National Park Service

Glen Canyon National Recreation Area
Low Water Ramp at Hite District

Aquatic Resources Delineation Report

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Acronyms and Abbreviations

Acronym	Definition
AMSL	Above mean sea level
CFR	*Code of Federal Regulations*
CWA	Clean Water Act
D.O.	Director's Order
°F	degree(s) Fahrenheit
FGDC	Federal Geographic Data Committee
GLCA	Glen Canyon National Recreation Area
HUC	Hydrologic Unit Code
LF	linear feet
NHD	National Hydrography Dataset
No.	Number
NPS	National Park Service
NWI	National Wetlands Inventory
OHWM	Ordinary High Water Mark
TNW	Traditional Navigable Waters
USACE	United States Army Corps of Engineers
U.S.C.	United States Code
USGS	United States Geological Survey
WOTUS	Waters of the United States

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Executive Summary

The National Park Service (NPS) is proposing to construct a new ramp to provide river and lake access at lower water levels in the Hite District of Glen Canyon National Recreation Area (GLCA). This ramp will replace an existing ramp that is inaccessible at current and anticipated lake levels due to its alignment.

This report presents the methods and results of an aquatic resources delineation for a 107.33-acre study area that encompasses the footprint of the proposed new ramp at Hite District project (project). This delineation was conducted in accordance with the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008), the *National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams (Interim Version)* (USACE 2022), and NPS *Procedural Manual #77-1: Wetland Protection* (referred to as D.O. #77-1) (NPS 2016).

A total of 9.29 acres of aquatic resources were delineated within the study area, which includes 2.60-acres of riverine and 6.69-acres lacustrine waters. There are 6.21-acres of aquatic resources within the study area that are potentially subject to regulation by the NPS under D.O. #77-1, which includes all aquatic resources except for open water that is 8.2 feet (2.5 meters) deep, or greater, below low water. There are 6.76-acres of aquatic resources within the study area that are potentially subject to regulation by the U.S. Army Corps of Engineers (USACE), which include all aquatic resources except for ephemeral watercourses.

The results and conclusions presented in this delineation report are considered preliminary, pending verification by the USACE, and are provided for the purpose of supporting planning, design, and permitting, if required, under the Clean Water Act.

Chapter 1 – Introduction

The National Park Service (NPS) is proposing to construct a ramp in the Hite District of Glen Canyon National Recreational Area (GLCA) to facilitate water access under lower water conditions.

Lake Powell is formed by the impounded waters of the Colorado River above the Glen Canyon Dam and is the second-largest reservoir in the nation. The lake is considered a premier watersports destination and recreation area. When Lake Powell is full (at a water elevation of 3,700 feet above mean sea level [AMSL]), it accounts for 13 percent of GLCA's geographic area and is a major draw for the approximately 4 million visitors who visit annually. However, persistent droughts are contributing to unprecedented low-water conditions. Water levels fluctuate throughout the year, with recent levels in the lake dropping as low as 3,522 feet AMSL in April 2022. In October 2024 water levels were at 3,577 feet AMSL. The U.S. Bureau of Reclamation determined that under a Probable Minimum Scenario, Lake Powell's physical elevation is projected to be 3,571.63 feet by December 31, 2024 (USBR 2022).

These lower water levels in Lake Powell have exposed reservoir sediments. In upper reaches of the river no longer influenced by the downstream control of Glen Canyon Dam, the transition from a reservoir to river conditions has caused dynamic changes in riverbed elevation and stability and associated riverbank stability.

In the Hite District, the Colorado River is actively adjusting to abundant sediment supply from the Dirty Devil tributary and change in base level (local control on elevation of the riverbed) resulting from reservoir declines. The alignment of the river has also changed compared to pre-dam conditions.

Currently, access to the river at the existing Hite Ramp on the river left (south/east) bank is no longer possible due to the presence of unconsolidated reservoir sediments, creating conditions causing trucks and trailers to get stuck. On the river right (north) bank, an unmaintained access road (North Wash Ramp) leads to the river located downstream of the Dirty Devil River confluence. Maintenance of the ramp is challenging, and river conditions are dynamic (these features are displayed on Figure 1 in Appendix A). Together, these factors create inconsistent and sometimes unsafe access to the water at this location. GLCA is initiating this project to provide ongoing water access at the Hite District.

1.01 Study Area Location

The study area is situated between the Hite Crossing Bridge and Hite Marina Campground, and is within San Juan County, Utah (Figure 1 in Appendix A). The study area can be accessed from Hite Marina Road off State Route 95. Table 1-1 includes location information for the study area.

Table 1-1. Location Information

Main Waterbodies	Lake Powell (Colorado River) (TNW)
Tributary to and Downstream Waterbody	Gulf of California

Table 1-1. Location Information

Watershed HUC and Name	Upper Lake Powell (14070001)
Central Latitude and Longitude (DD)	37.886523, -110.380379
Township, Range, Section	Township 33S, Range 14E, Sections 21, 22, 27, 28
USGS Quadrangles	Hite North and Sewing Machine
Directions	From the USACE Albuquerque District office, take I-25 north and continue for 12 miles then take US-550 N. Continue on US-550 N to Bloomington, NM then take US-64 W. Continue on US-64 W for 26 miles then take US-491 N, continue on US-491 N for 21 miles then turn left onto US-160 W. Continue on US-160 W for 13 miles then take CO-41 N / UT-162 W to US-191 N in Bluff, UT. Take US-191 N and continue for approximately 20 miles then turn left onto UT-95 N. Continue on UT-95 N for 73 miles then turn left onto Hite Marina Road. Continue for 0.75-mile and the study area is on the right down a dirt access road.

CO = Colorado State Route
HUC = Hydrologic Unit Code
I = Interstate
TNW = traditional navigable waters
US = United States Highway
USGS = U.S. Geological Survey
UT = Utah State Route

Chapter 2 – Regulatory Setting

This section describes the federal laws, regulations, and standards that apply to aquatic resource protection for the study area.

2.01 Clean Water Act (CWA)

Sections 401 and 404 of the Clean Water Act (CWA) prohibit the discharge of dredged or fill material into "waters of the United States," (WOTUS) including wetlands, without a permit from USACE. The definition of WOTUS includes rivers, streams, estuaries, the territorial seas, ponds, lakes, and wetlands. Wetlands are defined as those areas "that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 CFR § 328.3(c)(1)). Under Section 10 of the Rivers and Harbors Act of 1899, USACE has the authority to regulate the navigable capacity of any of the WOTUS. Under the Rivers and Harbors Act, it is not "lawful to excavate or fill, or in any manner alter or modify the course, location, condition, or capacity of…any navigable water of the United States…" (33 U.S.C. § 403).

All Section 404 CWA permit actions require water quality certification or a waiver pursuant to Section 401 of the CWA. This authority has been delegated by the U.S. Environmental Protection Agency (EPA) to the Utah Water Quality Board.

On May 25, 2023 the Supreme Court of the U.S. issued a decision in the *Sackett v. Environmental Protection Agency* case that revised the definition of WOTUS. Per the decision, for a wetland to be considered a WOTUS it must, with limited exceptions, have a continuous surface connection to a relatively permanent body of water connected to traditionally navigable waters (TNW) or jurisdictional interstate waters. The EPA and USACE issued a final rule on August 29, 2023 to amend the definition of WOTUS to conform to the *Sackett* ruling and removed the significant nexus standard from the definition of WOTUS. By removing the significant nexus standard, only tributaries (i.e., streams that flow into TNWs, territorial seas, or interstate waters) that are "relatively permanent, standing or continuously flowing bodies of water" are WOTUS. This change excluded streams with an ephemeral flow regime as WOTUS.

2.02 NPS Director's Order #77-1: Wetland Protection

The purpose of the Director's Order is to establish NPS policies, requirements, and standards for implementing Executive Order (E.O.) 11990: "Protection of Wetlands" (42 Fed. Reg. 26961). E.O. 11990 was issued by President Carter in 1977 in order "…to avoid to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative...." (42 Fed. Reg. 26961).

Section 6 of E.O. 11990 directed federal agencies to issue procedures to implement the Executive Order. NPS wetland protection procedures were originally adopted together with E.O. 11988 (Floodplain Management) procedures in the 1980 "NPS Floodplain Management and Wetland Protection Guidelines" (45 Fed. Reg. 35916, minor revisions in 47 Fed. Reg. 36718). Experience with implementing the wetland procedures, and changes in wetland management

concepts since they were first published necessitated updating, streamlining, and clarifying NPS wetland policies and procedures in Director's Order #77-1: Wetland Protection (issued October 22, 1998). The 1998 Director's Order and the accompanying Procedural Manual #77-1 superseded and replaced the 1980 NPS wetland guidance. Director's Order #77-1 included: 1) adoption of a "no net loss of wetlands" goal, which was first proclaimed in 1989 by President George Bush and has been sustained by subsequent Administrations; and 2) adoption of the Cowardin et al. (1979) wetland classification system as the NPS standard for defining, classifying, and inventorying wetlands.

In addition to the requirements of the Director's Order, NPS activities that involve the discharge of dredged or fill material into wetlands or other "waters of the United States" must also comply with Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act (regulations and permit process are described in 33 CFR Parts 320-331).

Chapter 3 – Methods

The following sections describe the field sampling procedures and methods used to determine and map aquatic resources.

3.01 Pre-field Investigation

Resources relevant to site conditions and aquatic resources were collected and reviewed as part of the delineation. The following materials were included in this data review:

- Bing satellite imagery (Bing 2024)
- Natural Resources Conservation Service (NRCS) soil maps and descriptions (NRCS 2024a)
- National Hydrography Dataset (NHD) maps (USGS 2024a)
- National Wetlands Inventory (NWI) (USFWS 2024)
- Lake Powell, Arizona and Utah Topographic Lidar Technical Data Report (NV5 Geospatial, Inc. 2022)
- Hite North and Sewing Machine USGS topographic maps (USGS 2024b)

3.02 Field Survey

Jacobs Government Services Company wetland scientists Greg Davis and Sabra McNeish conducted the aquatic resources field survey on October 2 and 3, 2024. The field survey was limited to the study area.

The delineation method was routine and conducted in accordance with the *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory 1987), the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008), the *National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams (Interim Version)* (USACE 2022), and the NPS *Procedural Manual #77-1: Wetland Protection* (D.O. #77-1) (NPS 2016).

Aquatic resources within the survey area were mapped in ArcGIS Field Maps using an Apple iOS device paired with a Juniper Geode global navigation satellite system that provided submeter accuracy. Aerial imagery of the survey area was used to identify locations with potential wetland signature for field investigation and mapping (Bing 2024).

3.02.1 Method for Delineating Wetlands

Wetland determination sample points were established in locations where landforms indicated the potential for wetlands to occur (for example, closed depressions or other low areas). At these points, plant species within proximity of each sample point were identified by stratum and assigned a wetland indicator status to determine the presence of hydrophytic vegetation. The wetland indicator status of each plant species was taken from the National Wetland Plant List, Arid West Region (USACE 2020). The soil profile was examined to a depth of approximately 12 inches, where possible, and soil color was described using a Munsell Soil Color Chart (Munsell 2009). Each sampling location was also examined for indicators of wetland hydrology. Wetland determination data forms associated with this survey are provided in Appendix B.

In addition to the USACE delineation methods above, the NPS Procedural Manual #77-1: Wetland Protection (referred to as D.O. #77-1) provides methods on wetland identification using the Federal Geographic Data Committee (FGDC) Wetlands Classification Standard (NPS 2016). The method utilizes the USACE delineation methods but allows for positive wetland identification based on two attributes (hydrophytic vegetation and wetland hydrology or hydric soil and wetland hydrology) or one attribute (wetland hydrology).

Under the FGDC Wetlands Classification Standard, a wetland must have one or more of the following three attributes:

1. at least periodically, the land supports predominantly hydrophytes (wetland vegetation).
2. the substrate is predominantly undrained hydric soil.
3. the substrate is non-soil and is saturated with water or covered by shallow water during the growing season of each year.

The FGDC Wetlands Classification Standard encompasses more aquatic habitat types than the USACE definition (33 CFR § 328.3) and delineation manual used by the USACE for identifying wetlands subject to Section 404 of the CWA. The following section provides guidance for delineating and mapping wetlands on NPS-managed lands so that both Section 404 wetlands and wetlands subject to these NPS procedures are included (NPS 2016). The method is provided below:

- For sites with vegetation and soils, use the most recent version (and any approved Regional Supplements) of the 1987 USACE Manual, including *problem area* and *atypical situation* procedures.
- If plants and soil are present (e.g., swamps, marshes or wet meadows), then all three attributes (wetland hydrology, hydrophytic vegetation and hydric soil) are required for positive wetland identification.
- If plants are present but soil is absent (e.g., vegetated rock substrates), then a predominance of hydrophytic vegetation and presence of wetland hydrology are required for positive wetland identification.
- If plants are absent but soil is present (e.g., playas or mudflats), then a predominance of undrained hydric soil and wetland hydrology are required for positive wetland identification.
- If neither plants nor soil are present (e.g., rocky shorelines or unvegetated shallow stream bottoms), then wetland identification must be made solely on the basis of hydrology.
- For naturally unvegetated or non-soil sites, such as many stream channels, tidal mudflats, playas, wave-active shorelines, and so on, use the "limits" of these systems as described in the FGDC Wetlands Classification Standard. In such cases, clear evidence of wetland hydrology is always required. However, the absence of vegetation or hydric soil characteristics due to natural physical or chemical conditions such as fluvial processes, wave action, or high salinity may make it appropriate to waive the hydrophytic vegetation and/or hydric soil requirements. Such modifications must be explained on data sheets and in wetland delineation/mapping reports.
- At drained sites that no longer meet wetland hydrology criteria, relic hydric soils or relic hydrophytic vegetation are not indicative of current wetlands. However, if such sites are

encountered and the hydrologic alterations are likely human-induced, then they should be identified as potential wetland restoration opportunities.

- Additionally, the FGDC Wetlands Classification Standard defines the riverine wetland/deepwater habitat boundary as a depth of 8.2 feet (2.5 meters) at low water, or at the limits of emergent or woody vegetation extending beyond this depth.

3.02.2 Method for Delineating Nontidal Stream Boundaries (Rivers, Creeks, Lakes, Drains, Canals, and Ditches)

Within nontidal waters, in the absence of adjacent wetlands, the extent of USACE jurisdiction is defined by the ordinary high water mark (OHWM). In *Code of Federal Regulations*, Title 33 Part 328.3 (33 CFR § 328.3), the OHWM is defined as the "line on the shore established by the fluctuations of water and indicated by physical characteristics such as clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, or the presence of litter and debris" (Environmental Laboratory 1987).

OHWM delineations were conducted using the appropriate OHWM characteristics, as defined in 33 CFR § 328.3(e) and 33 CFR § 329.11(a)(1). Any delineation of nontidal stream boundaries identified is consistent with OHWM Regulatory Guidance Letter Number (No.) 05-05 (USACE 2005). Additionally, the *National Ordinary High Water Mark Field Delineation Manual for Rivers and Streams, Interim Version* (USACE 2022) was used to characterize OHWM conditions. Rapid OHWM field identification data sheets associated with this survey are provided in Appendix C.

3.02.3 Limitations to Survey Accuracy

Hydrologic conditions within the study area were normal at the time of the delineation, as discussed in 3.02.3 and shown in Appendix D. Steep cliffs prohibited safe access and data collection at the lake shore. Additionally, persistent drought conditions have contributed to a lowered OHWM throughout Lake Powell. Perched locations on the terraces above Lake Powell were used as vantage points for observation of OHWM indicators. The OHWM was mapped using a combination of recent gage data, aerial imagery, and field observations.

Chapter 4 – Environmental Setting

This section discusses the environmental setting of the aquatic resource study area.

4.01 Regional Setting

The study area is within the Colorado Plateau Level III Ecoregion and the Arid Canyonlands Level IV Ecoregion (Woods et al. 2001). The Arid Canyonlands Ecoregion consists of arid narrow chasms, cliffs, valley floors, floodplains, structural benches, mesas, and cuestas where the terrain has been deeply eroded by major rivers and their tributaries (Woods et al. 2001). Elevations within this arid ecoregion range from approximately 3,200 to 5,000 feet.

4.02 Study Area Setting

The following sections describe the topography, climate, hydrology, soil, and habitat types associated with the study area.

4.02.1 Topography

Topography within the study area varies drastically and ranges from gently sloping terraces to vertical cliff faces with the natural gradient generally sloping downward from south to north. Several watercourses flow through the site and eventually drain to Lake Powell, which is located in the northern portion of the study area. Elevations in the study area range from approximately 4,035 feet above mean sea level (ASML) near Hite Marina Road in the southern portion of the study area to approximately 3,550 feet ASML within Lake Powell in the northern portion of the study area.

4.02.2 Climate

Climate within the study area is characterized by mild winters and hot, dry summers, with average high temperatures of up to 100 degrees Fahrenheit (°F) in July to 48°F in January. Annual precipitation in the Arid Canyonlands Ecoregion ranges between 5 and 8 inches, with precipitation values being lower in deeper canyons (Woods et al. 2001).

4.02.3 Hydrology

The study area is located within the Upper Lake Powell (14070001) watershed within the Colorado River basin. Persistent drought conditions within the Colorado River basin over the past two decades have resulted in reduced flows into Lake Powell as well as a significant decrease in water surface elevation.

Named surface water features in the study area include the Colorado River, which is discussed in this report primarily as Lake Powell, however the terms can be used interchangeably. It is important to note that due to persistent drought conditions, the site is in a dynamic period where fluctuating water elevation results in a free-flowing river during certain portions of the year and lake conditions in other portions of the year due to backwatering from the Glen Canyon dam. For decades, the study area was significantly more influenced by backwater from Lake Powell, however in recent years the site has fluctuated between riverine and lacustrine conditions. Given that gage data from the USGS indicates that the river at Hite still receives backwater from the Glen Canyon dam at certain times of the year, the term Lake Powell is used as part of this

assessment. The study area also includes several watercourses that appear to only flow in response to wet season precipitation and runoff.

Fieldwork for the aquatic resource delineation was conducted on October 3 and 4, 2024. USACE's Antecedent Precipitation Tool (USACE 2024) was used to define precipitation conditions over the time period preceding the survey. The wetness condition in the months preceding the October 2024 survey was normal, however the Antecedent Precipitation Tool also indicated that the study area was in a moderate drought at the time of the survey. Appendix D contains the complete results of the Antecedent Precipitation Tool query.

4.02.4 National Wetlands Inventory and National Hydrography Dataset

Figure 2 in Appendix A shows aquatic resources in the study area identified by the National Wetlands Inventory (NWI) (USFWS 2024) and the National Hydrography Dataset (NHD) (USGS 2024a). The NWI identifies Lake Powell as lacustrine, limnetic, unconsolidated bottom, permanently flooded, diked/impounded (L1UBHh). One tributary to Lake Powell is identified as riverine, intermittent, streambed, seasonally flooded (R4SBC). These features were mapped using color infrared imagery from 1986, and since their mapping in the NWI, the extent and water level of Lake Powell has significantly reduced (USFWS 2024). The NHD also displays Lake Powell (Colorado River) and the same intermittent drainage as the NWI (USGS 2024a).

4.02.5 Soils

Soil in the study area has been mapped by the NRCS and are described in the Soil Survey of San Juan Area, Utah (NRCS 2024b and SCS 1962). Soil series mapped within the study area are summarized in Table 4-1 and shown on Figure 3 in Appendix A. In addition to the soil types mapped within the site, the northern portion of the study area associated with Lake Powell is mapped as water.

