area

Drainage Feature	Waters of the State (acres)	Streambeds (acres)	Approximate Width (Across Channel) (feet)
Wash 1	0.015	0.078	68
Wash 2	0.018	0.020	17
Wash 3 – North	0.244	0.0978	852
Wash 3 – South	0.302	1.833	1,597
Wash 4	0.003	0.018	16
Wash 5	0.006	0.011	10
Wash 6	0.017	0.022	19
Wash 7	0.010	0.023	20
Wash 8 – West	0.137	0.510	444
Wash 8 – East	0.045	0.266	232
Wash 9	0.003	0.018	16
Wash 10	0.003	0.010	9
Wash 11	0.057	0.057	50
Total	**0.862**	**3.845**	**3,350**

2.0 PROPOSED PROJECT

2.1 Background and Purpose of Project

The Proponent seeks to provide improved cellular communication capability within the I-40 corridor and surrounding lands, specifically east of Ludlow, California, and along a portion of U.S. Route 66 (National Trails Highway). I-40 is a heavily traveled roadway that carries regional traffic between southern California and northern Arizona. This segment of I-40 and adjacent lands has been identified as having inadequate cellular transmission coverage, largely due to a current lack of towers in or adjacent to the highway within the coverage area. Wireless telecommunication providers (i.e., Verizon, AT&T, etc.) have determined a need for an additional communication site based on any or all of the following criteria:

- Need to provide signal coverage to an area or zone;
- Need to strengthen/densify coverage to an area or zone;
- Customer demand for coverage;
- Emergency Response Agency demand for coverage;
- Law Enforcement Agency demand for coverage; and
- Federal/Homeland Security demand for coverage.

The proposed Project would remedy the existing coverage deficiencies in the area and would meet one or more of the objectives outlined above. The facility would be made available for collocated use by existing wireless telecommunication providers and other telecommunication service providers. See Figure 1 for a regional location map and Figure 2 for a local vicinity aerial map of the area.

2.2 General Project Description

The proposed Project would entail the issuance of an approximately 0.23-acre ROW grant for the construction, operation, maintenance, and decommissioning and restoration of a multi-carrier communication site and ancillary components, on BLM-administered land.

The Proponent has filed an application for a 30-year ROW grant from the BLM for the proposed construction of the communication facility. The proposed Project site is not ancillary to an existing ROW. The proposed Project would be a multi-tenant wireless communication facility and would be designed to accommodate up to six tenants including a minimum of four national carriers as well as government agencies (police, fire and resource, and highway patrol).

The proposed Project would consist of the following proposed components:

- 100 by 100-foot lease area that includes a single three-legged, 196-foot freestanding, self-supporting lattice communication tower;
- 20-foot by 40-foot equipment shelter ;
- up to two 100-kW backup generators with up to three 2,000-gallon propane tanks;
- up to three 20-foot by 40-foot solar arrays;
- a chain-link fence, with galvanized hardware mesh with dimensions of 1 inch by 2 inches, would be attached to the lower 18 inches of the chain-link fencing and buried to a depth of 12 inches, in accordance with standard specifications for fencing in desert tortoise habitat; and
- a 12.5-foot-wide entrance gate at the southerly line of the lease site.

Detailed information about each of the proposed Project components is provided below.

Tower

The tower would be a self-supporting, three-legged, lattice-style structure, and would be 196 feet in height. The tower would serve as the structure upon which the communication equipment would be mounted. The tower would be placed upon a concrete slab foundation, and would consist of either cast-in-place caissons or shallow foundations designed to carry axial loads and moments of force applied by wind and other factors on the tower. The tower, foundations, and all other structures on the site would be built to professional standards and applicable building codes. Soil tests and other investigations would be performed within the location of the proposed site to determine the specific foundation requirements.

The structural members and bracing units of the tower would be constructed of industry-standard galvanized steel with a silver-gray color tone in conformance with the Applicant-proposed visual resource measures that require non-reflective metal surfaces and tones to reduce glare. A grounding system would also be installed. The types of communication equipment installed on the tower would be similar for the carriers housed at the site and would vary only with the equipment requirements for their specific systems. All systems will generally include a rectangular antenna array, omni antennas, and microwave dishes.

Equipment Shelter and Supporting Components

The site would include an equipment shelter adjacent to the tower to house interior communication equipment. The shelter would likely be a 20-foot by 40-foot slab block building that would be constructed onsite. Alternately, the shelter could be an assemblage of smaller industry standard prefabricated units or equipment cabinets brought by truck and installed onsite. Regardless of construction method, the structure(s) would be mounted on a concrete foundation sized according to structure dimensions and other design requirements. The shelter would be divided into two or more interior compartments or rooms depending upon carrier requirements. The shelter would include an environmental control system for heating, ventilation, and air conditioning (HVAC) to keep the interior of the shelter within the temperature range required for the operation of the electronic communication equipment inside. Alternately, a three or four-sided open air shelter would be constructed.

Electrical power to the proposed Project site would be provided by up to three 15-foot by 40-foot photovoltaic solar arrays. The panels would be approximately 8 feet in height on the south side angling to 15 feet high along the north edge of the solar panels. Electronic equipment would be installed within a series of weatherproof cabinets located beneath the solar panels. The compound would also include up to two 100-kW standby generators located outside of the equipment shelter and mounted on a concrete pad. The generators would provide electric power in the event of failure of grid power or during periods of high electric power consumption. The generators would be powered by propane fed by up to three 2,000-gallon steel tanks located adjacent to the shelter. The generators would include mufflers on the power units to minimize noise.

The communication site facility would be enclosed within a Motorola R56 Design Standard chain-link fence or equivalent measuring 8 to10 feet in height, with three strands of barbed wire on the top, bringing the total height of the fencing to 9 to 11 feet. Galvanized hardware mesh of 1-inch by 2-inch dimensions would be attached to the lower 18 inches of the chain-link fencing and buried to a 12-inch depth or bent outward and secured to the ground. A 12.5-foot-wide entrance gate would provide access into the compound for persons and vehicles. A downward-shielded security light would be mounted within the compound and would be activated by a motion sensor.

Access Road

The access route would primarily utilize a series of existing BLM-designated open access routes off of U.S. Route 66 The access route would utilize U.S. Route 66 to route NS00I 7 to route NS0003 to the proposed Project site for a total of approximately 5.77 miles. The section of access route off of NS0003 leading to the communication facility utilizes previously disturbed land but is considered unauthorized disturbance by the BLM because that section of the route has not been previously authorized with a ROW or designated as an open route. Figure 2 shows the location of the proposed access route.

The access route is currently of adequate width for the site access road and would not require significant improvement (i.e., no widening) to construct the communication site. Any minor grading proposed would be performed to smooth out the existing dirt road similar to road maintenance following heavy rains. No new disturbances would occur aside from that created by continued vehicular access and hauling construction equipment to the proposed communication tower site, as well as limited, necessary road repairs of a 300-foot stretch of route NS0017 located 100 feet northeast of the Atchison, Topeka & Santa Fe railroad alignment and within Wash 3 South and potentially placing material such as gravel over the existing road bed, if road maintenance is required there. Also, light smoothing of the access route may be necessary following heavy rains. Desert tortoise exclusionary fencing would not be installed along access road segments.

3.0 SITE LOCATION

The proposed communication site is in San Bernardino County, California, approximately 7.8 miles east of Ludlow, California, just south of the I-40 ROW.

The center of the proposed communication tower would be located at 34.716083°N, -116.022958°W at an elevation of approximately 2,070 feet above mean sea level. The proposed site, the access road, and all ancillary components would be entirely on BLM-managed lands. See Figure 1 for a regional location map; Figure 2 for a local vicinity aerial photo of the area; and Figure 3 for a topographic map.

The existing access road begins approximately 8.5 miles to the southeast of Ludlow, California, along U.S. Route 66 at 34.679686°N, -116.025251°W.

4.0 REGULATORY SETTING / TERMINOLOGY

The following section briefly summarizes the federal and state statutes and regulations pertaining to the JD conducted for the proposed Project. An Approved Jurisdictional Delineation (AJD) Form has been prepared and attached to this JD report, using the most current AJD Form (per the Clean Water Rule) (Appendix B). The preliminary conclusion is that the drainages onsite are isolated and thus not jurisdictional. Only the USACE, however, can make an official determination.

Because it is assumed that the watershed is isolated (and thus without federal jurisdiction), this delineation report will focus on code, regulation, and policy for California State agencies: the RWQCB and CDFW. Waters of the U.S. as regulated by the USACE[1] (per Clean Water Act [CWA] Section 404) and RWQCB[2] (per CWA Section 401) are not specifically discussed in this report. The use of the OHWM was a defining criterion for this report.[3]

Federal Regulation of Waters of the United States, Including Wetlands (Clean Water Act Sections 404 and 401) (33 U.S.C. 1251-1376)

The USACE and the Environmental Protection Agency (EPA) regulate the discharge of dredged or fill material into "waters of the U.S.," including wetlands, under CWA Section 404. The USACE has defined the term "wetlands" as follows: "Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstance do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas" (40 Code of Federal Regulations [CFR] 116.3). Some classes of fill activities may be authorized under general permits if specific conditions are met. Projects that would result in the placement of dredged or fill material into waters of the U.S. require a Section 404 permit from the USACE.

Section 401 of the CWA requires the issuance of a water quality certification or waiver thereof for all Section 404 nationwide or individual permits issued by the USACE. The EPA has deferred water quality certification authority to the State Water Resources Control Board (SWRCB). Most projects are regulated by RWQCBs. The SWRCB directly regulates multi-regional projects and supports and coordinates the program statewide.

4.1 Porter-Cologne Water Quality Control Act

Section 13263 of the 1969 Porter-Cologne Water Quality Control Act (Porter-Cologne) authorizes the RWQCB to regulate discharges of waste and fill material to waters of the State, including isolated waters and wetlands. The California Water Code Section 13050(e) defines the waters of the State separately and uniquely from the federal definition as *"…any surface water or groundwater, including saline waters, within the boundaries of the State."* The state definition places no limitation on the size of stream flow as is

[1] Under Section 404 of the CWA, the USACE regulates the discharge of dredged or fill material into jurisdictional waters of the U.S. (including adjacent wetlands), which include those waters listed in 33 CFR 328.3 (Definitions).
[2] Section 401 of the CWA requires states to certify that any activity that may result in discharge into waters of the U.S. will comply with state water quality standards. All permits issued by the USACE under Section 404 of the CWA require certification pursuant to Section 401. The RWQCB, as delegated by the EPA and SWRCB, is the state agency responsible for issuing a CWA Section 401 Water Quality Certification or waiver. In general, jurisdiction for the RWQCB will be the same as for the USACE, which includes waters of the U.S., including wetlands.
[3] For the purposes of determining the lateral extent of waters of the U.S. (as administered by the USACE/RWQCB for purposes of compliance with Section 404/401 of the CWA), the term OHWM is defined as "That line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."

implicitly the case for the waters of the U.S. The OHWM concept is indirectly used by the RWQCB to determine waters of the State, and it is not used by the CDFW to delineate stream boundaries for the purpose of determining California Fish and Game Code (CFGC) jurisdiction per the MESA protocol.

The term waters of the State applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes within the state of California, including wetland and/or riparian vegetation and fish and wildlife resources. This designation includes isolated, depressional wetlands, and vernal pools. Waters of the State are regulated by the SWRCB and the RWQCBs. A new policy is in the process of being introduced that will provide increased clarification with respect to waters of the State, especially wetlands, and will introduce additional regulatory requirements.[4]

When the USACE does not regulate drainages within an isolated watershed (e.g., Mojave Desert areas), then the RWQCB will authorize the project per Waste Discharge Requirements (WDRs). General WDRs are available if the applicant meets particular requirements; these WDRs represent a much more streamlined process than individual WDRs.

4.2 California Fish and Game Code (Section 1600 et seq.)

CFGC Sections 1600-1617 (Lake and Streambed[5] Alteration Agreement Program) require consultation with the CDFW if a proposed activity has the potential to detrimentally affect a stream, and thereby wildlife resources that depend on a stream for continued viability. All streams present on a proposed project site must be identified to characterize the potential for adverse project-related impacts on the stream and associated wildlife. Under CFGC Sections 1600 et seq., the CDFW regulates activities that would result in (1) any potential detrimental impacts associated with the substantial diversion or the obstruction of the natural flow of a stream; (2) substantial changes to the bed, channel, or banks of a stream, or the use of any material from the bed, channel, or banks; and (3) the disposal of debris or waste materials that may pass into a stream. CDFW jurisdiction can only be applied once stream presence is identified and a project design is developed to a level of detail adequate to perform impact analysis.

Per informal guidance and current practice, the CDFW may assert its jurisdiction under CFGC Sections 1600 et seq. over activities in stream features laterally to the top of the bank, or to the outer edge of the riparian vegetation (also called the “drip line”), whichever is wider. CDFW jurisdiction may also extend to the limits of the 100-year floodplain. Isolated, “non-streambed” wetlands are typically not regulated by the CDFW. Riparian habitat and wetlands adjacent to streambeds are additional resources that may be regulated by the CDFW.

Riparian habitat refers to areas within and adjacent to rivers, streams, and creeks that support plant species adapted to (or that can tolerate) occasional or permanent flooding and/or saturated soils. Riparian habitat may include areas within the jurisdiction of the USACE and/or CDFW. Typically, USACE jurisdictional areas are much smaller than CDFW jurisdictional areas, and lateral extents vary according to watershed position, water availability, and other factors (Larsen 2007). Riparian vegetation can occur outside of USACE and/or CDFW jurisdiction; however, unique attributes indicate agency jurisdiction and include hydrologic interaction (both laterally and longitudinally) and distinct geomorphic features (e.g., bankfull channel, floodplain, terrace).

[4] Statewide Wetland and Riparian Area Protection Policy Initiative; http://www.swrcb.ca.gov/water_issues/programs/cwa401/wrapp.shtml

[5] The term streambed refers to the bed, bank, and channel geomorphic features associated with streams (in other words, the land beneath a stream).

The California Fish and Game Commission defines the term wetland as: "Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year." (Cowardin et al. 1979).

The approved California Wetland Definition (SWRCB 2019) states: "*An area is wetland if, under normal circumstances, (1) the area has continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area's vegetation is dominated by hydrophytes or the area lacks vegetation.*"

4.3 Mojave Trails National Monument

The proposed Project is approximately 340 feet south of the eastbound I-40 ROW and is just within the northerly boundary of the MTNM. Per the Presidential Proclamation signed on February 12, 2016, "The MTNM contains the longest remaining undeveloped stretch of Route 66, offering spectacular and serene desert vistas and a glimpse into what travelers experienced during the peak of the route's popularity in the mid-20th century." The Presidential Proclamation established the following oversight and guidelines for the management of the MTNM:

- The management of the monument is assigned to the Secretary of Interior through the BLM as a unit of the National Landscape Conservation System;
- "Nothing in this proclamation shall be construed to preclude the renewal or assignment of, or interfere with the operation or maintenance of, or with the replacement, modification, or upgrade within or adjacent to an existing authorization boundary of, existing flood control, utility, pipeline, or telecommunications facilities that are located within the monument in a manner consistent with the care and management of the objects identified above. Existing flood control, utility, pipeline, or telecommunications facilities located within the monument may be expanded, and new facilities may be constructed within the monument, but only to the extent consistent with the care and management of the objects identified above."
- "Except for emergency or authorized administrative purposes, motorized vehicle use in the monument shall be permitted only on roads existing as of the date of this proclamation."
- "Laws, regulations, and policies followed by the BLM in issuing and administering grazing permits or leases on lands under its jurisdiction, including provisions specific to the California Desert Conservation Area, shall continue to apply with regard to the lands in the monument, consistent with the care and management of the objects identified above."

4.4 Glossary of Stream and Terrestrial Landforms

The following definitions (Section 4.4.1) are from the MESA Guidebook as used by CDFW (Vyverberg 2010; Brady and Vyverberg 2014; Vyverberg and Brady 2014), as well as the delineation manual for non-wetland waters of the U.S. (Section 4.3.2; Lichvar and McColley 2008; Curtis and Lichvar 2010).

4.4.1 CDFW MESA Terminology

Watercourse – The area within and along which water flows perennially or episodically through one or more channels. Or, the course over which water currently flows, or has flowed as defined by the topography that confines the water to this course when the water rises to its highest level. Where present, low flow channels, active channels, banks associated with these channels, floodplains, swales, islands, and stream-associated vegetation, may all occur within the bounds of a single larger channel designated the "watercourse" to discriminate between it and functionally related but subordinate fluvial landforms that lie within its bounds.

4.4.2 Other USACE, RWQCB, and CDFW Terminology

Active Channel – The ordinary high water zone in low-gradient, alluvial ephemeral/intermittent channel forms in the Arid West is the active floodplain. The dynamics of arid channel forms and the transitory nature of traditional OHWM indicators in arid environments render the limit of the active floodplain the only reliable and repeatable feature in terms of ordinary high water delineation (Lichvar and McColley 2008)[6]. In arid channel systems, the active floodplain functions in the same manner as the bankfull channel within a perennial channel form, in that most of the hydrological and fluvial dynamics produced by repeating effective discharges is confined within its boundaries. Also, the extent of flood model outputs for effective discharges—5- to 10-year events in arid channels—aligns well with the boundaries of the active floodplain, and the characteristic vegetative behavior and sediment texture associated with the active floodplain/low terrace transition are readily observable in aerial photographs and in the field.

Streambeds – This term refers to the bed, bank, and channel geomorphic features associated with streams (in other words, the land beneath a stream). A streambed may include all or a portion of the riparian zone. The lateral extent of streambeds may reach beyond the OHWM (the extent of USACE jurisdiction), and extend laterally beneath the banks where subsurface hydrologic connectivity exists between the stream and the surrounding land. Jurisdiction extends from top-of-bank to top-of-bank. Per internal guidance and accepted practice, jurisdiction may also extend to the outer edge of the riparian corridor, if present (also called the "drip line"), or the limits of the 100-year floodplain. Streambeds are regulated by the CDFW under Section 1600 et seq. of the CFGC.

Waters of the State – Applies to all perennial, intermittent, and ephemeral rivers, streams, and lakes within the state of California, including wetland and/or riparian vegetation and fish and wildlife resources. As defined in Porter-Cologne (revised in 2004; Water Code 13050), waters of the State refers to any surface water or groundwater, including saline waters, within the boundaries of the State of California. This designation includes isolated, depressional wetlands, and vernal pools. Waters of the State are regulated by the SWRCB (if across multiple regions) and RWQCBs. In the context of CWA permitting, the term waters of the State typically implies waters that the USACE has not asserted jurisdiction over. A new policy is in the process of being introduced that will provide increased clarification with respect to waters of the State, especially wetlands, and will introduce additional requirements.[7]

[6] https://www.spl.usace.army.mil/Portals/17/docs/regulatory/JD/FinalOHWMManual_2008.pdf
[7] Statewide Wetland and Riparian Area Protection Policy Initiative; http://www.swrcb.ca.gov/water_issues/programs/cwa401/wrapp.shtml.

Waters of the U.S. – Refers to federally regulated (per CWA Section 404) rivers, creeks, streams and lakes, delineated by an OHWM, and extending upstream to the headwaters. The OHWM is defined as the "*line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of the soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas*."[8]

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

5.0 METHODOLOGY

Prior to conducting field work, AECOM conducted a review of available mapping of watersheds, streams, wetlands, and soils (e.g., National Hydrographic Dataset, NHD [USGS 2018]; National Wetlands Inventory, NWI [USFWS 2018]; Web Soil Survey [USDA-NRCS 2019a,b,c]; CSRL and UC-ANR 2019). AECOM also reviewed accessible aerial photographs of the site from previous years (e.g., Google Earth historical aerials range from 1995 to 2017; Google Earth 2018), in order to observe historical patterns of stream activity. In addition, AECOM reviewed background geological information for the proposed Project site and vicinity, and applicable geological mapping. These pre-field reviews were conducted to obtain contextual information relevant to the site to be surveyed, which may not be evident from the ground during field surveys.

AECOM conducted a field survey to evaluate the presence of CDFW-jurisdictional streambeds and any applicable riparian habitat utilizing the methods as discussed below. AECOM staff visited the Ash Hill Project site on January 30 and 31, 2019. Conditions were cool, cloudy, with trace precipitation (approximately 60 degrees Fahrenheit). Bonnie Hendricks (Sr. Plant Ecologist), and John Parent (Biologist) of AECOM performed the JD and verification of existing vegetation mapping. The field investigation included documenting existing conditions, verifying consistency with existing vegetation data, jurisdictional resources, and land cover classification and mapping, as well as verifying consistency with existing vegetation data (AMEC 2011).

The MESA methodology was utilized to the extent practicable to define CDFW-jurisdictional drainages (or washes).[9] A site transect that allowed for a systematic collection of data that would provide a detailed representation of the primary watercourse within the Study Area was chosen (Figure 6B). Jurisdictional drainage features may include washes, low-flow channels, active floodplains, and secondary channels; collectively these may be termed the "watercourse." Notable drainage features that may or may not be jurisdictional, including swales and erosional features, were also mapped.

A MESA transect was walked during the site visit (Figure 6B), and a MESA data sheet was filled out for this transect area (Appendix B).The transect (across the main drainage feature) included the entire width across the drainage feature (bed, bank, channel of wash; i.e., width across drainage feature). The presence of geomorphic features was noted according to the distance along the transect.

All drainage features were documented, and photo-location points were noted on field maps (e.g., upland, bank, upper/lower floodplain, low-flow channel). Drainages were also mapped with Global Positioning System (GPS) enabled devices, and photograph locations and directions were noted. Potential drainage features were noted where they intersected the Study Area. Site photographs documented transect locations as well as hydrologic indicators and wash vegetation found at each site (Appendix C).

