National Park Service

Glen Canyon Recreation Area Low-Water Ramp at Hite, Hite, Utah GLCRA-318744

Statement of Findings for Director's Order #77-1: Wetland Protection and Director's Order #77-2: Floodplain Management

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Prepared by:

Jacobs Government Services Company

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Draft Statement of Findings for Protection of Wetlands (Executive Order 11990) and Floodplain Management (Executive Order 11988) Low Water Ramp at Hite March 2025

National Park Service
Glen Canyon Recreation Area

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Acronyms and Abbreviations

Acronym	Definition
°F	degree(s) Fahrenheit
amsl	above mean sea level
BMP	Best management practice
EO	Executive Order
fps	feet per second
GLCA	Glen Canyon National Recreation Area
HUC	Hydrologic Unit Code
ID	identifier
LiDAR	light detection and ranging
NEPA	National Environmental Policy Act
NHD	National Hydrography Dataset
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NWI	National Wetlands Inventory
OHWM	Ordinary High Water Mark
SOF	Statement of Findings
USACE	U.S. Army Corps of Engineers
USGS	U.S. Geological Survey

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Chapter 1 – Introduction

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). Currently, access to the river at the existing Hite Ramp on the river left (south/east) bank is no longer possible due to low water levels and the presence of unconsolidated reservoir sediments. This proposed ramp will replace an existing ramp that is inaccessible at current and anticipated future lake levels due to its grade. GLCA is initiating this project to provide ongoing water access at the Hite District.

1.01 Floodplains

Executive Order (EO) 11988, "Floodplain Management," requires NPS and other federal agencies to evaluate the likely impacts of actions in floodplains. The objective of EO 11988 is to avoid, to the extent possible, the long-term and short-term adverse impacts associated with occupancy, modification, or destruction of floodplains and to avoid indirect support of development and new construction in such areas wherever there is a practicable alternative. NPS administers floodplain policy through Director's Order 77-2: *Floodplain Management* (DO 77-2) and Procedural Manual 77-2 *Floodplain Management* (PM 77-2).

It is NPS policy to preserve floodplain functions and values and minimize potentially hazardous conditions associated with flooding, including threats to human health/life, risk to capital investment, and impacts on natural and beneficial floodplain values. If a proposed action is found to be in an applicable regulatory floodplain with associated impacts and relocating the action to a non-floodplain site is considered not to be a practicable alternative, then a formal floodplain "Statement of Findings" must be prepared. The "Statement of Findings" must:

(a) Quantify flood conditions and associated hazards as a basis for management decision making

(b) Describe the rationale for selection of a floodplain site

(c) Disclose the resources and amount of risk associated with the chosen site

(d) Explain flood mitigation plans

This Floodplains and Wetlands Statement of Findings (SOF) provides:

1. A detailed justification for selecting a proposed action that would adversely impact the Federal Flood Risk Management Standard (FFRMS) floodplain.

2. A detailed and comprehensive description of the flood hazard and risk associated with implementation of the proposed action.

3. A thorough description of mitigation measures chosen to eliminate, to the extent possible, adverse floodplain impacts associated with the proposed action(s).

1.02 Wetlands

EO 11990, "Protection of Wetlands," directs all federal agencies to avoid to the maximum extent possible the long- and short-term adverse impacts associated with the occupancy, destruction, or modification of wetlands and to avoid direct or indirect support of new construction in wetlands wherever there is a practicable alternative. In the absence of such alternatives, parks must modify actions to preserve and enhance wetland values and minimize degradation.

To comply with EO 11990, NPS has developed a set of policies and procedures found in Director's Order (DO) #77-1 *Wetland Protection* and *Procedural Manual #77-1: Wetland Protection* (2025). These policies and procedures emphasize:

1) Exploring all practical alternatives to building on, or otherwise adversely affecting, wetlands;

2) Reducing impacts to wetlands whenever possible; and

3) Providing direct compensation for any unavoidable wetland impacts by restoring degraded or destroyed wetlands on other NPS properties.

If a Preferred Alternative would have adverse impacts on wetlands, an SOF must be prepared that documents these steps and presents the rationale for choosing an alternative that would have adverse impacts on wetlands.

DO #77-1 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). The Federal Geographic Data Committee Wetlands Classification Standard encompasses more aquatic habitat types than the U.S. Army Corps of Engineers (USACE) definition (33 CFR § 328.3) and delineation manual used by the USACE for identifying wetlands subject to Section 404 of the CWA.

Pursuant to DO #77-1, 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.

This Wetlands SOF:

- Presents the rationale for implementation of the project with regards to wetlands and documents the anticipated effects on wetland resources.
- Describes the effects on wetland values associated with the Proposed Action.
- Provides a description of mitigation measures.
- Ensures “no net loss” of wetland functions and values.

Chapter 2 – Project Description

2.01 Project Location

The 107.33-acre project area is situated between the Hite Crossing Bridge and Hite Marina Campground, and is within San Juan County, Utah (Figure 1). Table 1 includes additional location information for the project area.

Table 1. Location Information

Main Water bodies	Lake Powell (Colorado River) (Traditional Navigable Waterway)
Tributary to and Downstream Water body	Gulf of California
Watershed Hydrologic Unit Code (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

HUC = Hydrologic Unit Code
TNW = traditional navigable waters
USGS = U.S. Geological Survey

2.02 Purpose and Need

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 annually. However, persistent droughts are contributing to unprecedented low-water conditions. Water levels fluctuate throughout the year, with recent levels in the lake dropping to a low of 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 was 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 informal access (known as North Wash) leads to the river located downstream of the Dirty Devil River confluence. The access route is loose and steep, and river conditions are dynamic (depicted on Figure 1). Together, these factors create inconsistent and challenging access to the water at this location. The GLCA is initiating this project to provide ongoing water access at the Hite District.

The purpose of this project is to provide reliable, sustainable, and safe access to the Colorado River near Hite, located at the downstream end of Cataract Canyon located approximately 4.75 miles to the east. The park was created to provide recreational opportunities, including water recreation. With the Hite boat ramp closed, some boaters currently use the North Wash access described above as a take-out and primitive launch area. However, this area is problematic due to its location on an exterior bend of the river channel. Natural hydrological forces continually wash away and destabilize the shoreline at this location, rendering it unsafe for boaters and rafters. The purpose of this project is to provide stable, safe, continuous water access to levels as low as 3,450 feet amsl in the far northern part of Lake Powell while protecting natural and cultural resources.

The project is needed to:

- Ensure Glen Canyon can continue to meet the direction to maintain public recreation access for the foreseeable future.
- Provide safe, reliable, and operational access to the northern end of Lake Powell.
- Protect natural and cultural resources by providing designated ingress and egress to and from the water.

2.03 Proposed Action

2.03.1 Construction

Construction is anticipated to begin in May of 2027 and be completed by January 2028. Construction would last approximately 8 months (Table 2).

Table 2. Anticipated Construction Timeline

Construction	Estimated Time Frame
Mobilization, install erosion control, clearing and grubbing	June 2027
Roadway and parking earthwork	June through January 2028
Blasting (ramp work)	June through August 2027; after September 1 if within 0.5 mile of MSO habitat
Concrete placement (ramp work)	December through January 2028
Roadway surface aggregate	January 2028
Parking surface aggregate	January 2028
Construction completion	February 2028

Access Road. The proposed access road would be approximately 18 feet wide by 5,295 feet long (1mile). While primarily designed for one-way traffic, the width would accommodate two vehicles passing. The road would follow the alignment of an existing primitive road from its intersection with the Hite Marina Road for approximately 2,433 feet and be extended by 4,134 feet. The new portion of the access road would extend northwest, curve to the north and then to the northeast, coming down off the plateau to a terrace where the access road runs parallel to the river, and finally curves north again where the boat ramp would be constructed up to the river's edge. Culverts would be installed under the access road to facilitate effective stormwater runoff within ephemeral drainages during precipitation events. Riprap/erosion control materials are planned to be used during construction activities. Gravel and fill materials may be generated from onsite construction activities (such as rock blasting), sourced from a commercial supplier, or generated from an offsite quarry. If gravel materials are imported, all materials would be inspected for noxious weeds or would be commercially certified weed-free before being incorporated into the project.

Launch Ramp. The boat ramp would consist of concrete surfacing and would service lake water level elevations ranging from 3,650 to an ultimate depth of 3,495 feet amsl. However, the interim construction ramp will only reach 3,529 feet amsl. The launch ramp would be approximately 35 feet wide by 1,000 feet long. In-water work may include, but is not limited to, grading, blasting, dredging, cofferdam, gravel placement, dewatering, and installation of concrete slabs. The parking area and launch ramp may also accommodate locations for materials processing, including crushing for aggregate used for road fill and surfacing. If road materials are imported, all materials would be sourced from a local commercial supplier and would be certified weed-free.

Rock Blasting. The proposed project may require up to 276,000 cubic yards of rock blasting. Rock blasting would be performed to facilitate adequate ramp grade to the

water, and much of the remaining debris would be used as fill under the road, parking lot, and ramp.

Staging Areas. There would be staging/spoil location areas within the project area boundary. Areas would include the proposed parking lot at the top of the ramp. All staging and stockpiling of equipment and materials would be located outside of waterways. All areas not needed for continued operation of the launch ramp and access road would be reclaimed and returned to their preexisting contours after construction is complete.

2.03.2 Operation

The launch ramp would be operated year-round. On average, there are approximately 1,800 small vessel craft retrieved annually, with the majority of use occurring seasonally between June and August/September. Approximately 1,100 of these retrievals are specific to the 20 or so Canyonland rafting concessioners that are floating down the Cataract Canyon. Retrieval activities require trucks of varying size and capacities, with trailers (CHM 2022).

2.03.3 Maintenance

General maintenance activities for the access road include the following:

- Regular inspection of road surface

General maintenance for the concrete boat launch ramp includes the following:

- Regular inspection of concrete pavement surface and edges
- Regular repair of cracks to prevent further separation or faulting development
- Joint sealant application to minimize water intrusion and protect against water-related spalling, softening, corrosion, pavement joint blow-ups, and/or materials related distress
- High friction surface treatments
- Partial depth repair (e.g. spalling, popouts, surface issues)
- Full depth repair (panel replacement)

2.03.4 Post-construction Reclamation

All construction areas not needed for operation would be recontoured and reseeded using an NPS-approved native seed mix as soon as reasonably possible after completion of phased construction.

Chapter 3 – Site Description

3.01 Existing Conditions

3.01.1 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.

3.01.2 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 amsl near Hite Marina Road in the southern portion of the study area to approximately 3,550 feet amsl within Lake Powell in the northern portion of the study area.

3.01.3 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).

3.01.4 Hydrology

The project area is located within the Upper Lake Powell (Hydrologic Unit Code [HUC] 14070001) watershed within the Colorado River basin. Persistent drought conditions within the Colorado River basin over the past 2 decades have resulted in reduced flows into Lake Powell as well as a significant decrease in water surface elevation. Flood conditions are controlled by both natural and anthropogenic actions. Regional-scale snowmelt and precipitation in the Rocky Mountains are the main drivers of inflow rates and volumes. Snowpack-depth, timing of snow melt, and precipitation patterns heavily influence seasonal inflows and flooding. The magnitude of flooding can be attenuated by the system of dams upstream of the Project Area.

Named surface water features in the study area include the Colorado River, which is discussed in this document 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 U.S. Geological Survey (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 unnamed watercourses that appear to only flow in response to wet season precipitation and runoff.

Figure 2 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).

3.01.5 Soils

Soils in the study area have been mapped by the Natural Resources Conservation Service (NRCS) and are described in the Soil Survey of San Juan Area, Utah (NRCS 2024a and SCS 1962). Soil series mapped within the study area are summarized in Table 3 and shown on Figure 3. 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 3. 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

3.01.6 Land Cover and Vegetation Communities

Biotic communities in the study area mapped by the U.S. Geological Survey (USGS) Southwest Regional Gap Analysis Project 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.*)
- 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*)
- Desert trumpet (*Eriogonum inflatum*)
- Invasive species detected included Russian thistle (*Salsola tragus*) and saltlover (*Halogeton glomeratus*).

Chapter 4 – Wetlands in the Project Area

4.01 Survey Methods

4.01.1 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)
- NRCS soil maps and descriptions (NRCS 2024b)
- NHD maps (USGS 2024a)
- 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)

4.01.2 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 project 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 2025).

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).

Steep cliffs prohibited safe access and data collection at the lake shore. Additionally, persistent drought conditions have contributed to a lowered Ordinary High Water Mark (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.

4.01.3 Results

Figure 4 shows the aquatic resources delineated in the project area. Appendix A provides representative photographs of features within the project area. Table 4 summarizes results of the aquatic resource delineation.

Table 4. Summary of Aquatic Resources Investigated in the Project Area

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

Aquatic Resource ID[a]	Cowardin Code[b]	Latitude	Longitude	OHWM Width (feet)	Area (Acres)	Length (linear feet)
Lacustrine Features						
LP-1	L2US	37.89023702	-110.37564741	N/A	3.61	N/A
OW-1	L1UB	37.89050757	-110.37425695	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
< = less than
ID = identifier

4.02 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). Ephemeral waters are those that flow only briefly after precipitation events, while intermittent waters seasonally flow during wet seasons. The following chapter discusses these features (Figure 4). Appendix A provides representative photographs of these features.

4.02.1 Ephemeral Watercourses

Seventeen ephemeral watercourses, features EDR-1–17, 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 (*Atriplex confertifolia*)
- Fremont barberry (*Berberis fremontii*)
- Yellow rabbitbrush (Chrysothamnus viscidiflorus)
- Rubber rabbitbrush (*Ericameria nauseosa*)
- Stansbury cliffrose (*Purshia stansburiana*)
- Singleleaf 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 considered 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 (Photos 5 and 10 in Appendix A).

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). These watercourses are not shown on USGS topographic maps as blue line features and are not documented by the NWI and NHD datasets as drainages (Figure 2).

4.02.2 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 datasets as an intermittent drainage (Figure 2).

4.03 Lacustrine Features

Lacustrine features delineated within the study area include Lake Powell (3.61 acres) and open water (3.08 acres). These features are additionally discussed in the following paragraphs and are depicted on Figure 4.

4.03.1 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 to 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 used 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 light detection and ranging (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.

4.03.2 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 more than 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.