Table 4-1. Soil Series Mapped Within the Study Area

Type or Series	Texture	Landscape Position and Parent Material	Drainage and Permeability	NRCS Hydric Rating
Myton	Extremely boulder loam	Deep soils on steep to very steep hillslopes and mountain slopes. Formed in colluvium derived from sandstone and shale.	Well drained; high runoff; moderately rapid permeability	No
Needle	Fine sand	Shallow to very shallow soils on hills with soil derived from eolian and alluvial deposits. Includes sand sheets on structural benches and rolling plateaus.	Excessively drained; slow to medium runoff; rapid permeability	No

Sources: NRCS 2024a and 2024b.

4.02.6 Land Cover and Vegetation Communities

Biotic communities in the study area mapped by the USGS Southwest Regional Gap Analysis Project (SWReGAP) consist of mostly unvegetated Colorado Plateau Mixed Bedrock Canyon and Tableland as well as Colorado Plateau Blackbrush-Mormon Tea Shrubland (USGS 2005). Colorado Plateau Mixed Bedrock Canyon and Tableland consists of barren to sparsely vegetated landscapes over steep cliff faces, narrow canyons, and open tablelands that occur on substrates derived predominantly from sedimentary rocks, such as sandstone, shale, and limestone (USGS 2005). Colorado Plateau Blackbrush-Mormon Tea Shrubland occurs on benches, colluvial slopes, and bajadas that generally have shallow sandy or gravelly substrates derived from sedimentary rock. Blackbrush-Mormon Tea Shrubland can also occur in deeper soils on sandy plains and is characterized by extensive open shrublands with sparse herbaceous cover (USGS 2005). A lesser amount of Inter-Mountain Basins Mixed Salt Desert Scrub is present, along with small pockets of Invasive Annual Grassland and Inter-Mountain Basins Active and Stabilized Dune communities.

Dominant vegetation species observed throughout the study area include blackbrush (*Coleogyne ramosissima*), Mormon tea (*Ephedra* sp.), and shadscale saltbush (*Atriplex confertifolia*). Other plant species observed in the study area include broom snakeweed (*Gutierrezia sarothrae*), fragrant sumac (*Rhus aromatica*), singleleaf ash (*Fraxinus anomala*), Stansbury cliffrose (*Purshia stansburiana*), soaptree yucca (*Yucca elata*), plains prickly pear (*Opuntia polyacantha*), Mojave hedgehog cactus (*Echinocereus mojavensis*), and desert trumpet (*Eriogonum inflatum*). Invasive species detected included Russian thistle (*Salsola tragus*) and saltlover (*Halogeton glomeratus*).

Chapter 5 – Results

Figure 4 in Appendix A shows the aquatic resources delineated in the study area and Appendix E contains representative photographs of features within the study area. Results of the aquatic resource delineation are summarized in Table 5-1 below.

Table 5-1. Summary of Aquatic Resources Investigated in the Study Area

Aquatic Resource ID[a]	Cowardin Code[b]	Latitude	Longitude	Potential NPS or USACE Jurisdiction[c]	OHWM Width (Feet)	Area (Acres)	Length (Linear Feet)
Other Waters							
Riverine Features							
EDR-1	R6	37.8806006	-110.36902332	NPS	2	<0.01	78
EDR-2	R6	37.88059034	-110.3693721	NPS	2 – 15	0.04	286
EDR-3	R6	37.88094707	-110.36976242	NPS	2 – 10	0.02	221
EDR-4	R6	37.88084116	-110.37033376	NPS	2 – 30	0.17	580
EDR-5	R6	37.88142524	-110.37102082	NPS	2 – 45	0.29	638
EDR-6	R6	37.88229795	-110.37191981	NPS	2 – 25	0.12	400
EDR-7	R6	37.88196807	-110.37184328	NPS	2 – 25	0.22	680
EDR-8	R6	37.88312386	-110.37351531	NPS	2 – 60	0.63	1,906
EDR-9	R6	37.88370008	-110.37513084	NPS	2	0.01	180
EDR-10	R6	37.88457993	-110.37490243	NPS	2 – 35	0.22	400
EDR-11	R6	37.88560554	-110.37622342	NPS	2 – 4	0.01	213
EDR-12	R6	37.88592953	-110.37661102	NPS	2 – 35	0.10	579
EDR-13	R6	37.88611555	-110.37849447	NPS	3 – 22	0.11	420
EDR-14	R6	37.88485548	-110.38040274	NPS	2 – 4	0.06	460
EDR-15	R6	37.88484975	-110.37931432	NPS	2 – 5	0.18	1,532
EDR-16	R6	37.88714358	-110.37995296	NPS	2 – 30	0.32	1,236
EDR-17	R6	37.88920805	-110.37273018	NPS	3 – 5	0.03	261
IDR-1	R4SB	37.88985144	-110.37206943	NPS, USACE	5 – 20	0.07	306
					Riverine Features Total	2.60	10,376

Table 5-1. Summary of Aquatic Resources Investigated in the Study Area

Aquatic Resource ID[a]	Cowardin Code[b]	Latitude	Longitude	Potential NPS or USACE Jurisdiction[c]	OHWM Width (Feet)	Area (Acres)	Length (Linear Feet)
Lacustrine Features							
LP-1	L2US	37.89023702	-110.37564741	NPS, USACE	N/A	3.61	N/A
OW-1	L1UB	37.89050757	-110.37425695	USACE	N/A	3.08	N/A
					Lacustrine Features Total	6.69	N/A
					Total Other Waters	**9.29**	**10,376**

[a] EDR = ephemeral watercourse; IDR = intermittent watercourse; LP = Lake Powell; OW = open water

[b] Source: Cowardin et al. 1979. L1UB = lacustrine, limnetic, unconsolidated bottom; L2US = lacustrine, littoral, unconsolidated shore; R4SB = riverine, intermittent, streambed; R6 = riverine, ephemeral

[c] Potential NPS or USACE jurisdiction for aquatic resources are based on the definitions specified in the following sections of this report: Section 2.01, which discusses waters of the US subject to regulation by the USACE under Section 404 of the CWA under current regulations, as well as traditional navigable waters subject to regulation under Section 10 of the Rivers and Harbors Act; and Section 3.02.1, which discusses the FGDC Wetland Classification Standard and wetlands subject to regulation by the NPS under D.O. #77-1.

5.01 Other Waters

5.01.1 Riverine Features

Riverine features delineated within the study area include 17 ephemeral watercourses (2.53 acres, 10,070 linear feet) and one intermittent watercourse (0.07 acre, 306 linear feet). These features are further discussed below and are depicted on Figure 4 in Appendix A. Representative photographs of these features are included in Appendix E.

Ephemeral Watercourses

Seventeen ephemeral watercourses, features EDR-1 through EDR-17, were delineated within the study area. These ephemeral features consisted of broad washes and incised drainages that were mostly barren to sparsely vegetated with upland herbaceous and shrub species. Shrub species observed along the banks of the ephemeral watercourses varied but included species such as four-wing saltbush (*Atriplex canescens*), shadscale, Fremont barberry (*Berberis fremontii*), yellow rabbitbrush (*Chrysothamnus viscidiflorus*), rubber rabbitbrush (*Ericameria nauseosa*), Stansbury cliffrose, and single-leaf ash (*Fraxinus anomala*). Occasionally, scattered individuals of these shrubs were observed within the channels of the ephemeral watercourses. These species are not listed in the Arid West Wetland Plant List and therefore are presumed to be upland plants (USACE 2020).

Five of these ephemeral watercourses, EDR-4, EDR-5, EDR-7, EDR-8, and EDR-12, cross the existing dirt access road. A slight berm is present along the outboard edge of the road surface in some areas and other sections of the road are sloped towards the inboard edge of the road. This has caused several portions of these ephemeral features to divert seasonal flow down the road before exiting at a low point (Appendix E, Photos 5 and 10).

Several watercourses within the study area, EDR-10 and EDR-13 through EDR-17, are partially conveyed over rock outcrops. These features convey seasonal flow via broad sheet flow over relatively flat rock outcrops (Photo 8, Map 2 of Figure 4) and by well-defined bedrock channels (Photo 11, Map 3 of Figure 4). One of these drainages, EDR-16, flows through a steep bedrock canyon and transitions into an incised channel on the bench above Lake Powell at the base of a cliff (Photo 15, Maps 4 and 5 of Figure 4). Another drainage, EDR-17, flows down to a cliff edge where the channel dissipates within the rock outcrops and infiltrates the ground on the terrace below (Photos 22 and 23, Map 6 of Figure 4).

Ephemeral watercourses within the study area are considered riverine wetlands under the FGDC Wetland Classification Standard and are likely subject to regulation by the NPS under D.O. #77-1. However, these ephemeral waters would not likely be considered waters of the US subject to regulation by the USACE under the CWA given that they would not be considered relatively permanent waters.

Intermittent Watercourse

One intermittent watercourse, feature IDR-1, was delineated within the study area. This intermittent watercourse flows through a bedrock canyon in the northeastern portion of the study area and drops down a steep cliff face to an inaccessible terrace above Lake Powell (Photo 23, Map 6 of Figure 4). IDR-1 is conveyed through an incised channel into Lake Powell, where hydrophytic shrubs such as mule fat (*Baccharis salicifolia*) and tamarisk (*Tamarix* sp.), as well as other emergent herbaceous species, are present along the channel and margins of the lake. This feature is shown on USGS topographic maps as a blue line feature and is also documented by the NWI and NHD dataset as an intermittent drainage (refer to Section 3.02.04 and Figure 2).

The intermittent watercourse within the study area is considered a riverine wetland under the FGDC Wetland Classification Standard and is likely subject to regulation by the NPS under D.O. #77-1. Additionally, this feature would likely be considered WOTUS subject to regulation by the USACE under the CWA given that it would be considered as a relatively permanent water with a continuous surface water connection to Lake Powell, which is a TNW.

5.01.2 Lacustrine Features

Lacustrine features delineated within the study area include Lake Powell (3.61 acres) and open water (3.08 acres). These features are further discussed below and are depicted on Figure 4 in Appendix A.

Lake Powell

Approximately 3.61 acres of Lake Powell, feature LP-1, were delineated within the study area. The boundaries of LP-1 were mapped between the open water of Lake Powell up to the OHWM. Within the study area, LP-1 consisted of vertical cliff faces and shoreline that has started to revegetate due to receding water elevation (Photos 18-21, Maps 5 and 6 of Figure 4). Observed field indicators of the OHWM of Lake Powell included break in slope, shelving, change in vegetation type and density, and water staining (Photos 18 and 21). Water staining was evident on the opposite side of Lake Powell (north bank) and is visible as a white band that corresponds with the delineated OHWM (Photos 18-21). Additionally, portions of the shoreline had incised rivulets extending from the OHWM to OW-1 are indicative of receding water. Supplemental data

utilized to confirm field observations of the OHWM included data from the USGS Colorado River AB Dirty Devil NR Hite, UT stream gage (09328990), aerial imagery, and LiDAR. The extent of this lacustrine littoral wetland extends from the OHWM down to lacustrine limnetic wetland boundary, which is where the water depth reaches 8.2 feet (2.5 meters) at low water.

Lake Powell within the study area is considered a lacustrine littoral wetland under the FGDC Wetland Classification Standard and is likely subject to regulation by the NPS under D.O. #77-1. Additionally, this feature would likely be considered waters of the US subject to regulation by the USACE under Section 404 the CWA and Section 10 of the Rivers and Harbors Act given that it is a TNW.

Open Water

Approximately 3.08 acres of open water (also referred to as deepwater habitat) associated with Lake Powell, feature OW-1, were delineated within the study area. The open water boundary delineated during the survey is represented by the current low-flow extent of Lake Powell where water is over 8.2 feet (2.5 meters) deep below low water. The low-flow water elevation at Lake Powell, as measured by the USGS Colorado River AB Dirty Devil NR Hite, UT stream gage (09328990), was approximately 3,571 feet AMSL in 2024.

Lake Powell within the study area is considered deepwater habitat under the FGDC Wetland Classification Standard and is not likely subject to regulation by the NPS under D.O. #77-1. However, this feature would likely be considered waters of the US subject to regulation by the USACE under Section 404 the CWA and Section 10 of the Rivers and Harbors Act given that it is a Traditional Navigable Water.

5.02 Other Areas Investigated

Areas exhibiting primary wetland hydrology indicators and sparse to barren vegetation cover were investigated in several locations throughout the study area. These sampling points were generally taken within ephemeral washes where water appears to temporarily pool in small depressions or relatively flat areas. The first elevated terrace above Lake Powell in the northern portion of the study area was investigated due to NWI and NRCS soil maps indicating lacustrine features; however, this location was determined not to be a wetland or other water (SP-HT6, Photo 17). In addition to potential wetland features, flood deposits were observed throughout the northern portion of the study area at elevations near or just above the 3,700-foot full pool elevation of Lake Powell. These were likely deposited during extreme flood events in the 1980's (Photo 24).

Chapter 6 – References

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Appendix A – Figures

Figure 1.
Project Location

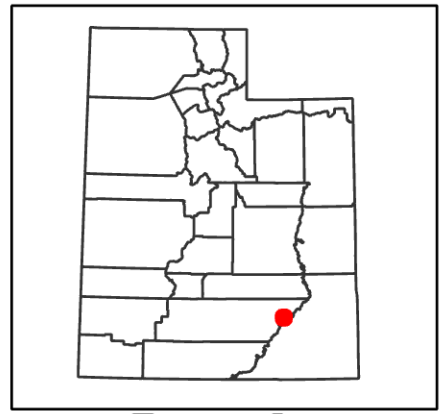
Floodplain and Wetlands Statement of Findings
Glen Canyon Recreational Area
Low Water Ramp at Hite District
San Juan County, Utah

Project Area
County Borders

N

0 1,000 2,000
Feet

Coordinate System: State Plane Utah South
FIPS 4303 (US Feet)
Datum: North American 1983
Map Prepared by: Zack Allard
Map Data: November 4, 2024
Aerial: Maxar



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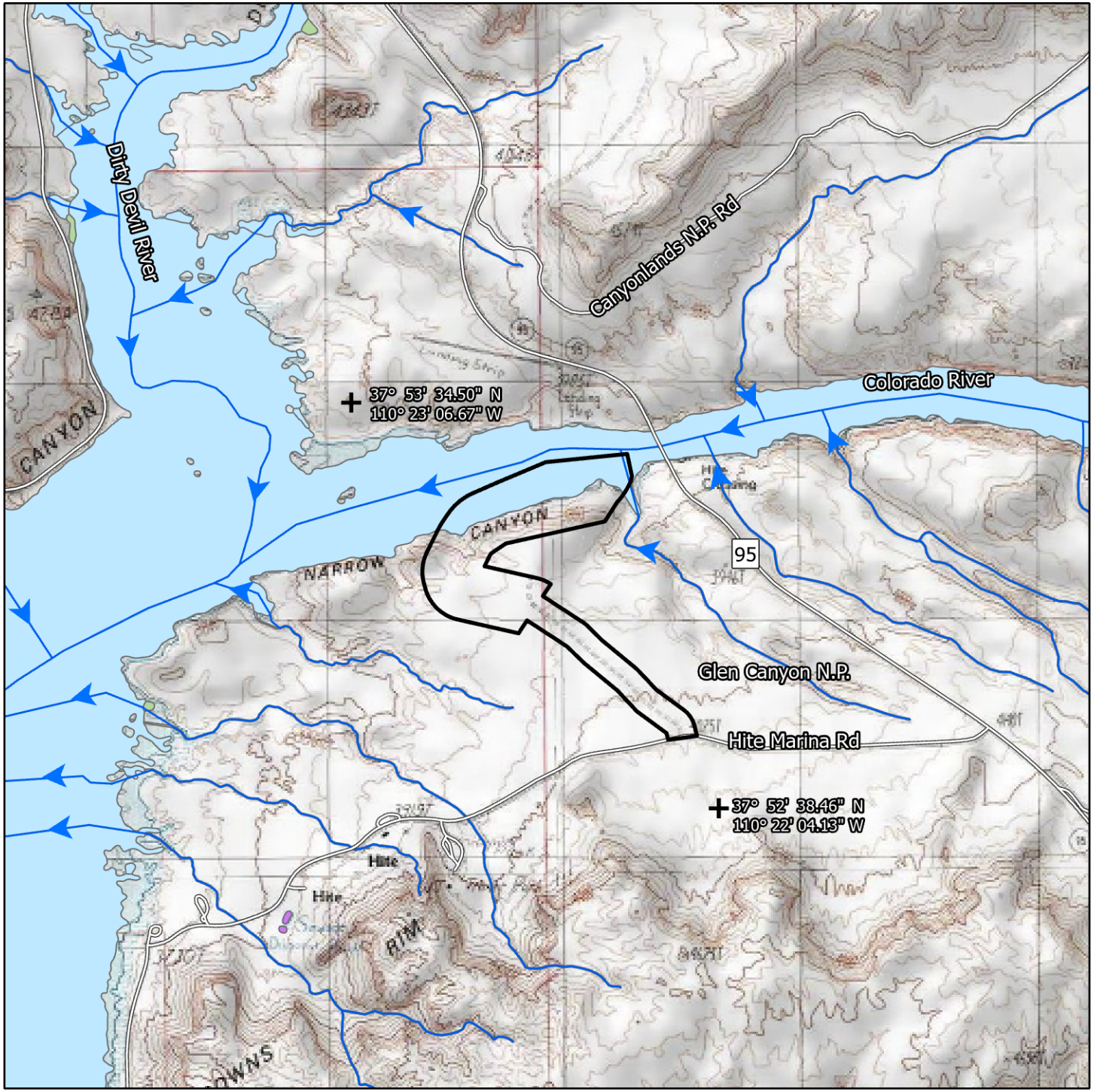


Figure 2.
National Wetland Inventory and National Hydrology Dataset

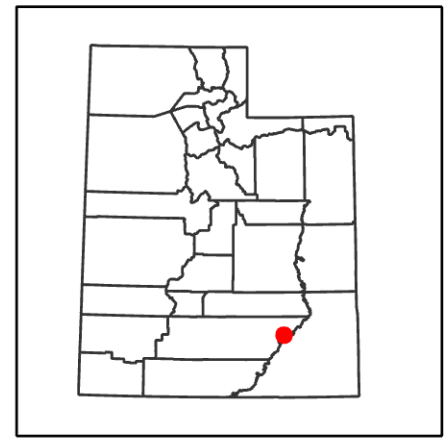
Floodplain and Wetlands Statement of Findings
Glen Canyon Recreation Area
Low Water Ramp at Hite District
San Juan County, Utah

- Project Area
- Flowline
- Lake
- Freshwater Pond
- Freshwater Emergent Wetland
- Riverine

N

0 1,000 2,000
Feet

Coordinate System: State Plane Utah South FIPS 4303 (US Feet)
Datum: North American 1983
Map Prepared by: Zack Allard
Map Data: November 26, 2024
Source: US Fish and Wildlife