As it is assumed that the waters in this region are isolated and thus non-jurisdictional with respect to the USACE, data sheets specific to the delineation of waters of the U.S., including wetlands, were not

[9] The CDFW Lake and Streambed Alteration Program web page states that "*MESA is intended to assist in identification and mapping of episodic streams when water is absent, and has perhaps been so for several years*." (https://www.wildlife.ca.gov/Conservation/LSA/Resources); MESA References: (a) *Methods to Describe and Delineate Episodic Stream Processes on Arid Landscapes for Permitting Utility-Scale Solar Power Plants, With the MESA Field Guide - Final Project Report*. Publication Number: CEC-500-2014-013. February 2014. (http://www.energy.ca.gov/2014publications/CEC-500-2014-013/CEC-500-2014-013.pdf); (b) *Appendix G - The Mesa Field Guide, Mapping Episodic Stream Activity*. Updated 12/18/2014. (http://www.energy.ca.gov/2014publications/CEC-500-2014-013/CEC-500-2014-013-APG.pdf).

completed for this report[10] (Environmental Laboratory 1987; Lichvar and McColley 2008; USACE 2008; Curtis and Lichvar 2010). The following stream and wetland references were used to define and/or characterize potentially jurisdictional features: Cowardin et al. 1979; Lefebvre et al. 2013; CWMW 2014; Wohl et al. 2016; and California Wetlands Portal 2019. Plant species were compiled for the entire site, and scientific names were consistent with standard references (Baldwin et al. 2012; Calflora 2019; Cal-IPC 2018; CNPS 2019, 2018; JFP 2018). Other vegetation-related references consulted included the following: Hanes et al. (1989); Lichvar and Dixon (2007); Buck-Diaz et al. (2011); Menke et al. (2013, 2016).

Vegetation communities were categorized using established systematic classification criteria described in *A Manual of California Vegetation, Second Edition* (Sawyer et al. 2009; CNPS 2019; CDFW 2018a, b, c; Holland 1986). Alternatively, vegetation communities or land cover types that are not described in *A Manual of California Vegetation* were classified using conventional naming practices (i.e., developed) or were defined by the dominant species. During the field survey, existing vegetation data within the Study Area was verified for consistency using field observations and a high-quality aerial photograph. Updates to the vegetation mapping were made where necessary. After the field investigation, the hand-mapped boundaries were digitized in conjunction with a high-quality aerial photograph using geographic information system (GIS) software from ArcGIS. A list of plant species was compiled by vegetation community; and a list of plant species observed during this survey is included (Appendix D). Plant nomenclature follows *The Jepson Manual-Vascular Plants of California, Second Edition* (Baldwin et al. 2012, JFP 2018, AMEC 2011).

AECOM staff scientists recorded all spatial and attribute data using the Environmental Systems Research Institute (ESRI) ArcCollector application running on Android and Apple (iPad, iPhone) devices. Potentially jurisdictional areas were mapped using a Trimble GeoXH sub-meter receiver connected to the Apple device through a Bluetooth connection. GPS collected spatial data were imported into ArcMap software for post-field processing.

It should be noted that AECOM's use of the MESA mapping for drainage features utilized the top of bank (for small, individual drainages) and watercourse elements (for larger washes) as the lateral extent of jurisdiction. However, application of the MESA methodology resulted in not including some features on the lateral limits of jurisdiction because of the lack of indicators (as described in the MESA protocol).

[10] Applicable datasheets for USACE methodologies, including wetland delineation forms (per the Arid West Supplement, 2008) and/or OHWM Manual (per the OHWM Manual, 2010), were not completed in the field. Nonetheless, the above USACE methodology (OHWM Manual) was utilized to assist in defining and classifying drainage features onsite.

6.0 RESULTS

6.1 Watershed Context and Hydrology

Per current agency requirements, both the USGS Watershed Boundary Dataset and the State of California's CalWater data were accessed to display and describe the watersheds for the proposed Project (Figures 5 and 6). The NWI Map is shown as Figure 7. In general, the watershed is an isolated, inland, desert system, with flows originating in the Bristol Mountains, a small mountain range in the central Mojave Desert, and flowing down to and across the Mojave Desert floor, where the majority, if not all, of the surface water typically dissipates prior to reaching the dry playa, Bristol Lake, the watershed's terminal water body (approximately 23 miles southeast of the proposed Project; Figures 4 and 5). The Lava Hills Watershed is internally drained, with no outlet to coastal areas or navigable waterways. None of the drainages within the Lava Hills Watershed appear to have any connection to interstate or foreign commerce. Therefore, all tributaries within this watershed are considered isolated.

Specifically, the proposed Project is located within the following watershed units:

HUC 8 – Southern Mojave (Figure 4)

- HUC 10 – Lava Hills
    - HUC 12 – Bristol Mountain Wash

10710 – Route Sixty Six (Figure 5)

Watershed (undefined) 10710.100000 Beneficial Uses as discussed in the Colorado River Basin Plan,[11] the following drainage feature and associated beneficial uses are noted:

Drainage Feature (Receiving Water)

Bristol Lake

Beneficial Uses for the receiving waters, Bristol Lake, and other nearby drainages/wetlands include the following:

MUN – municipal/domestic water supply
AGR – agricultural supply
IND – industrial service supply

6.2 Existing Setting and Vegetation Communities

Pre-existing site disturbance conditions were observed along the entire Study Area and consisted of an unpaved dirt access road and railroad bridge. The tower site is located at the terminus of the access road and consists of a largely unvegetated and disturbed area with rubble from a previous disturbance. The access road crosses several ephemeral desert washes along its length. The larger washes have windrowed material along the sections of the road within the Study Area, which have had minor effects on the hydrology within the immediate vicinity. All remaining areas within the Study Area consist of sparsely vegetated Creosote Bush Scrub in the uplands along with unvegetated desert pavement.

[11] https://www.waterboards.ca.gov/coloradoriver/water_issues/programs/basin_plan/

Observed vegetation communities were mapped within the Study Area and are described below.[12] The field mapping effort complemented the natural communities' literature review. No sensitive vegetation communities with a state rarity rank of S1-3[13] that were identified during the literature review were confirmed present within the Study Area during the reconnaissance survey. Table 6-1 identifies the field-observed vegetation communities and associated acreages within the Study Area, and these communities are illustrated in Figures 6A, 6B, and 6C.

Table 6-1. Vegetation Communities within Study Area

Vegetation Community[1]	Area (acres)
Creosote Bush Scrub	18.69
Cheesebush – Sweetbush Scrub	2.28
Native Vegetation Subtotal	20.97
Disturbed/developed (access roads)	13.99
Total	**34.96**

6.2.1 Upland Vegetation Communities (Adjacent to Episodic Drainages)

Creosote bush (*Larrea tridentata* –Shrubland Alliance). This community is composed of creosote bush as a dominant or co-dominant in the shrub canopy with goldenhead, burro weed, burrobush, spiny saltbush, desert holly, cattle spinach, wooly brickellia, brittle bush, Nevada ephedra, and Anderson thornbush. Emergent trees may be present at low cover, including honey mesquite and Joshua tree. This community occurs within alluvial fans, bajadas, upland slopes, and minor intermittent washes. Soils are well drained, sometimes with desert pavement. The majority of the Study Area is located within this vegetation community, with the exception of those areas that occur directly within the desert washes. Observed pre-existing disturbances were the access road and location of the proposed tower site. The state rarity ranking for this community is S5.

6.2.2 Arid Wash Vegetation Communities

Cheesebush – Sweetbush Scrub (*Ambrosia salsola* – *Bebbia juncea* Shrubland Alliance). This community is composed of cheesebush (*Ambrosia salsola*) and sweetbush (*Bebbia juncea*) as the dominant shrubs. This community occurs along intermittently flooded channels, arroyos and washes; valleys, flats, and rarely flooded low-gradient deposits. Soils are alluvial, sandy and gravelly, and disturbed desert pavement. Most portions of the Study Area that exist within the desert washes occur within this community. The state rarity ranking for this community is S4.

6.3 Soils and Geology

The proposed Project is located in the Mojave Desert on the south slope of the Bristol Mountains, which consists of a southward-sloping alluvial fan interspersed with outcrops of bedrock (Diblee and Minch 2008; Appendix E). These mountains are part of the Basin and Range physiographic province, which in the vicinity of the site consists of northwest-southeast–trending mountain ranges and valleys. The mountains are often associated with normal and strike slip faults that also trend northwest-southeast although no mapped faults

[12] Communities were described using *A Manual of California Vegetation Online* (http://vegetation.cnps.org/).
[13] California Native Plant Society (CNPS) utilizes a ranking system to assign an imperilment status for plant communities within California. They are as follow: S1 = Critically Imperiled – Critically imperiled in the state because of extreme rarity, 5 or fewer occurrences. S2 = Imperiled – Imperiled in the state because of rarity due to very restricted range, 20 or fewer occurrences. S3 = Vulnerable – Vulnerable in the state due to a restricted range, 80 or fewer occurrences. S4 = Apparently Secure – Uncommon but not rare; some cause for long-term concern due to declines or other factors. S5 = Secure – Common, widespread, and abundant in the state.

occur within the proposed Project. Also occurring in the vicinity of the proposed Project is the Barstow-Amboy Axis, a west-northwest to east-southeast–trending line along which a series of basalt volcanos occur, including Malpais Crater at the west-northwest end of the axis to Amboy Crater at the east-southeast end (Norris and Webb 1990). Some of the volcanic rocks found within the proposed Project Study Area are associated with the axis volcanos. Only the cinder cone at Amboy Crater has been dated at 79,000 years old (Phillips 2003). All of the basalts in the Barstow-Amboy Axis are estimated to be Quaternary in age.

Soil survey data were not available for this portion of the desert; thus, no soil mapping was developed for this report.

Geology in the proposed Project study area can be divided into the following principal groups:

- Bedrock outcrops, which constitute the oldest rocks in the proposed Project study area.
- Alluvial fan deposits of which there are two types.

The bedrock outcrops consist of late Tertiary/early Quaternary volcanic rocks including rhyolitic tuffs (Tr), volcanic tuff breccia (Tt), and basalt (Tb and QTb) associated with the Barstow-Amboy Axis and occur as isolated low hills rising above the alluvial plains in the northern half of the site as well as a more contiguous outcrop in the southwest corner of the site as part of a subrange of the Bristol Mountains.

Alluvial deposits in the proposed Project study area can be divided into an older unit (Qoa) and a younger unit (Qa). The older unit is composed of poorly to moderately sorted sand, gravel, and cobbles and occurs in the higher areas of the alluvial plain. Analysis of aerial photography indicates that Qoa sediments are distinguished from the Qa sediments by their darker overall coloring due to manganese oxide coatings (desert varnish) on these sediments. These deposits have been eroded into distinctive ridges and gullies, which drain into active braided channels occupied by Qa.

The younger unit (Qa) consists of younger alluvial sediments ranging in size from silty sand to cobbly gravels. They occur in the braided channels that dissect the Qoa sediments. Many of the Qoa sediments occur as isolated islands within the braided Qa channels. In the north, the Qa channels are numerous but less than several hundred feet wide; however, downstream (south), they coalesce to form channels several thousand feet wide.

6.4 Ephemeral Drainage Features within the Study Area

Eleven ephemeral drainages, all unnamed, and several small, unnamed non-jurisdictional features south of I-40 were observed within the Study Area. The proposed Project is expected to impact one of the unnamed ephemeral drainages within the Study Area (Figure 6C). Table 6-2 provides a summary of jurisdictional features within the Study Area. The potentially jurisdictional feature where impacts are expected was classified according to arid stream type and vegetation community in Table 6-3.

Table 6-2. Ephemeral Drainage Features within Study Area[1]

Feature	Waters of the State		Streambeds	Approximate Width (Across Channel) (feet)
	Approximate Width (Across Channel) (feet)	OHWM[2] (acres)	TOB (acres)[2]	
Wash 1	13	0.015	0.078	68
Wash 2	16	0.018	0.020	17
Wash 3 – North	213	0.244	0.978	852
Wash 3 – South	263	0.302	1.833	1,597
Wash 4	3	0.003	0.018	16
Wash 5	5	0.006	0.011	10
Wash 6	15	0.017	0.022	19
Wash 7	9	0.010	0.023	20
Wash 8 – West	119	0.137	0.510	444
Wash 8 – East	39	0.045	0.266	232
Wash 9	3	0.003	0.018	16
Wash 10	3	0.003	0.010	9
Wash 11	50	0.057	0.057	50
Total	**751**	**0.862**	**3.845**	**3,350**

[1] In general, access road is oriented perpendicular to the washes; linear feet (upstream-downstream) is assumed to be 50 ft (25 ft buffer on each side).
[2] OHWM = ordinary high water mark; TOB = Top of Bank
[3] Numbers rounded after summation

Table 6-3. Classification of Waters of the State and Streambeds (Existing Condition - Wash 3 Only)

Feature	Approximate Width (feet)	Classification (Cowardin)	Vegetation Community or Other Land Cover Type	Jurisdictional Unit
Waters of the State and Streambeds				
Wash 3 North	213	R6 - Riverine, Ephemeral; HGM - Riverine	Non-vegetated, Low Flow Channel / Vegetated Watercourse	RWQCB – OHWM; CDFW – TOB
Wash 3 South	263	R6 - Riverine, Ephemeral; HGM - Riverine	Non-vegetated, Low Flow Channel / Vegetated Watercourse	RWQCB – OHWM; CDFW – TOB
Top of Bank / Riparian Habitat				
Wash 3 North	852	Riverine	Cheesebush – Sweetbush Scrub (*Ambrosia salsola – Bebbia juncea*) Shrubland Alliance.	CDFW – Watercourse
Wash 3 South	1,597	Riverine	Cheesebush – Sweetbush Scrub (*Ambrosia salsola – Bebbia juncea*) Shrubland Alliance.	CDFW – Watercourse

Definitions: USACE = U.S. Army Corps of Engineers; RWQCB = Regional Water Quality Control Board; CDFW = California Department of Fish and Wildlife; TOB = Top of Bank; HGM = Hydrogeomorphic.

A. Wash 1 – A wash that flows through the northwestern portion of the Study Area, flowing generally from north to south. It is mainly a single, trapezoidal-shaped channel, with an approximately 13-foot-wide gravelly and sparsely vegetated bottom, emptying into Wash 3 about 0.45 mile downstream of the intersection with

the Study Area. A smaller wash, Wash 2, flows into this channel downstream of the intersection with the Study Area (Figure 6A).

B. Wash 2 – A wash that flows through the northwestern portion of the Study Area, flowing generally from northeast to southwest. It is mainly a single, trapezoidal-shaped channel, with an approximately 16-foot-wide predominantly gravel and sparsely vegetated bottom, draining into Wash 1 to the south of the Study Area (Figure 6A).

C. Wash 3 (North and South) – The largest wash within the Study Area, it intersects the Study Area in the north and again, 2.25 miles to the south, and flows from north to south. For ease of discussion, Wash 3 is broken up into North and South components (Figures 6A and 6C).

- **North:** Approximately 213-feet wide at the northern intersection of the Study Area, Wash 3 North is a low-gradient floodplain that consists of multiple small braided channels, with no clearly defined OHWM, and is bounded to the east and west by natural landforms. The bottom consists of coarse, large-grained sand and gravel, and is sparsely vegetated with Creosote – Cheesebush Scrub (Figure 6A).
- **South:** Ranging from approximately 263-feet wide at the southern intersection of the Study Area, Wash 3 South is a broad, low-gradient sandy bottomed channel that consists of a main low-flow channel and several braided channels. The previous construction of the railroad and associated bridge has constrained the channel to a smaller area, leaving a large portion of the original channel abandoned. The bottom consists of coarse, large-grained sand and gravel, and is sparsely vegetated with Cheesebush-Sweetbush Scrub. The existing access road runs along the bottom of the channel for approximately 1,300 feet at this location (Figure 6C).

D. Wash 4 – A wash that flows through the northern portion of the Study Area, flowing generally from northwest to southeast. It is a shallow, low-gradient channel, with an approximately 3-foot-wide gravel and unvegetated bottom, flowing into Wash 3 approximately 1.3 miles south of the Study Area (Figure 6A).

E. Wash 5 – A wash that flows through the northern portion of the Study Area, flowing generally from north to south. It is a single, trapezoidal-shaped channel, with an approximately 5-foot-wide sandy unvegetated bottom, flowing into Wash 6 approximately 0.1 mile south of the Study Area (Figure 6A).

F. Wash 6 – A wash that flows through the northern portion of the Study Area, flowing generally from north to south. It is a single, trapezoidal-shaped channel, with an approximately 15-foot-wide sandy and gravelly, sparsely vegetated bottom, flowing into Wash 8 approximately 0.13 mile south of the Study Area (Figure 6A).

G. Wash 7 – A wash that flows through the northern portion of the Study Area, flowing generally from northeast to the southwest. It is a single, trapezoidal-shaped channel, with an approximately 9-foot-wide gravelly unvegetated bottom, flowing into Wash 6 approximately 0.1 mile south of the Study Area (Figure 6B).

H. Wash 8 (East and West) – The second largest wash within the Study Area, it intersects the Study Area in the northeast and flows generally from north to south. The wash splits just north of the Study Area and converges approximately 0.4 mile to the south, forming an island. For ease of discussion, Wash 8 is broken up into East and West components (Figure 6B).

- **West:** Approximately 119 feet wide at the western intersection of the Study Area, Wash 8 West is a low-gradient floodplain that consists of multiple small braided channels and is bounded to the

east and west by natural landforms. The bottom consists of coarse, large-grained sand, gravel, and cobble sparsely vegetated with Creosote – Cheesebush Scrub (Figure 6B).

- **East:** Approximately 39 feet wide at the eastern intersection of the Study Area, Wash 8 East is a low-gradient floodplain that consists of multiple small braided channels and is bounded to the east and west by natural landforms. The bottom consists of coarse, large-grained sand, gravel, and cobble sparsely vegetated with Creosote – Cheesebush Scrub. Functionally, the channel is approximately 60 feet wide and is constrained to the western portion of the original channel by existing berms that appear to have been made during construction or maintenance of the road. The vegetation within the eastern portion of the channel is less dense in comparison to the western portion (Figure 6B).

I. Wash 9 – A wash that flows through the central portion of the Study Area, flowing generally from north to south. It is a single, low-gradient, approximately 3-foot-wide sparsely vegetated channel, flowing into an unidentified wash south of the Study Area (Figure 6C).

J. Wash 10 – A wash that flows through the central portion of the Study Area, flowing generally from north to south. It is a single, low-gradient, approximately 3-foot-wide sparsely vegetated channel, flowing into Wash 3 south of the Study Area (Figure 6C).

K. Wash 11 – A wash that flows through the southern portion of the Study Area, flowing generally from northwest to southeast. It is a single, shallow channel, with an approximately 50-foot-wide sandy and unvegetated bottom, flowing into Wash 3 approximately 650 feet to the southeast of the Study Area (Figure 6C.

7.0 IMPACTS

7.1 Impact Corridors

The impact area for the proposed Project is a 25-foot-wide area that will follow an existing dirt access road. Use of the existing access roads will reduce potential impacts. Expected impacts were calculated by assuming that the road repair (along one side of road) within Wash 3 – South would be approximately 25 feet of linear feet of stream channel (upstream/downstream) and 300 feet in width across channel.[14] Table 7-1 shows the acreage of waters of the State and streambeds associated with the impact corridor.

Table 7-1. Overview of Anticipated Impacts within Study Area

	Waters of the State (Ordinary High Water Mark; acres)	Streambeds (acres)	Total [1]	Linear Length Along Stream / Width Across Channel
Feature				
Wash 3 – South (RWQCB)	0.151	--	0.151	25 (linear length) / 263 (width)
Wash 3 – South (CDFW)	--	0.021	0.021	25 (linear length) / 37 (width)
Total	**0.151**	**0.021**	**0.172**	**25 / 300**

[1]The impact to waters of approximately 0.17 acres of water equates to impacts to Mojave Desert Wash Scrub (as listed in MND Table 3.4.1. Acreage of Vegetation Communities and Land Cover Types). Impacts include up to 25 foot linear length (upstream to downstream) and up to 300 feet across the width of the channel.

7.2 Avoidance, Minimization, and Mitigation Measures

Mitigation measures are recommended as precautionary measures relevant to the protection of biological resources, and are required to offset potentially significant adverse proposed Project impacts. A reporting mechanism will be associated with the measures, in order to document mitigation completion and performance. Potential impacts to ephemeral drainages will be avoided, minimized, and/or mitigated by incorporation of Project-specific mitigation measures.

1. *Limits of Disturbance*. All equipment and workers will remain within approved work limits. Work limits will be designated with lathe staking or a similar method. Impacts to vegetation outside of the access road are not anticipated.

2. *Water Quality*. Equipment and materials will be staged within the alignment and away from water drainages. Parked equipment will have secondary containment to prevent any fluid leaks coming into contact with the ground surface. Any hazardous waste spills will be immediately cleaned up and reported to the qualified biologist.

3. *Use of Disturbed Areas*. Wherever possible, construction personnel shall utilize existing access roads or previously disturbed areas to reach the Project or stage their vehicles and equipment.

4. *Regulatory Permits*. Prior to approval of the Project plans and specifications, the Proponent shall confirm that the plans and specifications stipulate that, prior to commencement of construction activities, the Proponent shall coordinate with the RWCQB to obtain a WDR pursuant to the California Water Code. Additionally, the Proponent shall obtain a Streambed Alteration Agreement from the CDFW pursuant to

[14] Impacts have been calculated based on the worst-case-scenario. It is likely that actual impacts will be less.

Section 1602 of the CFGC. The RWQCB will likely require a letter from the USACE regarding the applicability of Section 404 permits, and to verify that the watershed is indeed an “isolated watershed” where the USACE does not require a Section 404 permit.

8.0 DISCUSSION

8.1 Summary

The results include the description of the 11 unnamed jurisdictional features, as mapped within the Study Area. Within the Study Area, the JD resulted in 0.862 acre of waters of the State and 3.845 acres of CDFW streambeds for a total of 3,350 approximate width (across channel) feet. The JD also presents an impact analysis for a 25-foot corridor.

8.2 Regulatory Requirements

The Project as proposed would potentially affect waters of the State / streambeds subject to RWQCB and CDFW jurisdiction.[15] A WDR should be prepared and submitted to the Colorado River RWQCB[16] for review and a permit must be issued before Project construction could begin.

Due to the isolated nature of the Bristol Mountains Wash watershed, the USACE is not expected to regulate Project activities under Section 404 of the CWA; therefore, no application (or associated OHWM Data forms, Preliminary Jurisdictional Determination form) for a USACE CWA Section 404 dredge/fill permit will be required. It is recommended to obtain a letter from the USACE confirming this conclusion.

In some cases where a CWA section 404 permit will not be issued by the USACE for the Project, coverage under General WDRs (GWDRs) may be appropriate. This application can be used to apply for coverage under the following GWDRs:

> **WQO-2004-0004-DWQ**
> **General Waste Discharge Requirements for Dredged or Fill Discharges to Waters Deemed by the U.S. Army Corps of Engineers to be Outside of Federal Jurisdiction**
> http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2004/wqo/wqo2004-0004.pdf
> Regulates minor discharges of dredged or fill material to waters of the State waters not subject to Clean Water Act Section 404. Waters of the state means any surface water or groundwater, including saline waters, within the boundary of the state, including wetlands and riparian areas. Usage for land development, disposal of dredged material, bed and bank modifications, and other similar projects is restricted to size limits in the order (must be less than 0.2 acre).