4.04 Wetland Functions and Values Assessment

The functional wetland assessment was conducted with reference to the *Wetlands Functions and Values: A Descriptive Approach* as described in the September 1999 Supplement to *The Highway Methodology Workbook* (Supplement) by USACE (1999). This method uses a descriptive approach to characterize functions and values of wetlands and is typically used for National Environmental Policy Act (NEPA) projects. This method is based on qualitative descriptions of the wetlands primarily based upon best professional judgment. The method is designed to provide a flexible approach that incorporates wetland science along with human judgment regarding more subjective values and benefits.

Wetland functions are ecosystem properties that are present without regard to any subjective human values as a result of the biologic, geologic, hydrologic, biogeochemical and/or physical processes that occur within a wetland (USACE 1999). The existing wetlands were evaluated based on wetland functions and values described in NPS Procedural Manual #77-1: Wetland Protection (NPS 2025) and the Supplement (USACE 1999). Functions attributed to wetlands include the following:

- Groundwater Recharge/Discharge
- Floodflow Alteration
- Fish and Shellfish Habitat

- Sediment/Toxicant/Pathogen Retention
- Nutrient Removal/Retention/Transformation
- Production (Nutrient) Export
- Sediment/Shoreline Stabilization
- Wildlife Habitat

Wetland values are the perceived benefits to society that can be derived from the ecosystem functions and/or other characteristics of a wetland (USACE 1999). These values may depend on considerations such as location of the wetland, accessibility, human disturbance or pressures, economics, surrounding land uses, and cultural or historic information. Values attributed to wetlands include the following:

- Recreation
- Education/Scientific Value
- Uniqueness/Heritage
- Visual Quality/Aesthetics
- Threatened or Endangered Species Habitat

The wetland features are organized in this function and value assessment and grouped based on their close similarities and Cowardin codes. Table 5 summarizes the wetland functional assessment.

Table 5. Summary of the Wetland Functional Assessment

FUNCTIONAL VALUE PARAMETER	WETLAND			
	EDR-1 to EDR-17	IDR-1	LP-1	OW-1
Groundwater Recharge/Discharge		X	X	X
Floodflow Alteration	X	X	X	X
Fish and Shellfish Habitat			X	X
Sediment/Toxicant/Pathogen Retention		X	X	X
Nutrient Removal/Retention/Transformation		X	X	X
Production Export			X	X
Sediment/Shoreline Stabilization		X		
Wildlife Habitat		X	X	X
Recreation			X	X
Educational/Scientific Value				
Uniqueness/Heritage				
Visual Quality/Aesthetics			X	X
Endangered Species Habitat				

4.04.1 Riverine Ephemeral Watercourses

The 17 riverine ephemeral features classified in the Cowardin system as R6 (riverine, ephemeral) (EDR-1 through EDR-17) range between 2 to 60 feet wide. The functions and values of the riverine ephemeral features within the study area as noted in Table 5 are **low quality** for the following reasons:

- The features convey seasonal flows and do not contribute to groundwater recharge or discharge within the study area.
- The features receive and convey overland sheet flow from runoff from surrounding uplands, which provides limited floodflow alteration.
- The features do not provide suitable habitat to shellfish or fish due to their ephemeral flow regime.
- The features provide minimal sediment, toxicant, pathogen, nutrient retention and removal or export due to their ephemeral flow regime.
- The features do not offer any production export due to their lack of vegetation, fish or shellfish, or other commercially used products.
- The features primarily flow during stormwater runoff events and are subject to high amounts of erosion, scour, and channelization.
- There is no wildlife habitat unique from the surrounding terrain and no endangered species habitat associated with the features.
- The features are not used for recreation and sustain minimal education/scientific and uniqueness/heritage value in the area.
- Due to the prevalence of similar ephemeral riverine features in the area, these features contribute minimally to the visual quality/aesthetics of the surrounding landscape.

4.04.2 Riverine Intermittent Watercourse

IDR-1, an intermittent watercourse, is classified in the Cowardin system as R4SB (riverine, intermittent, streambed) and is 5 to 20 feet wide. The functions and values of IDR-1 within the study area as noted in Table 5 are **low to moderate quality** for the following reasons:

- IDR-1 is an intermittent watercourse that flows into Lake Powell, which may contribute to groundwater recharge.
- IDR-1 receives and conveys overland sheet flow from runoff from surrounding uplands, which provides limited floodflow alteration.
- IDR-1 does not provide consistent habitat to shellfish or fish due to its intermittent flow regime.

- The hydrophytic shrubs and emergent herbaceous species present along IDR-1's channel banks can trap sediments, toxicants, pathogens, and nutrients before entering Lake Powell. This vegetation can also stabilize Lake Powell's streambanks and shorelines against erosion.
- IDR-1 does not offer any production export due to its lack of fish or shellfish or other commercially used products.
- There is no wildlife habitat unique from the surrounding terrain and no endangered species habitat associated with IDR-1.
- IDR-1 is not used for recreation and sustains minimal education/scientific and uniqueness/heritage value in the area.
- IDR-1 contributes minimally to the visual quality/aesthetics of the surrounding landscape.

4.04.3 Lake Powell

Lake Powell, referred to as LP-1, is classified in the Cowardin system as a lacustrine littoral wetland (L2US) and consists of vertical cliff faces and the shoreline that has started to revegetate due to receding water elevation. The functions and values of LP-1 within the study area as noted in Table 5 are **moderate quality** for the following reasons:

- LP-1 receives flows from IDR-1 and is associated with Lake Powell, a perennial water, which contributes to groundwater recharge.
- LP-1 is sustained by input from upgradient watersheds and river systems and can retain inputs, which provides floodflow alteration.
- LP-1 provides fish and shellfish habitat; however, LP-1 within the study area is not suitable habitat for any endangered species. Fish and shellfish inhabitants promote nutrient cycling and provide potential food sources within the area, which contributes to LP-1's production export value.
- LP-1 receives sediment, nutrient, toxicants, and pathogens from upgradient systems and adjacent lands during precipitation runoff events.
- LP-1's sparse vegetation provides minimal stabilization for Lake Powell's streambanks and shorelines against erosion.
- LP-1 is used for recreation activities, such as fishing and boating; however, LP-1 provides minimal education/scientific or uniqueness/heritage value.
- The canyon walls and undeveloped land surrounding LP-1 provide for high visual quality and overall aesthetics.

4.04.4 Open Water

The open water, also referred to as deepwater habitat, associated with Lake Powell (OW-1) is classified in the Cowardin system as L1UB (lacustrine, limnetic, unconsolidated bottom). The functions and values of LP-1 within the study area as noted in Table 5 are **moderate quality** for the following reasons:

- OW-1 receives flows from IDR-1 and LP-1 and is associated with Lake Powell, a perennial water, which contributes to groundwater recharge.
- OW-1 is sustained by input from upgradient watersheds and river systems and can retain inputs, which provides floodflow alteration.
- OW-1 provides fish and shellfish habitat; however, OW-1 within the study area is not suitable habitat for any endangered species. Fish and shellfish inhabitants promote nutrient cycling and provide potential food sources within the area, which contributes to OW-1's production export value.
- OW-1 receives sediment, nutrient, toxicants, and pathogens from upgradient systems and adjacent lands during precipitation runoff events.
- OW-1 is used for recreation activities, such as fishing and boating; however, OW-1 provides minimal education/scientific or uniqueness/heritage value.
- The canyon walls and undeveloped land surrounding OW-1 provide for high visual quality and overall aesthetics.

4.05 Impacts of the Proposed Action

Although the project's design is still being developed, to facilitate timely project planning and permitting, and to meet the NPS legislative mandate to provide continued access to Lake Powell, all aquatic resources within the project area that meet the NPS definition of a wetland per the *National Park Service Procedural Manual #77-1 Wetland Protection* are being evaluated in this SOF and are included in the impact analysis, acreage totals, and mitigation plan. Actual impacts would likely be significantly less than those assumed in this SOF. Tables 6 and 7 outline the potential impacts to the wetland features identified in the project area.

Table 6. Riverine Wetland Impacts

Wetland	Cowardin Code	OHWM Width (feet)	Approx. Length (feet)[a]	Impact Area (acres)[b]
EDR-1	R6	2 to 10	0	0
EDR-2	R6	2 to 30	0	0
EDR-3	R6	2 to 45	>1	<0.01
EDR-4	R6	2 to 25	200	0.04
EDR-5	R6	2 to 25	330	0.10
EDR-6	R6	2 to 60	350	0.09
EDR-7	R6	2	700	0.13
EDR-8	R6	2 to 35	775	0.34
EDR-9	R6	2 to 4	0	0
EDR-10	R6	2 to 35	175	0.12
EDR-11	R6	3 to 22	70	<0.01
EDR-12	R6	2 to 4	400	0.05
EDR-13	R6	2 to 5	540	0.11
EDR-14	R6	2 to 30	0	0
EDR-15	R6	3 to 5	0	0
EDR-16	R6	5 to 20	1,250	0.24
EDR-17	R6	2 to 10	0	0
IDR-1	R4SB	2 to 30	0	0
			Total Acres:	**1.21**

[a] Approximate length refers to the full length of the mapped features within the disturbance limits.

[b] Area refers to total acreage within the OHWM for each water body within the disturbance limits.

> = greater than

Table 7. Lacustrine Wetland Impacts

Wetland	Cowardin Code	Area (acres)
LP-1	L2US	0.074
OW-1	L1UB	0.121
	Total Acres:	0.195

EDR-1, EDR-2, EDR-9, EDR-14, EDR-15, EDR-17, IDR-1 – No construction would occur within the OHWM of these washes. The project would avoid impacts on these aquatic resources.

EDR-3, EDR-4, EDR-5, EDR-6, EDR-7, EDR-8, EDR-10, EDR-11, EDR-12, EDR-13, and EDR-16 – Proposed impacts to these ephemeral washes would occur during construction of the proposed 18-foot-wide access road. Impacts to wetlands resulting from construction would be permanent. Potential impacts to the wetlands would result from grading, placement of fill and roadway surface aggregate, erosion control measures, and installation of culverts. Culverts would be installed under the access road at each wetland crossing to sustain flow and manage stormwater runoff. Potential impacts to wetland functions and values from the construction activities include stream channelization within the culvert features resulting in potential increases in erosion downstream due to increased flow velocities, as well as potential increases in sedimentation and turbidity following ground disturbance activities. Best management practices (BMPs) would be used to control erosion and sediment and would minimize runoff and sediment discharges from the project area.

LP-1 and OW-1 – Proposed impacts to LP-1 and OW-1 would occur during construction of the proposed 35-foot-wide boat ramp. Impacts wetlands resulting from construction would be permanent. Potential impacts to the wetlands would result from grading, blasting, dredging, installation of a cofferdam, gravel placement, dewatering, and installation of precast concrete slabs. Functions and values that have the potential to be affected within the permanent impact area include direct loss of fish and shellfish habitat from the construction activities, loss of sediment / toxicant / pathogen retention and removal, nutrient removal / retention / transformation function, and loss of production export from destruction of aquatic plants resulting from added fill to the wetland feature. The visual quality/aesthetic of the wetland would be impacted due to the development of the ramp and the increase in human use, though recreation value would benefit from increased access to the lake.

4.06 Other Alternatives Considered

The Preferred Alternative was selected based on a *Value Analysis Study* completed for the project (NPS 2023). It facilitates recreational activities with lower water velocities than other alternatives considered. The Preferred Alternative also provides better parking options, more space for commercial operators, and easier access to services without crossing the river. It minimizes visual and environmental impacts by leveraging existing infrastructure. Additionally, it offers safer highway access, easier roadway grades, and more staging area at the top of the ramp. The Preferred Alternative would also have lower maintenance costs, convenient access for concessionaires, reduced flood risk, and higher profit potential due to better infrastructure for fee collection and known traffic flows. Overall, the Preferred Alternative provides a balanced solution with significant benefits for recreational use, commercial operations, environmental protection, and public safety, while also being cost-effective and easier to implement.

In addition to the Preferred Alternative, the *Value Analysis Study* evaluated one other build alternative: the Upper North Ramp and Roadway Plan. This alternative proposed a new launch ramp on the north (right) bank of the Colorado River, upstream of the Dirty Devil confluence. It was considered promising due to its location on a straight reach of the river, potentially more stable substrate with less reservoir sediment, and shorter road access from UT Highway 95. The design included a 1,700-foot road descending approximately 160 feet, with an average slope of 11%. This alignment had a shorter access route, which would cross fewer washes and had extensive cut/fill areas. While this alternative had a lower initial and life cycle cost than the Preferred Alternative, it presented challenges such as potential sediment instability, limited proximity to existing infrastructure, and the possible need for a jetty to manage river flow at the ramp. Ultimately, it was not selected due to its lower overall value when considering long-term performance, environmental impacts, and operational advantages.

Under the No Action Alternative, no construction would occur for the proposed boat launch ramp or access road. Boaters would need to continue to use the North Wash as a primitive launch area because the existing ramp is no longer accessible, which would preclude visitor recreation at Hite.

4.07 Justification for the Use of Wetlands

The purpose of the Proposed Action is to provide reliable, sustainable, and safe access to the Colorado River near Hite, Utah. Access at the current existing ramp is no longer possible due to the presence of unconsolidated reservoir sediments. Boaters currently use the North Wash as a primitive launch area; however, this location is unsafe for boaters and rafters due to the destabilized shoreline. The lack of access to the Colorado River prevents visitor recreation and precludes NPS from its legislative direction to maintain public recreation access at GLCA for the foreseeable future. Avoiding all impacts on wetlands is not feasible due to the nature of the Proposed Action to construct a boat ramp, and there are no practical alternative locations suitable for the Proposed Action.

4.08 Impact Avoidance and Minimization

Overall, the Proposed Action would result in 0.195 acre of adverse impacts on lacustrine wetlands of moderate function value and 1.209759 acres of adverse impacts on riverine wetlands of low function value (refer to Section 3.3). Complete avoidance of wetland impacts is not feasible given the project's purpose and location requirements. Efforts would be taken throughout the duration of the project to minimize impacts wherever possible. The following avoidance and minimization actions would be implemented during construction to reduce adverse impacts:

- The proposed project would be constructed following standard erosion and sediment control BMPs. National Pollutant Discharge Elimination System (NPDES) permit requirements for general construction would apply to the project,

and GLCA would ensure that BMPs are installed and maintained in such a manner as to limit the potential for surface and subsurface impacts. General BMPs may include but are not limited to silt fencing; straw wattles; erosion control mats; maintaining established vegetation; and designated vehicle construction entrances and exits.