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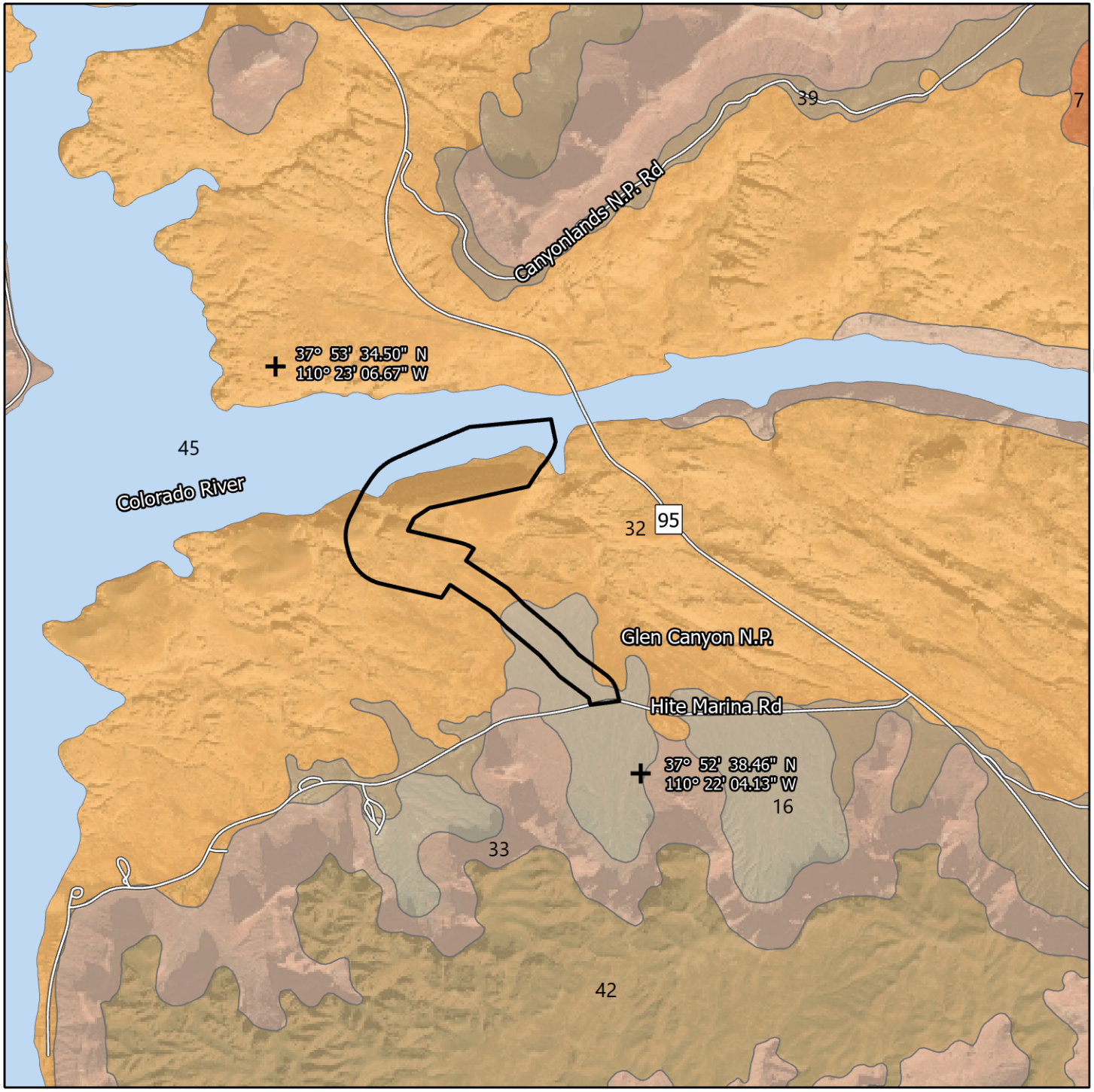

Figure 3.
NRCS Soil Survey
Aquatic Resources Delineation Report
Glen Canyon Recreation Area
Low Water Ramp at Hite District
San Juan County, Utah

- Aquatic Resource Study Area (107.33 acres)
- 7—Farb-Pagina-Rock outcrop complex, 4 to 20 percent slopes.
- 16—Myton very gravelly sandy loam, 5 to 18 percent slopes
- 32—Rock outcrop-Needle complex, 2 to 30 percent slopes
- 33—Rock outcrop-Torriorthents complex, 20 to 65 percent slopes
- 39—Somorent family-Rock outcrop complex, 5 to 12 percent slopes
- 42—Tsaya-Rock outcrop complex, 2 to 18 percent slopes

0 1,000 2,000
Feet

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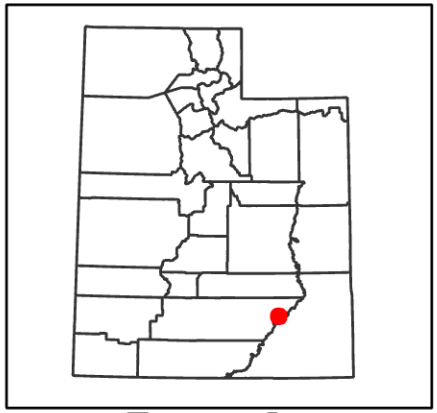
Coordinate System: State Plane Utah South FIPS 4303 (US Feet)
Datum: North American 1983
Map Prepared by: Zack Allard
Map Data: November 4, 2024
Source: Natural Resource Conservation Services



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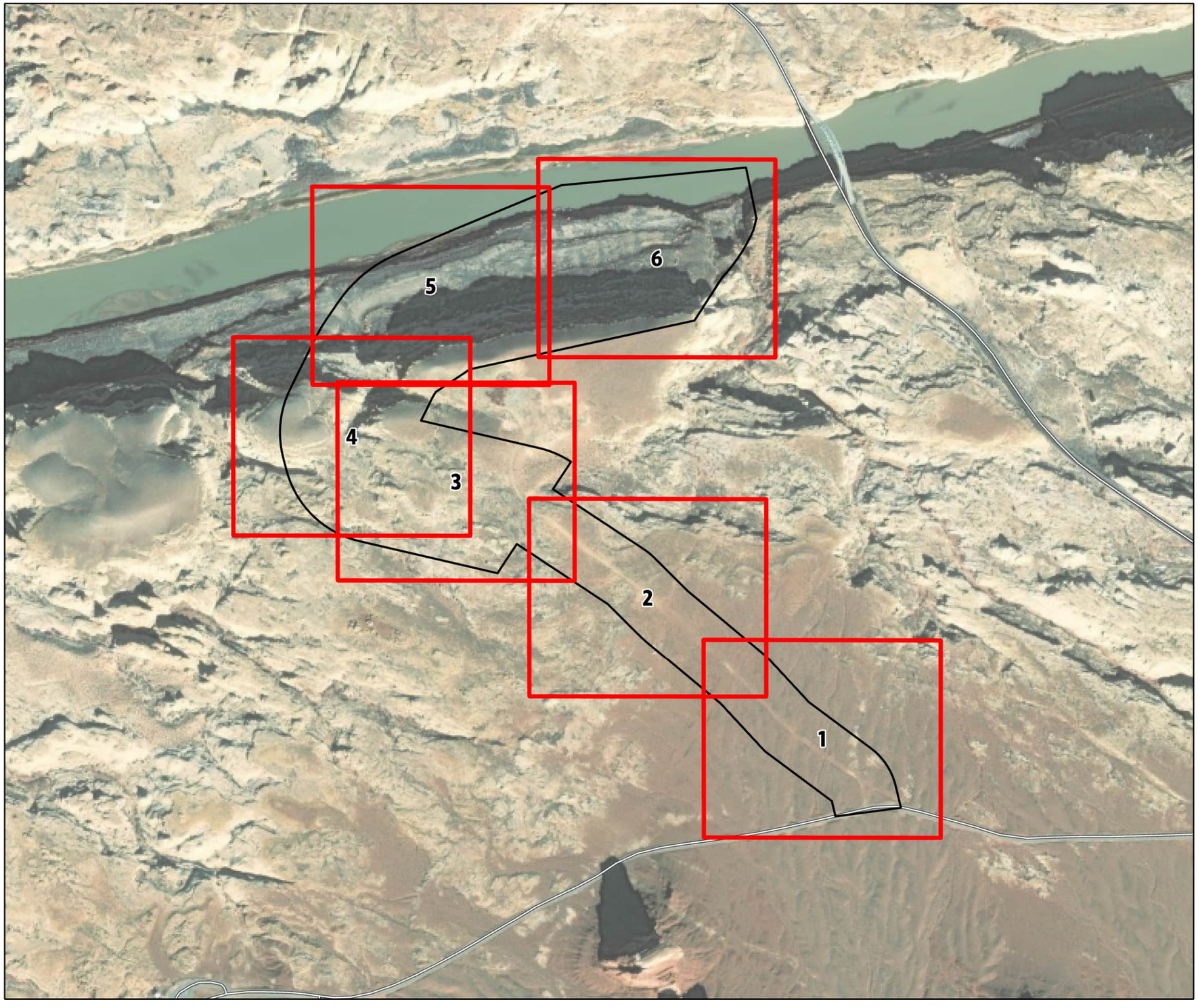

Figure 4 Overview
Aquatic Resources Delineation Map

Aquatic Resources Delineation Report
Low Water Ramp at Hite District
San Juan County, Utah

Legend

- Aquatic Resource Study Area (107.33 acres)
- Map Frames

Delineators: Greg Davis, Sabra McNeish
Survey Dates: October 2 & 3, 2024
Coordinate System: State Plane Utah South FIPS 4303 (US Feet)
Datum: North American 1983
Map Prepared by: Zack Allard
Map Data: November 4, 2024

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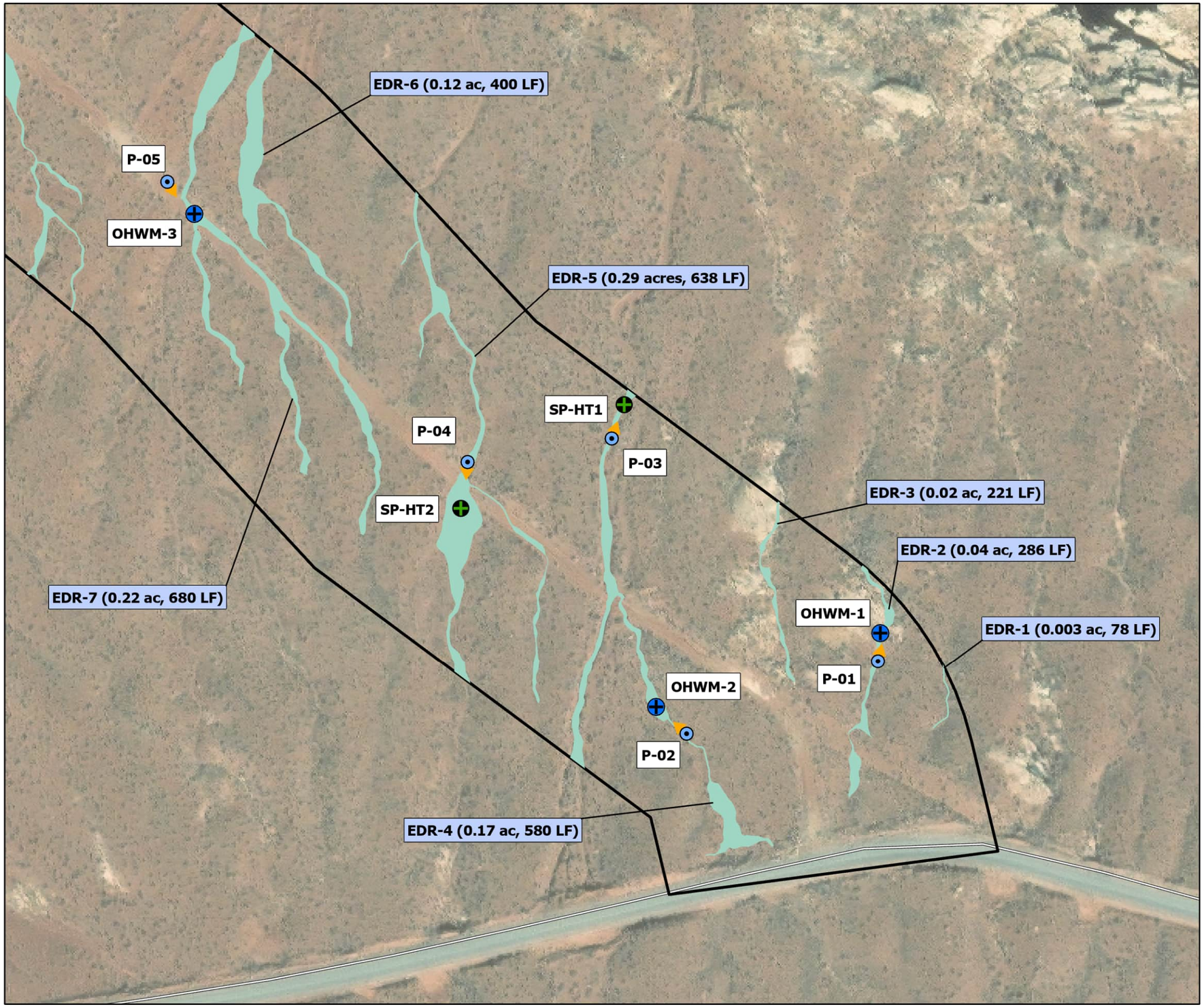
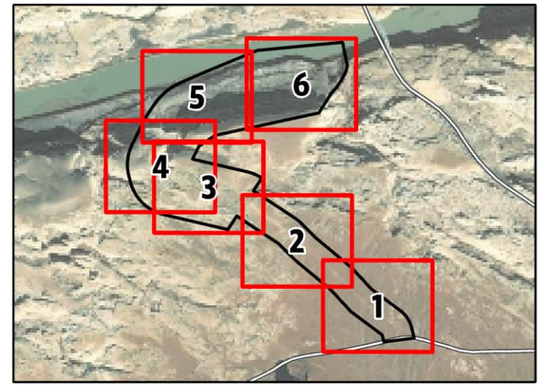
Feet

Jacobs





Legend

- Aquatic Resource Study Area (107.33 acres)
- OHWM Data Point
- Sampling Points
- Photo Points

Aquatic Resources
Riverine Waters

- Ephemeral Watercourses (EDR) (2.533 acres, 10,070 LF)
- Intermittent Watercourses (IDR) (0.07 acres, 306 LF)

Lacustrine Waters

- Lake Powell (LP-1) (3.61 acres)
- Open Water (OW-1) (3.08 acres)

Delineators: Greg Davis, Sabra McNeish
Survey Dates: October 2 & 3, 2024
Coordinate System: State Plane Utah South FIPS 4303 (US Feet)
Datum: North American 1983
Map Prepared by: Zack Allard
Map Data: November 4, 2024

Aerial Source: Maxar
OHWM = Ordinary High Water Mark
LF = Linear Feet

0 100 200
Feet

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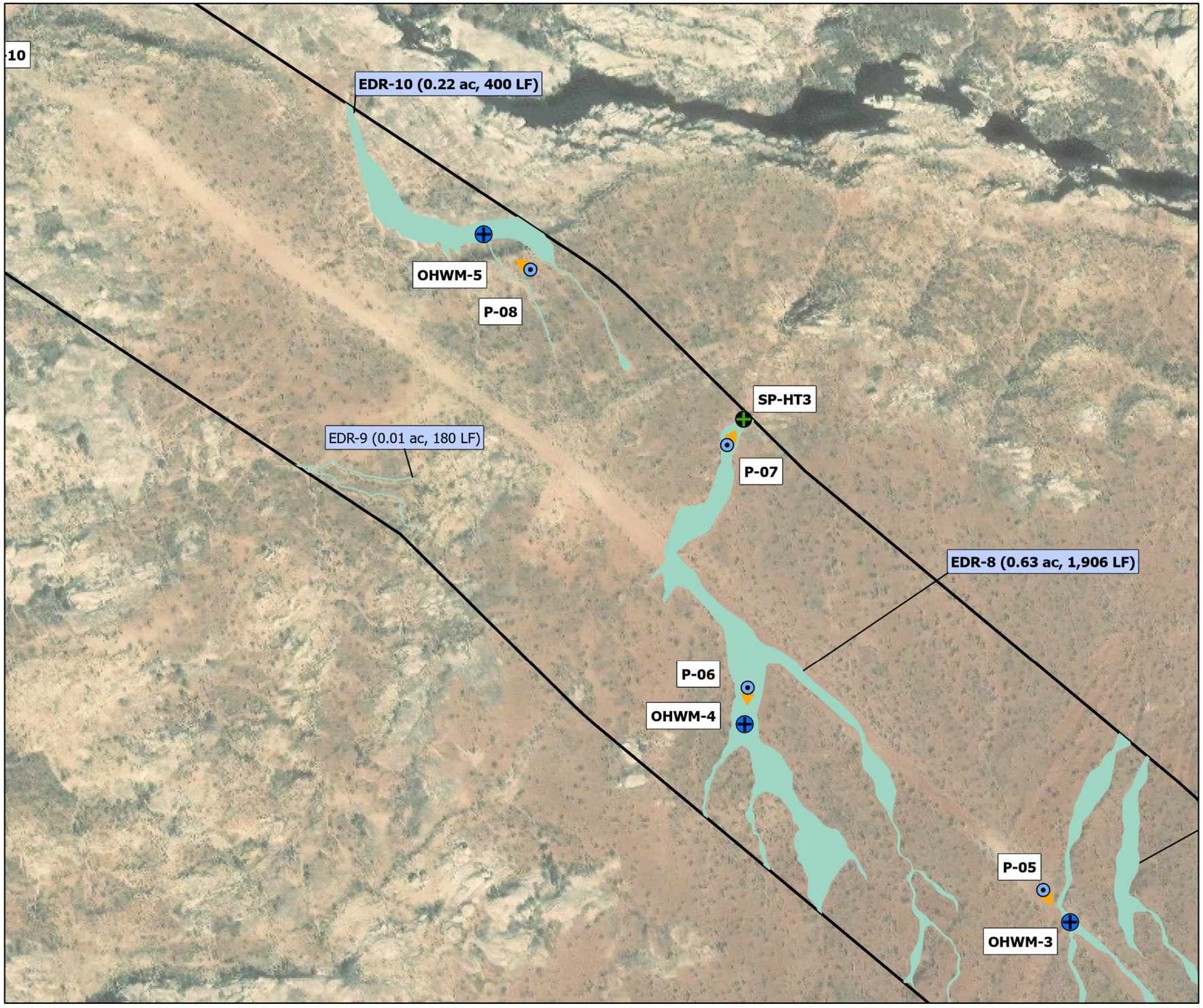
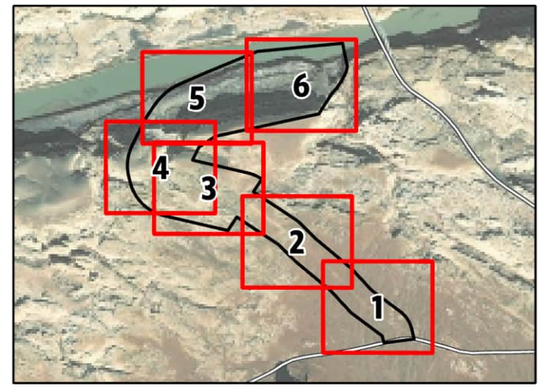
Figure 4
Map 1 of 6
Aquatic Resources Delineation Map

Aquatic Resources Delineation Report
Glen Canyon Recreational Area
Low Water Ramp at Hite District
San Juan County, Utah

Jacobs





Legend

- Aquatic Resource Study Area (107.33 acres)
- OHWM Data Point
- Sampling Points
- Photo Points

Aquatic Resources
Riverine Waters

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Survey Dates: October 2 & 3, 2024
Coordinate System: State Plane Utah South FIPS 4303 (US Feet)
Datum: North American 1983
Map Prepared by: Zack Allard
Map Data: November 4, 2024