Application to the Colorado River Region utilizes the same application as for the 401 Certification:

> Colorado River for CWA 401 and WDR for Dredge and Fill Projects. https://www.waterboards.ca.gov/coloradoriver/water_issues/programs/401_certification/docs/401_apform_r7.docx; https://www.waterboards.ca.gov/coloradoriver/water_issues/programs/401_certification/instructions_401.shtml

[15] Streambeds or watercourses jurisdictional per California Fish and Game Code 1600 *et seq*.
[16] Colorado River Regional Water Quality Control Board, 73-720 Fred Waring Drive, Suite 100, Palm Desert, CA 92260; http://www.waterboards.ca.gov/coloradoriver/.

A Notification of Lake or Streambed Alteration should be prepared and submitted to CDFW Inland Deserts Region No. 6 [17] for review and an agreement must be issued before Project construction could begin.

Lake or Streambed Alteration Notification Form (PDF Form).
https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=3754;
https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=3773&inline

[17] CDFW Inland Deserts Region (Region 6); 3602 Inland Empire Blvd, Suite C-220, Ontario, CA 91764; (909) 484-0167; AskRegion6@wildlife.ca.gov.

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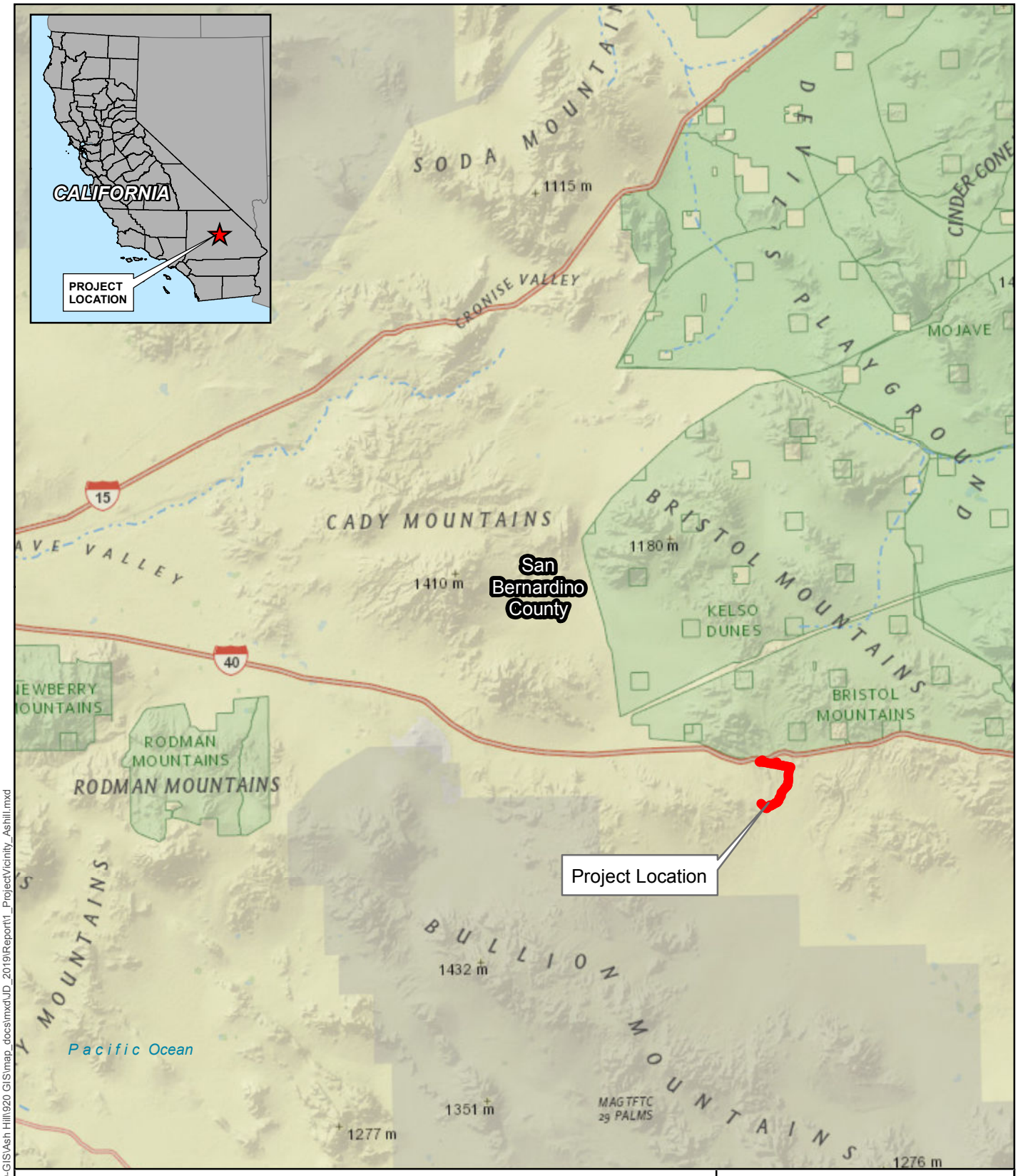
Appendix A

Figures 1 Through 7



Legend

Project Location

0 5 10 Miles

Base Map Source:
ESRI, ArcGIS Online
National Geographic World Map

FIGURE 1
PROJECT VICINITY

Interconnect Towers
Ash Hill Project

AECOM

P:_6053\60534139_ICT_Towers\900-CAD-GIS\Ash Hill\920 GIS\map_docs\mxd\JD_2019\Report\1_ProjectVicinity_Ashill.mxd

Legend

- Project Location
- Access Road 25ft Buffer
- West Mojave Plan Boundary (WEMO)

0 2,300 4,600 Feet

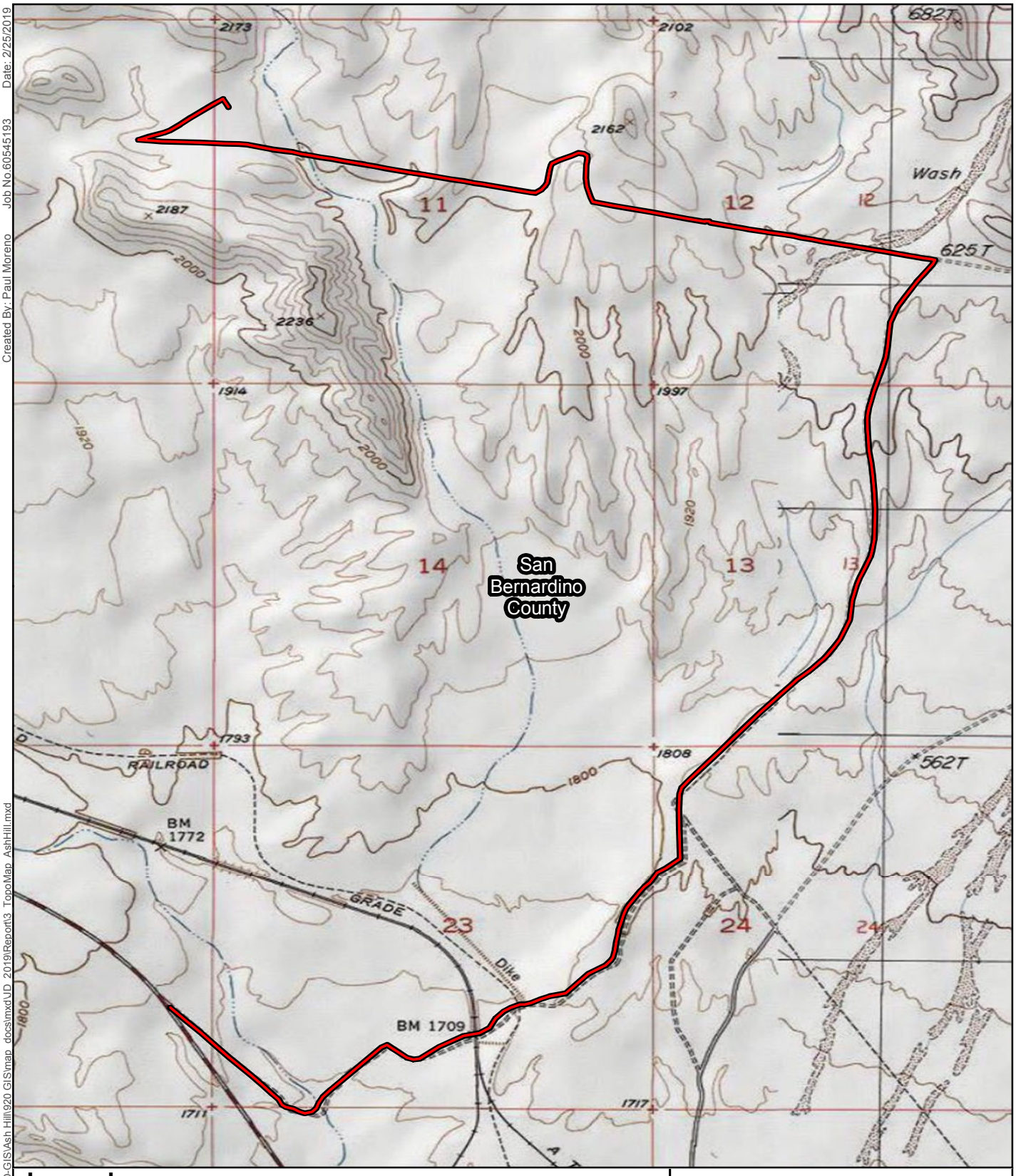
Base Map Source:
ESRI, ArcGIS Online
Bing Maps Hybrid

FIGURE 2
PROJECT LOCATION AND LAND OWNERSHIP

Interconnect Towers
Ash Hill Project

AECOM

Date: 2/25/2019
Job No.60545193
Created By: Paul Moreno
P:\ 60531\60534139 ICT Towers\900-CAD-GIS\Ash Hill\920 GIS\map docs\mxd\JD 2019\Report2 ProjectLocation AshHill.mxd



Date: 2/25/2019
Job No.60545193
Created By: Paul Moreno
P:\ 6053\60534139 ICT Towers\900-CAD-GIS\Ash Hill\920 GIS\map docs\mxd\JD_2019\Report3 TopoMap AshHill.mxd

Legend

- Project Location
- Access Road 25ft Buffer

0 2,000 4,000 Feet

Base Map Source:
ESRI, ArcGIS Online
Bing Maps Hybrid

FIGURE 3
TOPOGRAPHY

Interconnect Towers
Ash Hill Project

AECOM

Legend

- Project Location
- Watershed Boundary HUC 12 - Bristol Mountain Wash
- Watershed Boundary HUC 10 - Lava Hills
- Watershed Boundary HUC 8 - Southern Mojave
- County Boundary

0 11.5 23 Miles

Base Map Source:
ESRI, ArcGIS Online
Bing Map Hybrid

FIGURE 4
WATERSHED BOUNDARY DATASET

Interconnect Towers
Ash Hill Project

AECOM

P:\ 60534139 ICT Towers\900-CAD-GIS\Ash Hill\920 GIS\map docs\mxd\JD 2019\Report4 Watershed AshHill.mxd

Legend

- Project Location
- CalWatershed
- County Boundary

0 7.5 15 Miles

Base Map Source:
ESRI, ArcGIS Online
Bing Map Hybrid

FIGURE 5
CALWATER WATERSHEDS

Interconnect Towers
Ash Hill Project

AECOM

P:\ 60531605341\39 ICT Towers\900-CAD-GIS\Ash Hill\920 GIS\map docs\mxd\UD 2019\Report\5 Calwaters AshHill.mxd

Created By: Jason Sokol Job No.60545193 Date: 3/22/2019

Legend

- JD Photo Point
- Tower Location
- Mesa Transect
- Access Road
- Access Road 25ft Buffer

Vegetation & Drainages (AMEC)

- Creosote Bush Mixed Scrub
- Desert Wash System (Drainages)

0 550 1,100 Feet

Base Map Source:
ESRI, ArcGIS Online
Bing Maps Hybrid

FIGURE 6A
VEGETATION AND JURISDICTIONAL DELINEATION

Interconnect Towers
Ash Hill Project

AECOM

P:_6053\60534139_ICT_Towers\900-CAD-GIS\Ash Hill\920 GIS\map_docs\mxd\JD_2019\ReportVeg_JD_MapA.mxd

Created By: Jason Sokol Job No.60545193 Date: 3/22/2019

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Legend

- JD Photo Point
- Mesa Transect
- Access Road
- Access Road 25ft Buffer

Vegetation & Drainages (AMEC)

- Creosote Bush Mixed Scrub
- Desert Wash System (Drainages)

0 550 1,100 Feet

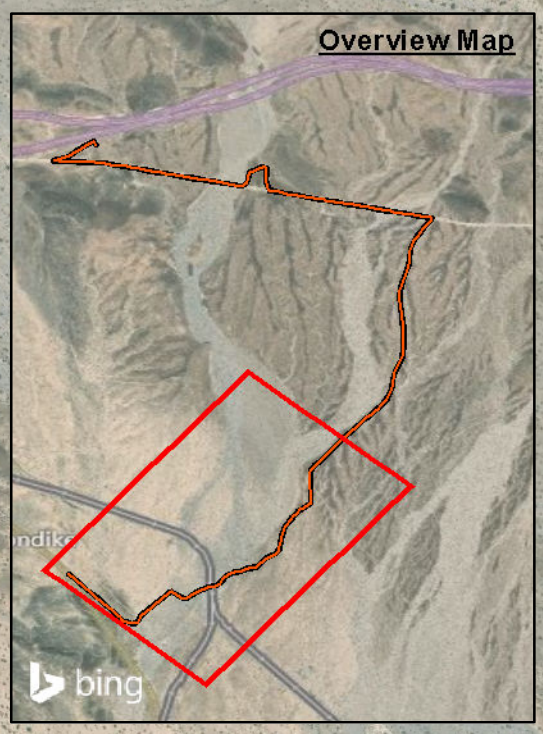
Base Map Source:
ESRI, ArcGIS Online
Bing Maps Hybrid

FIGURE 6B
VEGETATION AND JURISDICTIONAL DELINEATION

Interconnect Towers
Ash Hill Project

AECOM

Created By: Jason Sokol Job No.60545193 Date: 3/22/2019



Wash 9

P. 23-24

Wash 10

P. 25-26

Wash 3 South

P. 7-8

Wash 11

P. 27-28

Mojave Desert

Mojave Desert

Mojave D

bing

P:_60536\60534139_ICT_Towers\900-CAD-GIS\Ash Hill\920 GIS\map_docs\mxd\JD_2019\ReportVeg_JD_MapC.mxd

Legend

- JD Photo Point
- Mesa Transect
- Access Road
- Access Road 25ft Buffer

Vegetation & Drainages (AMEC)

- Creosote Bush Mixed Scrub
- Desert Wash System (Drainages)

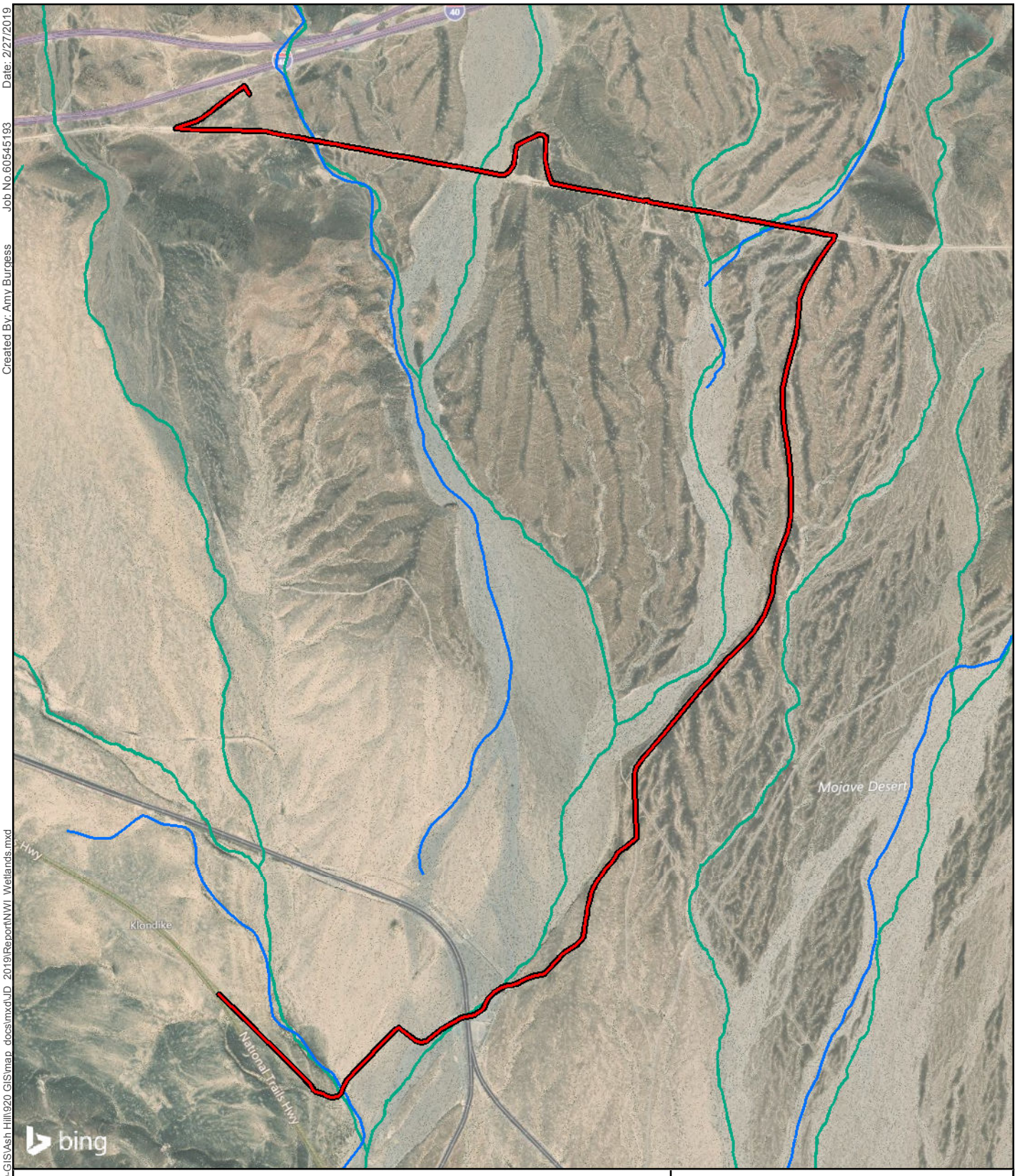
0 550 1,100 Feet

Base Map Source:
ESRI, ArcGIS Online
Bing Maps Hybrid

FIGURE 6C
VEGETATION AND JURISDICTIONAL DELINEATION

Interconnect Towers
Ash Hill Project

AECOM



Legend

- Project Location
- Access Road 25ft Buffer

Wetland Type

- Riverine
- National Hydrography Dataset

0 2,000 4,000 Feet

Base Map Source:
ESRI, ArcGIS Online
Bing Maps Hybrid

FIGURE 7
NATIONAL WETLAND INVENTORY AND NATIONAL HYDROGRAPHY DATASET

Interconnect Towers
Ash Hill Project

AECOM

Date: 2/27/2019
Job No.60545193
Created By: Amy Burgess
P:\ 60531\60534139 ICT Towers\900-CAD-GIS\Ash Hill\920 GIS\map docs\mxd\JD 2019\Report\NWI Wetlands.mxd

Appendix B

Mesa Data Sheets/Approved JD Forms

Appendix 1 - REQUEST FOR CORPS JURISDICTIONAL DETERMINATION (JD)

To: District Name Here

Ash Hill JD Report Appendix B. Approved JD Form.

- I am requesting a JD on property located at: Ash Hill Project Area (Street Address)
  City/Township/Parish: Ludlow County: San Bernardino State: CA
  Acreage of Parcel/Review Area for JD: 5 acres within Study Area
  Section: 11 Township: 7N Range: 9E
  Latitude (decimal degrees): 34.716083 Longitude (decimal degrees): -116.022958
  (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: Larsen, Erik Digitally signed by Larsen, Erik DN: cn=Larsen, Erik, ou=USORA1 Reason: I attest to the accuracy and integrity of this document Date: 2019.03.20 16:29:46 -07'00' Date: 20Mar2019

- Typed or printed name: Erik Larsen, D.Env.

Company name: AECOM Environment

Address: 999 Town & Country Road, 2nd Floor

Orange, CA 92868

Daytime phone no.: 714.648.2043

Email address: erik.larsen@aecom.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.

Ash Hill JD Report
Appendix B. Approved JD Form.

Regulatory Program

INTERIM APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers
This form should be completed by following the instructions provided in the Interim Approved Jurisdictional Determination Form User Manual.

SECTION I: BACKGROUND INFORMATION

A. COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (AJD): TBD

B. ORM NUMBER IN APPROPRIATE FORMAT (e.g., HQ-2015-00001-SMJ): TBD

C. PROJECT LOCATION AND BACKGROUND INFORMATION:
State:CA County/parish/borough: San Bernardino City: Ludlow
Center coordinates of site (lat/long in degree decimal format): Lat. 34.716083, Long. -116.022958.
Map(s)/diagram(s) of review area (including map identifying single point of entry (SPOE) watershed and/or potential jurisdictional areas where applicable) is/are: ☒ attached ☐ in report/map titled .
☐ Other sites (e.g., offsite mitigation sites, disposal sites, etc.) are associated with this action and are recorded on a different jurisdictional determination (JD) form. List JD form ID numbers (e.g., HQ-2015-00001-SMJ-1): .

D. REVIEW PERFORMED FOR SITE EVALUATION:
☒ Office (Desk) Determination Only. Date: TBD.
☐ Office (Desk) and Field Determination. Office/Desk Dates: TBD Field Date(s): TBD.