- Clean Water Act Sections 401 and 404 permitting would be required for the project and would dictate the environmental criteria and special conditions required to mitigate adverse impacts.
- Project disturbance would be limited to approved clearing limits, which would also be demarcated before construction using removable flagging or similar methods.
- An NPS-designated wetland monitor would be onsite during construction around wetlands, as determined necessary by GLCA staff.
- Appropriately sized culverts would be installed under the access road at wetland crossings to sustain the ephemeral fluvial processes including flow, water level fluctuations, sediment transport, and stream morphology.
- A construction barrier (e.g., turbidity curtain) would be placed in the water during work activities to isolate the project area and prevent fish and other aquatic species from entering the underwater construction area.
- Work in or around wetlands would not occur during or immediately following precipitation events until soil conditions are adequate to prevent sediment loss, substrate compaction, and unnecessary disturbance.
- No material stockpiling would occur in or immediately adjacent to wetland areas.
- Equipment and supplies would be staged and stored in already disturbed areas onsite or in designated staging areas outside of wetland features.
- Disturbed areas no longer needed for construction would be reclaimed, as appropriate, and noxious weeds would be managed as needed to reduce existing and prevent new weed infestations.
- Construction equipment transported from outside GLCA would first be pressure-washed to minimize the potential to import noxious weed seeds.
- Any fill materials imported for the project would be sourced from a local commercial supplier and would be certified weed-free.

4.08.1 Compensatory Mitigation

NPS has established a “no-net-loss of wetlands” policy, requiring the avoidance, minimization, and compensation for adverse impacts on wetlands pursuant to NPS Director’s Order 77-1: *Wetland Protection* (NPS 2025). As described above, avoidance is not a viable option, and minimization measures are identified to reduce additional

impacts. For the NPS, compensation refers primarily to restoring natural wetland functions in degraded or former natural wetland habitats on NPS lands. It does not refer to creating wetlands where they did not exist previously, except as allowed NPS Director's Order 77-1: *Wetland Protection* (NPS 2025). The focus of the wetland compensation is on no-net-loss of wetland functions, not solely wetland acreage.

LP-1, consisting of the OHWM of the lake down to a depth of 2.5 meters within the project area, and OW-1 meet the NPS definition of a wetland that fluctuates with changes in the lake water level elevation. Per Section 4.2.3 of the NPS Procedural Manual #77-1 Wetlands Protection, the wetland is an intentional feature (i.e., associated with the reservoir); therefore, project impacts to both features (0.195 acre) are excepted from the compensation requirements of Section 5.2.3 of the NPS Procedural Manual #77-1 Wetlands Protection, and no mitigation would be required for impacts to LP-1 and OW-1 (NPS 2025).

A meeting with NPS staff was conducted on March 13, 2025 and May 28, 2025, to discuss mitigation options and potential locations for mitigation sites for impacts to riverine wetlands. Based on these meetings and a site visit by GLCA staff, one compensatory mitigation site has been identified for the project. The site is located along Lake Powell, adjacent to the proposed new boat ramp on NPS-managed lands within GLCA (Figure 5). The mitigation area lies within the same watershed as the anticipated project impacts and is situated to provide direct ecological and recreational benefits to the surrounding riparian corridor.

The mitigation site encompasses riparian habitat currently dominated by tamarisk (*Tamarix ramosissima*), a non-native, invasive species. Tamarisk is known to consume excessive amounts of water through evapotranspiration, increase soil salinity, and displace native riparian vegetation such as willow and cottonwood. Its dense root systems over-stabilize riverbanks, impeding natural geomorphic processes such as erosion and deposition, which are essential for maintaining dynamic riparian ecosystems and associated biodiversity. Tamarisk also reduces recreational access and degrades the visual quality of riparian areas.

As part of the mitigation effort, GLCA would remove approximately 1 acre of tamarisk and replant the area with native willow species on either side of the new boat ramp. This restoration would enhance riparian habitat quality, support native wildlife, improve hydrologic function, and increase public access and aesthetic value along the river corridor.

Compensatory mitigation and wetland restoration would consist of mechanical tamarisk removal with chemical treatment, followed by planting of native willow species at the mitigation site to mitigate project impacts. The mitigation site is accessible by boat on Lake Powell. Mechanical removal of tamarisk would be accomplished using chainsaws and hand tools, and tamarisk debris would be distributed within the mitigation site. All cut stumps will be treated with an approved herbicide to kill the plants. To facilitate

native willow planting, cuttings will be collected onsite and planted during dormant season.

The removal of tamarisk and planting of native willow species would reduce unnecessary water loss to non-native species and reduce soil salinity along the riverbank. The mitigation activities would promote native species establishment, provide beneficial and sustainable habitat for birds and wildlife species, and support the natural geomorphic transition and dynamic river processes crucial to the natural riparian system. Tamarisk removal would ultimately improve recreation opportunities and tourism by improving access and improve visual quality and aesthetics.

GLCA would be responsible for monitoring the wetland mitigation sites annually, and photo documentation would be collected to observe changes over time. Annual monitoring would continue until 70% native vegetation cover is attained relative to adjacent, reference riverine wetland locations. Success is anticipated to be attained in at least three full growing seasons. Noxious weed cover would be limited to less than 20% cover relative to adjacent reference locations. Annual monitoring and photos would be utilized to document restoration efforts and to identify additional activities that could potentially be required, including the need for supplemental planting or invasive species removal, as needed. Due to the remote nature and limited accessibility of the mitigation wetlands on NPS-managed lands, no additional protective measures or institutional controls would be required to sustain the mitigation efforts.

Chapter 5 – Floodplains

5.01 Floodplains

Following PM 77-2, three action classes were considered when identifying the regulatory floodplain:

1. Class I Actions (i.e., non-critical actions) include location or construction of administrative, residential, warehouse, and maintenance buildings; non-excepted parking lots; or other man-made features, which by their nature entice or require individuals to occupy the site, are prone to flood damage, or result in impacts to natural floodplain values.

2. Class II Actions (i.e., critical actions) include any activity for which even a slight chance of flooding is too great, such as construction of schools, medical facilities, emergency services, hazardous material storage, and records/collections storage.

3. Class III Actions include any action that involves human occupation or substantial human exposure in high hazard areas, such as drainages subject to flash flooding.

This project meets the definition of a Class 1 Action.

Proposed actions that involve federal capital investment must comply with FFRMS for new construction, substantial improvement, or repairing substantial damage. Per departmental guidance, agencies may select one of three approaches to implement flood resiliency measures:

- **Climate-Informed Science Approach (CISA) –** The elevation and flood hazard area that result from using the best-available, actionable hydrologic and hydraulic data and methods that integrate current and future changes in flooding, including climate change and other physical processes (e.g. land-use change).
- **Freeboard Value Approach (FVA) –** The elevation and flood hazard area that result from adding an additional 2 feet to the base flood elevation (BFE) for non-critical actions and by adding an additional 3 feet to the BFE for critical actions.
- **0.2% Annual-Chance Flood Approach (0.2PFA) –** The area subject to flooding by the 0.2% (500-year) annual-chance flood.

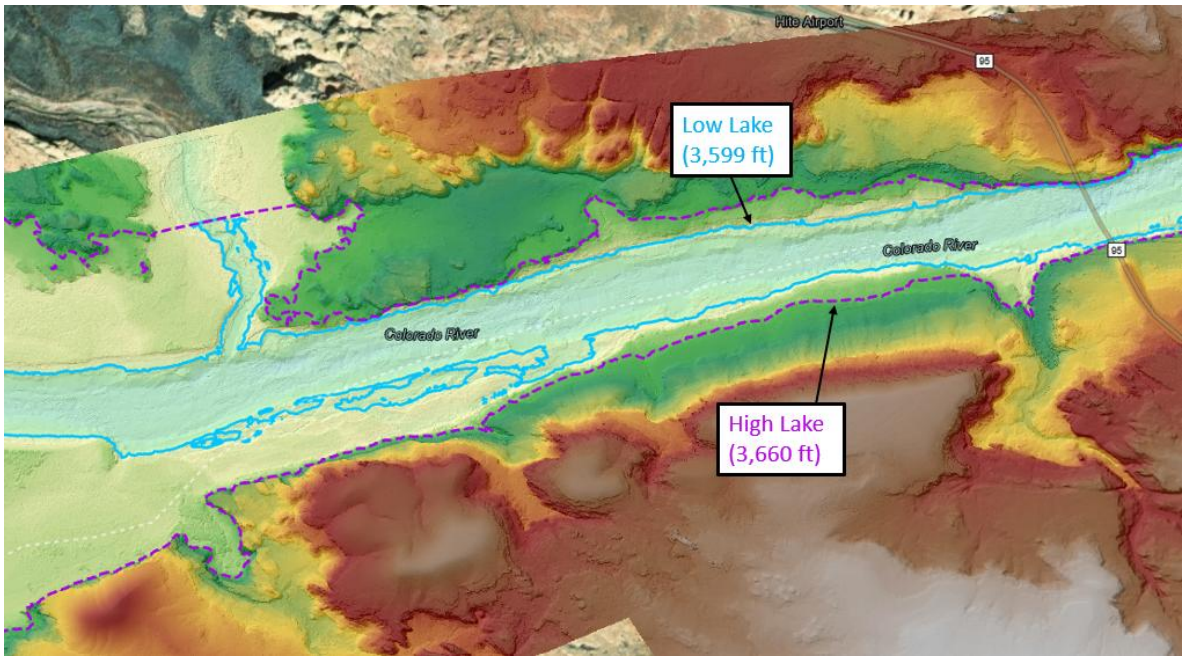
A FVA establishing FFRMS flood elevations is employed for this proposed action. Therefore, the regulatory floodplain for the proposed action is the 1% annual chance (100-year) flood elevation plus 2 feet.

The floodplain at this location is largely controlled by the elevation of Lake Powell, as opposed to riverine flooding. Many years ago when the lake extended to the project area, the floodplain could have extended into flatter overbanks. Now that the lake has lowered and the river continues to erode toward the river's pre-dam elevation, the floodplain is more contained within the riverbank limits, as it was historically.

The site has not been mapped by FEMA. The end of the proposed ramp would extend below the edge of water at the Colorado River and would be periodically flooded.

A single characterization of floodplain elevations does not accurately reflect the reality of future Lake Powell management, including uncertainty in future climate, water use, and policy. Figure 5-1 shows the inundation extents for the 100-year flood plus 2 feet for the existing condition scenarios for low- and high-lake levels in Lake Powell. Section 6.1.2 provides descriptions of low and high lake levels. Hydrology and hydraulics information used to develop model estimates are described in Section 5.3.1.

Figure 5-1. Existing Condition Floodplain (100-year flood plus 2 feet) Extents for Both Low- and High-lake Levels in Lake Powell



Figures 5-2 and 5-3 show the water surface elevation elevations for the base flood elevation plus 2 feet for the low- and high-lake level scenarios. In the low-lake level scenario the flood waters are contained within the canyon at the ramp location with

some overbank flooding downstream of the ramp. In the high-lake level scenario, the site is within the lake footprint, and the water surface is nearly flat. When Lake Powell is at full pool (last occurring in 1999), water levels would be 40 feet higher than in low-lake level conditions.

Figure 5-2. Existing Condition Floodplain (100-year flood plus 2 feet) Elevations for Low-lake Level Scenario

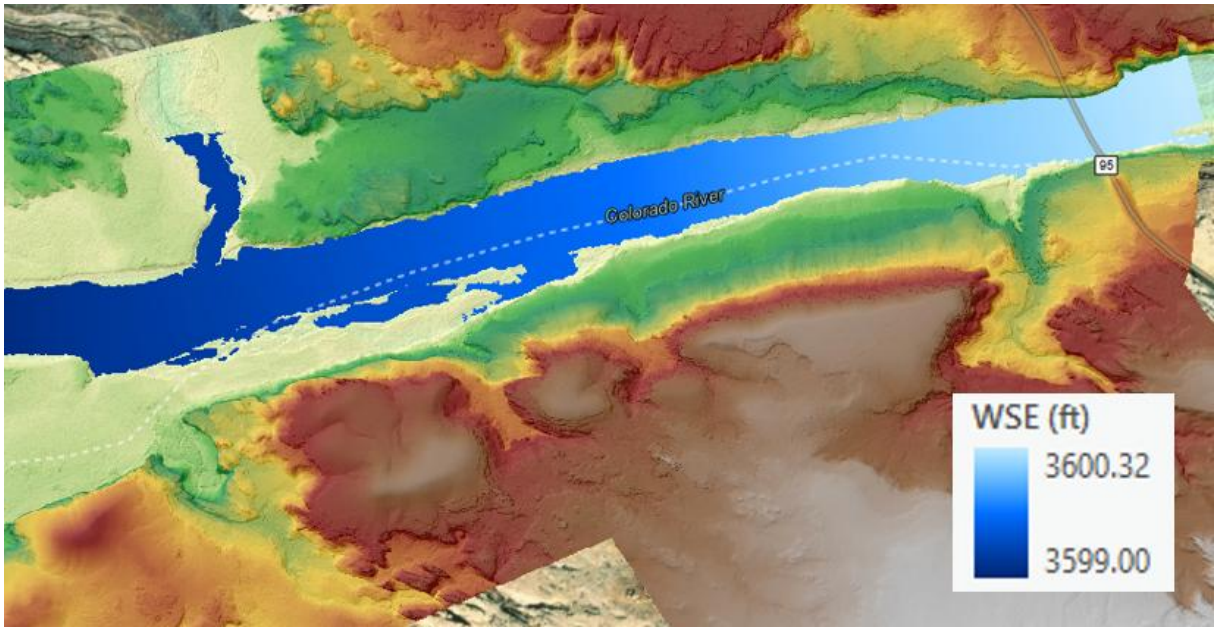
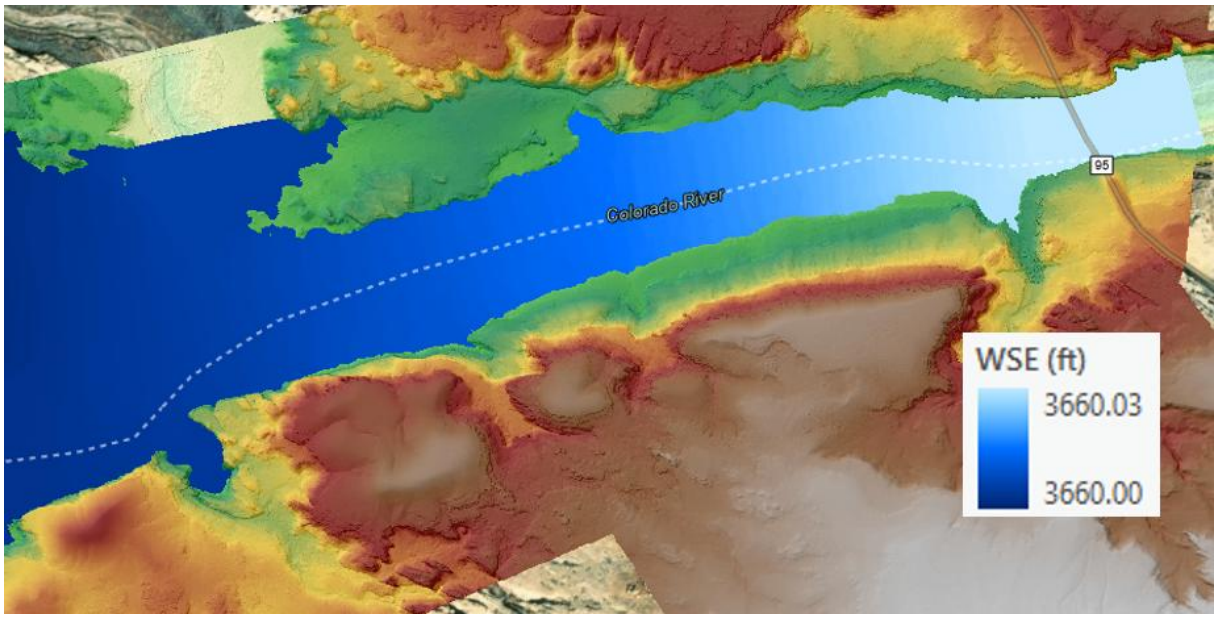


Figure 5-3. Existing Condition Floodplain (100-year flood plus 2 feet) Elevations for High-lake Level Scenario



5.02 Justification for Use of the Floodplain

No practicable alternatives exist for locating the project outside of the 100-year plus 2-foot floodplain because the purpose of the project is to construct a boat ramp to provide access to the Colorado River. A project site within the floodplain is fundamental to the utility of the final structure.