Aerial Source: Maxar
OHWM = Ordinary High Water Mark
LF = Linear Feet

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Feet

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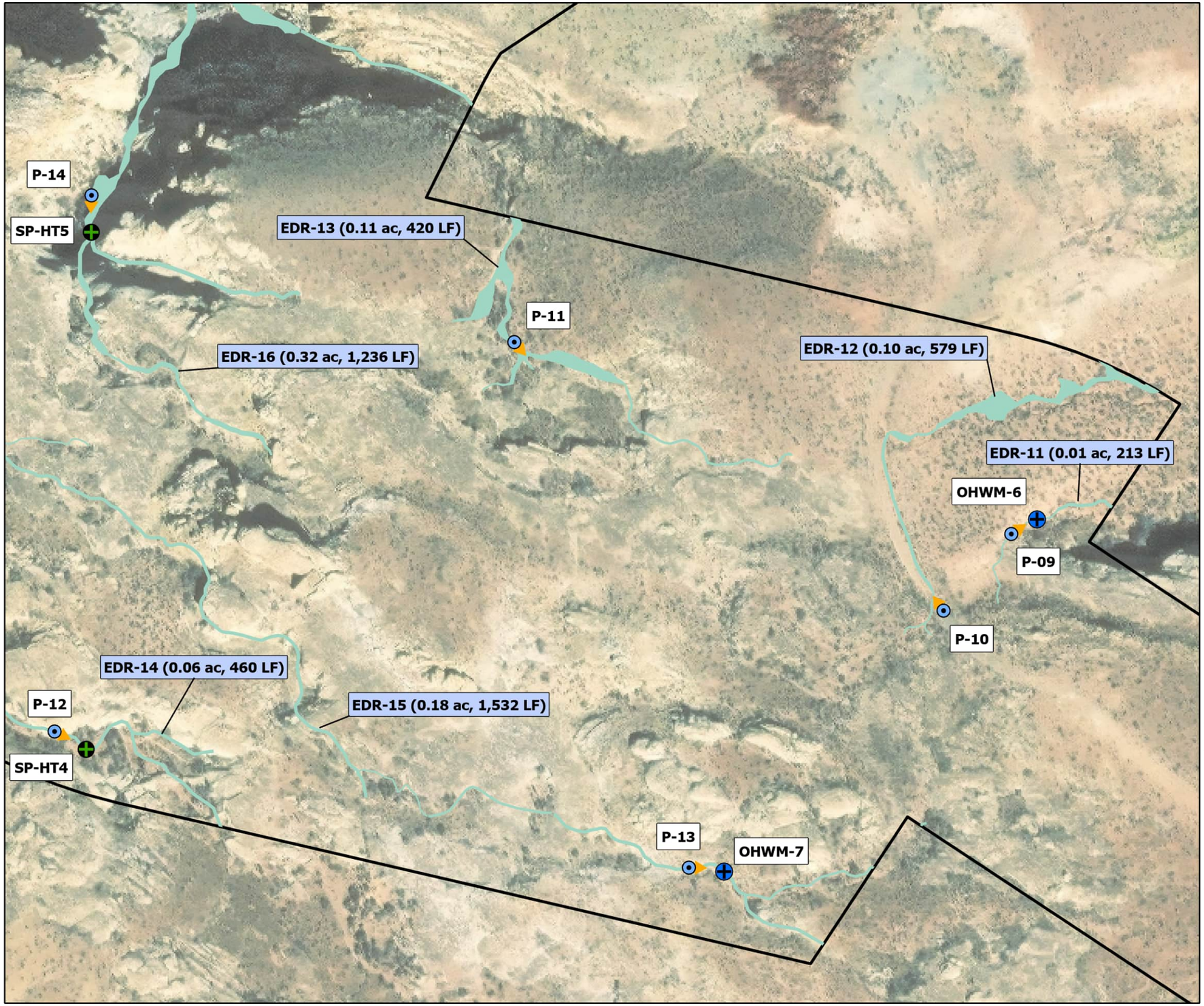
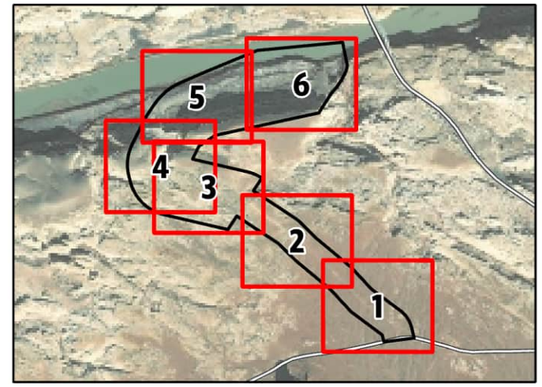
Figure 4
Map 2 of 6
Aquatic Resources Delineation Map

Aquatic Resources Delineation Report
Glen Canyon Recreational Area
Low Water Ramp at Hite District
San Juan County, Utah

Jacobs





Legend

- Aquatic Resource Study Area (107.33 acres)
- OHWM Data Point
- Sampling Points
- Photo Points

Aquatic Resources
Riverine Waters

- Ephemeral Watercourses (EDR) (2.533 acres, 10,070 LF)
- Intermittent Watercourses (IDR) (0.07 acres, 306 LF)

Lacustrine Waters

- Lake Powell (LP-1) (3.61 acres)
- Open Water (OW-1) (3.08 acres)

Delineators: Greg Davis, Sabra McNeish
Survey Dates: October 2 & 3, 2024
Coordinate System: State Plane Utah South FIPS 4303 (US Feet)
Datum: North American 1983
Map Prepared by: Zack Allard
Map Data: November 4, 2024

Aerial Source: Maxar
OHWM = Ordinary High Water Mark
LF = Linear Feet

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Feet

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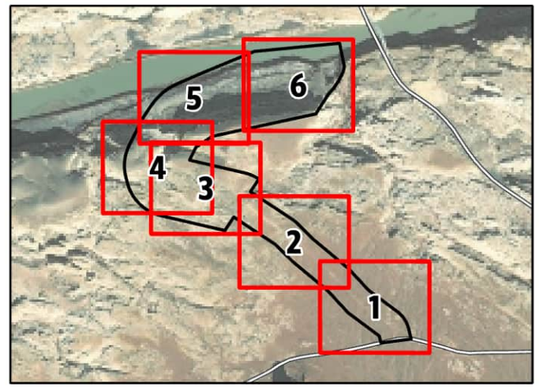
Figure 4
Map 3 of 6
Aquatic Resources Delineation Map

Aquatic Resources Delineation Report
Glen Canyon Recreational Area
Low Water Ramp at Hite District
San Juan County, Utah

Jacobs



Legend

- Aquatic Resource Study Area (107.33 acres)
- OHWM Data Point
- Sampling Points
- Photo Points

Aquatic Resources
Riverine Waters

- Ephemeral Watercourses (EDR) (2.533 acres, 10,070 LF)
- Intermittent Watercourses (IDR) (0.07 acres, 306 LF)

Lacustrine Waters

- Lake Powell (LP-1) (3.61 acres)
- Open Water (OW-1) (3.08 acres)

Delineators: Greg Davis, Sabra McNeish
Survey Dates: October 2 & 3, 2024
Coordinate System: State Plane Utah South FIPS 4303 (US Feet)
Datum: North American 1983
Map Prepared by: Zack Allard
Map Data: November 4, 2024

Aerial Source: Maxar
OHWM = Ordinary High Water Mark
LF = Linear Feet

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Feet

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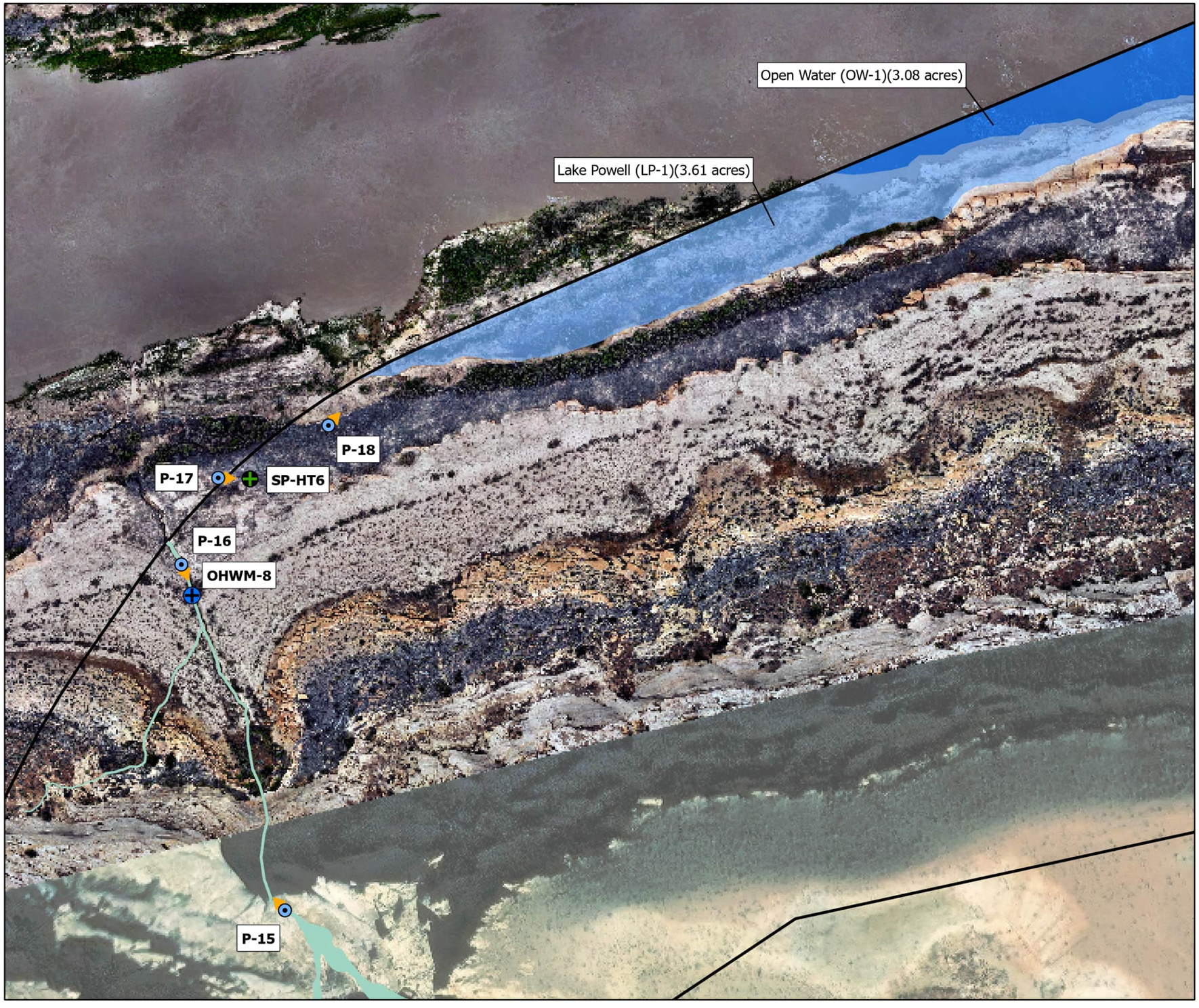
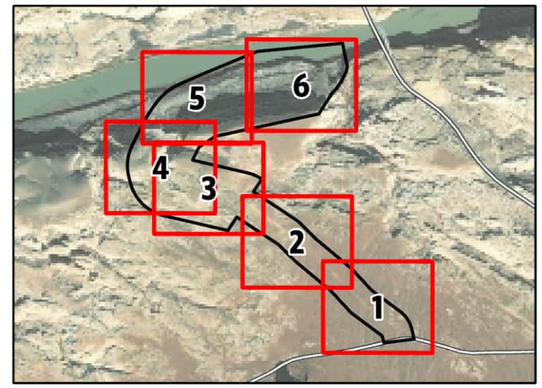
Figure 4
Map 4 of 6
Aquatic Resources Delineation Map

Aquatic Resources Delineation Report
Glen Canyon Recreational Area
Low Water Ramp at Hite District
San Juan County, Utah

Jacobs





Legend

- Aquatic Resource Study Area (107.33 acres)
- OHWM Data Point
- Sampling Points
- Photo Points

Aquatic Resources
Riverine Waters

- Ephemeral Watercourses (EDR) (2.533 acres, 10,070 LF)
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Delineators: Greg Davis, Sabra McNeish
Survey Dates: October 2 & 3, 2024
Coordinate System: State Plane Utah South FIPS 4303 (US Feet)
Datum: North American 1983
Map Prepared by: Zack Allard
Map Data: November 4, 2024

Aerial Source: Maxar
OHWM = Ordinary High Water Mark
LF = Linear Feet

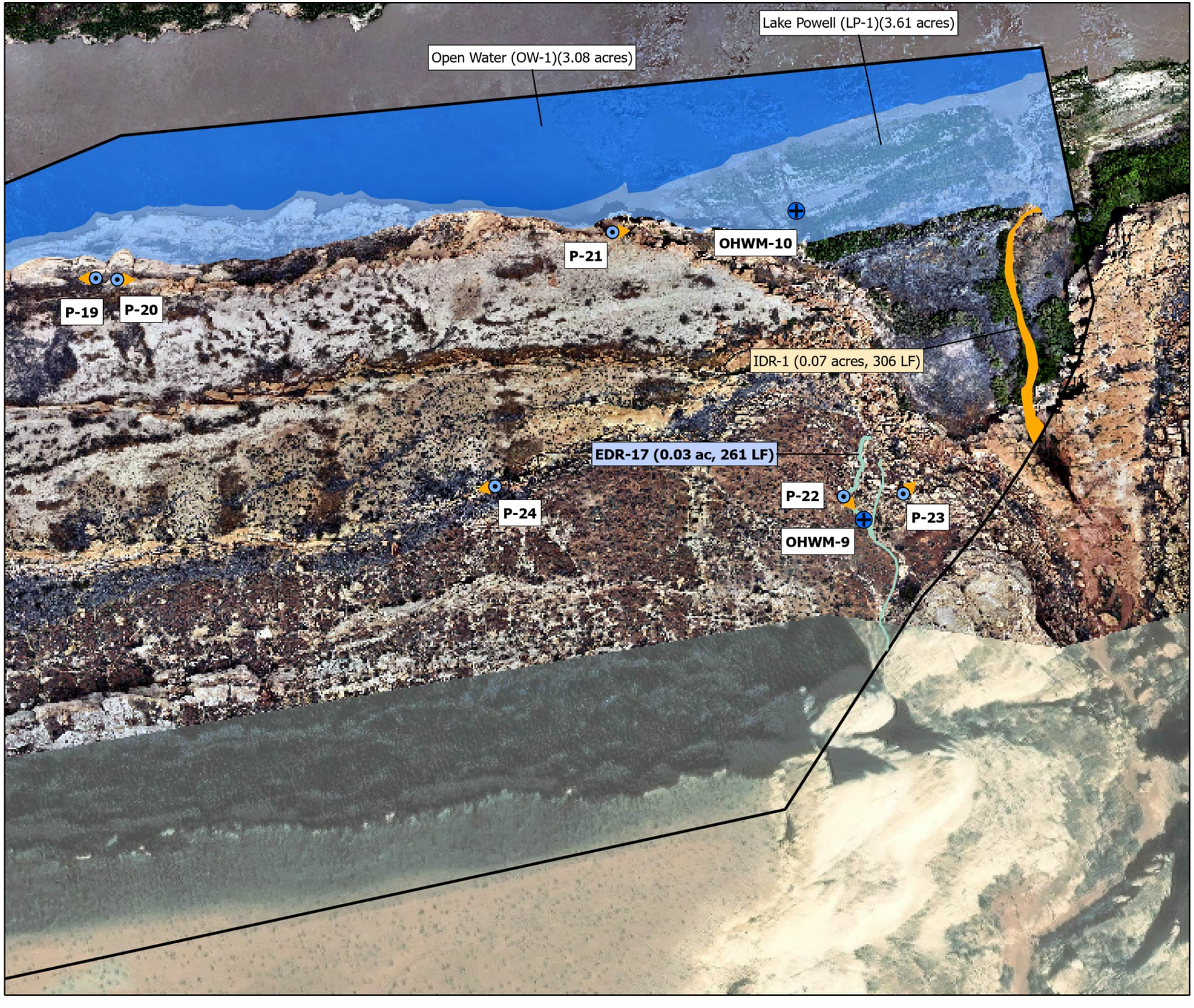
0 100 200
Feet

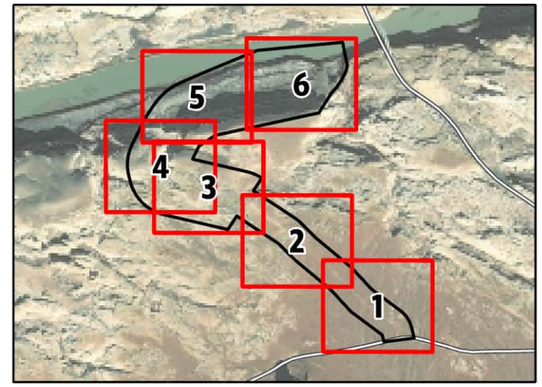
N

Figure 4
Map 5 of 6
Aquatic Resources Delineation Map

Aquatic Resources Delineation Report
Glen Canyon Recreational Area
Low Water Ramp at Hite District
San Juan County, Utah

Jacobs





Legend

- Aquatic Resource Study Area (107.33 acres)
- OHWM Data Point
- Sampling Points
- Photo Points

Aquatic Resources
Riverine Waters

- Ephemeral Watercourses (EDR) (2.533 acres, 10,070 LF)
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Delineators: Greg Davis, Sabra McNeish
Survey Dates: October 2 & 3, 2024
Coordinate System: State Plane Utah South FIPS 4303 (US Feet)
Datum: North American 1983
Map Prepared by: Zack Allard
Map Data: November 4, 2024

Aerial Source: Maxar
OHWM = Ordinary High Water Mark
LF = Linear Feet

0 100 200
Feet

N

Figure 4
Map 6 of 6
Aquatic Resources Delineation Map

Aquatic Resources Delineation Report
Glen Canyon Recreational Area
Low Water Ramp at Hite District
San Juan County, Utah

Jacobs

Appendix B – Wetland Determination Data Forms

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-08-28; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: GLCA - Hite Low-water Boat Ramp Project | City/County: Hite / San Juan County | Sampling Date: 10/3/2024
Applicant/Owner: National Park Service (NPS) | State: UT | Sampling Point: SP-HT1
Investigator(s): G. Davis, S. McNeish | Section, Township, Range: S27, T33S, R14E
Landform (hillside, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%): 5-10
Subregion (LRR): LRR D | Lat: 37.88161 | Long: -110.370387 | Datum: WGS 84
Soil Map Unit Name: 16 - Myton very gravelly sandy loam, 5 to 18% slopes | NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____
Are Vegetation ____, Soil ____, or Hydrology x naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:
Sampling location is within an ephemeral wash where surface cracks are present. While the site functions as an ephemeral wash and conveys seasonal flow downslope, it does not contain hydrophytic vegetation or hydric soils.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' x 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15' x 15')			
1. *Chrysothamnus viscidiflorus*	5	Yes	NI
2.			
3.			
4.			
5.			
	5 =Total Cover		
Herb Stratum (Plot size: 5' x 5')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
Woody Vine Stratum (Plot size: 30' x 30')			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	5	x 5 =	25
Column Totals:	5 (A)		25 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:
Sampling location is mostly barren within the ephemeral wash with some scattered shrubs and herbs present. Species with no indicator (NI) are treated as upland (UPL) species for this analysis.

SOIL

Sampling Point: SP-HT1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	2.5YR 4/6	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 8

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

No hydric soil indicators observed at sampling location.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Sampling location satisfies wetland hydrology parameter with surface soil cracks and drainage patterns. The project site, and surrounding area, has been subject to persistent moderate drought conditions according to the Palmer Drought Severity Index (PDSI).

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-08-28; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: GLCA - Hite Low-water Boat Ramp Project City/County: Hite / San Juan County Sampling Date: 10/3/2024
Applicant/Owner: National Park Service (NPS) State: UT Sampling Point: SP-HT2
Investigator(s): G. Davis, S. McNeish Section, Township, Range: S27, T33S, R14E
Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 5-10
Subregion (LRR): LRR D Lat: 37.881269 Long: -110.371078 Datum: WGS 84
Soil Map Unit Name: 16 - Myton very gravelly sandy loam, 5 to 18% slopes NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____
Are Vegetation ____, Soil ____, or Hydrology x naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:
Sampling location is within a broad low area of an ephemeral wash where surface cracks are present. While the site functions as an ephemeral wash and conveys seasonal flow downslope, it does not contain hydrophytic vegetation or hydric soils.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' x 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15' x 15')			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5' x 5')			
1. *Achnatherum hymenoides*	5	Yes	NI
2. *Hilaria rigida*	5	Yes	NI
3.			
4.			
5.			
6.			
7.			
8.			
	10 =Total Cover		
Woody Vine Stratum (Plot size: 30' x 30')			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 90 % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	10	x 5 =	50
Column Totals:	10 (A)		50 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:
____ Dominance Test is >50%
____ Prevalence Index is ≤3.0[1]
____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:
Sampling location is mostly barren within the ephemeral wash with some scattered herbs present. Species with no indicator (NI) are treated as upland (UPL) species for this analysis.