SECTION II: DATA SOURCES

Check all that were used to aid in the determination and attach data/maps to this AJD form and/or references/citations in the administrative record, as appropriate.
☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant. Title/Date: JD Report, Mar 2019.
☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  ☒ Data sheets/delineation report are sufficient for purposes of AJD form. Title/Date: JD Report, Mar 2019.
  ☐ Data sheets/delineation report are not sufficient for purposes of AJD form. Summarize rationale and include information on revised data sheets/delineation report that this AJD form has relied upon: .
  Revised Title/Date: .
☐ Data sheets prepared by the Corps. Title/Date: .
☐ Corps navigable waters study. Title/Date: .
☐ CorpsMap ORM map layers. Title/Date: .
☐ USGS Hydrologic Atlas. Title/Date: .
☒ USGS, NHD, or WBD data/maps. Title/Date: JD Report, Feb 2019.
☒ USGS 8, 10 and/or 12 digit HUC maps. HUC number: So. Mojave, Lower Mojave Desert (HUC8:18100100).
☒ USGS maps. Scale & quad name and date: USGS 7.5' Quads; Ash Hill, Siberia, CA.
☐ USDA NRCS Soil Survey. Citation: n/a.
☒ USFWS National Wetlands Inventory maps. Citation: JD Report, Mar 2019.
☐ State/Local wetland inventory maps. Citation: .
☐ FEMA/FIRM maps. Citation: .
☒ Photographs: ☒ Aerial. Citation: JD Report, Mar 2019. or ☐ Other. Citation: .
☐ LiDAR data/maps. Citation: .
☒ Previous JDs. File no. and date of JD letter: SPL-2016-00063-SLP (Dola Bridge Replacement Project) and SPL-2016-00566-DSP (I-40 Median Regrade and Recontour Project); Appendix B, JD Report, Mar 2019.
☐ Applicable/supporting case law: .
☐ Applicable/supporting scientific literature: .

☒ Other information (please specify): Figures 1 - 7 showing local and regional watersheds (see end of this document).

SECTION III: SUMMARY OF FINDINGS

Complete ORM "Aquatic Resource Upload Sheet" or Export and Print the Aquatic Resource Water Droplet Screen from ORM for All Waters and Features, Regardless of Jurisdictional Status – Required

A. RIVERS AND HARBORS ACT (RHA) SECTION 10 DETERMINATION OF JURISDICTION:

☐ "*navigable waters of the U.S.*" within RHA jurisdiction (as defined by 33 CFR part 329) in the review area.

- **Complete Table 1 - Required**

NOTE: If the navigable water is not subject to the ebb and flow of the tide or included on the District's list of Section 10 navigable waters list, DO NOT USE THIS FORM TO MAKE THE DETERMINATION. The District must continue to follow the procedure outlined in 33 CFR part 329.14 to make a Section 10 RHA navigability determination.

B. CLEAN WATER ACT (CWA) SECTION 404 DETERMINATION OF JURISDICTION: "*waters of the U.S.*" within CWA jurisdiction (as defined by 33 CFR part 328.3) in the review area. **Check all that apply.**

☐ (a)(1): All waters which are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide. (Traditional Navigable Waters (TNWs))

- **Complete Table 1 - Required**

☐ This AJD includes a case-specific (a)(1) TNW (Section 404 navigable-in-fact) determination on a water that has not previously been designated as such. Documentation required for this case-specific (a)(1) TNW determination is attached.

☐ (a)(2): All interstate waters, including interstate wetlands.

- **Complete Table 2 - Required**

☐ (a)(3): The territorial seas.

- **Complete Table 3 - Required**

☐ (a)(4): All impoundments of waters otherwise identified as waters of the U.S. under 33 CFR part 328.3.

- **Complete Table 4 - Required**

☐ (a)(5): All tributaries, as defined in 33 CFR part 328.3, of waters identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.

- **Complete Table 5 - Required**

☐ (a)(6): All waters adjacent to a water identified in paragraphs (a)(1)-(a)(5) of 33 CFR part 328.3, including wetlands, ponds, lakes, oxbows, impoundments, and similar waters.

- **Complete Table 6 - Required**

☐ Bordering/Contiguous.

Neighboring:

☐ (c)(2)(i): All waters located within 100 feet of the ordinary high water mark (OHWM) of a water identified in paragraphs (a)(1)-(a)(5) of 33 CFR part 328.3.

☐ (c)(2)(ii): All waters located within the 100-year floodplain of a water identified in paragraphs (a)(1)-(a)(5) of 33 CFR part 328.3 and not more than 1,500 feet of the OHWM of such water.

☐ (c)(2)(iii): All waters located within 1,500 feet of the high tide line of a water identified in paragraphs (a)(1) or (a)(3) of 33 CFR part 328.3, and all waters within 1,500 feet of the OHWM of the Great Lakes.

☐ (a)(7): All waters identified in 33 CFR 328.3(a)(7)(i)-(v) where they are determined, on a case-specific basis, to have a significant nexus to a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.

- **Complete Table 7 for the significant nexus determination. Attach a map delineating the SPOE watershed boundary with (a)(7) waters identified in the similarly situated analysis. - Required**

☐ Includes water(s) that are geographically and physically adjacent per (a)(6), but are being used for established, normal farming, silviculture, and ranching activities (33 USC Section 1344(f)(1)) and therefore are not adjacent and require a case-specific significant nexus determination.

☐ (a)(8): All waters located within the 100-year floodplain of a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3 not covered by (c)(2)(ii) above and all waters located within 4,000 feet of the high tide line or OHWM of a water identified in paragraphs (a)(1)-(a)(5) of 33 CFR part 328.3 where they are determined on a case-specific basis to have a significant nexus to a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.

- **Complete Table 8 for the significant nexus determination. Attach a map delineating the SPOE watershed boundary with (a)(8) waters identified in the similarly situated analysis. - Required**

☐ Includes water(s) that are geographically and physically adjacent per (a)(6), but are being used for established, normal farming, silviculture, and ranching activities (33 USC Section 1344(f)(1)) and therefore are not adjacent and require a case-specific significant nexus determination.

C. NON-WATERS OF THE U.S. FINDINGS:

Check all that apply.

☐ The review area is comprised entirely of dry land.

☐ Potential-(a)(7) Waters: Waters that DO NOT have a significant nexus to a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.

- **Complete Table 9 and attach a map delineating the SPOE watershed boundary with potential (a)(7) waters identified in the similarly situated analysis. - Required**

☐ Includes water(s) that are geographically and physically adjacent per (a)(6), but are being used for established, normal farming, silviculture, and ranching activities (33 USC Section 1344(f)(1)) and therefore are not adjacent and require a case-specific significant nexus determination.

☐ Potential-(a)(8) Waters: Waters that DO NOT have a significant nexus to a water identified in paragraphs (a)(1)-(a)(3) of 33 CFR part 328.3.

- **Complete Table 9 and attach a map delineating the SPOE watershed boundary with potential (a)(8) waters identified in the similarly situated analysis. - Required**

☐ Includes water(s) that are geographically and physically adjacent per (a)(6), but are being used for established, normal farming, silviculture, and ranching activities (33 USC Section 1344(f)(1)) and therefore are not adjacent and require a case-specific significant nexus determination.

☐ Excluded Waters (Non-Waters of U.S.), even where they otherwise meet the terms of paragraphs (a)(4)-(a)(8):

- **Complete Table 10 - Required**

☐ (b)(1): Waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of the CWA.

☐ (b)(2): Prior converted cropland.

☐ (b)(3)(i): Ditches with ephemeral flow that are not a relocated tributary or excavated in a tributary.

☐ (b)(3)(ii): Ditches with intermittent flow that are not a relocated tributary, excavated in a tributary, or drain wetlands.

☐ (b)(3)(iii): Ditches that do not flow, either directly or through another water, into a water identified in paragraphs (a)(1)-(a)(3).

☐ (b)(4)(i): Artificially irrigated areas that would revert to dry land should application of water to that area cease.

☐ (b)(4)(ii): Artificial, constructed lakes and ponds created in dry land such as farm and stock watering ponds, irrigation ponds, settling basins, fields flooded for rice growing, log cleaning ponds, or cooling ponds.

☐ (b)(4)(iii): Artificial reflecting pools or swimming pools created in dry land.[1]

☐ (b)(4)(iv): Small ornamental waters created in dry land.[1]

☐ (b)(4)(v): Water-filled depressions created in dry land incidental to mining or construction activity, including pits excavated for obtaining fill, sand, or gravel that fill with water.

☐ (b)(4)(vi): Erosional features, including gullies, rills, and other ephemeral features that do not meet the definition of tributary, non-wetland swales, and lawfully constructed grassed waterways.[1]

☐ (b)(4)(vii): Puddles.[1]

☐ (b)(5): Groundwater, including groundwater drained through subsurface drainage systems.[1]

☐ (b)(6): Stormwater control features constructed to convey, treat, or store stormwater that are created in dry land.[1]

☐ (b)(7): Wastewater recycling structures created in dry land; detention and retention basins built for wastewater recycling; groundwater recharge basins; percolation ponds built for wastewater recycling; and water distributary structures built for wastewater recycling.

☒ Other non-jurisdictional waters/features within review area that do not meet the definitions in 33 CFR 328.3 of (a)(1)-(a)(8) waters and are not excluded waters identified in (b)(1)-(b)(7).

- **Complete Table 11 - Required.**

D. ADDITIONAL COMMENTS TO SUPPORT AJD: See Table 11 below.

[1] In many cases these excluded features will not be specifically identified on the AJD form, unless specifically requested. Corps Districts may, in case-by-case instances, choose to identify some or all of these features within the review area.

Jurisdictional Waters of the U.S.

Table 1. (a)(1) Traditional Navigable Waters n/a

(a)(1) Waters Name	(a)(1) Criteria	Rationale to Support (a)(1) Designation Include High Tide Line or Ordinary High Water Mark indicators, when applicable.
N/A	Choose an item.	N/A

Table 2. (a)(2) Interstate Waters n/a

(a)(2) Waters Name	Rationale to Support (a)(2) Designation
N/A	N/A

Table 3. (a)(3) Territorial Seas n/a

(a)(3) Waters Name	Rationale to Support (a)(3) Designation
N/A	N/A

Table 4. (a)(4) Impoundments n/a

(a)(4) Waters Name	Rationale to Support (a)(4) Designation
N/A	N/A
N/A	N/A

Table 5. (a)(5)Tributaries n/a

(a)(5) Waters Name	Flow Regime	(a)(1)-(a)(3) Water Name to which this (a)(5) Tributary Flows	Tributary Breaks	Rationale for (a)(5) Designation and Additional Discussion. Identify flowpath to (a)(1)-(a)(3) water or attach map identifying the flowpath; explain any breaks or flow through excluded/non-jurisdictional features, etc.
N/A	Choose an item.	N/A	Choose an item.	N/A
N/A	Choose an item.	N/A	Choose an item.	N/A
N/A	Choose an item.	N/A	Choose an item.	N/A
N/A	Choose an item.	N/A	Choose an item.	N/A

Table 6. (a)(6) Adjacent Waters n/a

(a)(6) Waters Name	(a)(1)-(a)(5) Water Name to which this Water is Adjacent	Rationale for (a)(6) Designation and Additional Discussion. Identify the type of water and how the limits of jurisdiction were established (e.g., wetland, 87 Manual/Regional Supplement); explain how the 100-year floodplain and/or the distance threshold was determined; whether this water extends beyond a threshold; explain if the water is part of a mosaic, etc.
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A
N/A	N/A	N/A

Table 7. (a)(7) Waters n/a

SPOE Name	(a)(7) Waters Name	(a)(1)-(a)(3) Water Name to which this Water has a Significant Nexus	Significant Nexus Determination Identify SPOE watershed; discuss whether any similarly situated waters were present and aggregated for SND; discuss data, provide analysis, and summarize how the waters have more than speculative or insubstantial effect on the physical, chemical, or biological integrity of the (a)(1)-(a)(3) water, etc.
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Table 8. (a)(8) Waters n/a

SPOE Name	(a)(8) Waters Name	(a)(1)-(a)(3) Water Name to which this Water has a Significant Nexus	Significant Nexus Determination Identify SPOE watershed; explain how 100-yr floodplain and/or the distance threshold was determined; discuss whether waters were determined to be similarly situated to subject water and aggregated for SND; discuss data, provide analysis, and then summarize how the waters have more than speculative or insubstantial effect the on the physical, chemical, or biological integrity of the (a)(1)-(a)(3) water, etc.
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Non-Jurisdictional Waters

Table 9. Non-Waters/No Significant Nexus n/a

SPOE Name	Non-(a)(7)/(a)(8) Waters Name	(a)(1)-(a)(3) Water Name to which this Water DOES NOT have a Significant Nexus	Basis for Determination that the Functions DO NOT Contribute Significantly to the Chemical, Physical, or Biological Integrity of the (a)(1)-(a)(3) Water. Identify SPOE watershed; explain how 100-yr floodplain and/or the distance threshold was determined; discuss whether waters were determined to be similarly situated to the subject water; discuss data, provide analysis, and summarize how the waters did not have more than a speculative or insubstantial effect on the physical, chemical, or biological integrity of the (a)(1)-(a)(3) water.
N/A	N/A	N/A	N/A
N/A	N/A	N/A	N/A

Table 10. Non-Waters/Excluded Waters and Features n/a

Paragraph (b) Excluded Feature/Water Name	Rationale for Paragraph (b) Excluded Feature/Water and Additional Discussion.
N/A	N/A
N/A	N/A

Table 11. Non-Waters/Other

Other Non-Waters of U.S. Feature/Water Name	Rationale for Non-Waters of U.S. Feature/Water and Additional Discussion.
ASH HILL PROJECT AREA **Washes 1 – 11, including Bristol Mountains Wash (Wash No. 3 North and 3 South).**	See text below, as well as JD Report (AECOM 2019). **SUMMARY:** Based on the information presnted in the JD Report (AECOM 2019), the Corps concludes The Ash Hill Project Drainages are NON-WATERS of the United States, since the waters are NOT tributary to (a)(1), (a) 3, and (a)(4) waters and are not (a)(1)-(a)(8) waters themselves. The Corps makes such a conclusion since the intrastate, ephemeral waters are ultimately tributary to a geographically isolated, dry lake, with both waters lacking any associated surface water based commerce. Although Bristol Mountains Wash flows to Bagdad Dry Lake first, the discussion below includes both Bagdad Dry Lake and Bristol Dry Lake (thus, "Bagdad/Bristol Dry Lake"). *Continued below*.

Based on the results of the JD Report (AECOM 2019), this AJD was prepared to provide support to USACE in making a formal determination of all waters delineated within the project survey area that are geographically isolated waters (and/or not meeting the federal definition of waters [e.g., swales]) and, thus, not regulated by USACE for the following reasons 1 - 5, below.

1. There are two previous Approved JDs issued by USACE for geographic isolation of **Bagdad/Bristol Dry Lake** (e.g., a nonfederal jurisdictional water [that were delineated using federal protocol, manuals, and guidance]). This Approved JD is based, in part, on these previous two Approved JDs that were conducted for USACE file Nos. **SPL-2016-00063-SLP (Dola Bridge Replacement Project) and SPL-2016-00566-DSP (I-40 Median Regrade and Recontour Project)**. Below is applicable text from these two AJDs.

SPL-2016-00063-SLP (Dola Bridge Replacement Project)

> The Dola drainage is a 0.19 acre intrastate, ephemeral (non-RPW) watercourse located within the Bristol Lake watershed. The Bristol Lake Watershed is situated within the closed basin of the Southern Mojave Watershed. Bristol Lake and its non-RPW tributaries, including the Dola drainage, function as an isolated intrastate system, which lacks the presence of a TNW. Moreover, Bristol Lake and all tributaries to Bristol Lake are NOT (a)(3) waters as defined by 33 CFR 328.3, as they do NOT meet criteria (a)(3)(iii), since surface waters are NOT used for industrial or other commercial purposes by interstate commerce industries.
>
> Bristol Lake, the central terminus point for surface waters within the Bristol Lake Watershed, is situated within California, San Bernardino County, immediately southeast of Amboy. Its shallow depth ranges 585-feet to 610-feet in elevation. The Lake covers an area exceeding 41,578-acres, with an approximate width of 7.1-miles and length of 10.7-miles. Bristol Lake is surrounded by the Bullions Mountains to the west, the Bristol/Granite/Marble/Old Dad Mountains to the north, the Marble/Calumet/Ship Mountains to the east, and the Sheep Hole/Calumet/Coxcomb Mountains to the south. The overall Bristol Lake Watershed occupies an area of approximately 377,760 acres and is primarily uninhabited.
>
> The surface waters within the Bristol Valley groundwater basin, including Dola drainage, flow to Bristol dry lake, the central elevational low point of the Bristol Lake Watershed. Bristol Lake is situated immediately south of major east-west transportation corridors, including the interstate roadway, I-40, a BNSF main rail line and National Trails Highway (Route 66). A rail spur from this east-west main rail line even extends slightly south, from Saltus to the northern tip of Bristol Lake. Typical rainfall average in this area ranges 3- to 5-inches. The groundwater level is near the surface of Bristol Lake, and temporary ponding has occurred in the Lake even in low rainfall years. Prior approved jurisdictional determinations have been made for specific non-RPW tributaries to Bristol dry lake. Currently, there are no published commercial uses of the Dola drainage, and the review of aerial photographs (Google Earth) also did not depict surface water usage of the Dola drainage. Therefore, the Dola drainage tributary to Bristol Lake is NOT an (a)(3) water as defined by 33 CFR 328.3 (a)(3)(i-iii).

Bristol Lake, as the terminus for all waters within the Bristol Lake Watershed, is NOT a TNW. Moreover, Bristol Lake is NOT an (a)(3) water as defined by 33 CFR 328.3. Bristol dry 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. Mining and processing activities for calcium chloride (salt) have taken place in Bristol Lake since approximately 1909. Bristol Lake is also one of very few areas in California that naturally contains a large percentage of calcium chloride as salt. However, these salt mining industries on the lake do NOT utilize the lake surface waters. Furthermore, there are no published uses of Bristol Lake surface waters.

The above is based upon: the San Bernardino County JD Request (dated December 30, 2015, prepared by SB County); the Supplemental Data Delineation of Jurisdictional Waters and Wetlands for Bristol Dry Lake and Its Tributaries (dated July 2, 2009, prepared by Michael Brandman Associates), the California Groundwater Bulletin 118: Bristol Valley Groundwater Basin (last updated February 27, 2004), the review of aerial photographs (Google Earth) that also did not show surface water usage of any tributaries to Bristol Lake or the dry lake terminus itself, and prior approved jurisdictional determinations within the same watershed (see specific JD information listed in Section IV). Therefore, since Bristol Lake is an intrastate isolated water without a surface water connection to commerce, all tributaries to Bristol Lake as part of the overall watershed system are also isolated and additionally have no nexus to commerce. Thus, the Bristol Lake Watershed is an isolated watershed system that has no surface water connection to commerce.

Based on the information above, the Corps concludes that Dola drainage is a NONJURISDICTIONAL water of the United States, since the water is NOT tributary to either a TNW or an (a)(3) water and is NOT an (a)(3) water itself. The Corps makes such a conclusion since the water is tributary to an isolated, intrastate dry lake.

SPL-2016-00566-DSP (I-40 Median Regrade and Recontour Project

Unnamed Dry Lake is situated within the closed basin of the Southern Mojave Watershed in San Bernardino, California, immediately southeast of Bagdad. Its shallow depth ranges 610 feet to 620 feet in elevation, covering an area in excess of 2,600-acres, with an approximate width of 2 miles and length of 2.4 miles. Dry Lake is situated immediately south of major east-west transportation corridors including Interstate 40 (I-40), a BNSF main rail line, and National Trails Highway (Route 66). Typical rainfall average in this area ranges from 3 to 5 inches. The groundwater level is near the surface of Dry Lake. Currently, there are no published commercial uses of surface waters of the tributaries in the Project area to Dry Lake, and the review of aerial photography (Google Earth) did not depict surface water usage of said tributaries to Dry Lake.

Dry Lake and its non-RPW tributaries within the Project site function as an isolated intrastate system, which lacks the presence of a TNW. Moreover, Unnamed Dry Lake and the tributaries to Dry Lake within the Project area are NOT (a)(3) waters as defined by 33 CFR 328.3, as they do NOT meet criteria (a)(3)(i-iii) and since waters are NOT used for industrial or other commercial purposes by interstate commerce or industry.

The above is based upon Jurisdictional Waters Delineation Request SPL-2012-00136-SLP, and the review of aerial photographs (Google Earth), neither of which identified surface water usage of any tributary to Dry Lake or of the dry lake terminus itself. Therefore, since Dry Lake is an intrastate isolated water without a surface water connection to commerce, tributaries to Dry Lake within the Project are also isolated. Current conditions are consistent with the original determination and determinations since then.

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

2. Abatement into the landscape and the lack of hydrological connectivity of the ephemeral wash(es) (non-Relatively Permanent Waterway [non-RPW]) into an RPW that flows directly or indirectly into a TNW, and the lack of hydrological connectivity of the ephemeral washes into an RPW connected by storm drains or culverts. The ephemeral washes and swales within the project survey area originating within the Bristol Mountains Range flow in a southerly orientation and create a confluence with other ephemeral washes, which eventually drain into **Bagdad/Bristol Dry Lake** (an isolated playa lake system) approximately 12 miles southeast of the project survey area (JD Report, Appendix A, Figures; Appendix B).

3**. Bagdad/Bristol Dry Lake**, as the terminus for all ephemeral waters within the project survey area, is not a TNW. **Bagdad/Bristol Dry Lake** is not an "(a)(3) water" as defined by 33 CFR 328.3. **Bagdad/Bristol Dry Lake** does not meet criteria (a)(3)(i–iii), as it does not have use for surface water recreation or other purposes by foreign or interstate travelers, does not have harvesting activities of fish or shellfish that may be sold in interstate or foreign commerce, and does not have surface water industrial usage by industries in interstate commerce.

4. **Bagdad/Bristol Dry Lake** is not considered an interstate isolated water (33 CFR 328.3 [a][2]), with all of its area falling within California.

5. All tributaries **to Bagdad/Bristol Dry Lake** as part of the overall watershed system are also isolated and additionally have no nexus to commerce. Thus, the So. Mojave, Lower Mojave Desert (HUC8:18100100) Watershed is an isolated watershed system that has no surface water connection to commerce. Based on the information above, USACE concludes that all tributaries to Bagdad/Bristol Lake are nonjurisdictional waters of the U.S., since the waters are NOT tributary to either a TNW or an (a)(3) water, and are not (a)(3) waters themselves.