5.02.1 Investigation of Alternative Sites

NPS identified five potential sites in a Value Analysis Study conducted July 26, 2023 (locations shown in Figure 5-4) for evaluation based on a review of previous studies, stakeholder input, aerial imagery, and available topographic and bathymetric data. NPS considered each site against the following criteria: geomorphic stability, accessibility, constructability, maintenance, and availability. All sites were located in the Colorado River floodplain.

According to the Value Analysis Study, the Upper North Ramp and the Upper South Ramp were contenders for selection (circled in purple in Figure 5-4). The Upper South Ramp emerged as the most viable long-term solution to advance to concept design.

5.03 Detailed Flood Hazard and Flood Risk Analysis

Flood risk in existing conditions consists of high water in the Colorado River and in tributaries to the Colorado River that cross the site. Potential flood risk in the developed conditions would be for users of the launch ramp during high floods. Flood risks are further described in Section 5.03.02.

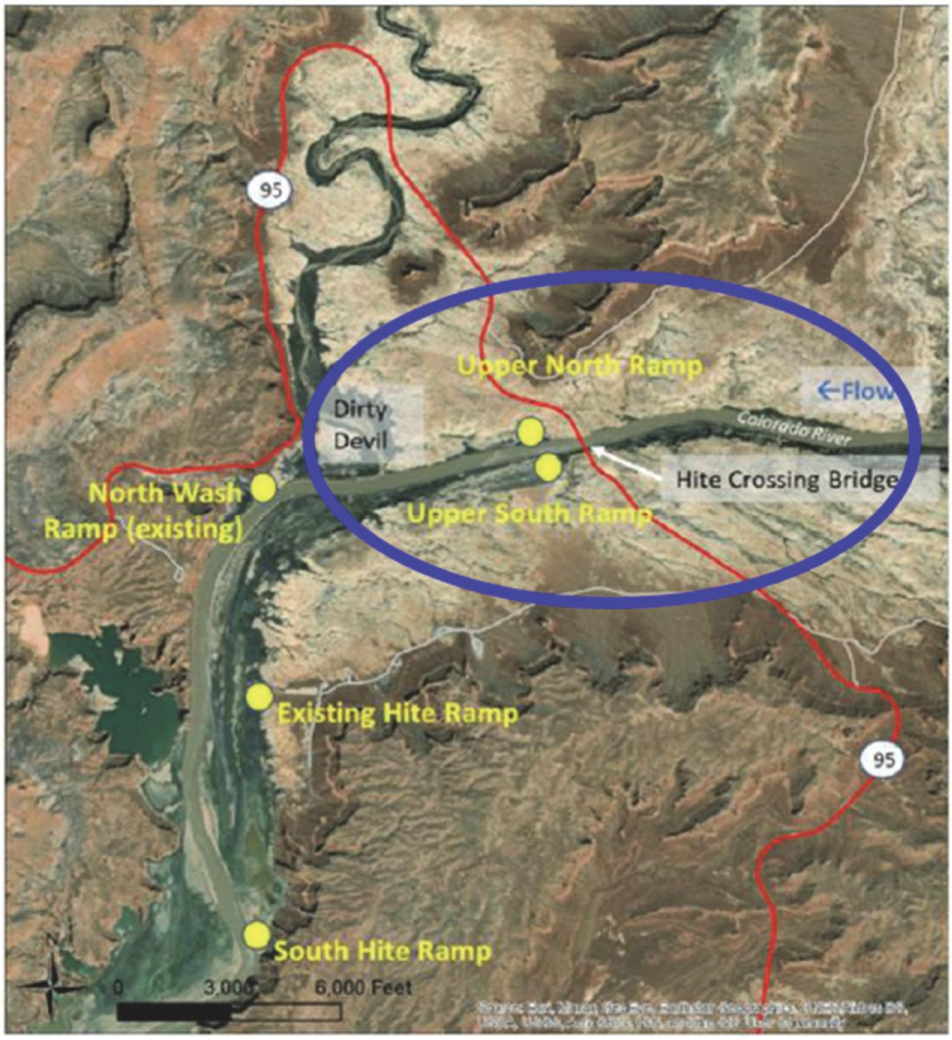


Figure 5-4. Candidate Locations for Hite Low-Water Launch Ramp

5.03.1 Description of Site-Specific Flood Hazard

There is minimum risk of flooding from the Colorado River at the top of the ramp, as the river has degraded over the years and the potential flooding elevation has correspondingly lowered.

Hydrology (Precipitation Estimates) – On average, the Hite area receives about 10 inches of rain per year (NOAA 2025). Forecasting future conditions of the Colorado River and Lake Powell in the project area is intractable due to watershed-scale uncertainties in future hydrologic (precipitation, drought) conditions, water withdrawals, and water allocation policy decisions, as well as reach-scale uncertainties in evolving bathymetry of the riverbanks and bed and the resulting water surface elevations. The period of record for nearby U.S. Geological Survey (USGS) gages is relatively limited (less than 10 years) and influenced by the dynamic river conditions. USGS measurements of discharge, river bathymetry, and water surface elevations are useful

for documenting recent trends, but extrapolation of those trends is subject to great uncertainty. The nearest long-term gage is located at Lees Ferry downstream of Glen Canyon Dam. Flow frequency analysis was performed using methods consistent with Bulletin 17c on data recorded from 1969 to 2019 to estimate the magnitude of the 100-year discharge. The resulting estimated 100-year discharge is 83,000 cfs.

Hydraulics of flooding at the site (depths, velocities) – The Colorado River currently floods to an approximate elevation of 3,600 feet amsl for low-lake level conditions, during a 100-year storm event plus 2 feet, inundating the lower portion of the ramp. For high-lake level conditions, the Colorado River floods to an approximate elevation of 3,660 feet amsl.

For low-lake level conditions, the depth of water at the bottom of the ramp for a 100-year storm event is 70.14 feet. 100-year velocities along the ramp range from 0.35 foot per second (fps) to 3.18 fps. For high-lake level conditions, the depth of water at the bottom of the ramp for a 100-year storm event is 130.14 feet. 100-year velocities along the ramp range from 0.30 fps to 1.63 fps.

5.03.2 Description Of Site-Specific Flood Risk

Human Health and Safety

Figures 5-5 and 5-6 show the proposed floodplain (100-year plus 2 feet) compared with the existing floodplain (100-year plus 2 feet) for low- and high-lake levels.

Figure 5-5. Existing and Proposed Floodplain (100-year plus 2 feet) Extent for the Low-lake Level Scenario

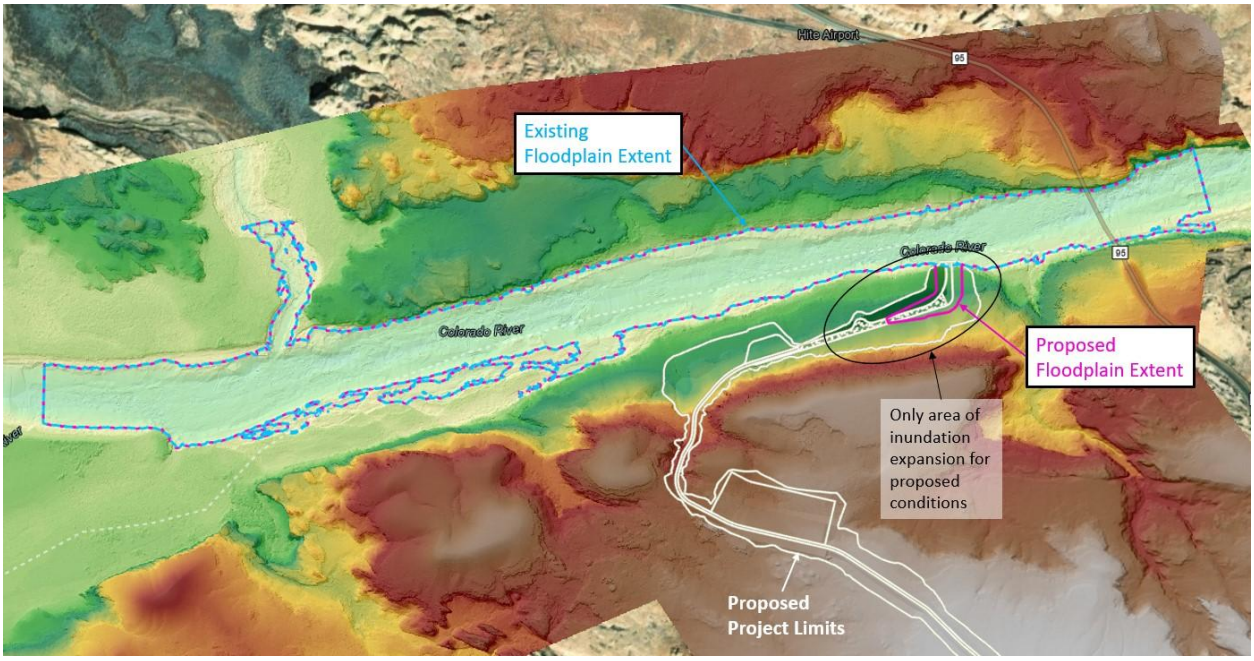
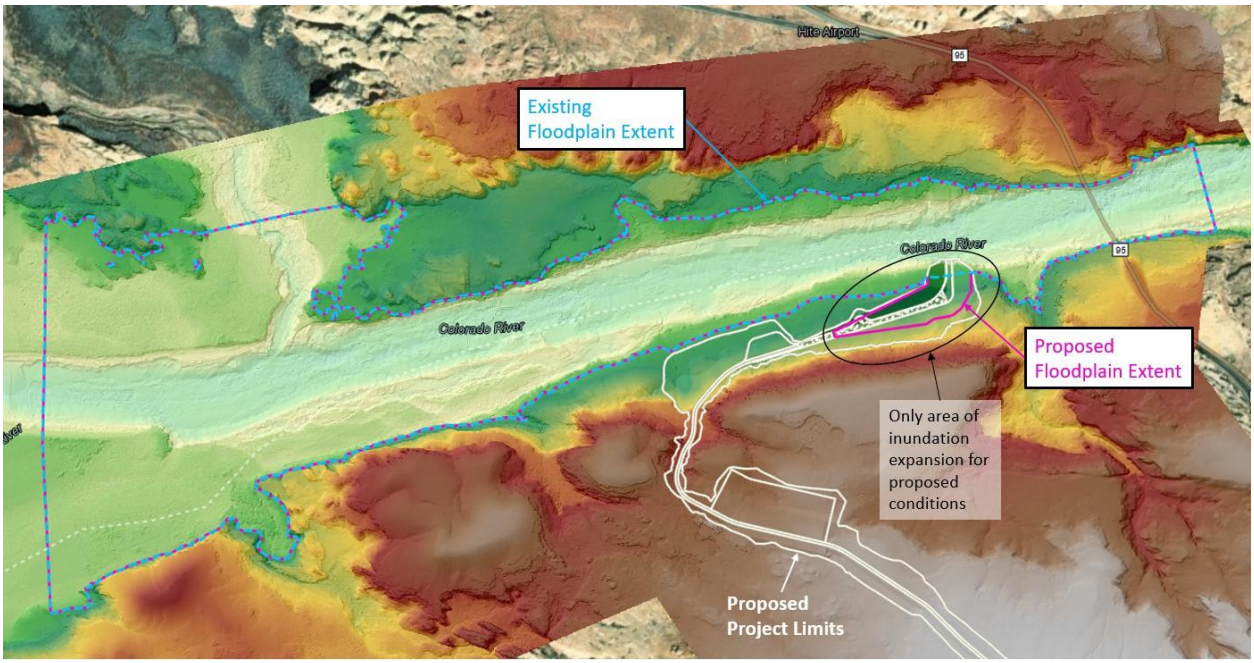


Figure 5-6. Existing and Proposed Floodplain (100-year plus 2 feet) Extent for the High-lake Level Scenario



Only the portion of the floodplain that would be affected by the proposed launch ramp would be additional inundation on the south side of the channel at the proposed boat ramp with no change in water surface elevation. Impacts would not occur upstream or downstream of the proposed improvements.

The purpose of the ramp is to load and unload boats and watercraft into and out of the river. Future risk for people accessing water using the new ramp could occur during flooding. Warning signs will warn the public when to avoid the site during flooding conditions. The public can check flood forecasts using the Colorado Basin River Forecast Center. Users should heed broadcasted weather warnings and follow instructions on signs to avoid health and safety issues at the site.