SOIL

Sampling Point: SP-HT2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	2.5YR 4/6	100					Loamy/Clayey	cobbles present

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock/cobble

Depth (inches): 10

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
No hydric soil indicators observed at sampling location.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- X Drift Deposits (B3) **(Riverine)**
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Sampling location satisfies wetland hydrology parameter with surface soil cracks, drainage patterns, and drift deposits. The project site, and surrounding area, has been subject to persistent moderate drought conditions according to the Palmer Drought Severity Index (PDSI).

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-08-28; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: GLCA - Hite Low-water Boat Ramp Project | City/County: Hite / San Juan County | Sampling Date: 10/3/2024
Applicant/Owner: National Park Service (NPS) | State: UT | Sampling Point: SP-HT3
Investigator(s): G. Davis, S. McNeish | Section, Township, Range: S27, T33S, R14E
Landform (hillside, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%): 5-10
Subregion (LRR): LRR D | Lat: 37.883941 | Long: -110.373548 | Datum: WGS 84
Soil Map Unit Name: 16 - Myton very gravelly sandy loam, 5 to 18% slopes | NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____
Are Vegetation ____, Soil ____, or Hydrology x naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:
Sampling location is within an ephemeral wash where surface cracks are present. While the site functions as an ephemeral wash and conveys seasonal flow downslope, it does not contain hydrophytic vegetation or hydric soils.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' x 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15' x 15')			
1. *Gutierrezia sarothrae*	5	Yes	NI
2.			
3.			
4.			
5.			
	5 =Total Cover		
Herb Stratum (Plot size: 5' x 5')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
Woody Vine Stratum (Plot size: 30' x 30')			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	5	x 5 =	25
Column Totals:	5 (A)		25 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:
Sampling location is mostly barren within the ephemeral wash with some scattered shrubs and herbs present. Species with no indicator (NI) are treated as upland (UPL) species for this analysis.

SOIL

Sampling Point: SP-HT3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	2.5YR 4/6	100					Loamy/Clayey	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: Rock

Depth (inches): 2

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

No hydric soil indicators observed at sampling location. A thin layer of soil is set on top of bedrock at this location where water appears to pool.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Water Marks (B1) **(Riverine)**
- X Sediment Deposits (B2) **(Riverine)**
- X Drift Deposits (B3) **(Riverine)**
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Sampling location satisfies wetland hydrology parameter with multiple indicators. The project site, and surrounding area, has been subject to persistent moderate drought conditions according to the Palmer Drought Severity Index (PDSI).

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-08-28; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: GLCA - Hite Low-water Boat Ramp Project | City/County: Hite / San Juan County | Sampling Date: 10/3/2024
Applicant/Owner: National Park Service (NPS) | State: UT | Sampling Point: SP-HT4
Investigator(s): G. Davis, S. McNeish | Section, Township, Range: S28, T33S, R14E
Landform (hillside, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%): 5-10
Subregion (LRR): LRR D | Lat: 37.884821 | Long: -110.380356 | Datum: WGS 84
Soil Map Unit Name: 32 - Rock outcrop-Needle complex, 2 to 30% slopes | NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____
Are Vegetation ____, Soil ____, or Hydrology x naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:
Sampling location is within an ephemeral wash where surface cracks are present. While the site functions as an ephemeral wash and conveys seasonal flow downslope, it does not contain hydrophytic vegetation or hydric soils.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' x 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15' x 15')			
1. *Purshia stansburyana*	25	Yes	NI
2. *Fraxinus anomala*	10	Yes	NI
3. *Gutierrezia sarothrae*	5	No	NI
4.			
5.			
	40 =Total Cover		
Herb Stratum (Plot size: 5' x 5')			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
Woody Vine Stratum (Plot size: 30' x 30')			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 100 % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	40	x 5 =	200
Column Totals:	40 (A)		200 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:
Sampling location is within the ephemeral wash with well established shrubs and some scattered herbs present. Species with no indicator (NI) are treated as upland (UPL) species for this analysis.

SOIL

Sampling Point: SP-HT4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-2	2.5YR 5/6	100					Loamy/Clayey	sandy loam
2-14	2.5YR 5/6	100					Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
No hydric soil indicators observed at sampling location.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Water Marks (B1) **(Riverine)**
- X Sediment Deposits (B2) **(Riverine)**
- X Drift Deposits (B3) **(Riverine)**
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Sampling location satisfies wetland hydrology parameter with multiple indicators. The project site, and surrounding area, has been subject to persistent moderate drought conditions according to the Palmer Drought Severity Index (PDSI).

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-08-28; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: GLCA - Hite Low-water Boat Ramp Project | City/County: Hite / San Juan County | Sampling Date: 10/3/2024
Applicant/Owner: National Park Service (NPS) | State: UT | Sampling Point: SP-HT5
Investigator(s): G. Davis, S. McNeish | Section, Township, Range: S28, T33S, R14E
Landform (hillside, terrace, etc.): Terrace | Local relief (concave, convex, none): Concave | Slope (%): 5-10
Subregion (LRR): LRR D | Lat: 37.886544 | Long: -110.380319 | Datum: WGS 84
Soil Map Unit Name: 32 - Rock outcrop-Needle complex, 2 to 30% slopes | NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____
Are Vegetation ____, Soil ____, or Hydrology x naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes ____ No X
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? **Yes** ____ **No** X

Remarks:
Sampling location is within a steep walled canyon associated with an ephemeral wash where surface cracks are present. While the site functions as an ephemeral wash and conveys seasonal flow downslope, it does not contain hydrophytic vegetation or hydric soils.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' x 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15' x 15')			
1. *Purshia stansburyana*	35	Yes	NI
2. *Fraxinus anomala*	15	Yes	NI
3. *Berberis fremontii*	10	No	NI
4.			
5.			
	60 =Total Cover		
Herb Stratum (Plot size: 5' x 5')			
1. *Yucca elata*	15	Yes	NI
2. *Achnaterum hymenoides*	10	Yes	NI
3. *Sporobolus cryptandrus*	5	No	FACU
4.			
5.			
6.			
7.			
8.			
	30 =Total Cover		
Woody Vine Stratum (Plot size: 30' x 30')			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 70 % Cover of Biotic Crust ____

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)
Total Number of Dominant Species Across All Strata: 4 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	5	x 4 =	20
UPL species	85	x 5 =	425
Column Totals:	90 (A)		445 (B)

Prevalence Index = B/A = 4.94

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
___ Prevalence Index is ≤3.0[1]
___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:
Sampling location is within the ephemeral wash with well established shrubs and some scattered herbs present. Species with no indicator (NI) are treated as upland (UPL) species for this analysis.

SOIL

Sampling Point: SP-HT5

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5YR 5/6	100					Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

No hydric soil indicators observed at sampling location.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- X Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- X Water Marks (B1) **(Riverine)**
- X Sediment Deposits (B2) **(Riverine)**
- X Drift Deposits (B3) **(Riverine)**
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Sampling location satisfies wetland hydrology parameter with multiple indicators. The project site, and surrounding area, has been subject to persistent moderate drought conditions according to the Palmer Drought Severity Index (PDSI).

U.S. Army Corps of Engineers
WETLAND DETERMINATION DATA SHEET – Arid West Region
See ERDC/EL TR-08-28; the proponent agency is CECW-CO-R

OMB Control #: 0710-0024, Exp: 11/30/2024
Requirement Control Symbol EXEMPT:
(Authority: AR 335-15, paragraph 5-2a)

Project/Site: GLCA - Hite Low-water Boat Ramp Project City/County: Hite / San Juan County Sampling Date: 10/3/2024

Applicant/Owner: National Park Service (NPS) State: UT Sampling Point: SP-HT6

Investigator(s): G. Davis, S. McNeish Section, Township, Range: S28, T33S, R14E

Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): None Slope (%): 0-2

Subregion (LRR): LRR D Lat: 37.888991 Long: -110.380159 Datum: WGS 84

Soil Map Unit Name: 45 - Water NWI classification: L1UBHh

Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes x No ____

Are Vegetation ____, Soil ____, or Hydrology x naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Sampling location is on a terrace/bench situated above Lake Powell that is mapped by NWI and NRCS as water. There is evidence that this area inundated in the past but likely only during flood events. The sampling location did not meet any of the three wetland parameters.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30' x 30')	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15' x 15')			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5' x 5')			
1. *Sporobolus cryptandrus*	5	Yes	FACU
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	5 =Total Cover		
Woody Vine Stratum (Plot size: 30' x 30')			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 95 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	5 (A)		20 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

____ Dominance Test is >50%

____ Prevalence Index is ≤3.0[1]

____ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ____ **No** X

Remarks:
Sampling location is within a band of dead vegetation/shrubs that is perched on a terrace above Lake Powell. Some scattered herbs are present but generally this area is sparsely vegetated.

SOIL

Sampling Point: SP-HT6

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	2.5YR 5/4	100					Sandy	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5) **(LRR C)**
- ___ 1 cm Muck (A9) **(LRR D)**
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) **(LRR C)**
- ___ 2 cm Muck (A10) **(LRR B)**
- ___ Iron-Manganese Masses (F12) **(LRR D)**
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

No hydric soil indicators observed at sampling location.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1) **(Nonriverine)**
- ___ Sediment Deposits (B2) **(Nonriverine)**
- ___ Drift Deposits (B3) **(Nonriverine)**
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Water-Stained Leaves (B9)
- ___ Salt Crust (B11)
- ___ Biotic Crust (B12)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Water Marks (B1) **(Riverine)**
- ___ Sediment Deposits (B2) **(Riverine)**
- ___ Drift Deposits (B3) **(Riverine)**
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ___ No X Depth (inches): ___

Water Table Present? Yes ___ No X Depth (inches): ___

Saturation Present? Yes ___ No X Depth (inches): ___

(includes capillary fringe)

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Sampling location does not satisfy the wetland hydrology parameter. The project site, and surrounding area, has been subject to persistent moderate drought conditions according to the Palmer Drought Severity Index (PDSI).

Appendix C – Rapid Ordinary High Water Mark (OHWM) Field Identification Data Sheets

U.S. Army Corps of Engineers (USACE)

INTERIM DRAFT RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD IDENTIFICATION DATA SHEET

The proponent agency is Headquarters USACE CECW-CO-R.

Form Approved -
OMB No. 0710-0025
Expires: 01-31-2025

AGENCY DISCLOSURE NOTICE

The public reporting burden for this collection of information, 0710-OHWM, is estimated to average 30 **minutes** per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

Project ID #: OHWM-1	Site Name: Low Water Ramp at Hite District, UT	Date and Time: 10/3/2024
Location (lat/long): 37.880843, -110.369318	Investigator(s): G. Davis, S. McNeish	

Step 1 Site overview from remote and online resources

Check boxes for online resources used to evaluate site:

- [ ] gage data
- [ ] LiDAR
- [ ] geologic maps
- [x] climatic data
- [x] satellite imagery
- [ ] land use maps
- [x] aerial photos
- [x] topographic maps
- [ ] Other: _____

Describe land use and flow conditions from online resources. Were there any recent extreme events (floods or drought)?

The USACE Antecedent Precipitation Tool indicates that the site is in a moderate drought. While flow is present in Lake Powell (Colorado River), no flow was observed in ephemeral or intermittent watercourses within the site.

Step 2 Site conditions during field assessment. First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

This sampling location is associated with ephemeral watercourse (EDR)-2, which was observed to be an ephemeral wash that originates downslope of Hite Marina Road. The feature varies between having a braided channel and single channel.

Step 3 Check the boxes next to the indicators used to identify the location of the OHWM.

OHWM is at a transition point, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below `b', at `x', or just above `a' the OHWM.

Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

Geomorphic indicators

- [x] **Break in slope:** x
  - [x] *on the bank:* x
  - [ ] *undercut bank:*
  - [ ] *valley bottom:*
  - [ ] Other: _____
- [ ] **Shelving:**
  - [ ] *shelf at top of bank:*
  - [ ] *natural levee:*
  - [ ] *man-made berms or levees:*
  - [ ] *other berms:* _____
- [ ] **Channel bar:**
  - [ ] *shelving (berms) on bar:*
  - [ ] *unvegetated:*
  - [ ] *vegetation transition (go to veg. indicators)*
  - [ ] *sediment transition (go to sed. indicators)*
  - [ ] *upper limit of deposition on bar:*
- [x] **Instream bedforms and other bedload transport evidence:**
  - [x] *deposition bedload indicators (e.g., imbricated clasts, gravel sheets, etc.)* b
  - [x] *bedforms (e.g., pools, riffles, steps, etc.):* b
- [x] *erosional bedload indicators (e.g., obstacle marks, scour, smoothing, etc.)* x
- [ ] **Secondary channels:**

Sediment indicators

- [x] **Soil development:** a
- [x] **Changes in character of soil:** a
- [x] **Mudcracks:** b
- [ ] **Changes in particle-sized distribution:**
  - [ ] *transition from* _____ to _____
  - [ ] *upper limit of sand-sized particles*
  - [ ] *silt deposits:*

Vegetation Indicators

- [x] **Change in vegetation type and/or density:** x

  Check the appropriate boxes and select the general vegetation change *(e.g., graminoids to woody shrubs).* ***Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.***

  - [x] *vegetation absent to:* absent
  - [ ] *moss to:*
  - [ ] *forbs to:*
  - [ ] *graminoids to:*
  - [ ] *woody shrubs to:*
  - [ ] *deciduous trees to:*
  - [ ] *coniferous trees to:*
- [ ] **Vegetation matted down and/or bent:**
- [ ] **Exposed roots below intact soil layer:**

Ancillary indicators

- [x] **Wracking/presence of organic litter:** b
- [ ] **Presence of large wood:**
- [ ] **Leaf litter disturbed or washed away:**
- [x] **Water staining:** x
- [x] **Weathered clasts or bedrock:** b

Other observed indicators? Describe:

Vegetation within the channel is relatively sparse to barren. Above the OHWM, shrubs and forbs become more prevalent.

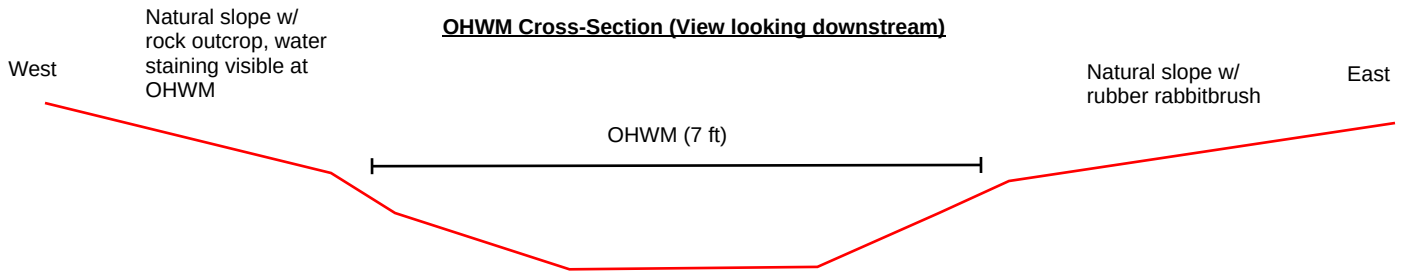
Project ID #: OHWM-1

Step 4 Is additional information needed to support this determination? ☐ Yes ☒ No If yes, describe and attach information to datasheet:

Step 5 Describe rationale for location of OHWM

Incised channel at low point in topography with evidence of sediment transport via scoured banks, water markings on exposed rocks, sorted fine sediment within the channel that transitions to coarse sandy substrate above the OHWM. Racking of vegetation observed against rocks throughout feature.

Additional observations or notes



Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☒ Yes ☐ No If no, explain why not: _____

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

Photo Number	Photograph description
Photo 1	See Appendix E

U.S. Army Corps of Engineers (USACE)

INTERIM DRAFT RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD IDENTIFICATION DATA SHEET

The proponent agency is Headquarters USACE CECW-CO-R.

Form Approved -
OMB No. 0710-0025
Expires: 01-31-2025

AGENCY DISCLOSURE NOTICE

The public reporting burden for this collection of information, 0710-OHWM, is estimated to average 30 **minutes** per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

Project ID #: OHWM-2	Site Name: Low Water Ramp at Hite District, UT	Date and Time: 10/3/2024
Location (lat/long): 37.880603, -110.370261	Investigator(s): G. Davis, S. McNeish	

Step 1 Site overview from remote and online resources

Check boxes for online resources used to evaluate site:

- [ ] gage data
- [ ] LiDAR
- [ ] geologic maps
- [x] climatic data
- [x] satellite imagery
- [ ] land use maps
- [x] aerial photos
- [x] topographic maps
- [ ] Other: _____

Describe land use and flow conditions from online resources. Were there any recent extreme events (floods or drought)?

The USACE Antecedent Precipitation Tool indicates that the site is in a moderate drought. While flow is present in Lake Powell (Colorado River), no flow was observed in ephemeral or intermittent watercourses within the site.

Step 2 Site conditions during field assessment. First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

This sampling location is associated with ephemeral watercourse (EDR)-4, which was observed to be an ephemeral wash that originates downslope of Hite Marina Road and crosses over the dirt access road within the study area.

Step 3 Check the boxes next to the indicators used to identify the location of the OHWM.

OHWM is at a transition point, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below `b', at `x', or just above `a' the OHWM.

Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

Geomorphic indicators

- [x] **Break in slope:** x
  - [x] *on the bank:* x
  - [ ] *undercut bank:*
  - [ ] *valley bottom:*
  - [ ] Other: _____
- [ ] **Shelving:**
  - [ ] *shelf at top of bank:*
  - [ ] *natural levee:*
  - [ ] *man-made berms or levees:*
  - [ ] *other berms:* _____
- [ ] **Channel bar:**
  - [ ] *shelving (berms) on bar:*
  - [ ] *unvegetated:*
  - [ ] *vegetation transition (go to veg. indicators)*
  - [ ] *sediment transition (go to sed. indicators)*
  - [ ] *upper limit of deposition on bar:*
- [x] **Instream bedforms and other bedload transport evidence:**
  - [x] *deposition bedload indicators (e.g., imbricated clasts, gravel sheets, etc.)* b
  - [x] *bedforms (e.g., pools, riffles, steps, etc.):* b
- [x] *erosional bedload indicators (e.g., obstacle marks, scour, smoothing, etc.)* x
- [ ] **Secondary channels:**

Sediment indicators

- [x] **Soil development:** a
- [x] **Changes in character of soil:** a
- [x] **Mudcracks:** b
- [ ] **Changes in particle-sized distribution:**
  - [ ] *transition from* _____ to _____
  - [ ] *upper limit of sand-sized particles*
  - [ ] *silt deposits:*

Vegetation Indicators

- [x] **Change in vegetation type and/or density:** x

  Check the appropriate boxes and select the general vegetation change *(e.g., graminoids to woody shrubs).* ***Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.***

  - [x] *vegetation absent to:* absent
  - [ ] *moss to:*
  - [ ] *forbs to:*
  - [ ] *graminoids to:*
  - [ ] *woody shrubs to:*
  - [ ] *deciduous trees to:*
  - [ ] *coniferous trees to:*
- [ ] **Vegetation matted down and/or bent:**
- [ ] **Exposed roots below intact soil layer:**

Ancillary indicators

- [x] **Wracking/presence of organic litter:** b
- [ ] **Presence of large wood:**
- [ ] **Leaf litter disturbed or washed away:**
- [x] **Water staining:** x
- [x] **Weathered clasts or bedrock:** b

Other observed indicators? Describe:

Vegetation within the channel is relatively sparse to barren. Above the OHWM, shrubs and forbs become more prevalent.