*Continued below, with **Figures 1 through 7**.*

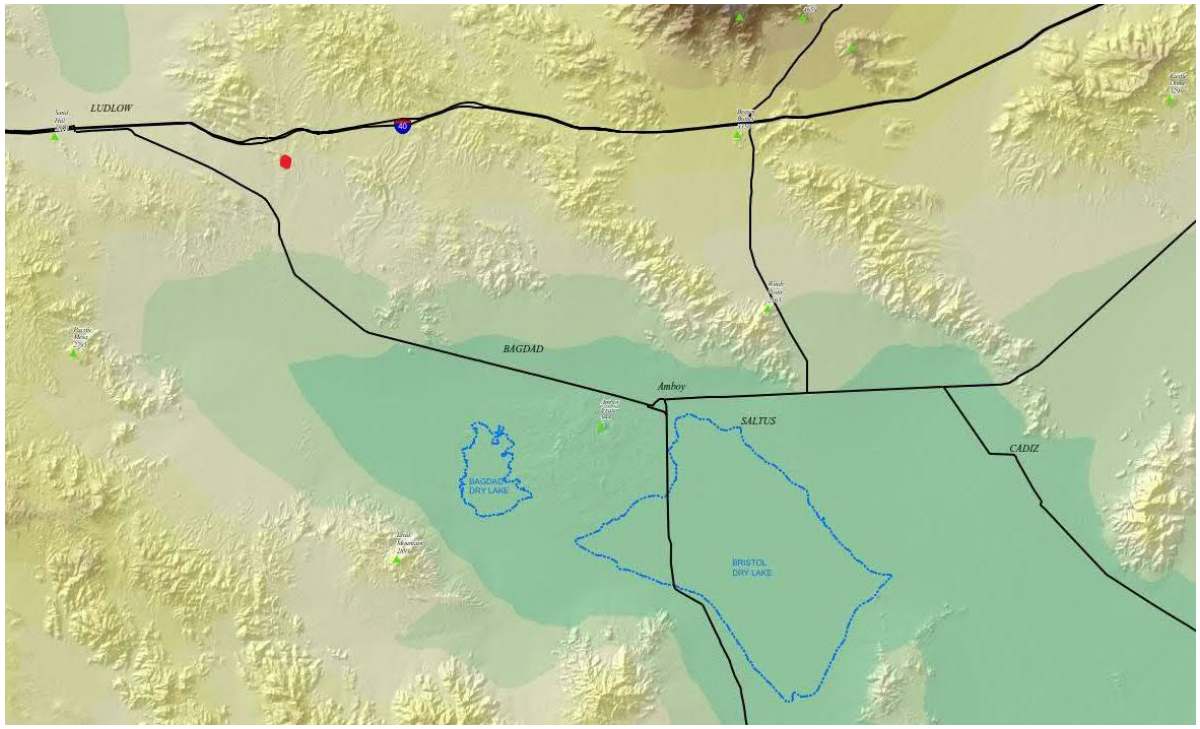


Figure 1. Shaded relief map of Ash Hill Project Area (red dot) and downstream Bagdad Dry Lake and Bristol Dry Lake. San Bernardino County Map view.

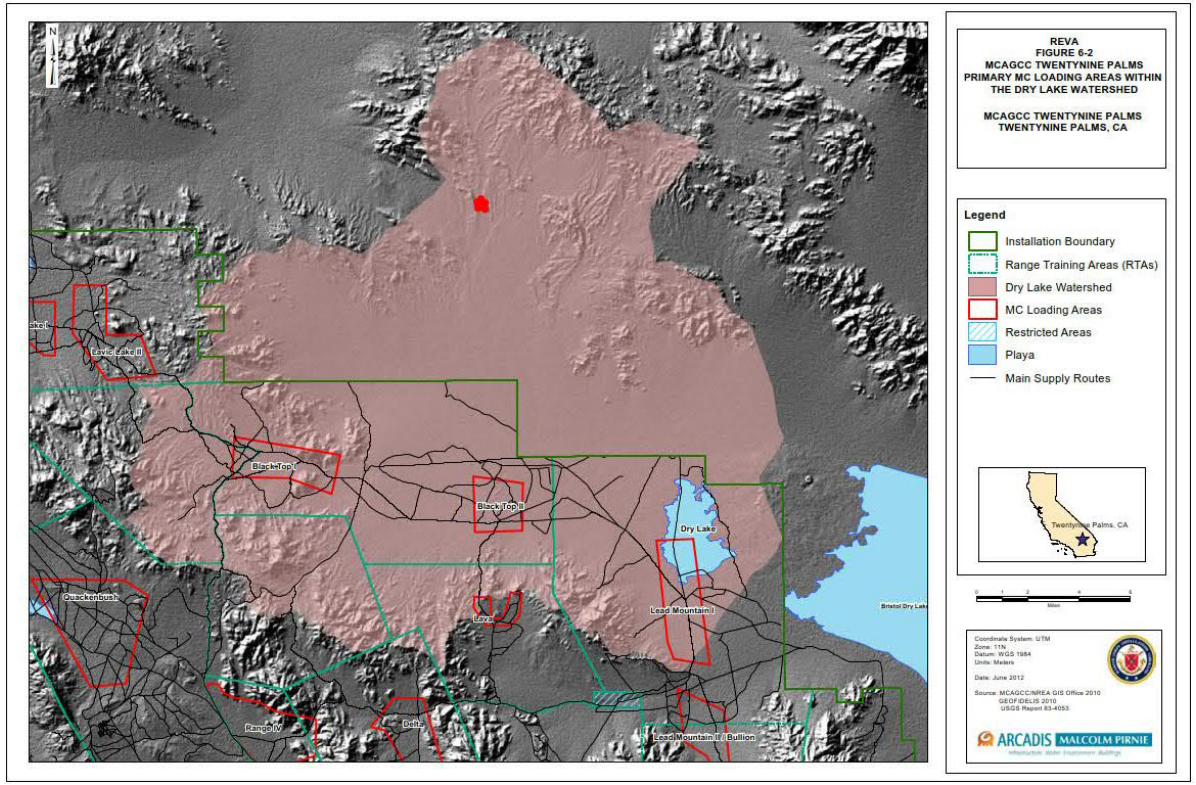


Figure 2. Dry Lake watershed map (lower). Red dot indicates project location.
Figure from a 2012 MCAGCC Twentynine Palms Document.

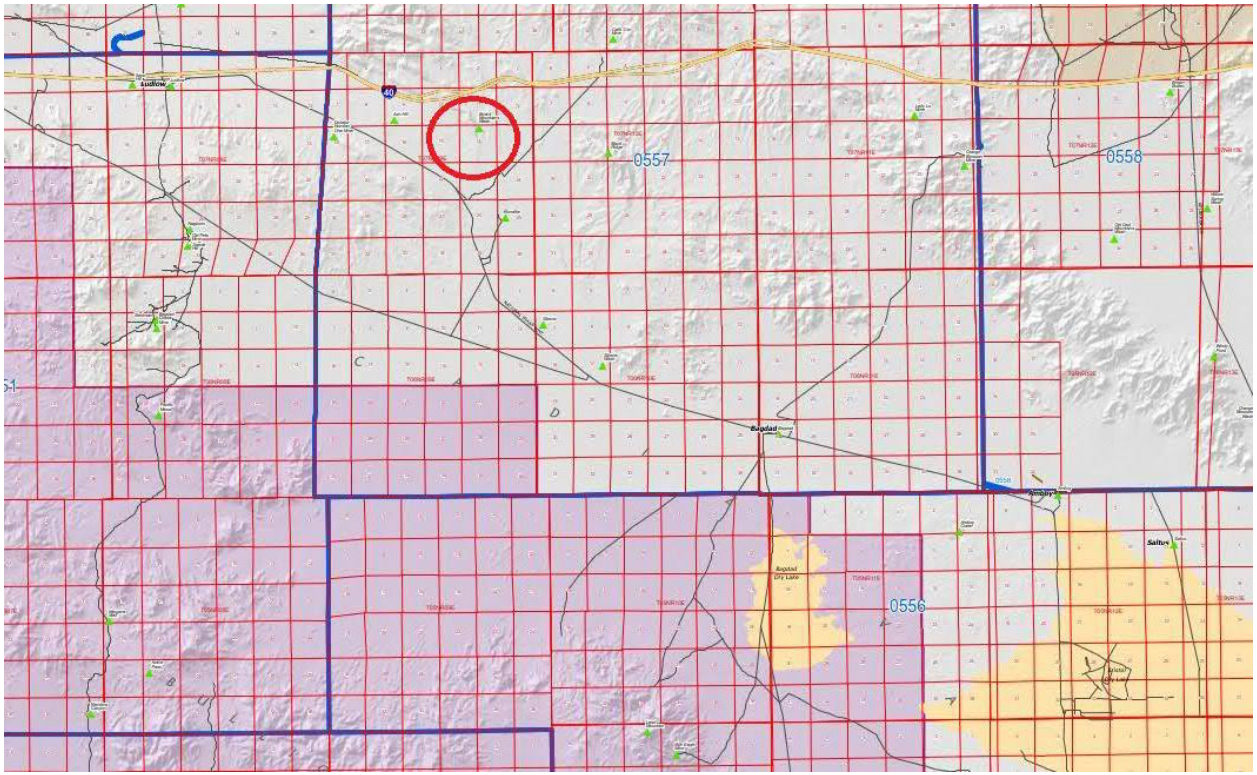


Figure 3a. San Bernardino County Map view, showing Bristol Mountains Wash, within red circle (which indicates project location).

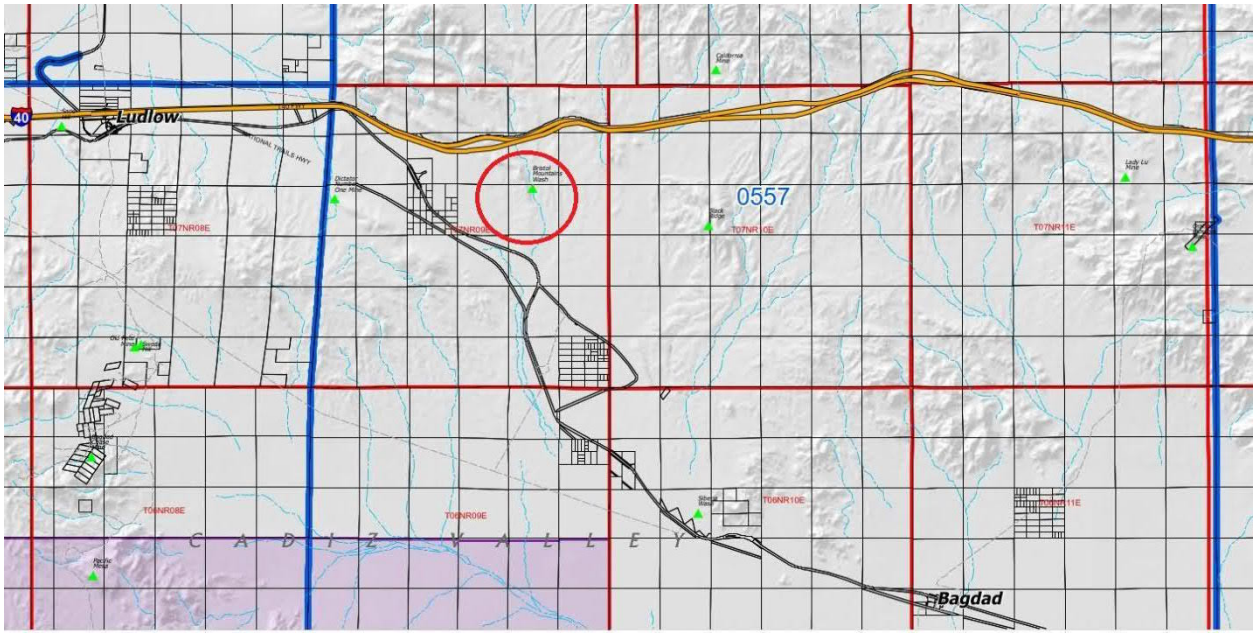


Figure 3b. San Bernardino County Map views, showing Bristol Mountains Wash, within red circle (which indicates project location).

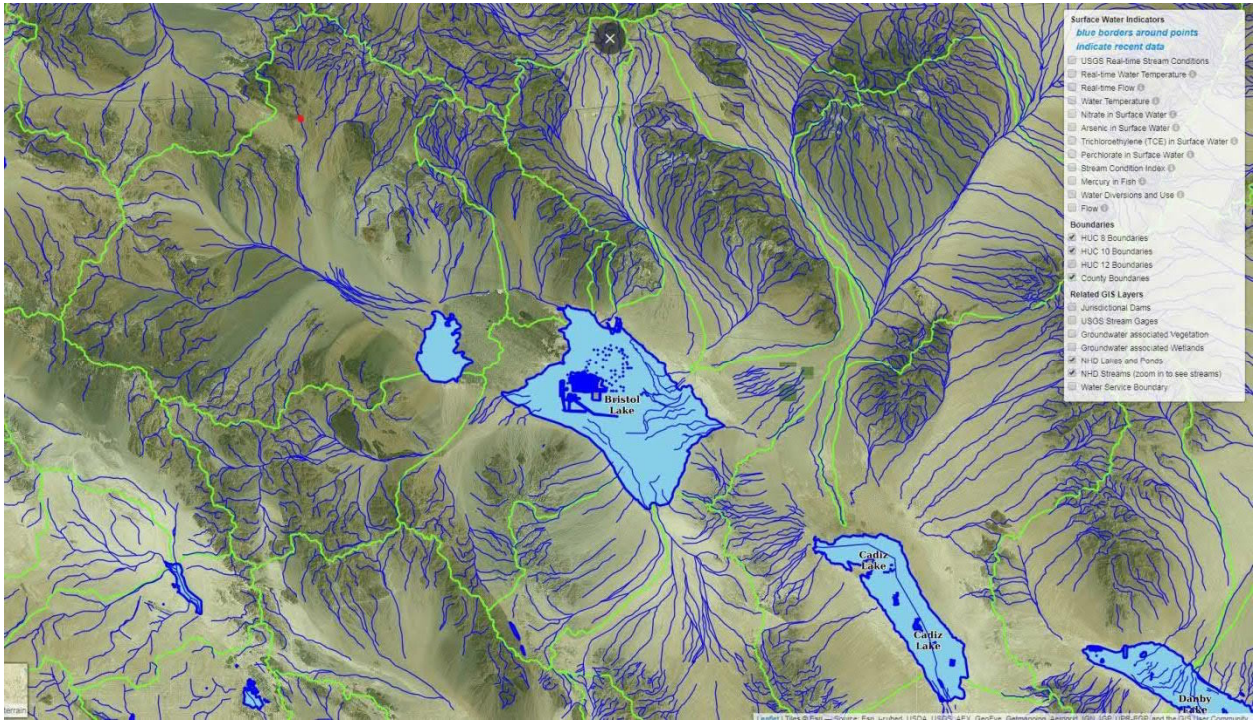


Figure 4a. HUC 10 boundaries. Red dot indicates project location.

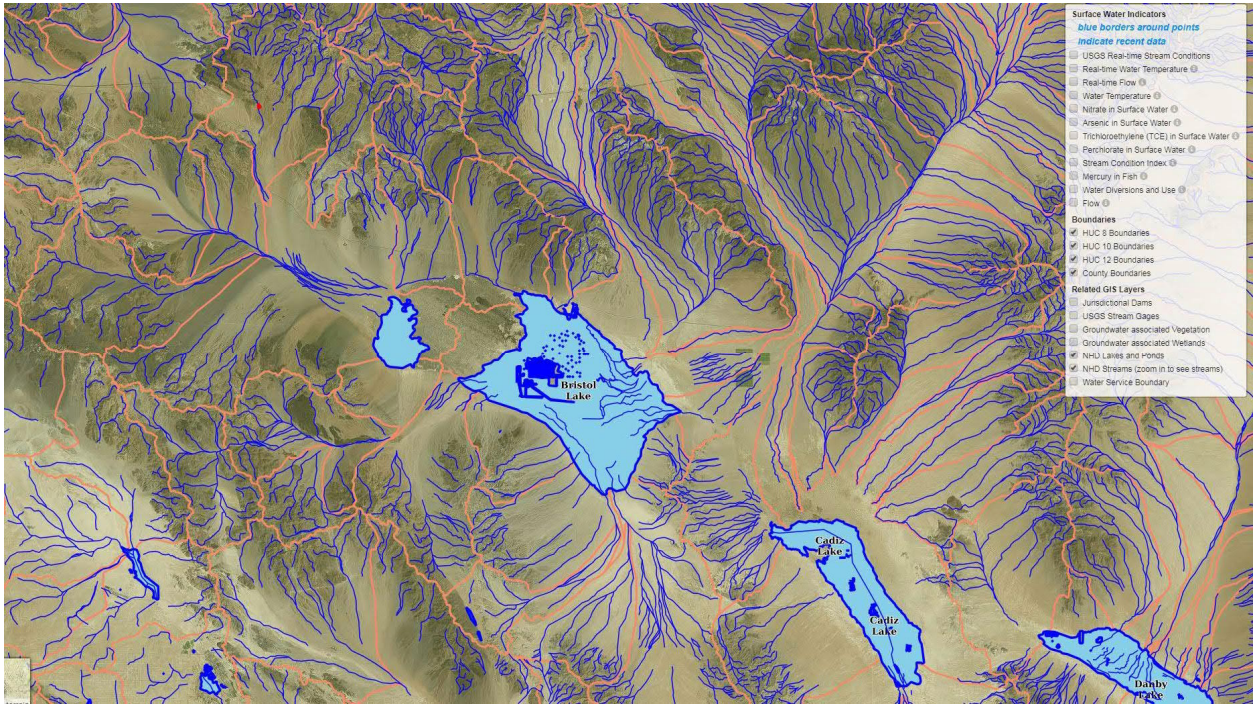


Figure 4b. HUC 12 boundaries. Red dot indicates project location.

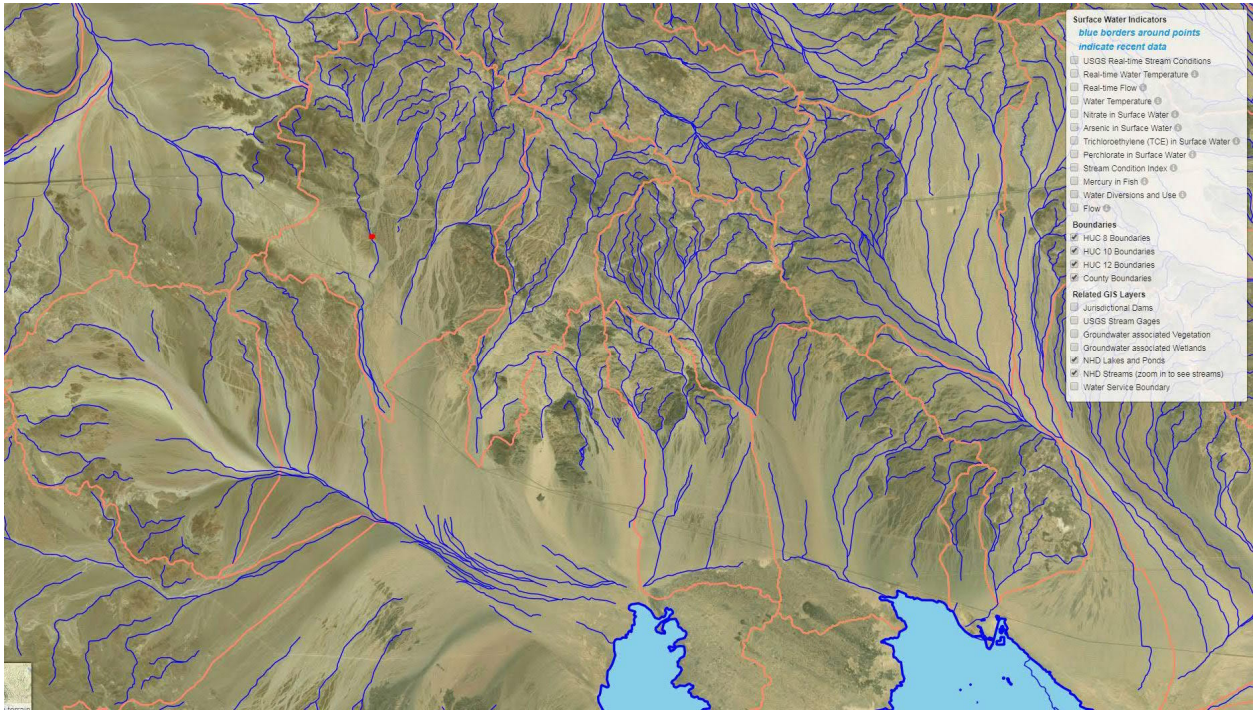


Figure 4c. HUC 12 boundaries. Red dot indicates project location. The desert dry lakes towards bottom view are Bagdad Dry Lake (left) and Bristol Dry Lake (right).

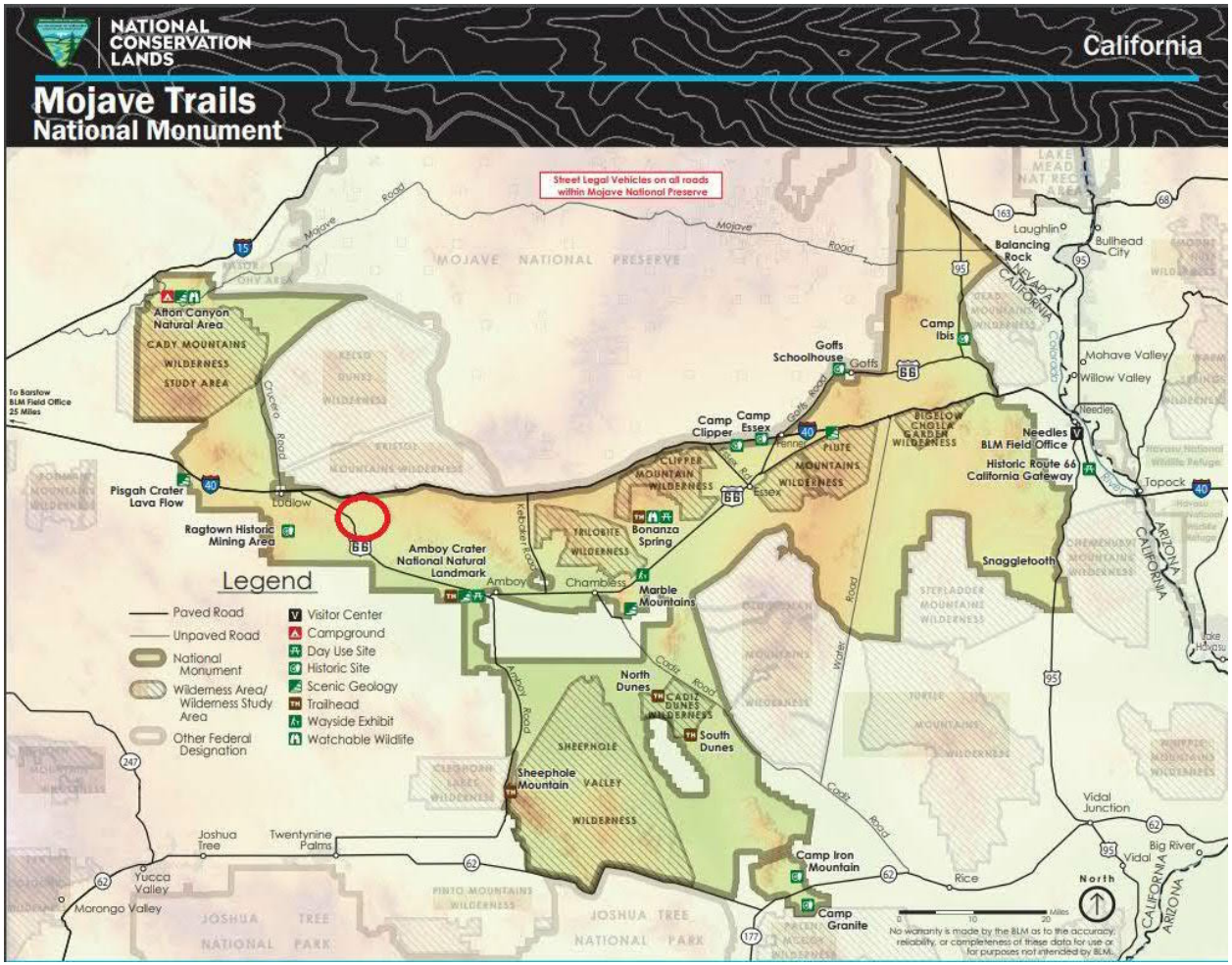


Figure 5. Project Location within BLM land. Red circle indicates the project area.