Warning Time – The amount of warning prior to flood conditions varies with the cause of flooding. Flash floods can happen within minutes due to situations like a thunderstorm with heavy precipitation or a collapsed dam upstream. Larger scale floods resulting from snowmelt, upstream water control operations, etc. typically have greater warning times ranging from hours to days.

Condition of Egress During Flooding - When flooding occurs in the ramp area, egress would be from the parking area and roadway, which are above the river's flood elevation.

Property: Risks to Infrastructure, Buildings, and Government Property

Although the ramp is designed to be inundated by the river waters, there is potential for scour and erosion if stabilizing measures are displaced. The State Highway 95 bridge over the Colorado River located approximately 800 feet upstream of the site will not be impacted by the proposed excavation operations of the ramp.

Floodplain Values

Riparian/Aquatic Habitat – Refer to Section 4 for a summary of the aquatic features and wetland functions and values within the project area.

Groundwater Recharge – The majority of the launch ramp would be constructed on bedrock; introduction of impervious surfaces would be minimal. Precipitation would travel down the ramp to the river. Groundwater recharge would not be adversely affected by the project.

Erosion and Sediment Control – Refer to geomorphic considerations discussion below.

Flood Attenuation – The proposed project would not modify the river flows or introduce any attenuation. During flood conditions, the ramp would be closed for safety.

Water Quality – Runoff that would travel down the ramp and the driving of trailers or trucks into the river could introduce small amounts of petroleum products. Similarly, leakage of fluids from parked and launching vehicles could be deposited on the ramp, which could be washed into the river during heavy rains. Water quality impacts would be incidental and negligible.

Nutrient Cycling – Refer to Section 4 for a summary of the wetland functions and values within the project area.

Geomorphic considerations (erosion, sediment deposition, channel adjustments) – The planform of the river is constrained from migrating laterally due to the vertical rock walls. The vertical profile of the channel bed is currently undergoing a dynamic response as the site has been transitioning from a lake to a free-flowing river in recent years. The ramp profile has been designed to accommodate further erosion of the channel bed, all the way to the channel's pre-dam elevation. Sediment deposition on the boat ramp is expected after high flow events. Annual maintenance may be required.

5.04 Floodplain Impact Mitigation Measures

The following floodplain impact mitigation measures would be implemented:

- To reduce the risk of exposure to flood hazards, warning signs would be placed at the ramp and in parking areas, warning visitors of potential flood risks.

- To reduce the risk of pollutants entering waterways, fuel storage and hazardous waste storage during construction would be at least 3 feet above the 100-year floodplain elevation.
- NPS may close the ramp during hazardous conditions.
- Slope stabilization measures will be provided to reduce erosion and scour at the ramp.
- The ramp is designed to withstand the 100-year plus 2 feet storm event in the Colorado River basin.
- Construction of the access ramp within the natural Colorado River floodplain will be done in a way to minimize the impact to the natural resources of the floodplain.

Chapter 6 – Conclusions

The Proposed Action is required to provide continued lake access to the Hite District and North Lake Powell in San Juan County, Utah. The Proposed Action would adversely impact 0.195 acre of lacustrine wetlands and of 1.21 acres of riverine wetlands. Adverse impacts would be mitigated through project-specific avoidance and minimization measures and the wetlands would be restored with similar functions and values of those that will be disturbed. Given the proposed mitigation strategy, the NPS finds that this Proposed Action is acceptable under EO 11990 for the protection of wetlands and is consistent with the policies and procedures of *NPS Director's Order #77-1: Wetland Protection*, including the "no-net-loss of wetlands" policy.

NPS has determined that implementing the Proposed Action would not impose unacceptable risk to human health and safety, NPS property, and floodplain values. Risks from flooding to life, property, and natural resources are very low and can be mitigated. With the proposed mitigations applied, NPS finds that the Proposed Action would have minor adverse impacts on floodplains and their associated values due to the ramp construction.

Chapter 7 – Preparers

Jacobs Government Services Company wetland scientists Greg Davis and Sabra McNeish conducted the wetland delineation and mapping for this project. Both individuals meet the qualifications recommended by the NPS Water Resources Division. Greg Davis is a certified Professional Wetland Scientist and has more than 9 years of experience in wetland delineations and has completed numerous projects in various ecological settings. Sabra McNeish also completed a 40-hour wetland delineation training program from the Wetland Training Institute and has 3 years of experience in completing wetland delineations.

Douglas P. Stewart, PE, a senior technologist in Hydrology and Hydraulics, prepared the Floodplains section of this document. He has more than 35 years of floodplain design and management experience. Ryan Mitchell, PE, is a senior River Engineer with more than 20 years of experience with expertise in multidimensional hydraulic modeling, sediment transport, and river engineering design. Ryan Mitchell performed the hydraulic modeling for the Colorado River within the project area.

Chapter 8 – References

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Figures

Figure 1.
Project Location

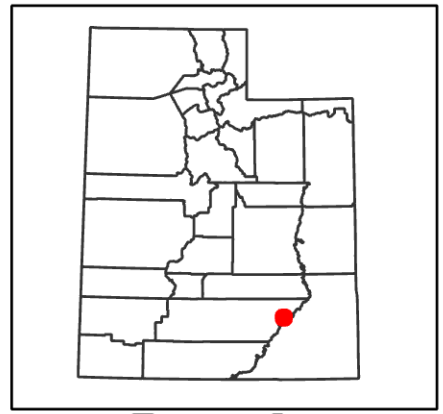
Floodplain and Wetlands Statement of Findings
Glen Canyon Recreational Area
Low Water Ramp at Hite District
San Juan County, Utah

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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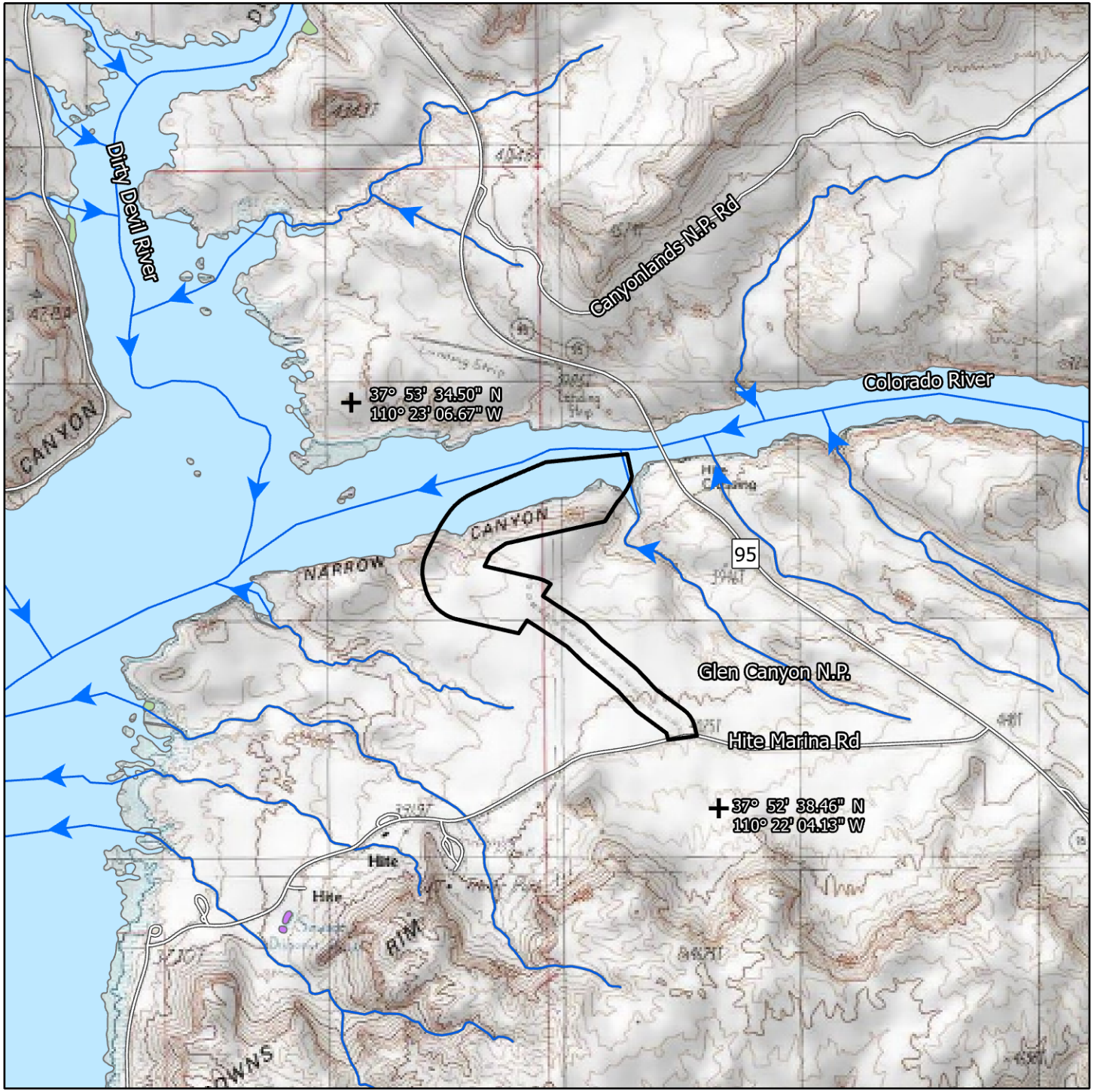

Figure 2.
National Wetland Inventory and National Hydrology Dataset

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

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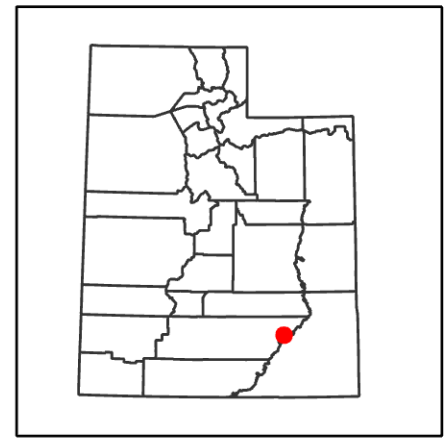
Feet

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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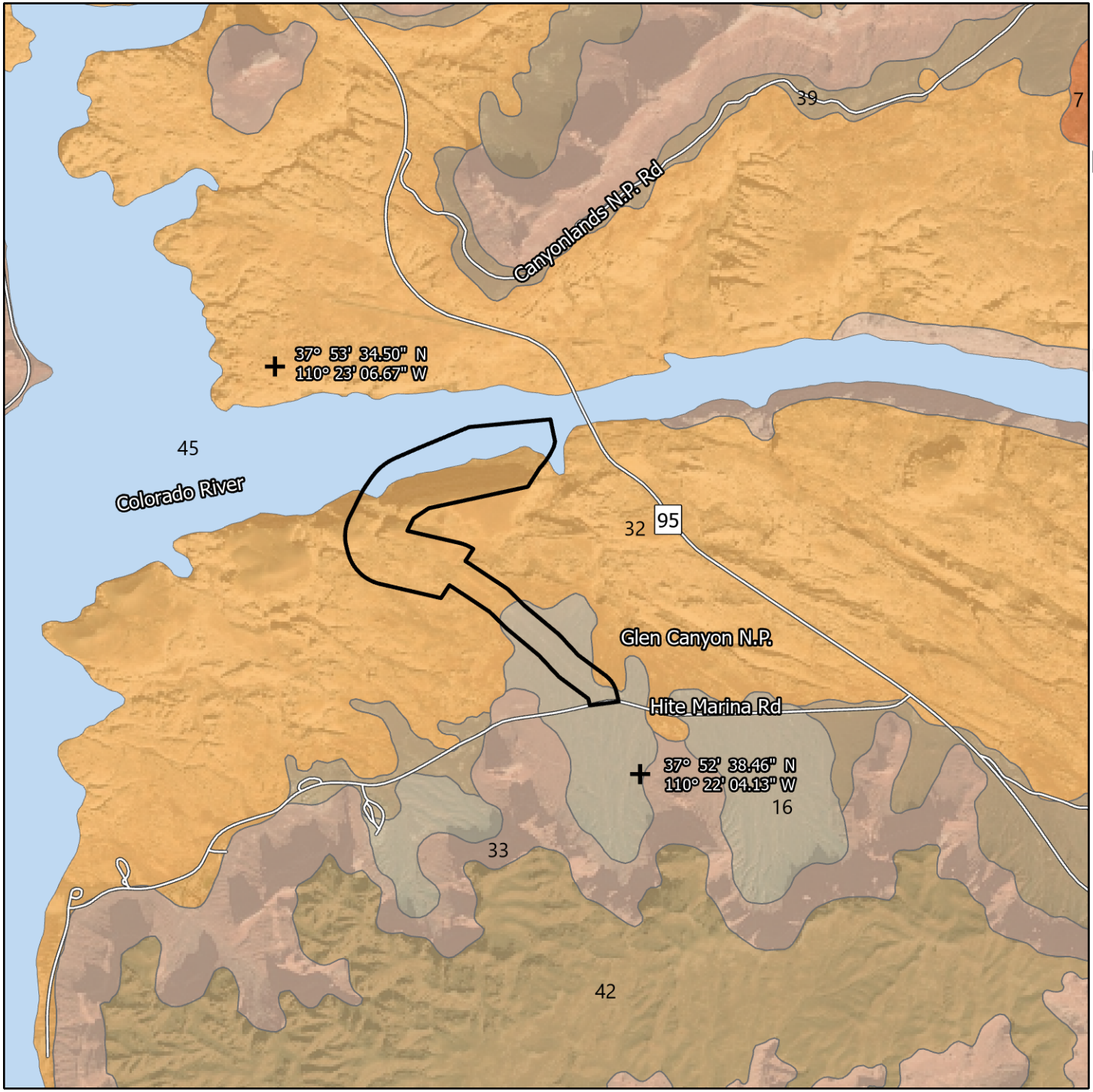

Figure 3.
NRCS Soil Survey

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

- Project Area
- 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

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Feet

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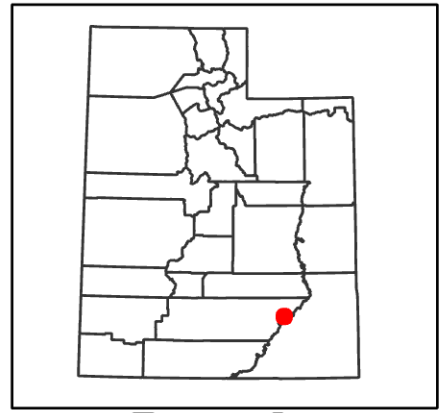
Coordinate System: State Plane Utah South FIPS 4303 (US Feet)
Datum: North American 1983
Map Prepared by: Zack Allard
Map Data: November 4, 2024
Source: Natural Resource Conservation Services