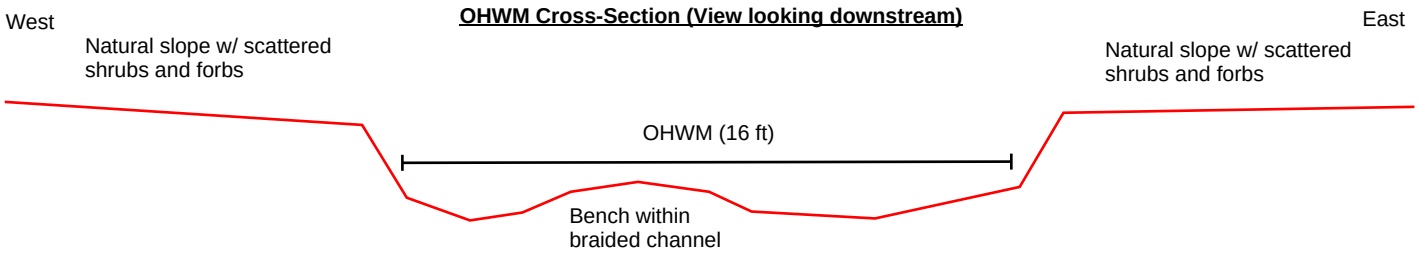
Project ID #: OHWM-2

Step 4 Is additional information needed to support this determination? ☐ Yes ☒ No If yes, describe and attach information to datasheet:

Step 5 Describe rationale for location of OHWM

Incised channel at low point in topography with evidence of sediment transport via scoured banks, water markings on exposed rocks, sorted fine sediment within the channel that transitions to coarse sandy substrate above the OHWM. Racking of vegetation observed against rocks throughout feature. Feature is very broad in some sections and varies from a braided channel to a single channel.

Additional observations or notes



Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☒ Yes ☐ No If no, explain why not: _____

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

Photo Number	Photograph description
Photo 2	See Appendix E

U.S. Army Corps of Engineers (USACE)

INTERIM DRAFT RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD IDENTIFICATION DATA SHEET

The proponent agency is Headquarters USACE CECW-CO-R.

Form Approved -
OMB No. 0710-0025
Expires: 01-31-2025

AGENCY DISCLOSURE NOTICE

The public reporting burden for this collection of information, 0710-OHWM, is estimated to average 30 **minutes** per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

Project ID #: OHWM-3	Site Name: Low Water Ramp at Hite District, UT	Date and Time: 10/3/2024
Location (lat/long): 37.882255, -110.372188	Investigator(s): G. Davis, S. McNeish	

Step 1 Site overview from remote and online resources

Check boxes for online resources used to evaluate site:

- ☐ gage data
- ☐ LiDAR
- ☐ geologic maps
- ☒ climatic data
- ☒ satellite imagery
- ☐ land use maps
- ☒ aerial photos
- ☒ topographic maps
- ☐ Other: _____

Describe land use and flow conditions from online resources. Were there any recent extreme events (floods or drought)?

The USACE Antecedent Precipitation Tool indicates that the site is in a moderate drought. While flow is present in Lake Powell (Colorado River), no flow was observed in ephemeral or intermittent watercourses within the site.

Step 2 Site conditions during field assessment. First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

This sampling location is associated with ephemeral watercourse (EDR)-7, which was observed to be an ephemeral wash that flows down and crosses over the dirt access road within the study area.

Step 3 Check the boxes next to the indicators used to identify the location of the OHWM.

OHWM is at a transition point, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below `b', at `x', or just above `a' the OHWM.

Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

Geomorphic indicators

- ☒ **Break in slope:** x
  - ☒ *on the bank:* x
  - ☐ *undercut bank:*
  - ☐ *valley bottom:*
  - ☐ Other: _____
- ☐ **Shelving:**
  - ☐ *shelf at top of bank:*
  - ☐ *natural levee:*
  - ☐ *man-made berms or levees:*
  - ☐ *other berms:* _____
- ☐ **Channel bar:**
  - ☐ *shelving (berms) on bar:*
  - ☐ *unvegetated:*
  - ☐ *vegetation transition (go to veg. indicators)*
  - ☐ *sediment transition (go to sed. indicators)*
  - ☐ *upper limit of deposition on bar:*
- ☒ **Instream bedforms and other bedload transport evidence:**
  - ☒ *deposition bedload indicators (e.g., imbricated clasts, gravel sheets, etc.)* b
  - ☒ *bedforms (e.g., pools, riffles, steps, etc.):* b
- ☒ *erosional bedload indicators (e.g., obstacle marks, scour, smoothing, etc.)* x
- ☐ **Secondary channels:**

Sediment indicators

- ☒ **Soil development:** a
- ☒ **Changes in character of soil:** a
- ☒ **Mudcracks:** b
- ☐ **Changes in particle-sized distribution:**
  - ☐ *transition from* _____ to _____
  - ☐ *upper limit of sand-sized particles*
  - ☐ *silt deposits:*

Vegetation Indicators

- ☒ **Change in vegetation type and/or density:** x

  Check the appropriate boxes and select the general vegetation change *(e.g., graminoids to woody shrubs).* ***Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.***

  - ☒ *vegetation absent to:* absent
  - ☐ *moss to:*
  - ☐ *forbs to:*
  - ☐ *graminoids to:*
  - ☐ *woody shrubs to:*
  - ☐ *deciduous trees to:*
  - ☐ *coniferous trees to:*
- ☐ **Vegetation matted down and/or bent:**
- ☐ **Exposed roots below intact soil layer:**

Ancillary indicators

- ☒ **Wracking/presence of organic litter:** b
- ☐ **Presence of large wood:**
- ☐ **Leaf litter disturbed or washed away:**
- ☒ **Water staining:** x
- ☒ **Weathered clasts or bedrock:** b

Other observed indicators? Describe:

Vegetation within the channel is relatively sparse to barren. Above the OHWM, shrubs and forbs become more prevalent.

Project ID #: OHWM-3

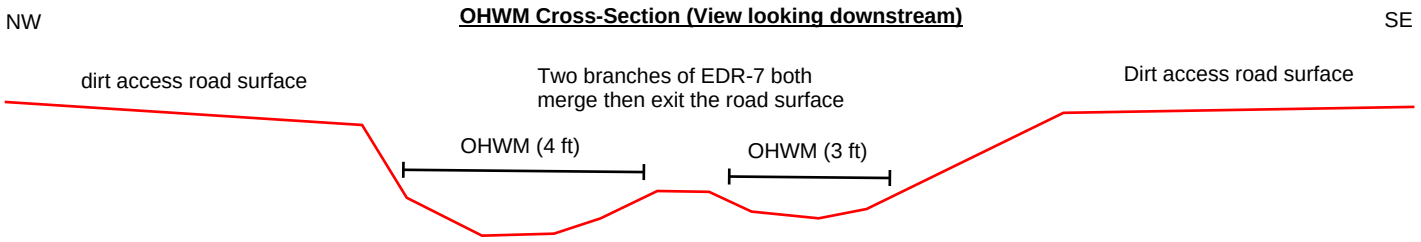
Step 4 Is additional information needed to support this determination? ☐ Yes ☒ No If yes, describe and attach information to datasheet:

Step 5 Describe rationale for location of OHWM

Incised channel at low point in topography with evidence of sediment transport via scoured banks, water markings on exposed rocks, sorted fine sediment within the channel that transitions to coarse sandy substrate above the OHWM. Racking of vegetation observed against rocks throughout feature. Feature is very broad in some sections and varies from a braided channel to a single channel.

Upslope and to the southeast of the ford crossing on the dirt access road, two branches of EDR-7 flow down to the road surface and divert down to the northwest for over 300 feet before exiting the road surface at the OHWM-3 sampling point.

Additional observations or notes



Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☒ Yes ☐ No If no, explain why not: _____

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

Photo Number	Photograph description
Photo 5	See Appendix E

U.S. Army Corps of Engineers (USACE)

INTERIM DRAFT RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD IDENTIFICATION DATA SHEET

The proponent agency is Headquarters USACE CECW-CO-R.

Form Approved -
OMB No. 0710-0025
Expires: 01-31-2025

AGENCY DISCLOSURE NOTICE

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Project ID #: OHWM-4	Site Name: Low Water Ramp at Hite District, UT	Date and Time: 10/3/2024
Location (lat/long): 37.882922, -110.373553	Investigator(s): G. Davis, S. McNeish	

Step 1 Site overview from remote and online resources

Check boxes for online resources used to evaluate site:

- [ ] gage data
- [ ] LiDAR
- [ ] geologic maps
- [x] climatic data
- [x] satellite imagery
- [ ] land use maps
- [x] aerial photos
- [x] topographic maps
- [ ] Other: _____

Describe land use and flow conditions from online resources. Were there any recent extreme events (floods or drought)?

The USACE Antecedent Precipitation Tool indicates that the site is in a moderate drought. While flow is present in Lake Powell (Colorado River), no flow was observed in ephemeral or intermittent watercourses within the site.

Step 2 Site conditions during field assessment. First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

This sampling location is associated with ephemeral watercourse (EDR)-8, which was observed to be an ephemeral wash that flows down and crosses over the dirt access road within the study area.

Step 3 Check the boxes next to the indicators used to identify the location of the OHWM.

OHWM is at a transition point, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below `b', at `x', or just above `a' the OHWM.

Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

Geomorphic indicators

- [x] **Break in slope:** x
  - [x] *on the bank:* x
  - [ ] *undercut bank:*
  - [ ] *valley bottom:*
  - [ ] Other: _____
- [ ] **Shelving:**
  - [ ] *shelf at top of bank:*
  - [ ] *natural levee:*
  - [ ] *man-made berms or levees:*
  - [ ] *other berms:* _____
- [ ] **Channel bar:**
  - [ ] *shelving (berms) on bar:*
  - [ ] *unvegetated:*
  - [ ] *vegetation transition (go to veg. indicators)*
  - [ ] *sediment transition (go to sed. indicators)*
  - [ ] *upper limit of deposition on bar:*
- [x] **Instream bedforms and other bedload transport evidence:**
  - [x] *deposition bedload indicators (e.g., imbricated clasts, gravel sheets, etc.)* b
  - [x] *bedforms (e.g., pools, riffles, steps, etc.):* b
- [x] *erosional bedload indicators (e.g., obstacle marks, scour, smoothing, etc.)* x
- [ ] **Secondary channels:**

Sediment indicators

- [x] **Soil development:** a
- [x] **Changes in character of soil:** a
- [x] **Mudcracks:** b
- [ ] **Changes in particle-sized distribution:**
  - [ ] *transition from* _____ to _____
  - [ ] *upper limit of sand-sized particles*
  - [ ] *silt deposits:*

Vegetation Indicators

- [x] **Change in vegetation type and/or density:** x

  Check the appropriate boxes and select the general vegetation change *(e.g., graminoids to woody shrubs).* ***Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.***

  - [x] *vegetation absent to:* absent
  - [ ] *moss to:*
  - [ ] *forbs to:*
  - [ ] *graminoids to:*
  - [ ] *woody shrubs to:*
  - [ ] *deciduous trees to:*
  - [ ] *coniferous trees to:*
- [ ] **Vegetation matted down and/or bent:**
- [ ] **Exposed roots below intact soil layer:**

Ancillary indicators

- [x] **Wracking/presence of organic litter:** b
- [ ] **Presence of large wood:**
- [ ] **Leaf litter disturbed or washed away:**
- [x] **Water staining:** x
- [x] **Weathered clasts or bedrock:** b

Other observed indicators? Describe:

Vegetation within the channel is relatively sparse to barren. Above the OHWM, shrubs and forbs become more prevalent.

Project ID #: OHWM-4

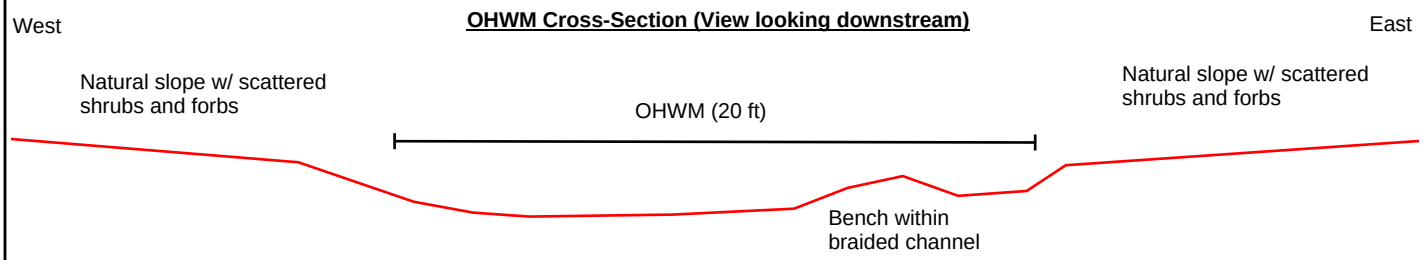
Step 4 Is additional information needed to support this determination? ☐ Yes ☒ No If yes, describe and attach information to datasheet:

Step 5 Describe rationale for location of OHWM

Incised channel at low point in topography with evidence of sediment transport via scoured banks, water markings on exposed rocks, sorted fine sediment within the channel that transitions to coarse sandy substrate above the OHWM. Racking of vegetation observed against rocks throughout feature. Feature is very broad in some sections and varies from a braided channel to a single channel.

EDR-8 diverts down the dirt access road for over 300 feet before exiting the road surface at a low point.

Additional observations or notes



Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☒ Yes ☐ No If no, explain why not: _____

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

Photo Number	Photograph description
Photo 6	See Appendix E

U.S. Army Corps of Engineers (USACE)

INTERIM DRAFT RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD IDENTIFICATION DATA SHEET

The proponent agency is Headquarters USACE CECW-CO-R.

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Project ID #: OHWM-5	Site Name: Low Water Ramp at Hite District, UT	Date and Time: 10/3/2024
Location (lat/long): 37.884562, -110.374638	Investigator(s): G. Davis, S. McNeish	

Step 1 Site overview from remote and online resources

Check boxes for online resources used to evaluate site:

- ☐ gage data
- ☐ LiDAR
- ☐ geologic maps
- ☒ climatic data
- ☒ satellite imagery
- ☐ land use maps
- ☒ aerial photos
- ☒ topographic maps
- ☐ Other: _____

Describe land use and flow conditions from online resources. Were there any recent extreme events (floods or drought)?

The USACE Antecedent Precipitation Tool indicates that the site is in a moderate drought. While flow is present in Lake Powell (Colorado River), no flow was observed in ephemeral or intermittent watercourses within the site.

Step 2 Site conditions during field assessment. First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

This sampling location is associated with ephemeral watercourse (EDR)-10, which was observed to be an ephemeral wash that flows broadly over bedrock.

Step 3 Check the boxes next to the indicators used to identify the location of the OHWM.

OHWM is at a transition point, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below `b', at `x', or just above `a' the OHWM.

Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

Geomorphic indicators

- ☐ **Break in slope:**
  - ☐ *on the bank:*
  - ☐ *undercut bank:*
  - ☐ *valley bottom:*
  - ☐ Other: _____
- ☐ **Shelving:**
  - ☐ *shelf at top of bank:*
  - ☐ *natural levee:*
  - ☐ *man-made berms or levees:*
  - ☐ *other berms:* _____
- ☐ **Channel bar:**
  - ☐ *shelving (berms) on bar:*
  - ☐ *unvegetated:*
  - ☐ *vegetation transition (go to veg. indicators)*
  - ☐ *sediment transition (go to sed. indicators)*
  - ☐ *upper limit of deposition on bar:*
- ☒ **Instream bedforms and other bedload transport evidence:**
  - ☒ *deposition bedload indicators (e.g., imbricated clasts, gravel sheets, etc.)* b
  - ☒ *bedforms (e.g., pools, riffles, steps, etc.):* b
- ☒ *erosional bedload indicators (e.g., obstacle marks, scour, smoothing, etc.)* x
- ☐ **Secondary channels:**

Sediment indicators

- ☐ **Soil development:**
- ☐ **Changes in character of soil:**
- ☐ **Mudcracks:**
- ☐ **Changes in particle-sized distribution:**
  - ☐ *transition from* _____ to _____
  - ☐ *upper limit of sand-sized particles*
  - ☐ *silt deposits:*

Vegetation Indicators

- ☒ **Change in vegetation type and/or density:** x

  Check the appropriate boxes and select the general vegetation change *(e.g., graminoids to woody shrubs).* ***Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.***

  - ☒ *vegetation absent to:* absent
  - ☐ *moss to:*
  - ☐ *forbs to:*
  - ☐ *graminoids to:*
  - ☐ *woody shrubs to:*
  - ☐ *deciduous trees to:*
  - ☐ *coniferous trees to:*
- ☐ **Vegetation matted down and/or bent:**
- ☐ **Exposed roots below intact soil layer:**

Ancillary indicators

- ☒ **Wracking/presence of organic litter:** b
- ☐ **Presence of large wood:**
- ☐ **Leaf litter disturbed or washed away:**
- ☒ **Water staining:** x
- ☒ **Weathered clasts or bedrock:** b

Other observed indicators? Describe:

numerous flow paths observed discharging over bedrock that eventually confine into a single channel downslope.

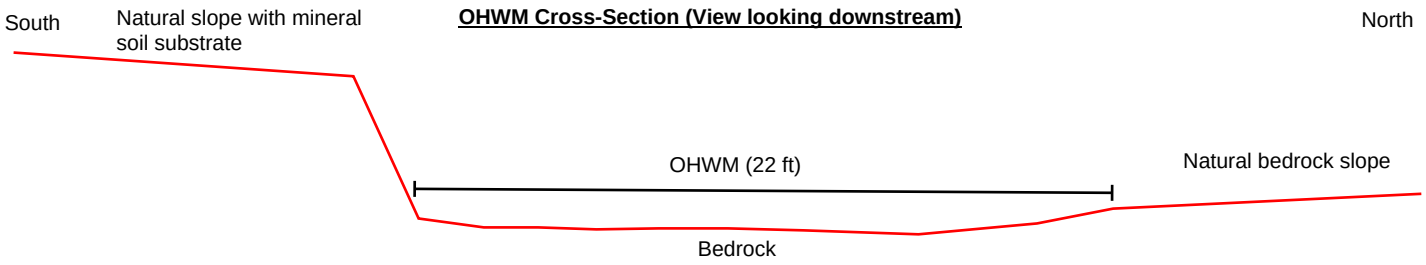
Project ID #: OHWM-5

Step 4 Is additional information needed to support this determination? ☐ Yes ☒ No If yes, describe and attach information to datasheet:

Step 5 Describe rationale for location of OHWM

Incised and defined channels consistent with the characteristics observed in other ephemeral watercourses within the study area are present upslope of the OHWM-5 sampling point within EDR-10. Flow paths from these channels are visible in the soil as they transition onto the bedrock surface and water stained depressions are visible within the bedrock. The flow path along the bedrock transitions downslope back into a confined channel in mineral soil that continues downslope outside of the study area.

Additional observations or notes



Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☒ Yes ☐ No If no, explain why not: _____

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

Photo Number	Photograph description
Photo 8	See Appendix E

U.S. Army Corps of Engineers (USACE)

INTERIM DRAFT RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD IDENTIFICATION DATA SHEET

The proponent agency is Headquarters USACE CECW-CO-R.

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Project ID #: OHWM-6	Site Name: Low Water Ramp at Hite District, UT	Date and Time: 10/3/2024
Location (lat/long): 37.885567, -110.376353	Investigator(s): G. Davis, S. McNeish	

Step 1 Site overview from remote and online resources

Check boxes for online resources used to evaluate site:

- ☐ gage data
- ☐ LiDAR
- ☐ geologic maps
- ☒ climatic data
- ☒ satellite imagery
- ☐ land use maps
- ☒ aerial photos
- ☒ topographic maps
- ☐ Other: _____

Describe land use and flow conditions from online resources. Were there any recent extreme events (floods or drought)?