North of Project Area, and north of I-40: Bristol Mountains Wilderness – BLM. https://www.blm.gov/visit/bristol-mountains-wilderness

Surrounding Project Area, and south of I-40: Mojave Trails National Monument – BLM. https://www.blm.gov/programs/national-conservation-lands/california/mojave-trails-national-monument; https://www.blm.gov/visit/mojave-trails

Southeast of Project Area: Amboy Crater National Natural Landmark – BLM. https://www.blm.gov/visit/search-details/14854/2

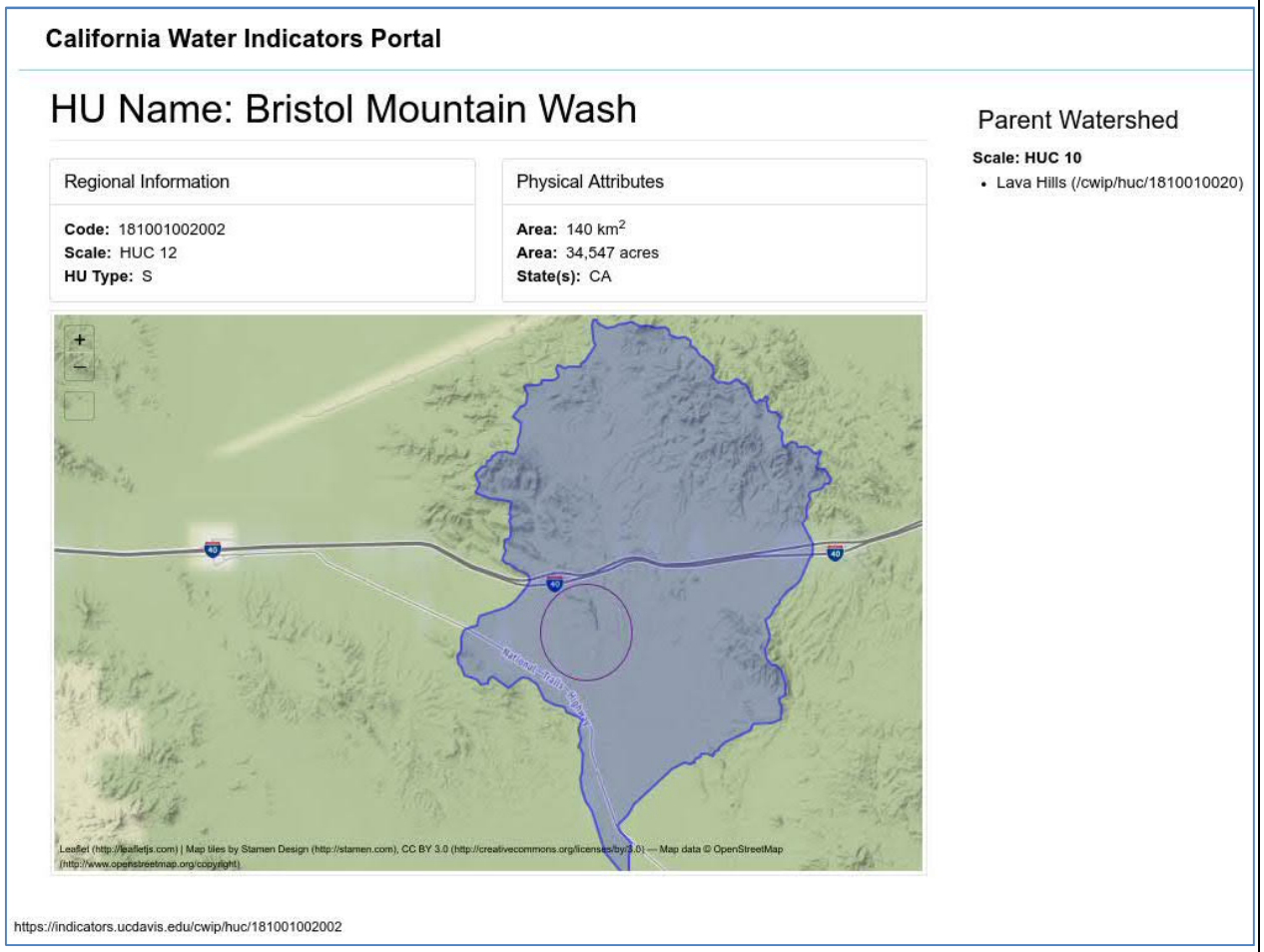


Figure 6. HUC 12: 181001002002, Bristol Mountain Wash; HUC 10: 1810010020, Lava Hills; HUC 08: 18100100, Southern Mojave. Purple circle indicates the project area.

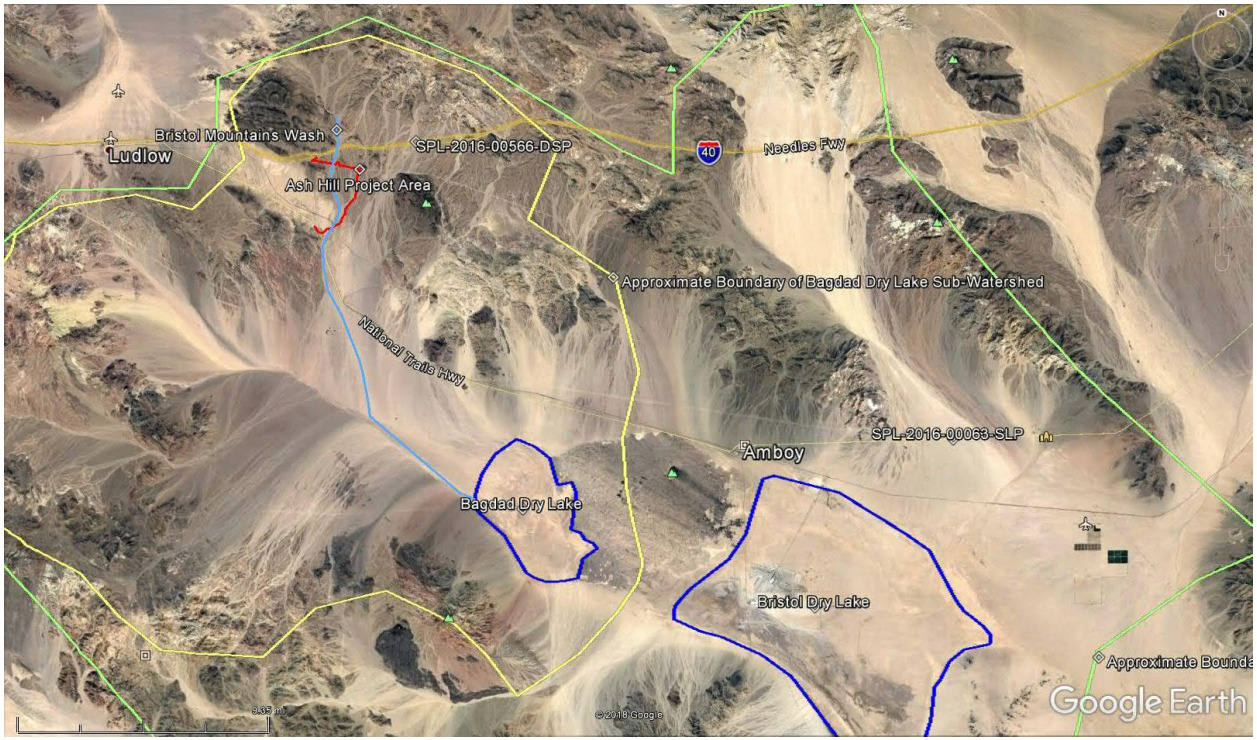
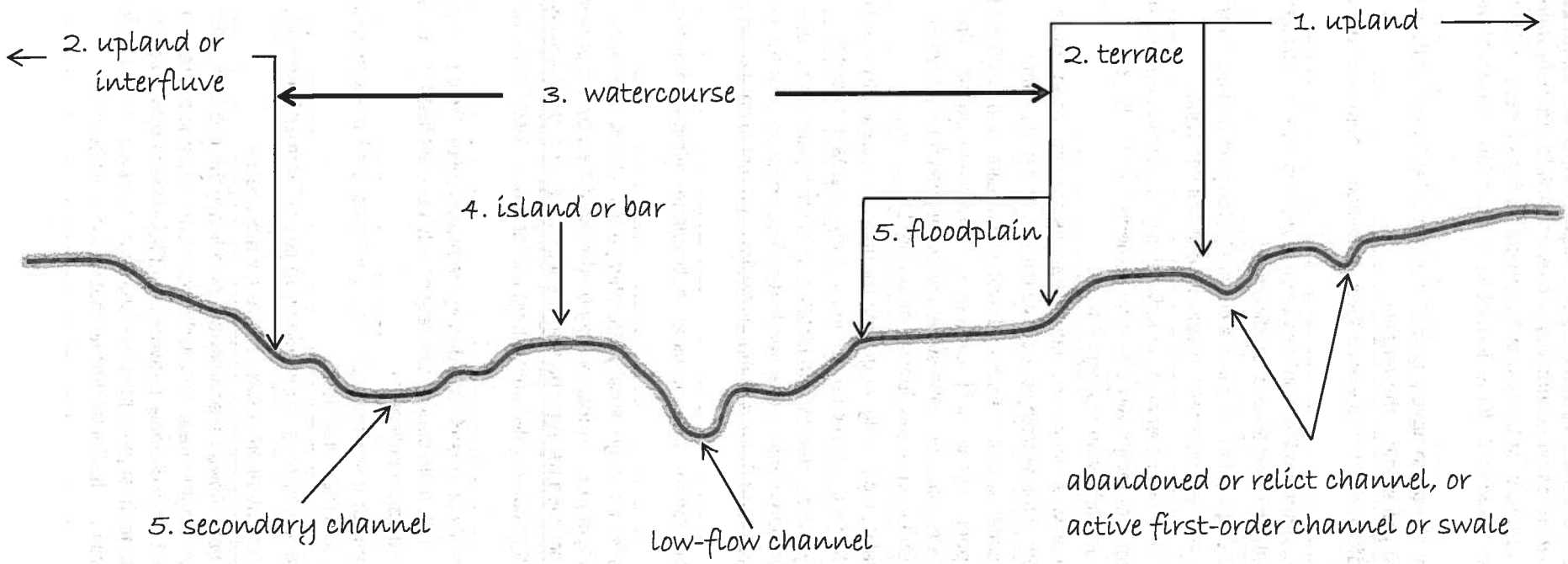


Figure 7. Location of nearby Approved JDs: SPL-2016-00566-DSP (Bagdad Dry Lake); SPL-2016-00063-SLP (Bristol Dry Lake). Dark blue lines outline the dry lakes, and light blue line traces theoretical down-gradient path of water from project area (red line) to dry lakes.

Waters_Name	State	Cowardin_Code	HGM_Code	Meas_Type	Amount	Units	Waters_Type	Latitude	Longitude	Local_Waterway
Wash 1	CALIFORNIA	R6	RIVERINE	Area	0.096	ACRE	ISOLATE	34.71384500	-116.01973800	Bagdad/Bristol Dry Lake
Wash 2	CALIFORNIA	R6	RIVERINE	Area	0.035	ACRE	ISOLATE	34.71310300	-116.01545600	Bagdad/Bristol Dry Lake
Wash 3 - North - Bristol Mountains Wash	CALIFORNIA	R6	RIVERINE	Area	1.2	ACRE	ISOLATE	34.71249900	-116.01164500	Bagdad/Bristol Dry Lake
Wash 3 - South - Bristol Mountains Wash	CALIFORNIA	R6	RIVERINE	Area	2.487	ACRE	ISOLATE	34.67856	-116.012925	Bagdad/Bristol Dry Lake
Wash 4	CALIFORNIA	R6	RIVERINE	Area	0.022	ACRE	ISOLATE	34.71143100	-116.00543100	Bagdad/Bristol Dry Lake
Wash 5	CALIFORNIA	R6	RIVERINE	Area	0.016	ACRE	ISOLATE	34.71082500	-116.00198100	Bagdad/Bristol Dry Lake
Wash 6	CALIFORNIA	R6	RIVERINE	Area	0.029	ACRE	ISOLATE	34.71072200	-116.00119100	Bagdad/Bristol Dry Lake
Wash 7	CALIFORNIA	R6	RIVERINE	Area	0.028	ACRE	ISOLATE	34.71041400	-115.99943600	Bagdad/Bristol Dry Lake
Wash 8 - West	CALIFORNIA	R6	RIVERINE	Area	0.646	ACRE	ISOLATE	34.71021800	-115.99802500	Bagdad/Bristol Dry Lake
Wash 8 - East	CALIFORNIA	R6	RIVERINE	Area	0.341	ACRE	ISOLATE	34.70970200	-115.99515400	Bagdad/Bristol Dry Lake
Wash 9	CALIFORNIA	R6	RIVERINE	Area	0.024	ACRE	ISOLATE	34.68639800	-116.00474900	Bagdad/Bristol Dry Lake
Wash 10	CALIFORNIA	R6	RIVERINE	Area	0.009	ACRE	ISOLATE	34.68542500	-116.00501000	Bagdad/Bristol Dry Lake
Wash 11	CALIFORNIA	R6	RIVERINE	Area	0.078	ACRE	ISOLATE	34.67570900	-116.01918000	Bagdad/Bristol Dry Lake

Representative Watercourse Cross Section with Associated Geomorphic Units



Guidance on Defining Watercourse Boundaries

1. **Uplands:** although dominated by terrestrial processes, uplands commonly include drainage swales and first- and sometimes higher-order streams. Document the presence and fluvial activity of these with a separate longitudinal survey using both the Watercourse and Upland indicators section of the Data Sheet.
2. **Terraces and interfluves:** are upland landforms. If the differences between terrace or interfluve and upland surface indicators are nominal and terrestrial indicators dominate, include their indicators on the Upland Indicators section of the Data Sheet. If the surfaces of terraces or interfluves have indicators of fluvial activity, reconsider the landform interpretation as floodplain within the watercourse boundaries, and include these indicators on the Watercourse Indicators section of the Data Sheet. If the surfaces or the percent cover and vigor of the vegetation on the terraces or interfluves notably differ from those on the adjacent upland, describe these differences in the notes to the vegetation sections of the Data Sheet.
3. **Watercourse:** includes all functionally related swales, single-thread channels, compound channels, braided channels, discontinuous and distributary channel networks, islands, and floodplains.
4. **Islands:** these bodies of land and the unique habitat they provide are defined and often formed by the water that surrounds and interacts with them. They are part of the watercourse unless their landscapes and ecosystem characteristics differ from those of the watercourse, and there is minimal physical or biological exchange between them and the stream. Document differences in surface indicators or vegetation on the Upland Indicators section of the Data Sheet and in explanatory notes.
5. **Floodplains and secondary channels:** lie within the bounds of a watercourse, and are essential to stream and ecosystem function. Include their indicators with those of the Watercourse Indicators section of the Data Sheet.

Annotated Definitions of Stream and Terrestrial Landforms	
Abandoned channel	a channel along which stream flow no longer occurs; e.g. a channel isolated from its water source through faulting or stream capture, or by human constructs such as levees. With time and the absence of the processes responsible for its formation an abandoned channel will become relict.
Active channel	a channel receiving frequent enough flow to have physical or biological evidence of fluvial activity roughly within the last 200 years before the present.
Alluvial fan	a gently sloping, fan-shaped landform that forms where steep, confined, mountain streams flow out onto a plain or valley.
Bank	the land on the outermost edge of a stream that confines or otherwise defines the stream's boundary when its waters rise to the highest level of confinement.
Bar	a ridge-like accumulation of sand or gravel formed in the channel, along the banks, at the mouth, or within the channel of a stream where a decrease in velocity induces deposition.
Channel	a defined course along which water flows perennially or episodically. Channels may be active during every runoff event or spatially or temporally dormant elements within a larger watercourse that receive water periodically during higher flows.
Dormant channel	a channel isolated from its principal water source by natural causes or human constructs such as roads, but that retains its potential for hydrologic reactivation and stream function.
Floodplain	a relatively flat area of land associated with a stream and over which water and soil from the parent stream flows when the capacity of channel is exceeded. Floodplains parallel stream channels by may also occur at the terminal end of a stream where it joins a larger wash, transitions into a playa, or the channel ends and flow subsides into the ground.
Interfluve	a relatively undissected and fluvially inactive higher ground (or upland) between two adjacent stream channels that flow in the same general direction in the same drainage network.
Island	elevated body of land periodically surrounded by and isolated from the upland landscape by water. Islands are part of a watercourse unless their landscape and ecosystem characteristics differ from those of the watercourse, and there is minimal physical and biological exchange between the two.
Low-flow channel	the topographically lowest stream channel or the dominant subchannel within a compound channel watercourse.
Relict channel	an "old" channel made by processes no longer locally operative; e.g. a stream that once drained a lake that is now permanently dry. Antiquity may be demonstrated by the presence of rock varnish, soil development, rock weathering, and the absence of recent fluvial activity.
Secondary channel	topographically higher channels that carry water only during higher flows. Also known as overflow or high flow channels.
Stream	a body of water that flows perennially or episodically during the historic hydrologic regime (ca. 1800 to present), and where the width of its course can reasonably be identified by resultant landforms or other physical and biological indicators.
Swale	a depression where runoff from the surrounding uplands concentrates to initiate stream flow; source areas considered Integral to stream function.
Terrace	planar surfaces representing infrequently or rarely flooded remnants of former floodplain.
Upland	the higher ground dominated by terrestrial processes above a watercourse.
Watercourse	the area within and along which water flows perennially or episodically through one or more channels. Where present, swales, single-thread channels, compound channels, braided channels, discontinuous and distributary channel networks, and floodplains may all occur within the bounds of a single larger channel designated the "watercourse" to discriminate between it and functionally related but subordinate fluvial landforms that lie within its bounds.

Episodic Stream Indicator Data Sheet				page 1 of 4
Site ID: Ash Hill	Stream ID:			Date: 1/31/19
Nearest Town:		County:		
Investigators: John Parent				
Base Map				
Aerial Photo #:	Date: ~~1/31/19~~	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:

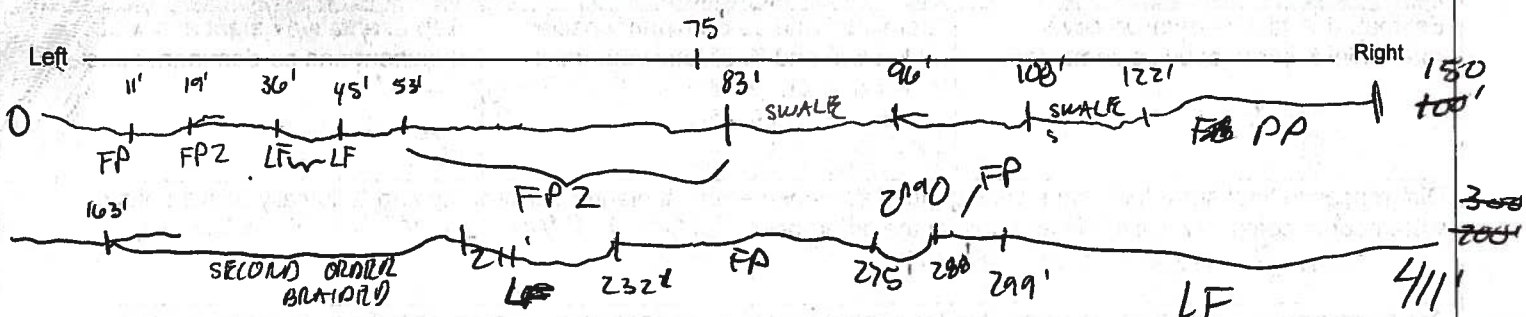
Transect was selected to:

✓	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: UNPAVED ROAD, BERMED ON BOTH SIDES, BISECTING CHANNEL. STREAM OCCUPIES WIDTH OF VALLEY BOTTOM, IS SURROUNDED BY DESERT PAVEMENT. FEW ROLLING HILLS. GRADUAL ELEVATIONAL GRADIENT FROM EAST TO WEST ACROSS VALLEY BOTTOM.

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.