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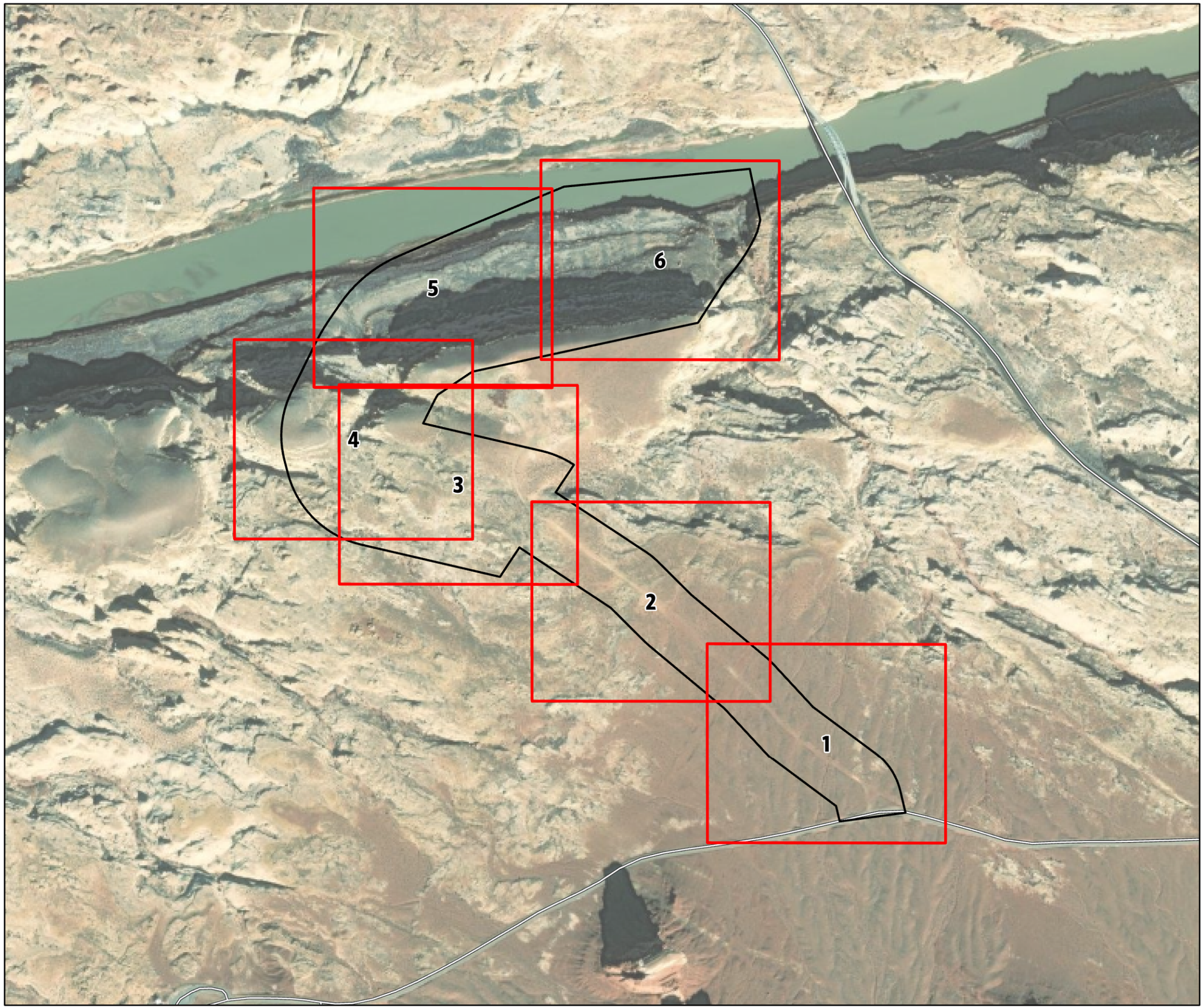

Figure 4 Overview
Aquatic Resource Delineation Map

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

Legend

- Project Area
- 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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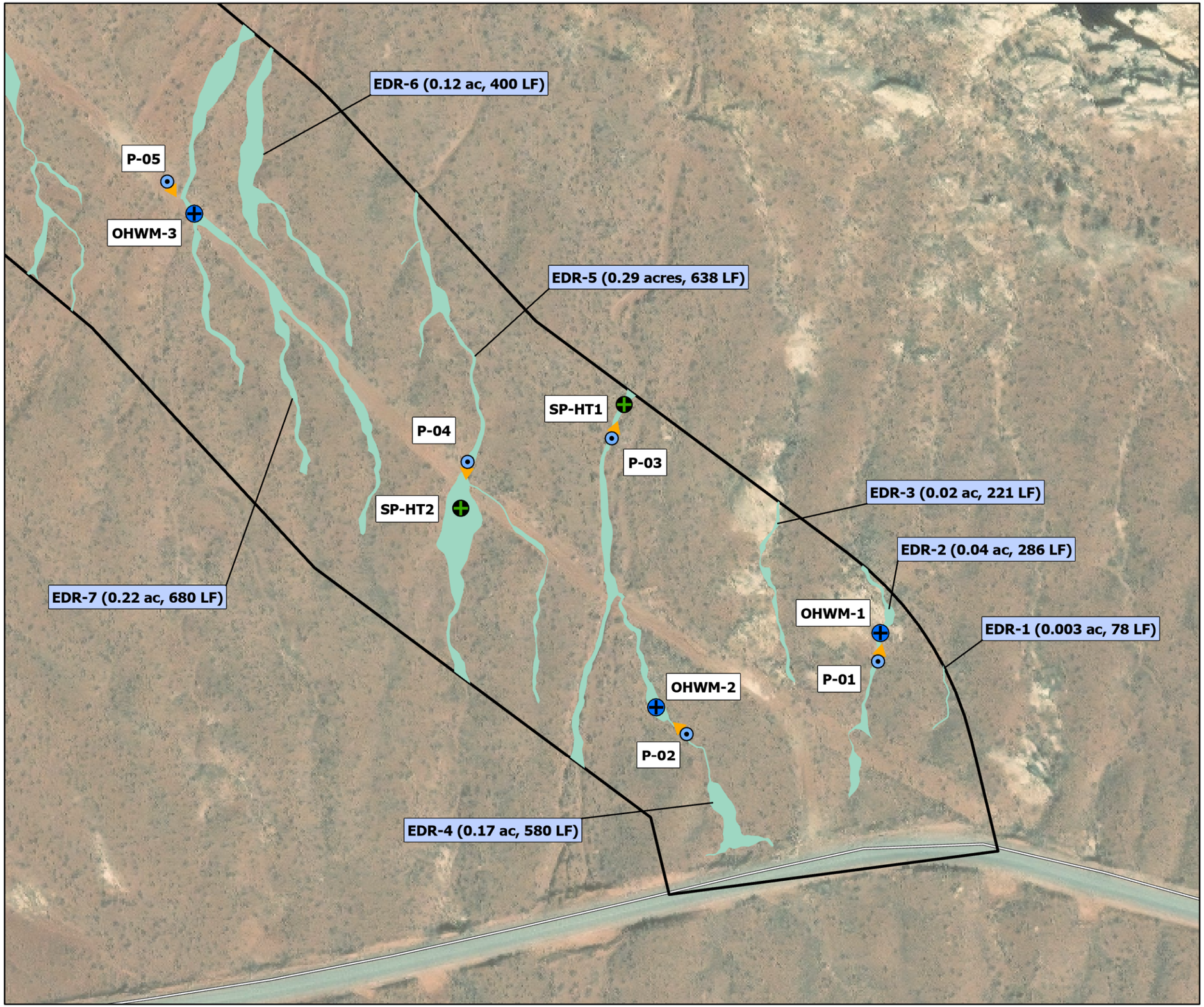
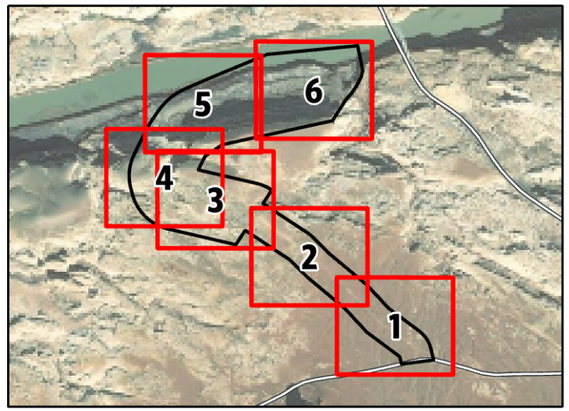
Feet

Jacobs





Legend

- Project Area
- 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

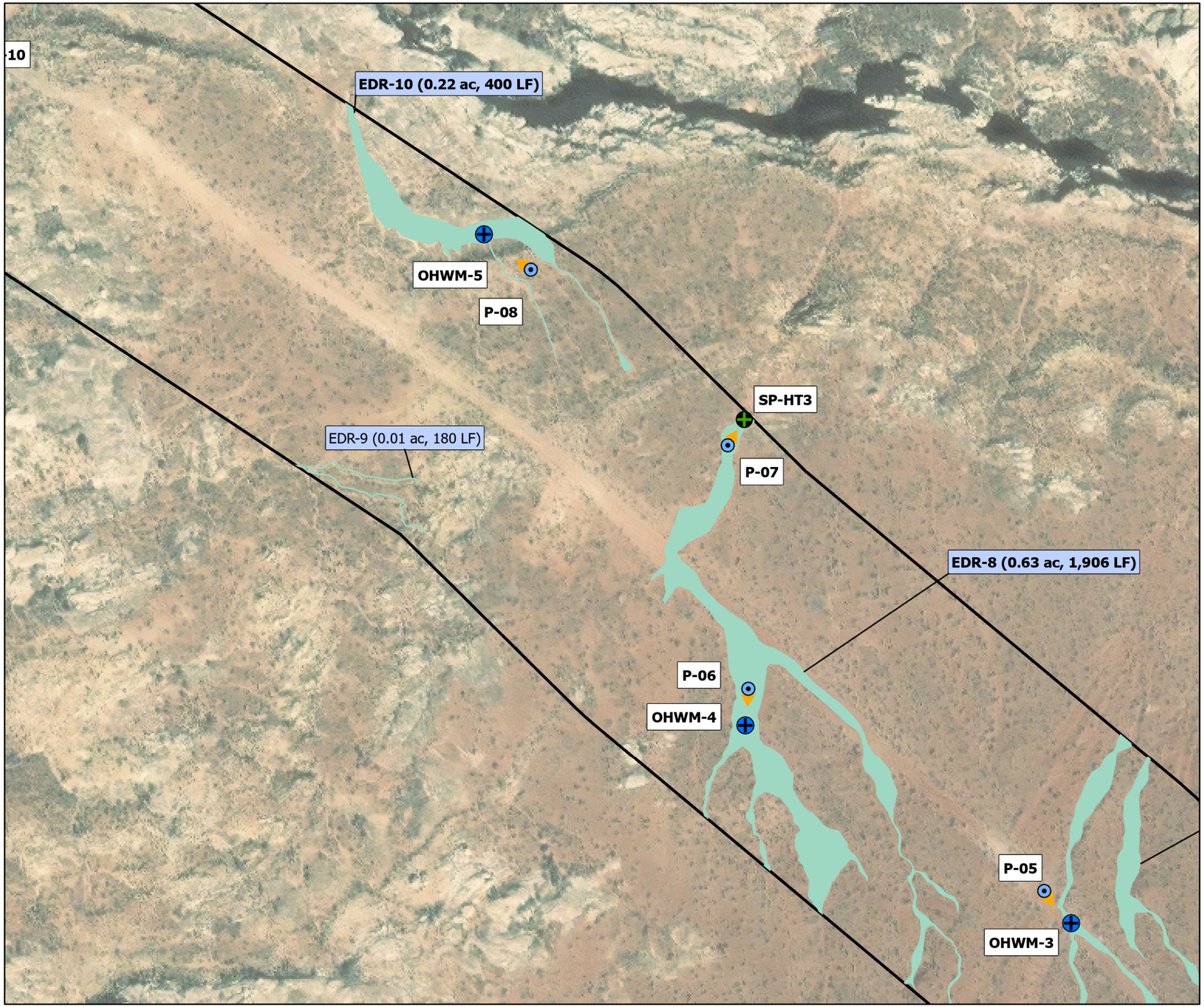
0 100 200
Feet

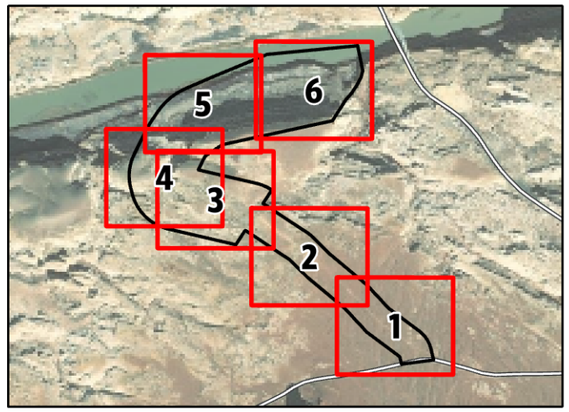
N

Figure 4
Map 1 of 6
Aquatic Resource Delineation Map

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

Jacobs





Legend

- Project Area
- OHWM Data Point
- Sampling Points
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Map Data: November 4, 2024

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OHWM = Ordinary High Water Mark
LF = Linear Feet

0 100 200
Feet

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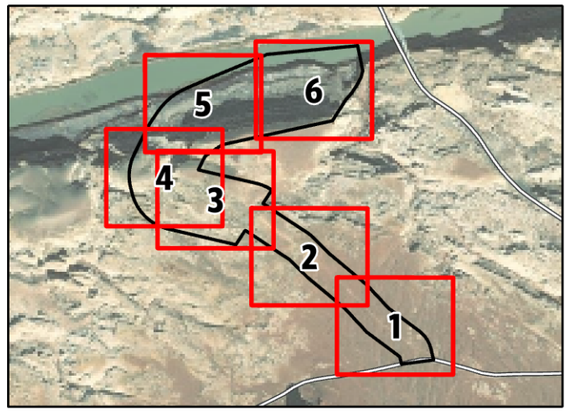
Figure 4
Map 2 of 6
Aquatic Resource Delineation Map