The USACE Antecedent Precipitation Tool indicates that the site is in a moderate drought. While flow is present in Lake Powell (Colorado River), no flow was observed in ephemeral or intermittent watercourses within the site.

Step 2 Site conditions during field assessment. First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

This sampling location is associated with ephemeral watercourse (EDR)-11, which was observed to be an ephemeral wash.

Step 3 Check the boxes next to the indicators used to identify the location of the OHWM.

OHWM is at a transition point, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below `b', at `x', or just above `a' the OHWM.

Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

Geomorphic indicators

- ☒ **Break in slope:** x
  - ☒ *on the bank:* x
  - ☐ *undercut bank:*
  - ☐ *valley bottom:*
  - ☐ Other: _____
- ☐ **Shelving:**
  - ☐ *shelf at top of bank:*
  - ☐ *natural levee:*
  - ☐ *man-made berms or levees:*
  - ☐ *other berms:* _____
- ☐ **Channel bar:**
  - ☐ *shelving (berms) on bar:*
  - ☐ *unvegetated:*
  - ☐ *vegetation transition (go to veg. indicators)*
  - ☐ *sediment transition (go to sed. indicators)*
  - ☐ *upper limit of deposition on bar:*
- ☒ **Instream bedforms and other bedload transport evidence:**
  - ☒ *deposition bedload indicators (e.g., imbricated clasts, gravel sheets, etc.)* b
  - ☒ *bedforms (e.g., pools, riffles, steps, etc.):* b
- ☒ *erosional bedload indicators (e.g., obstacle marks, scour, smoothing, etc.)* x
- ☐ **Secondary channels:**

Sediment indicators

- ☒ **Soil development:** a
- ☒ **Changes in character of soil:** a
- ☒ **Mudcracks:** b
- ☐ **Changes in particle-sized distribution:**
  - ☐ *transition from* _____ to _____
  - ☐ *upper limit of sand-sized particles*
  - ☐ *silt deposits:*

Vegetation Indicators

- ☒ **Change in vegetation type and/or density:** x

  Check the appropriate boxes and select the general vegetation change *(e.g., graminoids to woody shrubs).* ***Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.***

  - ☒ *vegetation absent to:* absent
  - ☐ *moss to:*
  - ☐ *forbs to:*
  - ☐ *graminoids to:*
  - ☐ *woody shrubs to:*
  - ☐ *deciduous trees to:*
  - ☐ *coniferous trees to:*
- ☐ **Vegetation matted down and/or bent:**
- ☐ **Exposed roots below intact soil layer:**

Ancillary indicators

- ☒ **Wracking/presence of organic litter:** b
- ☐ **Presence of large wood:**
- ☐ **Leaf litter disturbed or washed away:**
- ☒ **Water staining:** x
- ☒ **Weathered clasts or bedrock:** b

Other observed indicators? Describe:

Vegetation within the channel is relatively sparse to barren. Above the OHWM, shrubs and forbs become more prevalent.

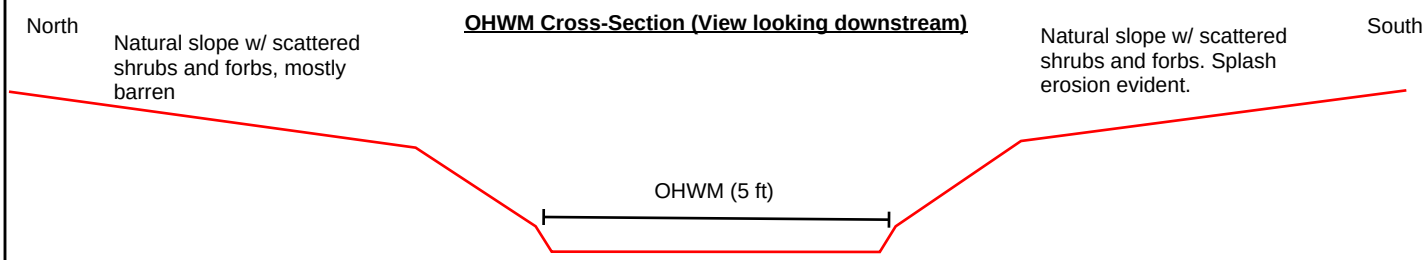
Project ID #: OHWM-6

Step 4 Is additional information needed to support this determination? ☐ Yes ☒ No If yes, describe and attach information to datasheet:

Step 5 Describe rationale for location of OHWM

Incised channel at low point in topography with evidence of sediment transport via scoured banks, water markings on exposed rocks, sorted fine sediment within the channel that transitions to coarse sandy substrate above the OHWM. Racking of vegetation observed against rocks throughout feature.

Additional observations or notes



Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☒ Yes ☐ No If no, explain why not: _____

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

Photo Number	Photograph description
Photo 10	See Appendix E

U.S. Army Corps of Engineers (USACE)

INTERIM DRAFT RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD IDENTIFICATION DATA SHEET

The proponent agency is Headquarters USACE CECW-CO-R.

Form Approved -
OMB No. 0710-0025
Expires: 01-31-2025

AGENCY DISCLOSURE NOTICE

The public reporting burden for this collection of information, 0710-OHWM, is estimated to average 30 **minutes** per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or burden reduction suggestions to the Department of Defense, Washington Headquarters Services, at whs.mc-alex.esd.mbx.dd-dod-information-collections@mail.mil. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.

Project ID #: OHWM-7	Site Name: Low Water Ramp at Hite District, UT	Date and Time: 10/3/2024
Location (lat/long): 37.884401, -110.377677	Investigator(s): G. Davis, S. McNeish	

Step 1 Site overview from remote and online resources

Check boxes for online resources used to evaluate site:

- [ ] gage data
- [ ] LiDAR
- [ ] geologic maps
- [x] climatic data
- [x] satellite imagery
- [ ] land use maps
- [x] aerial photos
- [x] topographic maps
- [ ] Other: _____

Describe land use and flow conditions from online resources. Were there any recent extreme events (floods or drought)?

The USACE Antecedent Precipitation Tool indicates that the site is in a moderate drought. While flow is present in Lake Powell (Colorado River), no flow was observed in ephemeral or intermittent watercourses within the site.

Step 2 Site conditions during field assessment. First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

This sampling location is associated with ephemeral watercourse (EDR)-15, which was observed to be an ephemeral wash.

Step 3 Check the boxes next to the indicators used to identify the location of the OHWM.

OHWM is at a transition point, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below `b', at `x', or just above `a' the OHWM.

Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

Geomorphic indicators

- [x] **Break in slope:** x
  - [x] *on the bank:* x
  - [ ] *undercut bank:*
  - [ ] *valley bottom:*
  - [ ] Other: _____
- [ ] **Shelving:**
  - [ ] *shelf at top of bank:*
  - [ ] *natural levee:*
  - [ ] *man-made berms or levees:*
  - [ ] *other berms:* _____
- [ ] **Channel bar:**
  - [ ] *shelving (berms) on bar:*
  - [ ] *unvegetated:*
  - [ ] *vegetation transition (go to veg. indicators)*
  - [ ] *sediment transition (go to sed. indicators)*
  - [ ] *upper limit of deposition on bar:*
- [x] **Instream bedforms and other bedload transport evidence:**
  - [x] *deposition bedload indicators (e.g., imbricated clasts, gravel sheets, etc.)* b
  - [x] *bedforms (e.g., pools, riffles, steps, etc.):* b
- [x] *erosional bedload indicators (e.g., obstacle marks, scour, smoothing, etc.)* x
- [ ] **Secondary channels:**

Sediment indicators

- [x] **Soil development:** a
- [x] **Changes in character of soil:** a
- [x] **Mudcracks:** b
- [ ] **Changes in particle-sized distribution:**
  - [ ] *transition from* _____ to _____
  - [ ] *upper limit of sand-sized particles*
  - [ ] *silt deposits:*

Vegetation Indicators

- [x] **Change in vegetation type and/or density:** x

  Check the appropriate boxes and select the general vegetation change *(e.g., graminoids to woody shrubs).* ***Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.***

  - [x] *vegetation absent to:* absent
  - [ ] *moss to:*
  - [ ] *forbs to:*
  - [ ] *graminoids to:*
  - [ ] *woody shrubs to:*
  - [ ] *deciduous trees to:*
  - [ ] *coniferous trees to:*
- [ ] **Vegetation matted down and/or bent:**
- [ ] **Exposed roots below intact soil layer:**

Ancillary indicators

- [x] **Wracking/presence of organic litter:** b
- [ ] **Presence of large wood:**
- [ ] **Leaf litter disturbed or washed away:**
- [x] **Water staining:** x
- [x] **Weathered clasts or bedrock:** b

Other observed indicators? Describe:

Vegetation within the channel is relatively sparse to barren. Above the OHWM, shrubs and forbs become more prevalent.

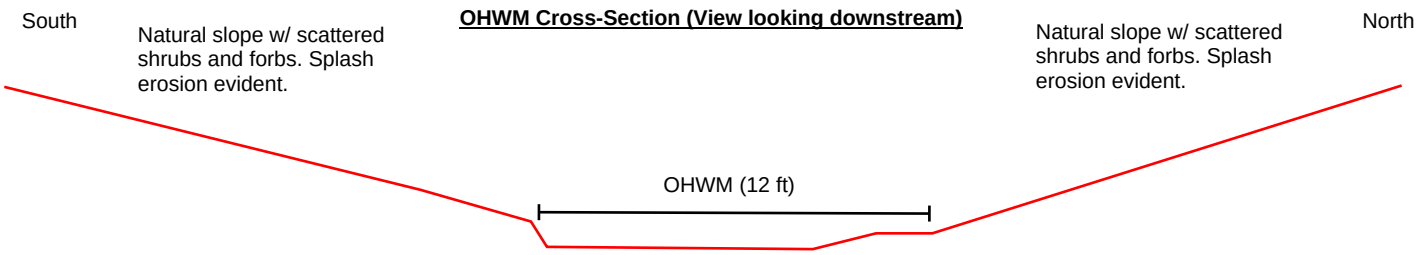
Project ID #: OHWM-7

Step 4 Is additional information needed to support this determination? ☐ Yes ☒ No If yes, describe and attach information to datasheet:

Step 5 Describe rationale for location of OHWM

Incised channel at low point in topography with evidence of sediment transport via scoured banks, water markings on exposed rocks, sorted fine sediment within the channel that transitions to coarse sandy substrate above the OHWM. Racking of vegetation observed against rocks throughout feature.

Additional observations or notes



Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☒ Yes ☐ No If no, explain why not: _____

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

Photo Number	Photograph description
Photo 12	See Appendix E

U.S. Army Corps of Engineers (USACE)

INTERIM DRAFT RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD IDENTIFICATION DATA SHEET

The proponent agency is Headquarters USACE CECW-CO-R.

Form Approved -
OMB No. 0710-0025
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AGENCY DISCLOSURE NOTICE

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Project ID #: OHWM-8	Site Name: Low Water Ramp at Hite District, UT	Date and Time: 10/3/2024
Location (lat/long): 37.888603, -110.380407	Investigator(s): G. Davis, S. McNeish	

Step 1 Site overview from remote and online resources

Check boxes for online resources used to evaluate site:

- [ ] gage data
- [ ] LiDAR
- [ ] geologic maps
- [x] climatic data
- [x] satellite imagery
- [ ] land use maps
- [x] aerial photos
- [x] topographic maps
- [ ] Other: _____

Describe land use and flow conditions from online resources. Were there any recent extreme events (floods or drought)?

The USACE Antecedent Precipitation Tool indicates that the site is in a moderate drought. While flow is present in Lake Powell (Colorado River), no flow was observed in ephemeral or intermittent watercourses within the site.

Step 2 Site conditions during field assessment. First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

This sampling location is associated with ephemeral watercourse (EDR)-16, which was observed to be an ephemeral wash upslope that transitions into a somewhat deeply incised drainage on the terrace above Lake Powell.

Step 3 Check the boxes next to the indicators used to identify the location of the OHWM.

OHWM is at a transition point, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below `b', at `x', or just above `a' the OHWM.

Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

Geomorphic indicators

- [x] **Break in slope:** x
  - [x] *on the bank:* x
  - [ ] *undercut bank:*
  - [ ] *valley bottom:*
  - [ ] Other: _____
- [ ] **Shelving:**
  - [ ] *shelf at top of bank:*
  - [ ] *natural levee:*
  - [ ] *man-made berms or levees:*
  - [ ] *other berms:* _____
- [ ] **Channel bar:**
  - [ ] *shelving (berms) on bar:*
  - [ ] *unvegetated:*
  - [ ] *vegetation transition (go to veg. indicators)*
  - [ ] *sediment transition (go to sed. indicators)*
  - [ ] *upper limit of deposition on bar:*
- [x] **Instream bedforms and other bedload transport evidence:**
  - [x] *deposition bedload indicators (e.g., imbricated clasts, gravel sheets, etc.)* b
  - [x] *bedforms (e.g., pools, riffles, steps, etc.):* b
- [x] *erosional bedload indicators (e.g., obstacle marks, scour, smoothing, etc.)* x
- [ ] **Secondary channels:**

Sediment indicators

- [x] **Soil development:** a
- [x] **Changes in character of soil:** a
- [x] **Mudcracks:** b
- [ ] **Changes in particle-sized distribution:**
  - [ ] *transition from* _____ to _____
  - [ ] *upper limit of sand-sized particles*
  - [ ] *silt deposits:*

Vegetation Indicators

- [x] **Change in vegetation type and/or density:** x

  Check the appropriate boxes and select the general vegetation change *(e.g., graminoids to woody shrubs).* ***Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.***

  - [x] *vegetation absent to:* absent
  - [ ] *moss to:*
  - [ ] *forbs to:*
  - [ ] *graminoids to:*
  - [ ] *woody shrubs to:*
  - [ ] *deciduous trees to:*
  - [ ] *coniferous trees to:*
- [ ] **Vegetation matted down and/or bent:**
- [ ] **Exposed roots below intact soil layer:**

Ancillary indicators

- [x] **Wracking/presence of organic litter:** b
- [ ] **Presence of large wood:**
- [ ] **Leaf litter disturbed or washed away:**
- [ ] **Water staining:**
- [x] **Weathered clasts or bedrock:** b

Other observed indicators? Describe:

Vegetation within the channel is relatively sparse to barren. Above the OHWM, shrubs and forbs become more prevalent.

Project ID #: OHWM-8

Step 4 Is additional information needed to support this determination? ☐ Yes ☒ No If yes, describe and attach information to datasheet:

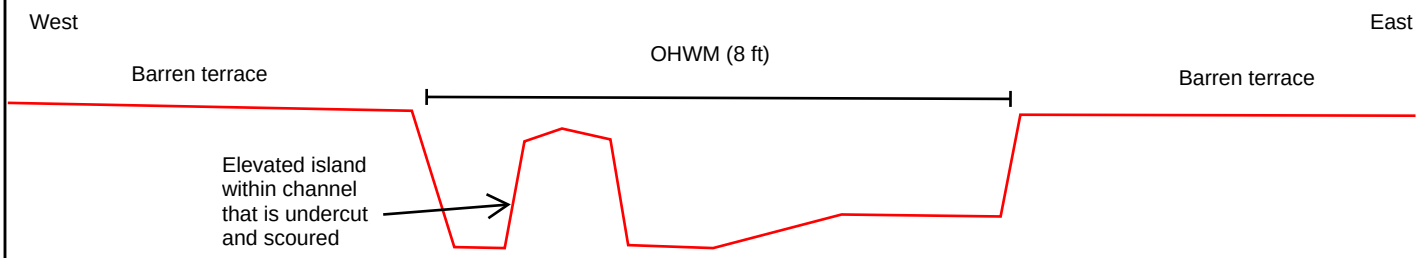
Step 5 Describe rationale for location of OHWM

Incised channel at low point in topography with evidence of sediment transport via scoured banks, water markings on exposed rocks, sorted fine sediment within the channel that transitions to coarse sandy substrate above the OHWM.

Upslope of this sampling point, this watercourse flows through a bedrock canyon, drops down a vertical cliff face, then continues downslope towards Lake Powell in an incised channel.

Additional observations or notes

OHWM Cross-Section (View looking downstream)



Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☒ Yes ☐ No If no, explain why not: _____

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

Photo Number	Photograph description
Photo 16	See Appendix E

U.S. Army Corps of Engineers (USACE)

INTERIM DRAFT RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD IDENTIFICATION DATA SHEET

The proponent agency is Headquarters USACE CECW-CO-R.

Form Approved -
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AGENCY DISCLOSURE NOTICE

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Project ID #: OHWM-9	Site Name: Low Water Ramp at Hite District, UT	Date and Time: 10/3/2024
Location (lat/long): 37.889269, -110.372777	Investigator(s): G. Davis, S. McNeish	

Step 1 Site overview from remote and online resources

Check boxes for online resources used to evaluate site:

- ☐ gage data
- ☐ LiDAR
- ☐ geologic maps
- ☒ climatic data
- ☒ satellite imagery
- ☐ land use maps
- ☒ aerial photos
- ☒ topographic maps
- ☐ Other: _____

Describe land use and flow conditions from online resources. Were there any recent extreme events (floods or drought)?

The USACE Antecedent Precipitation Tool indicates that the site is in a moderate drought. While flow is present in Lake Powell (Colorado River), no flow was observed in ephemeral or intermittent watercourses within the site.

Step 2 Site conditions during field assessment. First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

This sampling location is associated with ephemeral watercourse (EDR)-17, which was observed to flow for a short distance before discharging over a vertical cliff face, where flow dissipates.

Step 3 Check the boxes next to the indicators used to identify the location of the OHWM.

OHWM is at a transition point, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below `b', at `x', or just above `a' the OHWM.

Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

Geomorphic indicators

- ☒ **Break in slope:** x
  - ☒ *on the bank:* x
  - ☐ *undercut bank:*
  - ☐ *valley bottom:*
  - ☐ Other: _____
- ☐ **Shelving:**
  - ☐ *shelf at top of bank:*
  - ☐ *natural levee:*
  - ☐ *man-made berms or levees:*
  - ☐ *other berms:* _____
- ☐ **Channel bar:**
  - ☐ *shelving (berms) on bar:*
  - ☐ *unvegetated:*
  - ☐ *vegetation transition (go to veg. indicators)*
  - ☐ *sediment transition (go to sed. indicators)*
  - ☐ *upper limit of deposition on bar:*
- ☒ **Instream bedforms and other bedload transport evidence:**
  - ☒ *deposition bedload indicators (e.g., imbricated clasts, gravel sheets, etc.)* b
  - ☒ *bedforms (e.g., pools, riffles, steps, etc.):* b
- ☒ *erosional bedload indicators (e.g., obstacle marks, scour, smoothing, etc.)* x
- ☐ **Secondary channels:**

Sediment indicators

- ☒ **Soil development:** a
- ☒ **Changes in character of soil:** a
- ☒ **Mudcracks:** b
- ☐ **Changes in particle-sized distribution:**
  - ☐ *transition from* _____ to _____
  - ☐ *upper limit of sand-sized particles*
  - ☐ *silt deposits:*

Vegetation Indicators

- ☒ **Change in vegetation type and/or density:** x

  Check the appropriate boxes and select the general vegetation change *(e.g., graminoids to woody shrubs).* ***Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.***

  - ☒ *vegetation absent to:* absent
  - ☐ *moss to:*
  - ☐ *forbs to:*
  - ☐ *graminoids to:*
  - ☐ *woody shrubs to:*
  - ☐ *deciduous trees to:*
  - ☐ *coniferous trees to:*
- ☐ **Vegetation matted down and/or bent:**
- ☐ **Exposed roots below intact soil layer:**

Ancillary indicators

- ☒ **Wracking/presence of organic litter:** b
- ☐ **Presence of large wood:**
- ☐ **Leaf litter disturbed or washed away:**
- ☐ **Water staining:**
- ☒ **Weathered clasts or bedrock:** b

Other observed indicators? Describe:

Vegetation within the channel is relatively sparse to barren. Above the OHWM, shrubs and forbs become more prevalent.