INVERT UPSTREAM

Site ID:	Stream ID:	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

0	% Bedrock / Cemented substrate	
5	% Boulder	≥ 256 mm
40	% Cobble	≥ 64 – 256mm
50	% Pebble	≥ 4 – 64 mm
3	% Granule	≥ 2 – 4 mm
1	% Sand	≤ 2 mm
1	% 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:				

Vegetation

Estimated % total vegetative cover (perennial & shrub species combined):	Dominant and co-dominant species (if known) and % of total vegetative cover of each:	Representative height and width of dominant and co-dominant species:
20%	AMBROSIA SALSOLA – 10% BEBBIA JUNCEA 3% CREOSOTE 1% SMOKE TREE 1%	– 1×1 – .5×.5 – 2×2 – 3×2

Differences in total shrub/perennial density (total #shrubs/perennial plants) between upland & fluvially active units or watercourse complex? (describe and qualify the differences): GREATER DENSITY IN WATERCOURSE ANNUALS ALMOST ABSENT FROM UPLANDS

Are there plant species that are present in (or absent from) the uplands when compared to fluvially active units or the watercourse complex? (describe differences): UPLANDS DOMINATED BY CREOSOTE

Are there plant species that are more abundant (or less abundant) in the uplands when compared to the fluvially active units or the watercourse complex? (describe and qualify differences) CREOSOTE MORE ABUNDANT ANNUALS ABSENT

Site ID:	Stream ID:	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

0	% Bedrock / Cemented substrate	
15	% Boulder	≥ 256 mm
40	% Cobble	≥ 64 – 256 mm
35	% Pebble	≥ 4 – 64 mm
5	% Granule	≥ 2 – 4 mm
3	% Sand	≤ 2 mm
2	% Silt/Clay	Fines

Erosion Indicators

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

Vegetation

Estimated % total vegetative cover (perennial & shrub species combined):	Dominant and co-dominant species (if known) and % of total vegetative cover of each:	Representative height and width of dominant and co-dominant species:
10%	CREOSOTE: 9% ABBDOM: 1%	1x1 .5x.5

Differences in total shrub/perennial density (total #shrubs/perennial plants) between the low-flow channel(s) and the adjacent floodplain? (describe and qualify the differences):

Are there plant species that are present in (or absent from) the low-flow channel(s) when compared to the adjacent floodplain? (describe differences):

Are there plant species that are more abundant (or less abundant) on the low-flow channel(s) and the adjacent floodplain? (describe and qualify differences)

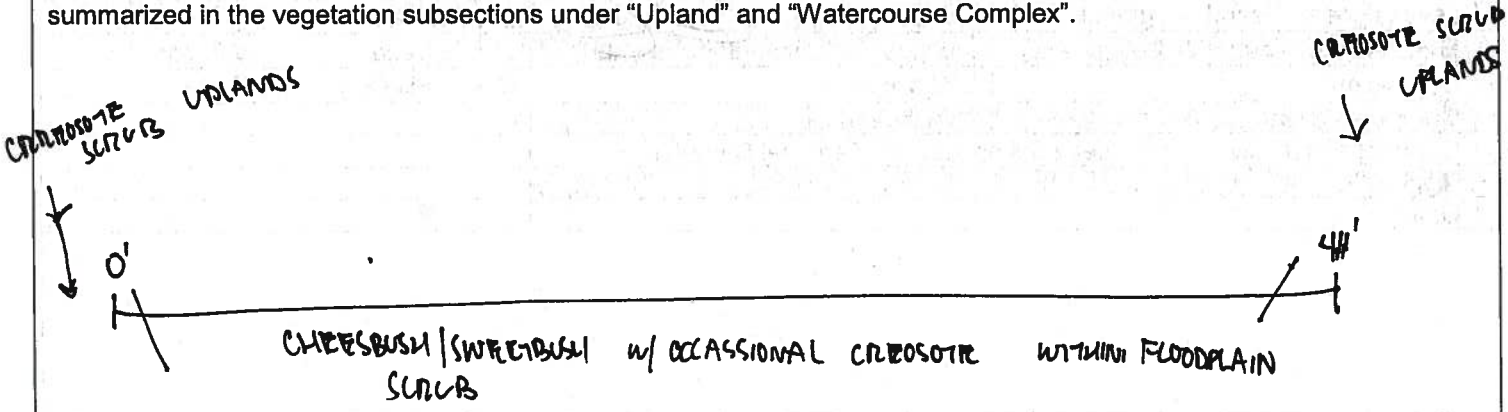
Site ID	Stream ID	page 4 of 4

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:				

Additional Diagrams and Notes

Vegetation cross-section diagram: Draw a cross-section that identifies the approximate locations along the transect or diagram of geomorphic units (see page 1 of data sheet) where there are changes in vegetation characteristics, as summarized in the vegetation subsections under "Upland" and "Watercourse Complex".



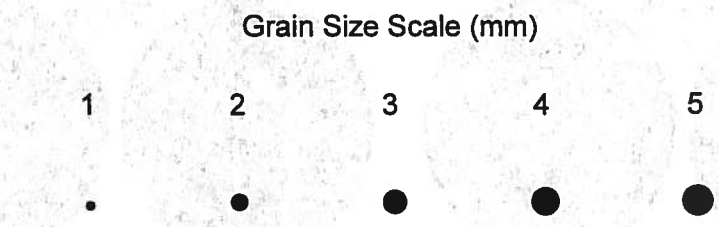
Photographs

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

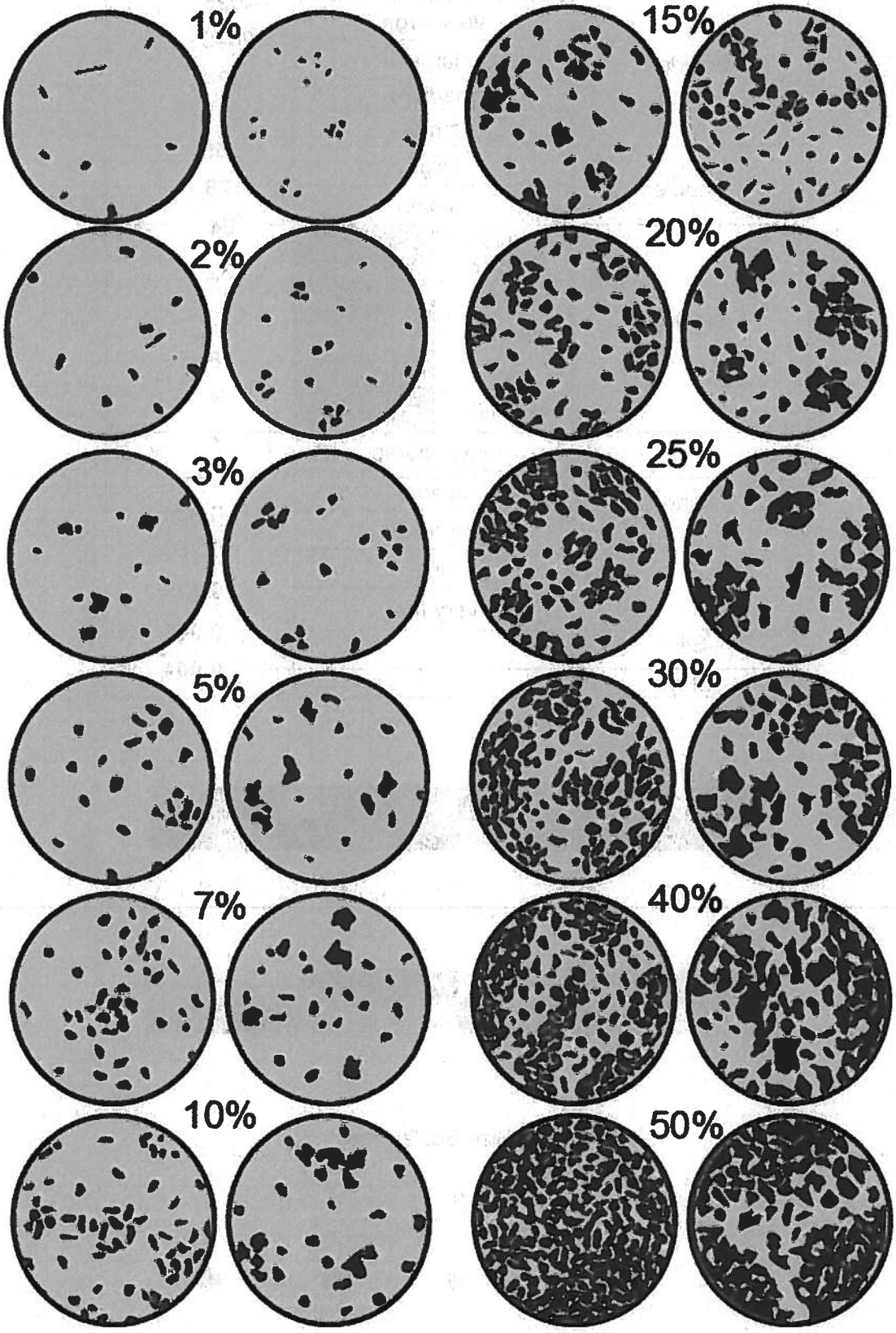
Photo ID #	Description	GPS location	

Particle Size Gradations

Description of particle size			millimeters
Boulder	mammoth		4096
	very large		2048
	large		1024
	medium		512
	small		**256**
Cobble	large		128
	small		**64**
Gravel	very coarse	Pebble	32
	coarse		16
	medium		8
	fine		4
	very fine	Granule	**2**
Sand	very coarse		1
	coarse		0.500
	medium		0.250
	fine		0.125
	very fine		**0.063**
Silt			**0.004**
Clay			



Percent Landscape Cover Diagram



OHWM Delineation Cover Sheet

Project: _ _ **Date:** 1/31/19 _

Location: _ **Investigator(s):**

Drainage Name / ID#: Wash #3 A

Location within Site: _____

Representative GPS Point: (*lat/long; decimal degrees*)

_____

Describe the river or stream's condition (disturbances, in-stream structures, etc.):

Natural condition & Natural banks except where dirt road crosses some erosion of banks.
Broad drainage 980 ft wide

Minor disturbance (soils piled) in wash on one side in upper from road work floodplain on edge.

Off-site Information

Remotely sensed image(s) acquired? ☐ **Yes** ☒ **No** [If yes, attach image(s) to datasheet(s) and indicate approx. locations of transects, OHWM, and any other features of interest on the image(s); describe below] Description:

AERIAL / GOOGLE EARTH PHOTO

Hydrologic/hydraulic information acquired? ☐ **Yes** ☒ **No** [If yes, attach information to datasheet(s) and describe below.] Description:

APPROX. 750' WIDE

List and describe any other supporting information received/acquired:

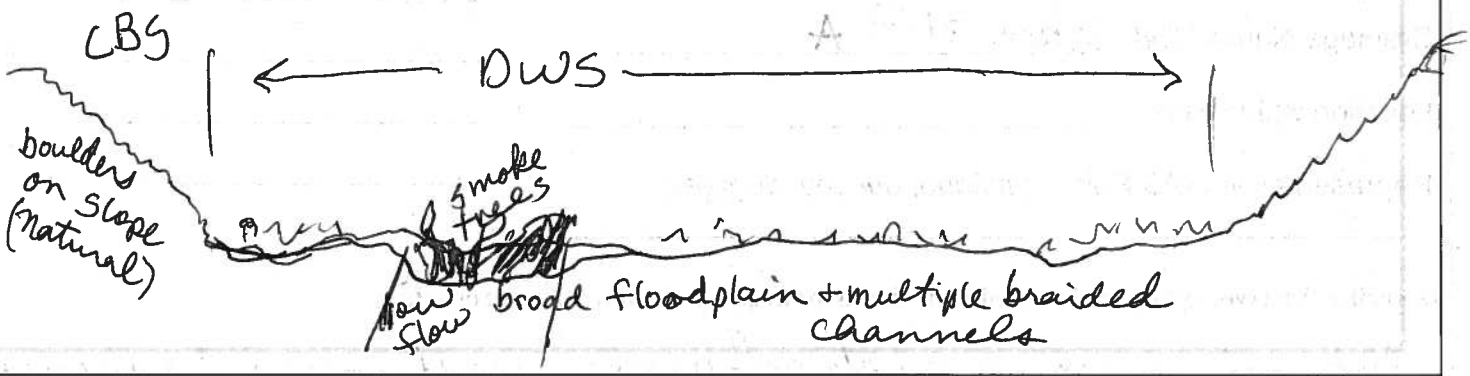
JD PHOTO POINT 3A UPSTREAM
" " " " DOWNSTREAM

Instructions: Complete one cover sheet and one or more datasheets for each project site. Each datasheet should capture the dominant characteristics of the OHWM along some length of a given stream. Complete enough datasheets to adequately document up- and/or downstream variability in OHWM indicators, stream conditions, etc. Transect locations can be marked on a recent aerial image or their GPS coordinates noted on the datasheet.

1/31/19 Wash #3

Datasheet # ___of___ **OHWM Delineation Datasheet** Page 02 of 02

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)



Break in Slope at OHWM: ☒ Sharp (> 60°) | ☐ Moderate (30–60°) | ☐ Gentle (< 30°) | ☐ None

Notes/Description:

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	10	<1	5	50	35	
Below OHWM	2	5	50	25	18	

Notes/Description:

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	0	10	0	90
Below OHWM	5	15	15	65

Notes/Description:

Vegetation Communities/Notable Species: DWS + Olneya tesota + Ambrosia sals + Senegalia greggii + Encelia actonii + Bebbia juncea + Cryptantha spp. + Larrea trid.

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

CBS in upland

OHWM Delineation Cover Sheet

Project: Ash Hill

Date: 1/31/19

Location:

Investigator(s): Bonnie Hendricks, John Parent

Drainage Name / ID#: Wash #1

Location within Site:

Representative GPS Point: (*lat/long; decimal degrees*)

Describe the river or stream's condition (disturbances, in-stream structures, etc.):

Piles of boulders either side of channel pushed with heavy equipment.

Off-site Information

Remotely sensed image(s) acquired? ☐ Yes ☒ No [If yes, attach image(s) to datasheet(s) and indicate approx. locations of transects, OHWM, and any other features of interest on the image(s); describe below] Description:

AERIAL PHOTO AND/OR GOOGLE EARTH

Hydrologic/hydraulic information acquired? ☐ Yes ☒ No [If yes, attach information to datasheet(s) and describe below.] Description:

1-2' ?

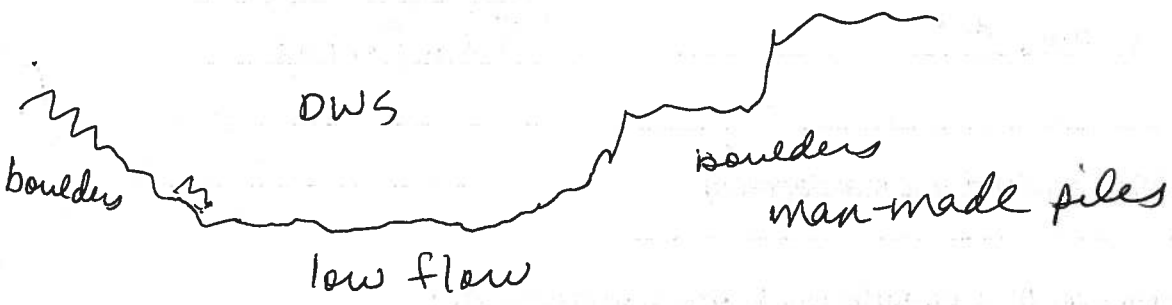
List and describe any other supporting information received/acquired:

JD PHOTO POINT 1 UPSTREAM
" " " " DOWNSTREAM

Instructions: Complete one cover sheet and one or more datasheets for each project site. Each datasheet should capture the dominant characteristics of the OHWM along some length of a given stream. Complete enough datasheets to adequately document up- and/or downstream variability in OHWM indicators, stream conditions, etc. Transect locations can be marked on a recent aerial image or their GPS coordinates noted on the datasheet.

Datasheet # ___of___ 1/31/19 **OHWM Delineation Datasheet** Wash #1 Page 02 of 02

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)



Break in Slope at OHWM: ☒ Sharp (> 60°) | ☐ Moderate (30–60°) | ☐ Gentle (< 30°) | ☐ None

Notes/Description:

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	<1%	3%	5%	2%	90%	
Below OHWM	<1	5%	15%	30%	50%	

Notes/Description:

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	0	5%	<1	95%
Below OHWM	5%	10%	5%	80%

Notes/Description:

Vegetation Communities/Notable Species: DWS + Oneya tesota + Senegalia greggii + Bebbia juncea + Aristida + Ambrosia salsola

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

CBS in upland

OHWM Delineation Cover Sheet Page 01 of 02

Project: Ash Hill **Date:** 1/30/19

Location: Wash #9 **Investigator(s):** Bonnie Hendricks, John Parent

Drainage Name / ID#: Wash #9

Location within Site:

Representative GPS Point: (*lat/long; decimal degrees*)
34.685444720 -116.00503630

Describe the river or stream's condition (disturbances, in-stream structures, etc.):

Dirt road crossing stream / Arizona crossing
Otherwise undisturbed

Off-site Information

Remotely sensed image(s) acquired? ☐ **Yes** ☒ **No** [If yes, attach image(s) to datasheet(s) and indicate approx. locations of transects, OHWM, and any other features of interest on the image(s); describe below] Description:

Aerial Photo

Hydrologic/hydraulic information acquired? ☐ **Yes** ☒ **No** [If yes, attach information to datasheet(s) and describe below.] Description:

Approx 30 ft width

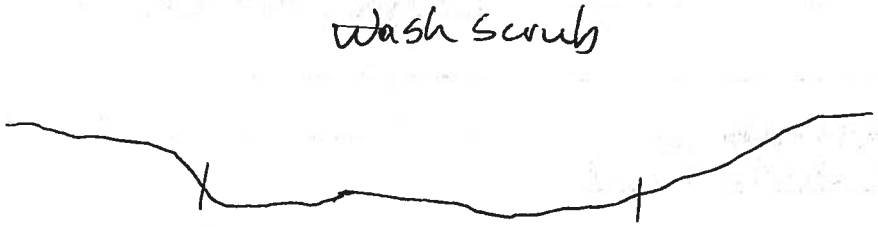
List and describe any other supporting information received/acquired:

JD Photo Point 9 upstream
JD " " " downstream

Instructions: Complete one cover sheet and one or more datasheets for each project site. Each datasheet should capture the dominant characteristics of the OHWM along some length of a given stream. Complete enough datasheets to adequately document up- and/or downstream variability in OHWM indicators, stream conditions, etc. Transect locations can be marked on a recent aerial image or their GPS coordinates noted on the datasheet.

Datasheet # ___of___ 1/30/19 **OHWM Delineation Datasheet** Wash#9 Page 02 of 02

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)



Break in Slope at OHWM: ☐ Sharp (> 60°) | ☐ Moderate (30–60°) | ☐ Gentle (< 30°) | ☐ None

Notes/Description:

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	5%	10%	25%	50%	10%	N
Below OHWM	10%	10%	50%	25%	5%	N

Notes/Description:

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	0	10%	5%	85%
Below OHWM	0	15%	10%	75%

Notes/Description:

Vegetation Communities/Notable Species: Desert Dry Wash dominated by Crypt. + Bebbia juncea Phacelia + Larrea tridentata Annuals starting to bloom in wash

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

Absence of Bebbia outside drainage.
Only Larrea trid in upland
Drainage pattern/Wash trib to larger wash

OHWM Delineation Cover Sheet Page 01 of 02

Project: Ash Hill **Date:** 1/31/19

Location: _ **Investigator(s):** Bonnie Hendricks, John Parent

Drainage Name / ID#: Wash #H36

Location within Site: _____

Representative GPS Point: (*lat/long; decimal degrees*) _____

Describe the river or stream's condition (disturbances, in-stream structures, etc.):

Road alignment runs down this broad, low wash on existing dirt road within the wash. Disturbed by vehicle tracks, man-made berm on opposite side, and berm ~~for~~ and bridge for railroad crossing over wash.

Off-site Information

Remotely sensed image(s) acquired? ☐ Yes ☒ No [If yes, attach image(s) to datasheet(s) and indicate approx. locations of transects, OHWM, and any other features of interest on the image(s); describe below] Description:

AERIAL PHOTO / GOOGLE EARTH

Hydrologic/hydraulic information acquired? ☐ Yes ☒ No [If yes, attach information to datasheet(s) and describe below.] Description:

RANGES FROM APPROX 480' – 940' WIDE

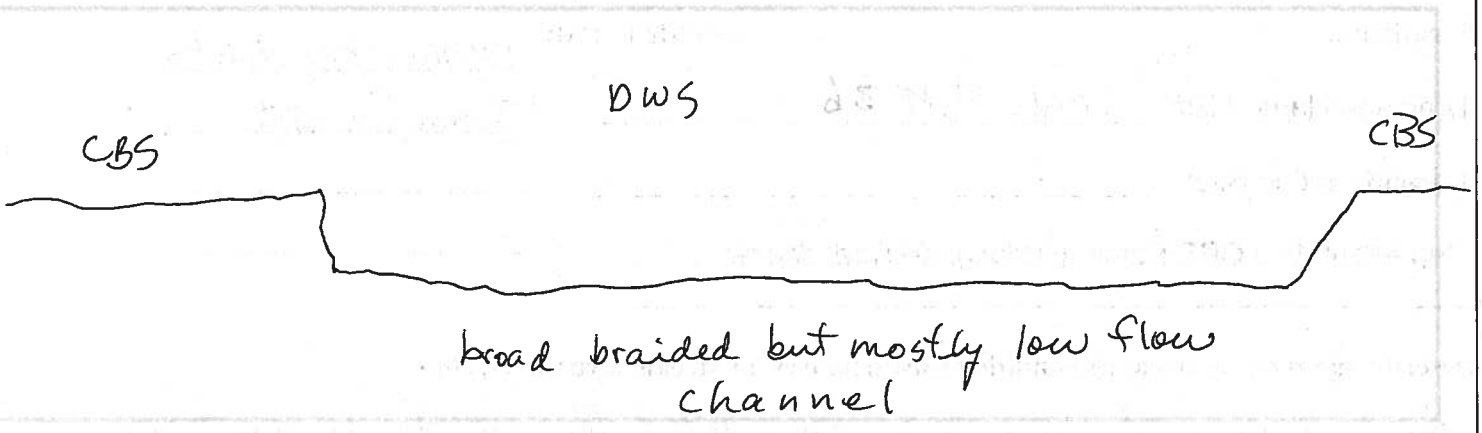
List and describe any other supporting information received/acquired:

JD	PHOTO	POINTS	3B	UPSTREAM
"	"	"	"	DOWNSTREAM

Instructions: Complete one cover sheet and one or more datasheets for each project site. Each datasheet should capture the dominant characteristics of the OHWM along some length of a given stream. Complete enough datasheets to adequately document up- and/or downstream variability in OHWM indicators, stream conditions, etc. Transect locations can be marked on a recent aerial image or their GPS coordinates noted on the datasheet.