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

Jacobs

P-14
SP-HT5
EDR-13 (0.11 ac, 420 LF)
P-11
EDR-16 (0.32 ac, 1,236 LF)
EDR-12 (0.10 ac, 579 LF)
EDR-11 (0.01 ac, 213 LF)
OHWM-6
P-09
P-10
EDR-14 (0.06 ac, 460 LF)
P-12
EDR-15 (0.18 ac, 1,532 LF)
SP-HT4
P-13
OHWM-7



Legend

- Project Area
- OHWM Data Point
- Sampling Points
- Photo Points

Aquatic Resources
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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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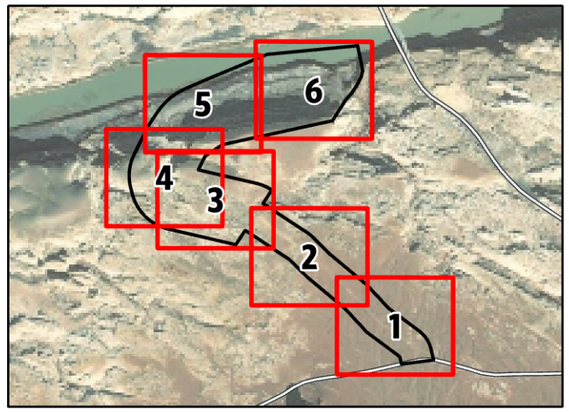
Figure 4
Map 3 of 6
Aquatic Resource Delineation Map

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

Jacobs



Legend

- Project Area
- OHWM Data Point
- Sampling Points
- Photo Points

Aquatic Resources
Riverine Waters

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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

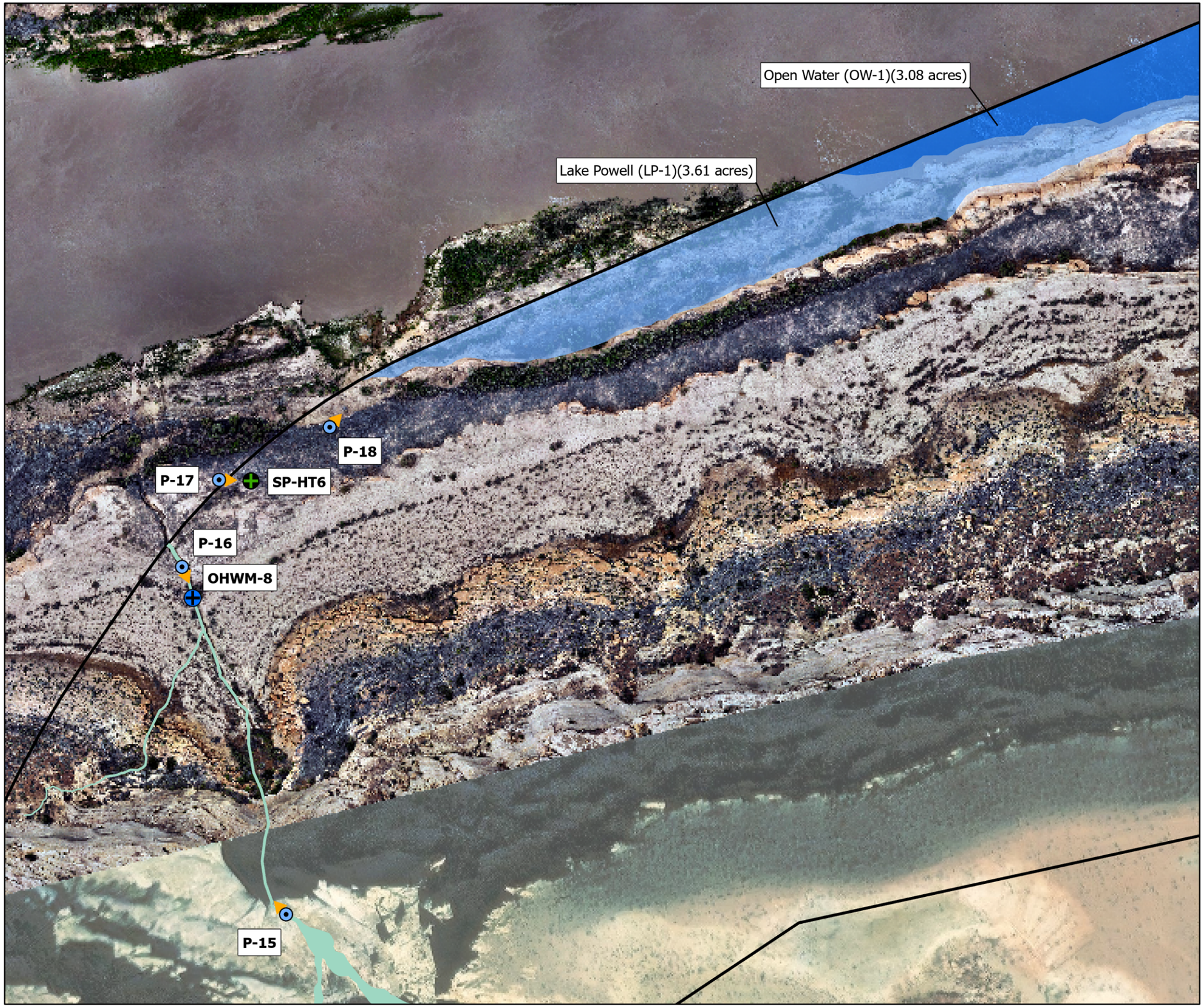
0 100 200
Feet

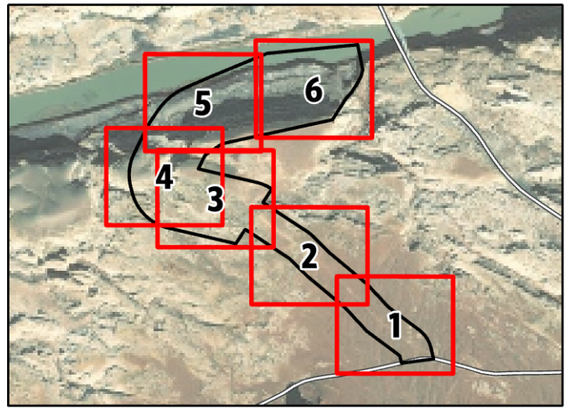
N

Figure 4
Map 4 of 6
Aquatic Resource Delineation Map

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

Jacobs





Legend

- Project Area
- OHWM Data Point
- Sampling Points
- Photo Points

Aquatic Resources
Riverine Waters

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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

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

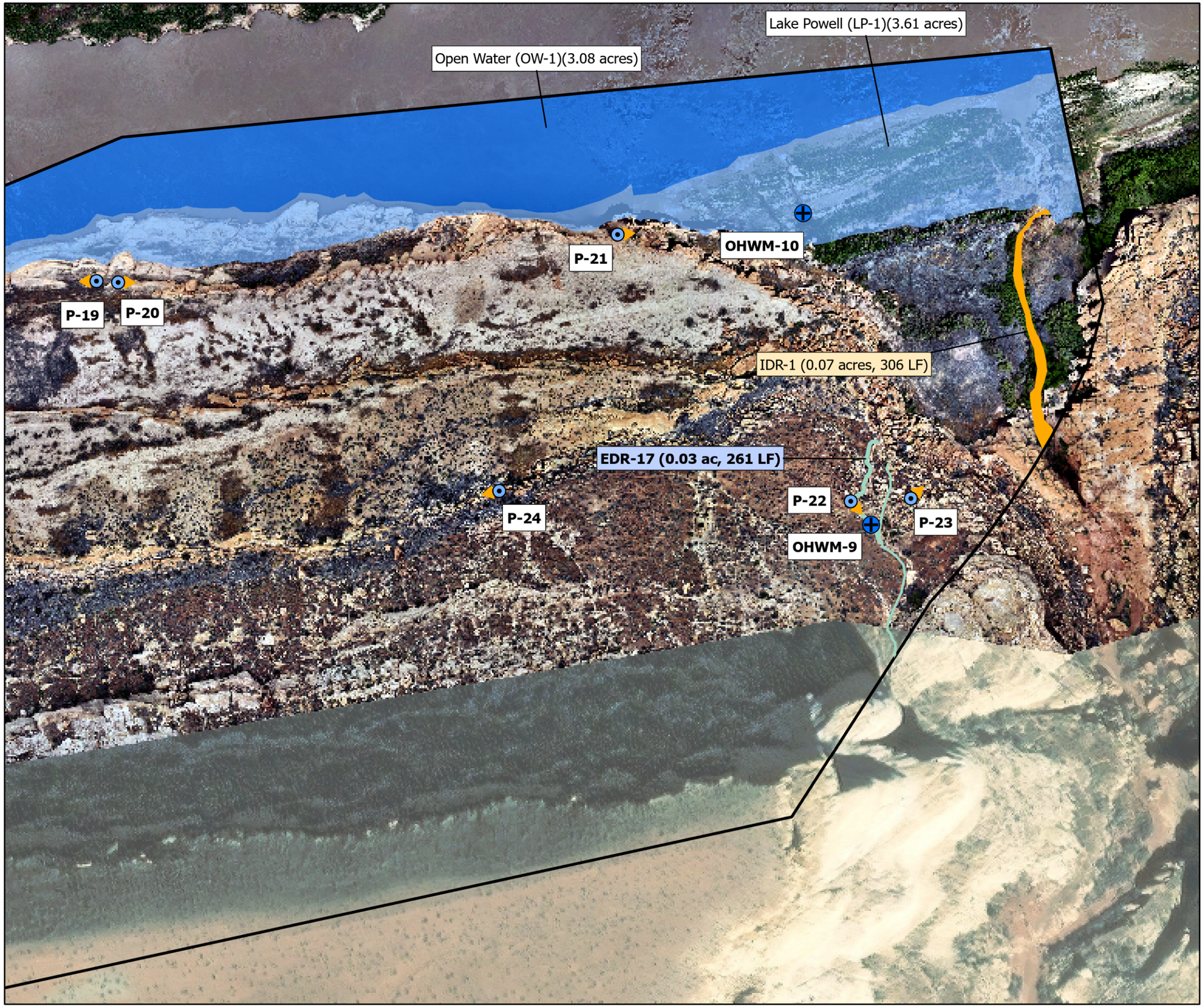
0 100 200
Feet

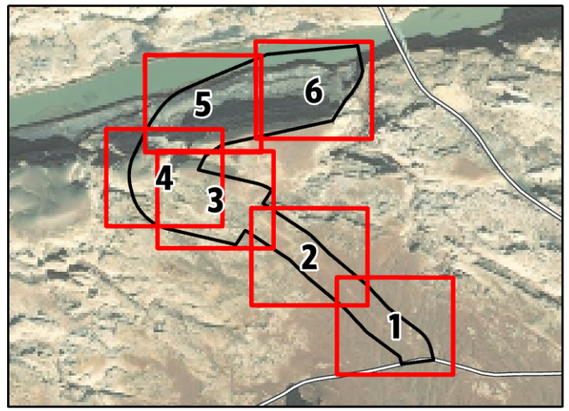
N

Figure 4
Map 5 of 6
Aquatic Resource Delineation Map

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

Jacobs





Legend

- Project Area
- 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

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- 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

N

Figure 4
Map 6 of 6
Aquatic Resource Delineation Map

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

Jacobs

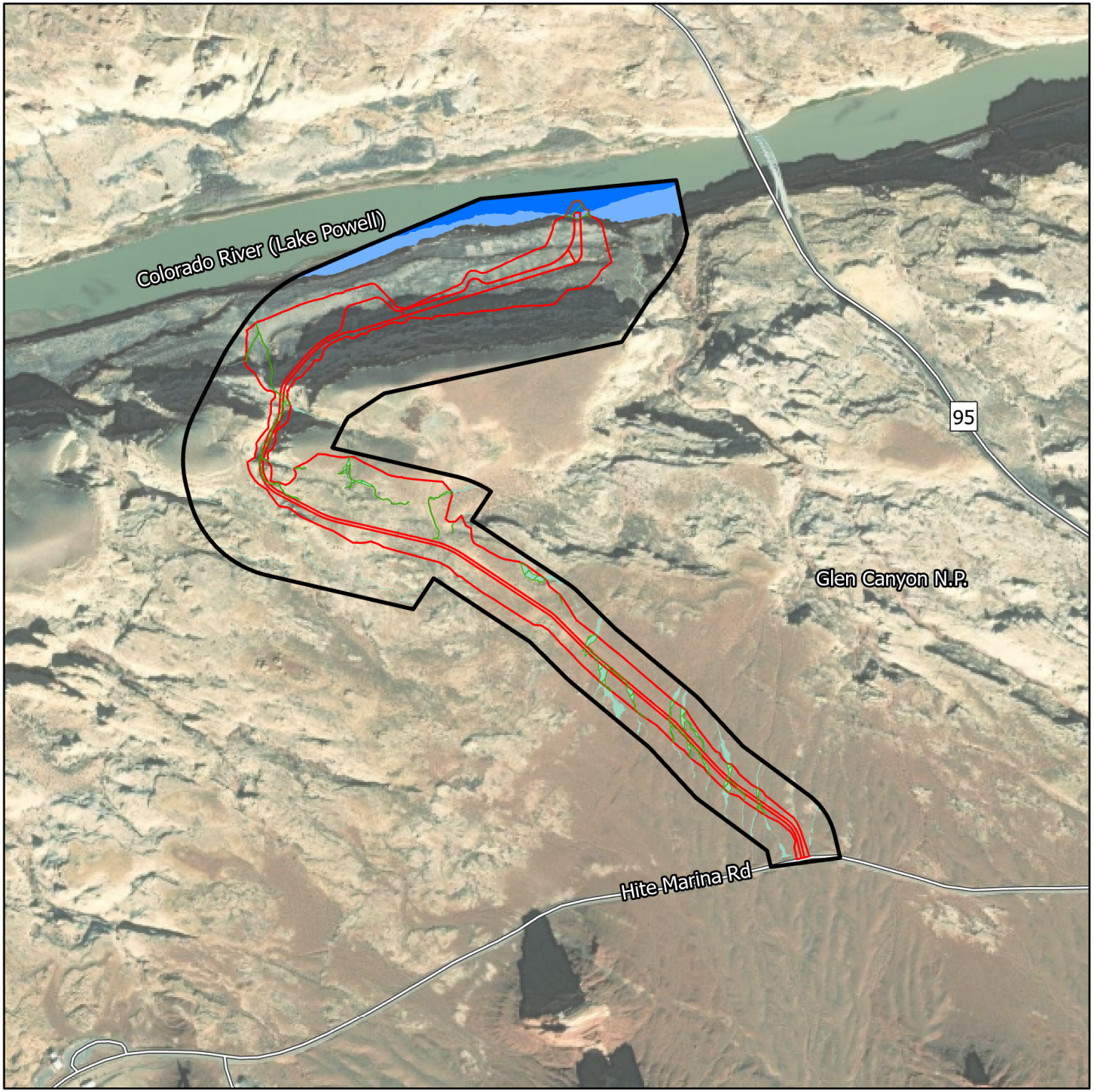


Figure 5.
Impacts

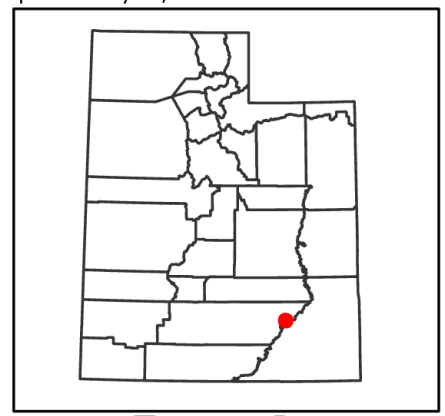
Floodplain and Wetlands Statement of Findings
Glen Canyon Recreation Area
Low Water Ramp at Hite District
San Juan County, Utah

- Project Limits
- Design Lines
- Ephemeral Watercourses
- Lake Powell (LP-1)
- Open Water (OW-1)
- Permanent Impacts (1.21 acres)

0 500 1,000 Feet

N

Coordinate System: State Plane Arizona North FIPS 4303 (US Feet)
Datum: North American 1983
Map Prepared by: Zack Allard
Map Data: July 31, 2025



Jacobs

Appendix A – Photo Log

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 northwest. 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 northeast. 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 southeast. 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 northwest 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 facing east (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 southeast. 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.	