Project ID #: OHWM-9

Step 4 Is additional information needed to support this determination? ☐ Yes ☒ No If yes, describe and attach information to datasheet:

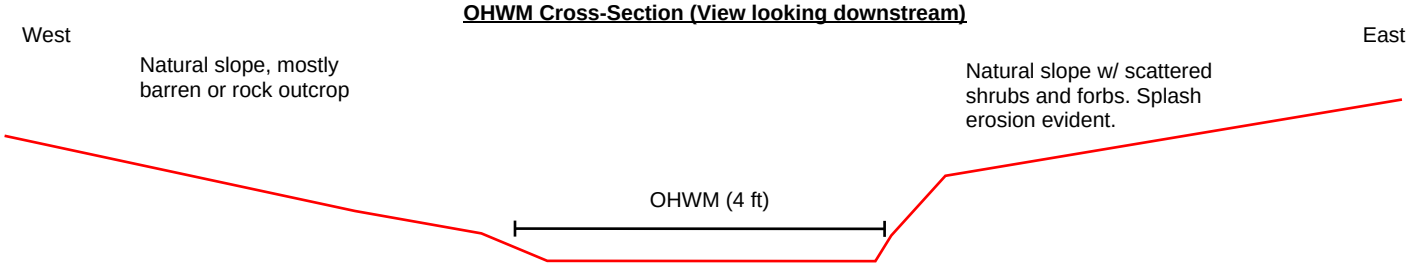
Step 5 Describe rationale for location of OHWM

Incised channel at low point in topography with evidence of sediment transport via scoured banks, water markings on exposed rocks, sorted fine sediment within the channel that transitions to coarse sandy substrate above the OHWM.

This feature terminates at a cliff edge as the defined channel dissipates and was not observed to continue within the rock outcrops or terrace below.

Additional observations or notes

OHWM Cross-Section (View looking downstream)



Attach a photo log of the site. Use the table below, or attach separately.

Photo log attached? ☒ Yes ☐ No If no, explain why not: _____

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

Photo Number	Photograph description
Photo 22	See Appendix E

U.S. Army Corps of Engineers (USACE)

INTERIM DRAFT RAPID ORDINARY HIGH WATER MARK (OHWM) FIELD IDENTIFICATION DATA SHEET

The proponent agency is Headquarters USACE CECW-CO-R.

Form Approved -
OMB No. 0710-0025
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AGENCY DISCLOSURE NOTICE

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Project ID #: OHWM-10	Site Name: Low Water Ramp at Hite District, UT	Date and Time: 10/3/2024
Location (lat/long): 37.890295, -110.373048	Investigator(s): G. Davis, S. McNeish	

Step 1 Site overview from remote and online resources

Check boxes for online resources used to evaluate site:

- [x] gage data
- [x] LiDAR
- [ ] geologic maps
- [x] climatic data
- [x] satellite imagery
- [ ] land use maps
- [x] aerial photos
- [x] topographic maps
- [ ] Other: _____

Describe land use and flow conditions from online resources. Were there any recent extreme events (floods or drought)?

The USACE Antecedent Precipitation Tool indicates that the site is in a moderate drought. Flow was present in Lake Powell (Colorado River). Local gage data indicated that the water elevation during the survey was at 3,581 ft.

Step 2 Site conditions during field assessment. First look for changes in channel shape, depositional and erosional features, and changes in vegetation and sediment type, size, density, and distribution. Make note of natural or man-made disturbances that would affect flow and channel form, such as bridges, riprap, landslides, rockfalls etc.

This sampling location is associated with Lake Powell, an impoundment of the Colorado River. Low-flow conditions were observed during the survey and there was exposed, unvegetated shorelines visible on both banks of the river. See Step 5 for more detail.

Step 3 Check the boxes next to the indicators used to identify the location of the OHWM.

OHWM is at a transition point, therefore some indicators that are used to determine location may be just below and above the OHWM. From the drop-down menu next to each indicator, select the appropriate location of the indicator by selecting either just below `b', at `x', or just above `a' the OHWM.

Go to page 2 to describe overall rationale for location of OHWM, write any additional observations, and to attach a photo log.

Geomorphic indicators

- [x] **Break in slope:** x
  - [x] *on the bank:* x
  - [ ] *undercut bank:*
  - [ ] *valley bottom:*
  - [ ] Other: _____
- [x] **Shelving:** a
  - [x] *shelf at top of bank:* a
  - [ ] *natural levee:*
  - [ ] *man-made berms or levees:*
  - [ ] *other berms:* _____
- [ ] **Channel bar:**
  - [ ] *shelving (berms) on bar:*
  - [ ] *unvegetated:*
  - [ ] *vegetation transition (go to veg. indicators)*
  - [ ] *sediment transition (go to sed. indicators)*
  - [ ] *upper limit of deposition on bar:*
- [x] **Instream bedforms and other bedload transport evidence:** b
  - [x] *deposition bedload indicators (e.g., imbricated clasts, gravel sheets, etc.)* b
  - [x] *bedforms (e.g., pools, riffles, steps, etc.):* b
- [x] *erosional bedload indicators (e.g., obstacle marks, scour, smoothing, etc.)* x
- [ ] **Secondary channels:**

Sediment indicators

- [x] **Soil development:** a
- [x] **Changes in character of soil:** x
- [x] **Mudcracks:** b
- [ ] **Changes in particle-sized distribution:**
  - [ ] *transition from* _____ to _____
  - [ ] *upper limit of sand-sized particles*
  - [ ] *silt deposits:*

Vegetation Indicators

- [x] **Change in vegetation type and/or density:** x

  Check the appropriate boxes and select the general vegetation change *(e.g., graminoids to woody shrubs).* ***Describe the vegetation transition looking from the middle of the channel, up the banks, and into the floodplain.***

  - [x] *vegetation absent to:* woody shrubs
  - [ ] *moss to:*
  - [ ] *forbs to:*
  - [ ] *graminoids to:*
  - [ ] *woody shrubs to:*
  - [ ] *deciduous trees to:*
  - [ ] *coniferous trees to:*
- [ ] **Vegetation matted down and/or bent:**
- [ ] **Exposed roots below intact soil layer:**

Ancillary indicators

- [x] **Wracking/presence of organic litter:** x
- [x] **Presence of large wood:** a
- [ ] **Leaf litter disturbed or washed away:**
- [x] **Water staining:** x
- [x] **Weathered clasts or bedrock:** x

Other observed indicators? Describe:

Project ID #: OHWM-10

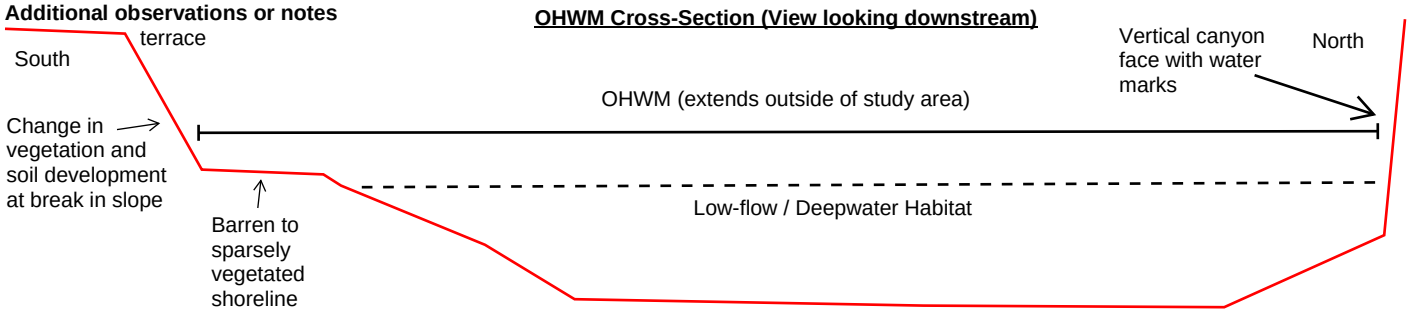
Step 4 Is additional information needed to support this determination? ☐ Yes ☒ No If yes, describe and attach information to datasheet:

Step 5 Describe rationale for location of OHWM

Both the OHWM and transition to open water (deepwater habitat) were mapped as part of this assessment. Low-flow conditions were observed at the time of the survey and barren shoreline was visible.The barren shoreline transitions to sparsely vegetated herbaceous cover where sediment deposits were visible throughout. The barren shoreline was observed to have a substrate of unconsolidated fine grained sediment. An abrupt break in slope is present above the shoreline where vegetation shifts from sparse herb cover to woody shrubs (primarily tamarisk). Soil appears to be more developed at this break in slope, which transitions into an elevated flat terrace that is well vegetated with grass. The OHWM was defined at the break in slope, which was also consistent with water markings visible on the canyon wall on the opposite bank of the river.

Additional observations or notes

OHWM Cross-Section (View looking downstream)



Attach a photo log of the site. Use the table below, or attach separately.

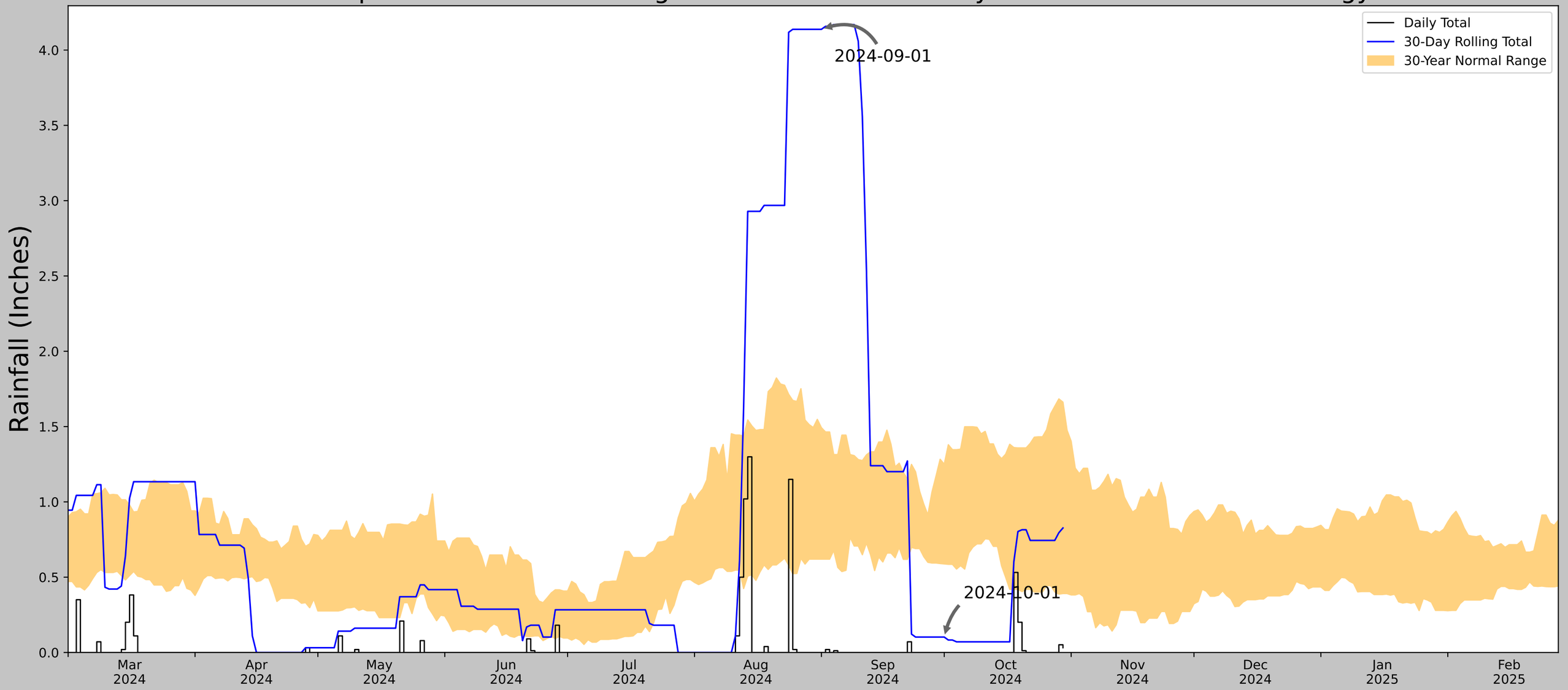
Photo log attached? ☒ Yes ☐ No If no, explain wl OHWM (extends outside of study area)

List photographs and include descriptions in the table below.

Number photographs in the order that they are taken. Attach photographs and include annotations of features.

Photo Number	Photograph description
Photos 18 - 21	See Appendix E

Appendix D – Antecedent Precipitation Tool Results



Coordinates	37.891469, -110.370836
Observation Date	2024-10-01
Elevation (ft)	3612.041
Drought Index (PDSI)	Moderate drought (2024-09)
WebWIMP H_2O Balance	Dry Season

30 Days Ending	30^{th} %ile (in)	70^{th} %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2024-10-01	0.588189	1.25	0.102362	Dry	1	3	3
2024-09-01	0.619685	1.49252	4.137795	Wet	3	2	6
2024-08-02	0.451181	1.051969	0.0	Dry	1	1	1
Result							Normal Conditions - 10

US Army Corps of Engineers

ERDC

Figures and tables made by the Antecedent Precipitation Tool Version 2.0

Developed by: U.S. Army Corps of Engineers and U.S. Army Engineer Research and Development Center

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
HANS FLAT RS	38.255, -110.18	6600.066	27.178	2988.025	93.438	11280	90
NATURAL BRIDGES NM	37.6094, -109.9772	6507.874	45.955	92.192	24.916	44	0
CANYONLANDS-THE NEEDLES	38.1678, -109.7597	4905.84	23.6	1694.226	50.604	28	0
HANKSVILLE	38.3706, -110.7153	4308.071	30.099	2291.995	82.531	1	0

Appendix E – Representative Photographs

Photo ID: 1	Date: October 3, 2024
Location: Hite District, Utah	
Description: View of the OHWM-1 sampling location associated with EDR-2 looking downstream to the north. Note the cross-section OHWM sampling point.	

Photo ID: 2	Date: October 3, 2024
Location: Hite District, Utah	
Description: View of the OHWM-2 sampling location associated with EDR-4 looking downstream to the north. Note the cross-section OHWM sampling point.	

Photo ID: 3	Date: October 3, 2024
Location: Hite District, Utah	
Description: View of the SP-HT1 sampling point within EDR-4 looking north. Surface cracks were visible in low areas of this feature but it did not exhibit hydrophytic vegetation or hydric soils.	

Photo ID: 4	Date: October 3, 2024
Location: Hite District, Utah	
Description: View of the SP-HT2 sampling point (denoted by arrow) within EDR-5 looking south across the dirt access road. Surface cracks were visible in this broad low area, but it did not exhibit hydrophytic vegetation or hydric soils.	

Photo ID: 5	Date: October 3, 2024
Location: Hite District, Utah	
Description: View of the OHWM-3 sampling location associated with EDR-7 looking up the dirt access road to the southeast. Note that portions of this feature are flowing within the roadbed for over 300 feet before exiting the road at a ford crossing.	

Photo ID: 6	Date: October 3, 2024
Location: Hite District, Utah	
Description: View of the OHWM-4 sampling location associated with EDR-8 looking upstream to the south. Note the cross-section OHWM sampling point.	

Photo ID: 7	Date: October 3, 2024
Location: Hite District, Utah	
Description: View of the SP-HT3 sampling point (denoted by arrow) within EDR-8 looking downstream to the north. Surface cracks are visible on the thin soil layer on top of a rock outcrop, but the sampling location did not exhibit hydrophytic vegetation or hydric soils.	

Photo ID: 8	Date: October 3, 2024
Location: Hite District, Utah	
Description: View of the OHWM-5 sampling location associated with EDR-10 looking downstream to the northwest. Note that this feature sheets over bedrock (center frame).	

Photo ID: 9	Date: October 3, 2024
Location: Hite District, Utah	
Description: View of the OHWM-6 sampling location associated with EDR-11 looking downstream to the east. Note the cross-section OHWM sampling point.	

Photo ID: 10	Date: October 3, 2024
Location: Hite District, Utah	
Description: View of the dirt access road looking northwest where EDR-12 flows down the road surface for approximately 200 feet before exiting a low point in the road.	

Photo ID: 11	Date: October 3, 2024
Location: Hite District, Utah	
Description: View of EDR-13 (center frame) looking upstream to the south. Note that this feature conveys flow in a relatively confined channel over bedrock. Additionally, evidence of splash erosion is visible on both sides of the ephemeral watercourse.	

Photo ID: 12	Date: October 3, 2024
Location: Hite District, Utah	
Description: View of the SP-HT4 sampling point (denoted by arrow) within EDR-14 looking upstream to the east. Surface cracks were visible at the sampling location, but the site did not exhibit hydrophytic vegetation or hydric soils.	

Photo ID: 13	Date: October 3, 2024
Location: Hite District, Utah	
Description: View of the OHWM-7 sampling location associated with EDR-15 looking upstream to the east. Note the cross-section OHWM sampling point.	

Photo ID: 14	Date: October 3, 2024
Location: Hite District, Utah	
Description: View of the SP-HT5 sampling point (denoted by arrow in the center frame) within EDR-16 looking upstream to the south. Surface cracks were visible at the sampling location, but the site did not exhibit hydrophytic vegetation or hydric soils.	

Photo ID: 15	Date: October 3, 2024
Location: Hite District, Utah	
Description: View of the incised portion of EDR-16 (center frame) looking downstream to the north from a cliff edge. Lake Powell (LP-1) is visible in the background.	

Photo ID: 16	Date: October 2, 2024
Location: Hite District, Utah	
Description: View of the OHWM-8 sampling location associated with EDR-16 looking upstream to the south. Note the cross-section OHWM sampling point.	

Photo ID: 17	Date: October 2, 2024
Location: Hite District, Utah	
Description: View of the SP-HT6 sampling point (denoted by arrow in the center frame) on the bench situated above Lake Powell. This site was mapped as water by the NWI, but upon further investigation the location was determined to be an upland on an elevated terrace.	

Photo ID: 18	Date: October 2, 2024
Location: Hite District, Utah	
Description: View of Lake Powell and associated open water (LP-1, OW-1) looking northeast. Note that in the foreground standing water is present on the sparsely vegetated shoreline.	

Photo ID: 19	Date: October 2, 2024
Location: Hite District, Utah	
Description: View of Lake Powell (LP-1) looking downstream to the west. Note the approximate location of the OHWM is represented by the dashed line, and the limit of open water (OW-1) is represented by the solid line. LP-1 is located between the dashed and solid lines.	

Photo ID: 20	Date: October 2, 2024
Location: Hite District, Utah	
Description: View of Lake Powell looking upstream to the east towards the Hite Bridge.	

Photo ID: 21	Date: October 2, 2024
Location: Hite District, Utah	
Description: View of Lake Powell (LP-1) looking upstream to the east. Note that solid line represents the limit of open water (OW-1) and the dashed line represents the limit of LP-1. Also note the white colored water staining on the opposite bank (denoted by arrow). This view includes the OHWM-10 sampling location.	

Photo ID: 22	Date: October 2, 2024
Location: Hite District, Utah	
Description: View of the OHWM-9 sampling location associated with EDR-17 looking upstream to the south. Note the cross-section OHWM sampling point.	

Photo ID: 23	Date: October 2, 2024
Location: Hite District, Utah	
Description: View of IDR-1 looking northeast towards the Hite Bridge. Note that the arrow is situated just above the flow path of IDR-1 on the terrace above Lake Powell.	

Photo ID: 24	Date: October 2, 2024
Location: Hite District, Utah	
Description: View of the flood deposits on the terraces above Lake Powell looking west.	