Datasheet # ___of___ 1/31/19 **OHWM Delineation Datasheet** Wash # 4 Page 02 of 02

Transect (cross-section) drawing: (choose a location that is representative of the dominant stream characteristics over some distance; label the OHWM and other features of interest along the transect; include an estimate of transect length)



Break in Slope at OHWM: ☒ Sharp (> 60°) | ☐ Moderate (30–60°) | ☐ Gentle (< 30°) | ☐ None

Notes/Description:

Sediment Texture: Estimate percentages to describe the general sediment texture above and below the OHWM

	Clay/Silt <0.05mm	Sand 0.05 – 2mm	Gravel 2mm – 1cm	Cobbles 1 – 10cm	Boulders >10cm	Developed Soil Horizons (Y/N)
Above OHWM	5	35	40	20	2	Y
Below OHWM	3	10	70	15	2	

Notes/Description:

Vegetation: Estimate absolute percent cover to describe general vegetation characteristics above and below the OHWM

	Tree (%)	Shrub (%)	Herb (%)	Bare (%)
Above OHWM	0	25	2	75
Below OHWM	3	10	15	70

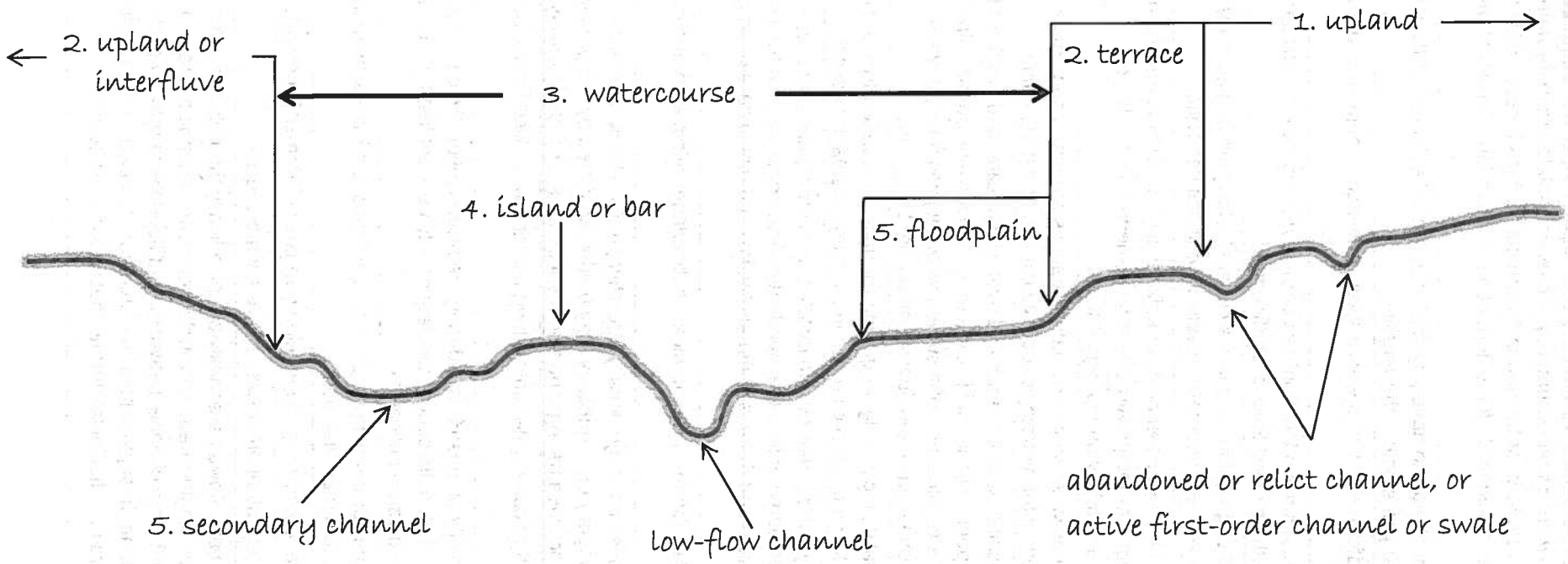
Notes/Description:

Vegetation Communities/Notable Species: DWS
+ Olneya tesota
+ Ambrosia salsola
+ Encelia actonil

Other Evidence: List/describe any additional field evidence and/or lines of reasoning used to support your delineation

CBS

Representative Watercourse Cross Section with Associated Geomorphic Units



Guidance on Defining Watercourse Boundaries

1. **Uplands:** although dominated by terrestrial processes, uplands commonly include drainage swales and first- and sometimes higher-order streams. Document the presence and fluvial activity of these with a separate longitudinal survey using both the Watercourse and Upland indicators section of the Data Sheet.
2. **Terraces and interfluves:** are upland landforms. If the differences between terrace or interfluve and upland surface indicators are nominal and terrestrial indicators dominate, include their indicators on the Upland Indicators section of the Data Sheet. If the surfaces of terraces or interfluves have indicators of fluvial activity, reconsider the landform interpretation as floodplain within the watercourse boundaries, and include these indicators on the Watercourse Indicators section of the Data Sheet. If the surfaces or the percent cover and vigor of the vegetation on the terraces or interfluves notably differ from those on the adjacent upland, describe these differences in the notes to the vegetation sections of the Data Sheet.
3. **Watercourse:** includes all functionally related swales, single-thread channels, compound channels, braided channels, discontinuous and distributary channel networks, islands, and floodplains.
4. **Islands:** these bodies of land and the unique habitat they provide are defined and often formed by the water that surrounds and interacts with them. They are part of the watercourse unless their landscapes and ecosystem characteristics differ from those of the watercourse, and there is minimal physical or biological exchange between them and the stream. Document differences in surface indicators or vegetation on the Upland Indicators section of the Data Sheet and in explanatory notes.
5. **Floodplains and secondary channels:** lie within the bounds of a watercourse, and are essential to stream and ecosystem function. Include their indicators with those of the Watercourse Indicators section of the Data Sheet.

Episodic Stream Indicator Data Sheet				page 1 of 4
Site ID: Ash Hill	Stream ID:			Date: 1/31/19
Nearest Town:		County:		
Investigators: John Parent				
Base Map				
Aerial Photo #:	Date: ~~1/31/19~~	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:

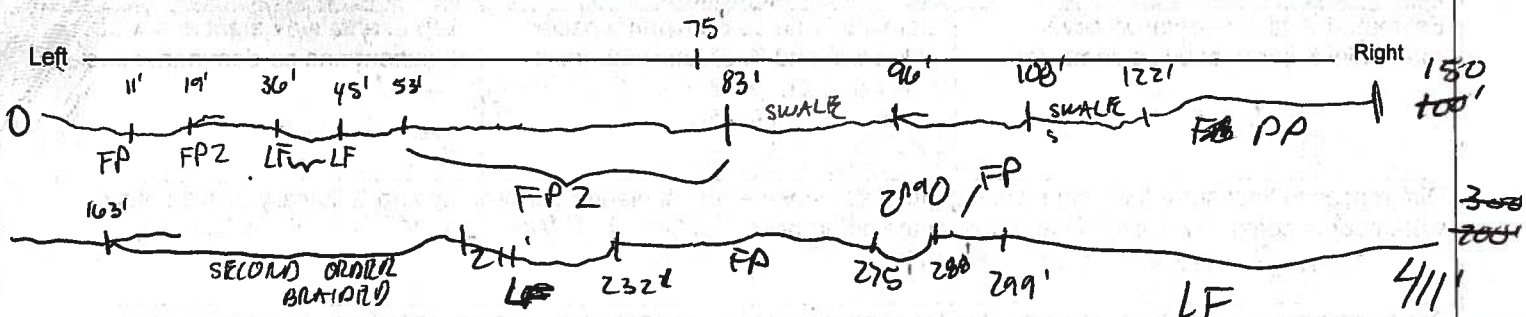
Transect was selected to:

✓	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: UNPAVED ROAD, BERMED ON BOTH SIDES, BISECTING CHANNEL. STREAM OCCUPIES WIDTH OF VALLEY BOTTOM, IS SURROUNDED BY DESERT PAVEMENT. FEW ROLLING HILLS. GRADUAL ELEVATIONAL GRADIENT FROM EAST TO WEST ACROSS VALLEY BOTTOM.

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.



INVERT UPSTREAM

Site ID:	Stream ID:	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

0	% Bedrock / Cemented substrate	
15	% Boulder	≥ 256 mm
40	% Cobble	≥ 64 – 256 mm
35	% Pebble	≥ 4 – 64 mm
5	% Granule	≥ 2 – 4 mm
3	% Sand	≤ 2 mm
2	% Silt/Clay	Fines

Erosion Indicators

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

Vegetation

Estimated % total vegetative cover (perennial & shrub species combined):	Dominant and co-dominant species (if known) and % of total vegetative cover of each:	Representative height and width of dominant and co-dominant species:
10%	CREOSOTE: 9% ABBDOM: 1%	1x1 .5x.5

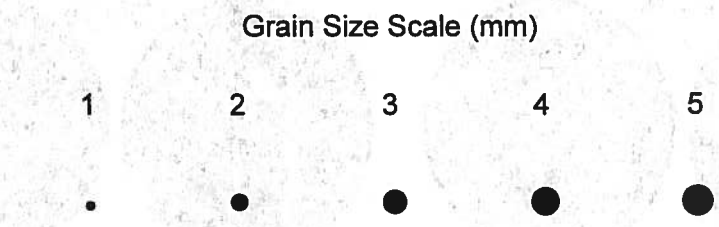
Differences in total shrub/perennial density (total #shrubs/perennial plants) between the low-flow channel(s) and the adjacent floodplain? (describe and qualify the differences):

Are there plant species that are present in (or absent from) the low-flow channel(s) when compared to the adjacent floodplain? (describe differences):

Are there plant species that are more abundant (or less abundant) on the low-flow channel(s) and the adjacent floodplain? (describe and qualify differences)

Particle Size Gradations

Description of particle size			millimeters
Boulder	mammoth		4096
	very large		2048
	large		1024
	medium		512
	small		**256**
Cobble	large		128
	small		**64**
Gravel	very coarse	Pebble	32
	coarse		16
	medium		8
	fine		4
	very fine	Granule	**2**
Sand	very coarse		1
	coarse		0.500
	medium		0.250
	fine		0.125
	very fine		**0.063**
Silt			**0.004**
Clay			



Appendix C

Site Photographs

AECOM Imagine it. Delivered.

APPENDIX C – JANUARY 2019
PHOTOGRAPHS

Client Name:	**Site Location:**
InterConnect	Ash Hill Project

Photo No.	**Date:**
1	01/31/19

Direction Photo Taken:

Northwest

Description:

Looking upstream along Wash 1 from the access road.

Photo No.	**Date:**
2	01/31/19

Direction Photo Taken:

Southeast

Description:

Looking downstream along Wash 1 from the access road.

Client Name:	**Site Location:**
InterConnect	Ash Hill Project

Photo No.	**Date:**
3	01/31/19

Direction Photo Taken:

Northeast

Description:

Looking upstream along Wash 2 from the access road.

Photo No.	**Date:**
4	01/31/19

Direction Photo Taken:

Southwest

Description:

Looking downstream along Wash 2 from the access road.

Client Name:	**Site Location:**
InterConnect	Ash Hill Project

Photo No.	**Date:**
5	01/31/19

Direction Photo Taken:

East

Description:

Looking east along the access road across Wash 3 – North.

Photo No.	**Date:**
6	01/31/19

Direction Photo Taken:

West

Description:

Looking west along the access road across Wash 3 – North.

Client Name:	**Site Location:**
InterConnect	Ash Hill Project

Photo No.	**Date:**
7	01/31/19

Direction Photo Taken:

North

Description:

Looking north from within Wash 3 – South towards the existing road failure.

Photo No.	**Date:**
8	01/31/19

Direction Photo Taken:

South

Description:

Looking south from within Wash 3 – South towards the railroad bridge.

Client Name:	**Site Location:**
InterConnect	Ash Hill Project

Photo No.	**Date:**
9	01/31/19

Direction Photo Taken:

Northwest

Description:

Looking upstream along Wash 4 from the access road.

Photo No.	**Date:**
10	01/31/19

Direction Photo Taken:

Southeast

Description:

Looking downstream along Wash 4 from the access road.

Client Name:	**Site Location:**
InterConnect	Ash Hill Project

Photo No.	**Date:**
11	01/31/19

Direction Photo Taken:

North

Description:

Looking upstream along Wash 5 from the access road.

Photo No.	**Date:**
12	01/31/19

Direction Photo Taken:

South

Description:

Looking downstream along Wash 5 from the access road.

Client Name:	**Site Location:**
InterConnect	Ash Hill Project

Photo No.	**Date:**
13	01/31/19

Direction Photo Taken:

North

Description:

Looking upstream along Wash 6 from the access road.

Photo No.	**Date:**
14	01/31/19

Direction Photo Taken:

South

Description:

Looking downstream along Wash 6 from the access road.

Client Name:	**Site Location:**
InterConnect	Ash Hill Project

Photo No.	**Date:**
15	01/31/19

Direction Photo Taken:

Northeast

Description:

Looking upstream along Wash 7 from the access road.

Photo No.	**Date:**
16	01/31/19

Direction Photo Taken:

Southwest

Description:

Looking downstream along Wash 7 from the access road.

Client Name:	**Site Location:**
InterConnect	Ash Hill Project

Photo No.	**Date:**
17	01/31/19

Direction Photo Taken:

East

Description:

Looking east from the start of the MESA transect, within Wash 8 – West, just north/upstream of the access road.

Photo No.	**Date:**
18	01/31/19

Direction Photo Taken:

East

Description:

Looking east along the MESA transect, within Wash 8 – West, approximately 150-feet across the channel, just north/upstream of the access road.

Client Name:	**Site Location:**
InterConnect	Ash Hill Project

Photo No.	**Date:**
19	01/31/19

Direction Photo Taken:

East

Description:

Looking east along the MESA transect, within Wash 8 – West, approximately 100-feet from the eastern side of the channel, just north/upstream of the access road.

Photo No.	**Date:**
20	01/31/19

Direction Photo Taken:

West

Description:

Looking west from the end of the MESA transect, within Wash 8 – West, just north/upstream of the access road.

Client Name:	**Site Location:**
InterConnect	Ash Hill Project

Photo No.	**Date:**
21	01/31/19

Direction Photo Taken:

North

Description:

Looking upstream along Wash 8 - East from the access road.

Photo No.	**Date:**
22	01/31/19

Direction Photo Taken:

Southwest

Description:

Looking downstream along Wash 8 - East from the access road.

Client Name:	**Site Location:**
InterConnect	Ash Hill Project

Photo No.	**Date:**
23	01/30/19

Direction Photo Taken:

Northeast

Description:

Looking upstream along Wash 9 from the access road.

Photo No.	**Date:**
24	01/30/19

Direction Photo Taken:

Southwest

Description:

Looking downstream along Wash 9 from the access road.

Client Name:	**Site Location:**
InterConnect	Ash Hill Project

Photo No.	**Date:**
25	01/30/19

Direction Photo Taken:

North

Description:

Looking upstream along Wash 10 from the access road.

Photo No.	**Date:**
26	01/30/19

Direction Photo Taken:

South

Description:

Looking downstream along Wash 10 from the access road.

Client Name:	**Site Location:**
InterConnect	Ash Hill Project

Photo No.	**Date:**
27	01/31/19

Direction Photo Taken:

Northwest

Description:

Looking upstream along Wash 11 from the access road.

Photo No.	**Date:**
28	01/31/19

Direction Photo Taken:

Southeast

Description:

Looking downstream along Wash 11 from the access road.

Appendix D

Observed Plant List

Appendix D. Ash Hill - List of Observed Plant Species

Family Scientific Name	Common Name	Native/ Non-native	Life Form	Wetland Indicator Rating
Agavaceae				
Yucca brevifolia	Joshua tree	Native	Tree	NL
Asteraceae				
Ambrosia dumosa	Burro weed	Native	Shrub	NL
Ambrosia salsola	Cheesebrush	Native	Shrub	NL
Bahiopsis parishii	Parish viguiera	Native	Shrub	NL
Chaenactis glabriuscula	Yellow pincushion	Native	Annual herb	NL
Encelia farinosa	Acton encelia	Native	Shrub	NL
Monoptilon belloides	Desert star	Native	Annual herb	NL
Perityle emoryi	Rock daisy	Native	Annual herb	NL
Boraginaceae				
Cryptantha ssp.	Forget-me-not	Native	Annual herb	NL
Cactaceae				
Cylindropuntia acanthocarpa	Buck horn cholla	Native	Perennial herb (stem succulent)	NL
Ferrocactus cylindraceus	California barrel cactus	Native	Shrub (stem succulent)	NL
Opuntia basilaris	Beavertail	Native	Shrub (stem succulent)	NL
Ephedraceae				
Ephedra sp.	Ephedra	Native	Shrub	NL
Fabaceae				
Senegalia greggii	Catclaw acacia	Native	Shrub	FACU
Psorothamnus arborescens	Mojave indigo bush	Native	Shrub	FACU
Hydrophyllaceae				
Phacelia campanularia ssp. *vasiformis*	Desert Canterbury bells	Native	Annual herb	NL
Lamiaceae				
Condea emoryi	Desert lavender	Native	Shrub	NL
Scutellaria Mexicana	Paperbag bush	Native	Shrub	NL
Papaveraceae				
Eschscholzia glyptosperma	Mojave gold poppy	Native	Annual herb	NL
Polygonaceae				
Eriogonum fasciculatum	California buckwheat	Native	Shrub	NL
Eriogonum inflatum	Desert trumpet	Native	Perennial herb	NL
Poaceae				

Appendix D. Ash Hill - List of Observed Plant Species

Family Scientific Name	Common Name	Native/ Non-native	Life Form	Wetland Indicator Rating
Hilaria rigida	Big galleta grass	Native	Perennial grass	NL
Aristida purpurea	Purple threeawn	Native	Perennial grass	NL
Solanaceae				
Physalis crassifolia	Thick-leaved ground cherry	Native	Shrub	NL
Zygophyllaceae				
Larrea tridentata	South american creosote bush	Native	Shrub	NL

Appendix E

Geology Map

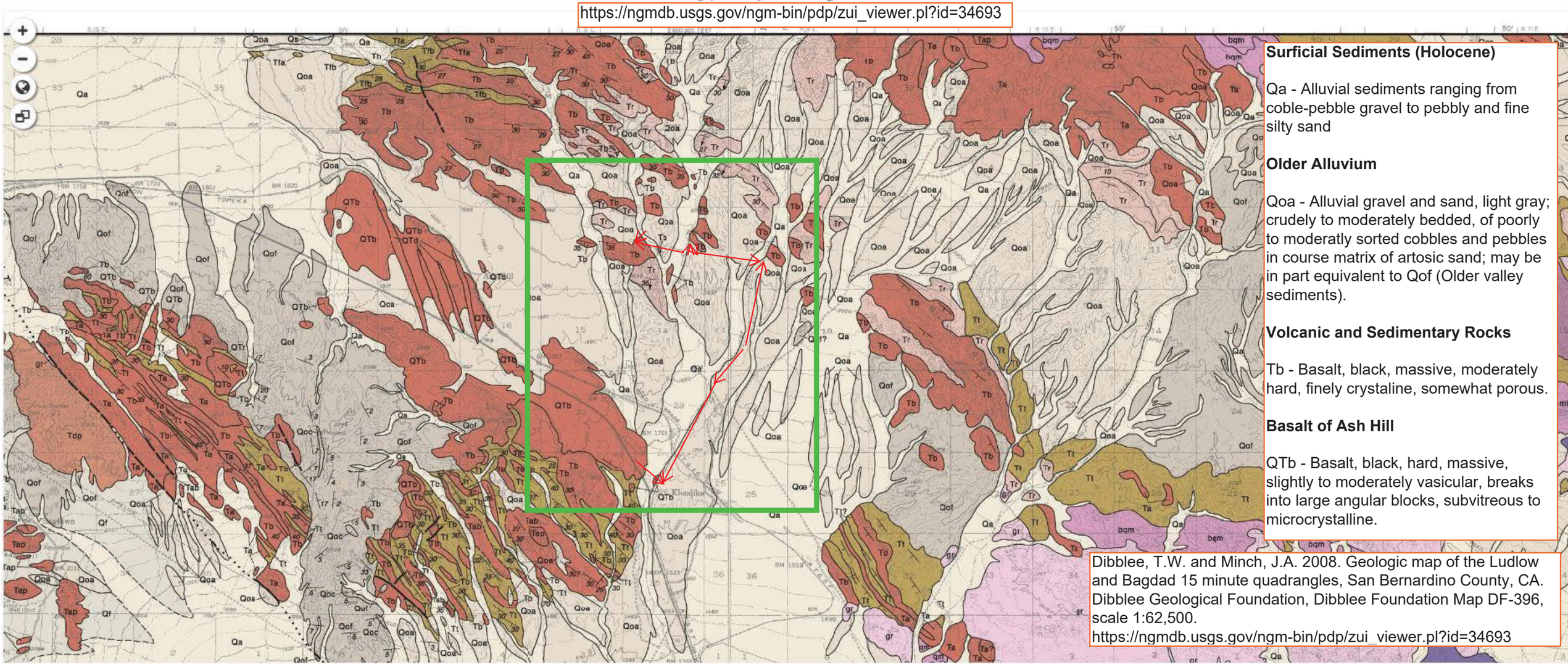
National Geologic Map Database

Preview

Dibblee, T.W., and Minch, J.A., 2008, Geologic map of the Ludlow & Bagdad 15 minute quadrangles, San Bernardino County, California: Dibblee Geological Foundation, Dibblee Foundation Map DF-396, scale 1:62,500

Image provided by Dibblee Geological Foundation

https://ngmdb.usgs.gov/ngm-bin/pdp/zui_viewer.pl?id=34693



Surficial Sediments (Holocene)

Qa - Alluvial sediments ranging from coble-pebble gravel to pebbly and fine silty sand

Older Alluvium

Qoa - Alluvial gravel and sand, light gray; crudely to moderately bedded, of poorly to moderatly sorted cobbles and pebbles in course matrix of artosic sand; may be in part equivalent to Qof (Older valley sediments).

Volcanic and Sedimentary Rocks

Tb - Basalt, black, massive, moderately hard, finely crystaline, somewhat porous.

Basalt of Ash Hill

QTb - Basalt, black, hard, massive, slightly to moderately vasicular, breaks into large angular blocks, subvitreous to microcrystalline.

Dibblee, T.W. and Minch, J.A. 2008. Geologic map of the Ludlow and Bagdad 15 minute quadrangles, San Bernardino County, CA. Dibblee Geological Foundation, Dibblee Foundation Map DF-396, scale 1:62,500.
https://ngmdb.usgs.gov/ngm-bin/pdp/zui_viewer.pl?id=34693