Appendix B – Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Antelope Point Low-water Boat Ramp Project City/County: Page / Coconino County Sampling Date: 10/1/2024

Applicant/Owner: National Park Service (NPS) State: AZ Sampling Point: SP-AP1

Investigator(s): G. Davis, S. McNeish Section, Township, Range: S8, T41N, R9E

Landform (hillslope, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 1-5

Subregion (LRR): LRR D Lat: 36.965537 Long: -11.442727 Datum: WGS 84

Soil Map Unit Name: 45 - Water NWI classification: None

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

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ✔ No _____

Are Vegetation _____, Soil _____, or Hydrology ✔ 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 ✔	**Is the Sampled Area within a Wetland?** Yes _____ No ✔
Hydric Soil Present?	Yes _____	No ✔	
Wetland Hydrology Present?	Yes _____	No ✔	

Remarks:

This sampling location was inundated with water in 2009, however aerial imagery in subsequent years have shown this area being dry. The sampling location lacked hydrophytic vegetation, hydric soils, and wetland hydrology.

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. Tamarix ramosissima	70	Y	NI
2.			
3.			
4.			
5.			
	70 = Total Cover		
Herb Stratum (Plot size: 5' x 5')			
1. Pluchea sericea	1	N	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	1 = 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 (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = _____

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 ✔

Remarks:

Sampling location did not meet the hydrophytic vegetation parameter, however invasive tamarisk was observed at this location which may have been established as a result of fluctuating water elevation in the past.

SOIL

Sampling Point: SP-AP1

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 %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-10	2.5YR 5/6	100	-	-	-	-	LS	
10-14	7.5YR 6/4	100	-	-	-	-	LS	

[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)
- ___ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ___ 1 cm Muck (A9) (**LRR C**)
- ___ 2 cm Muck (A10) (**LRR B**)
- ___ Reduced Vertic (F18)
- ___ Red Parent Material (TF2)
- ___ Other (Explain in Remarks)

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

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ✔

Remarks:

No hydric soils were observed at this sampling location.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one 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 along 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 (2 or more 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 ✔ Depth (inches): _____

Water Table Present? Yes _____ No ✔ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes _____ No ✔ Depth (inches): _____

Wetland Hydrology Present? Yes _____ No ✔

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

Remarks:

No wetland hydrology indicators were observed at this sampling location. The project site, and surrounding area, has been subject to persistent drought conditions according to the Palmer Drought Severity Index (PDSI).

Appendix C – Wetland Function and Value Data Sheets

CONSIDERATIONS/QUALIFIERS OF FUNCTIONS AND VALUES USED IN ANALYSIS:

GROUNDWATER RECHARGE/DISCHARGE— This function considers the potential for a wetland to serve as a groundwater recharge and/or discharge area. It refers to the fundamental interaction between wetlands and aquifers, regardless of the size or importance of either.

CONSIDERATIONS/QUALIFIERS
1. Public or private wells occur downstream of the wetland.
2. Potential exists for public or private wells downstream of the wetland.
3. Wetland is underlain by stratified drift.
4. Gravel or sandy soils present in or adjacent to the wetland.
5. Fragipan does not occur in the wetland.
6. Fragipan, impervious soils, or bedrock does occur in the wetland.
7. Wetland is associated with a perennial or intermittent watercourse.
8. Signs of groundwater recharge are present or piezometer data demonstrates recharge.
9. Wetland is associated with a watercourse but lacks a defined outlet or contains a constricted outlet (such as a berm or dam).
10. Wetland contains only an outlet, no inlet.
11. Groundwater quality of stratified drift aquifer within or downstream of wetland meets drinking water standards.
12. Quality of water associated with the wetland is high.
13. Signs of groundwater discharge are present (e.g., springs, seeps).
14. Water temperature suggests it is a discharge site.
15. Wetland shows signs of variable water levels.
16. Piezometer data demonstrates discharge.
17. Other

FLOODFLOW ALTERATION (Storage & Desynchronization) — This function considers the effectiveness of the wetland in reducing flood damage by water retention for prolonged periods following precipitation events and the gradual release of floodwaters. It adds to the stability of the wetland ecological system or its buffering characteristics and provides social or economic value relative to erosion and/or flood prone areas.

CONSIDERATIONS/QUALIFIERS
1. Area of this wetland is large relative to its watershed.
2. Wetland occurs in the upper portions of its watershed.
3. Effective flood storage is small or non-existent upslope of or above the wetland.
4. Wetland watershed contains a high percent of impervious surfaces.
5. Wetland contains hydric soils which are able to absorb and detain water.
6. Wetland exists in a relatively flat area that has flood storage potential and/or a wide floodplain exists.
7. Wetland has an intermittent outlet, ponded water, or signs are present of variable water level.
8. During flood events, this wetland can retain higher volumes of water than under normal or average rainfall conditions.
9. Wetland receives and retains overland or sheet flow runoff from surrounding uplands.
10. In the event of a large storm, this wetland may receive and detain excessive flood water from a nearby watercourse.
11. Valuable properties, structures, or resources are located in or near the floodplain from the wetland.
12. The watershed has a history of economic loss due to flooding.
13. This wetland is associated with one or more watercourses.
14. This wetland watercourse is sinuous or diffuse.
15. This wetland outlet is constricted.
16. Channel flow velocity is affected by this wetland.
17. Land uses downstream are protected by this wetland.
18. This wetland contains a high density of vegetation.

19. Other

FISH AND SHELLFISH HABITAT (FRESHWATER) — This function considers the effectiveness of seasonal or permanent watercourses associated with the wetland in question for fish and shellfish habitat.

CONSIDERATIONS/QUALIFIERS
1. Forest land dominant in the watershed above this wetland.
2. Abundance of cover objects present.
STOP HERE IF THIS WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE
3. Size of this wetland is able to support large fish/shellfish populations.
4. Wetland is part of a larger, contiguous watercourse.
5. Wetland has sufficient size and depth in open water areas so as not to freeze solid and retain some open water during winter.
6. Stream width (bank to bank) is more than 50 feet.
7. Quality of the watercourse associated with this wetland is able to support healthy fish/shellfish populations.
8. Streamside vegetation provides shade for the watercourse.
9. Spawning areas are present (submerged vegetation or gravel beds).
10. Food is available to fish/shellfish populations within this wetland.
11. Barrier(s) to anadromous fish (such as dams, including beaver dams, waterfalls, road crossing) are absent from the stream reach associated with this wetland.
12. Evidence of fish is present.
13. Wetland is stocked with fish.
14. The watercourse is persistent.
15. Man-made streams are absent.
16. Water velocities are not too excessive for fish usage.
17. Defined stream channel is present.
18. Other

SEDIMENT/TOXICANT/PATHOGEN RETENTION — This function reduces or prevents degradation of water quality. It relates to the effectiveness of the wetland as a trap for sediments, toxicants, or pathogens in runoff water from surrounding uplands or upstream eroding wetland areas.

CONSIDERATIONS/QUALIFIERS
1. Potential sources of excess sediment are in the watershed above the wetland.
2. Potential or known sources of toxicants are in the watershed above the wetland.
3. Opportunity for sediment trapping by slow moving water or deepwater habitat are present in this wetland.
4. Fine grained mineral or organic soils are present.
5. Long duration water retention time is present in this wetland.
6. Public or private water sources occur downstream.
7. The wetland edge is broad and intermittently aerobic.
8. The wetland is known to have existed for more than 50 years.
9. Drainage ditches have not been constructed in the wetland.
STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE.
10. Wetland is associated with an intermittent or perennial stream or a lake.
11. Channelized flows have visible velocity decreases in the wetland.
12. Effective floodwater storage in wetland is occurring. Areas of impounded open water are present.
13. No indicators of erosive forces are present. No high water velocities are present.
14. Diffuse water flows are present in the wetland.
15. Wetland has a high degree of water and vegetation interspersion.
16. Dense vegetation provides opportunity for sediment trapping and/or signs of sediment accumulation by dense vegetation is present.
17. Other

NUTRIENT REMOVAL/RETENTION/TRANSFORMATION — This function considers the effectiveness of the wetland as a trap for nutrients in runoff water from surrounding uplands or contiguous wetlands and the ability of the wetland to process these nutrients into other forms or trophic levels. One aspect of this function is to prevent ill effects of nutrients entering aquifers or surface waters such as ponds, lakes, streams, rivers, or estuaries.

CONSIDERATIONS/QUALIFIERS
1. Wetland is large relative to the size of its watershed.
2. Deep water or open water habitat exists.
3. Overall potential for sediment trapping exists in the wetland.
4. Potential sources of excess nutrients are present in the watershed above the wetland.
5. Wetland saturated for most of the season. Ponded water is present in the wetland.
6. Deep organic/sediment deposits are present.
7. Slowly drained fine grained mineral or organic soils are present.
8. Dense vegetation is present.
9. Emergent vegetation and/or dense woody stems are dominant.
10. Opportunity for nutrient attenuation (or reduction) exists within wetland.
11. Vegetation diversity/abundance sufficient to utilize nutrients.
STOP HERE IF WETLAND IS NOT ASSOCIATED WITH A WATERCOURSE.
12. Waterflow through this wetland is diffuse.
13. Water retention/detention time in this wetland is increased by constricted outlet or thick vegetation.
14. Water moves slowly through this wetland.
15. Other

PRODUCTION EXPORT (Nutrient) — This function evaluates the effectiveness of the wetland to produce food or usable products for humans or other living organisms.

CONSIDERATIONS/QUALIFIERS
1. Wildlife food sources grow within this wetland.
2. Detritus development is present within this wetland
3. Economically or commercially used products found in this wetland.
4. Evidence of wildlife use found within this wetland.
5. Higher trophic level consumers are utilizing this wetland.
6. Fish or shellfish develop or occur in this wetland.
7. High vegetation density is present.
8. Wetland exhibits high degree of plant community structure/species diversity.
9. High aquatic vegetative diversity/abundance is present.
10. Nutrients exported in wetland watercourses (permanent outlet present).
11. “Flushing” of relatively large amounts of organic plant material occurs from this wetland.
12. Wetland contains flowering plants that are used by nectar-gathering insects.
13. Indications of export are present.
14. High production levels occurring, however, no visible signs of export (assumes export is attenuated).
15. Other

SEDIMENT/SHORELINE STABILIZATION — This function considers the effectiveness of a wetland to stabilize streambanks and shorelines against erosion.

CONSIDERATIONS/QUALIFIERS
1. Indications of erosion or siltation are present.
2. Topographical gradient is present in wetland.
3. Potential sediment sources are present up-slope.
4. Potential sediment sources are present upstream.
5. No distinct shoreline or bank is evident between the waterbody and the wetland or upland.
6. A distinct step between the open waterbody or stream and the adjacent land exists (i.e., sharp bank) with dense roots throughout.
7. Wide wetland (>10’) borders watercourse, lake, or pond.
8. High flow velocities in the wetland.

9. The watershed is of sufficient size to produce channelized flow.
10. Open water fetch is present.
11. Boating activity is present.
12. Dense vegetation is bordering watercourse, lake, or pond.
13. High percentage of energy-absorbing emergents and/or shrubs border a watercourse, lake, or pond.
14. Vegetation is comprised of large trees and shrubs that withstand major flood events or erosive incidents and stabilize the shoreline on a large scale (feet).
15. Vegetation is comprised of a dense resilient herbaceous layer that stabilizes sediments and the shoreline on a small scale (inches) during minor flood events or potentially erosive events.
16. Other

WILDLIFE HABITAT — This function considers the effectiveness of the wetland to provide habitat for various types and populations of animals typically associated with wetlands and the wetland edge. Both resident and/or migrating species must be considered. Species lists of observed and potential animals should be included in the wetland assessment report.

CONSIDERATIONS/QUALIFIERS
1. Wetland is not degraded by human activity.
2. Water quality of the watercourse, pond, or lake associated with this wetland meets or exceeds Class A or B standards.
3. Wetland is not fragmented by development.
4. Upland surrounding this wetland is undeveloped.
5. More than 40% of this wetland edge is bordered by upland wildlife habitat (e.g., brushland, woodland, active farmland, or idle land) at least 500 feet in width.
6. Wetland is contiguous with other wetland systems connected by a watercourse or lake.
7. Wildlife overland access to other wetlands is present.
8. Wildlife food sources are within this wetland or are nearby.
9. Wetland exhibits a high degree of interspersion of vegetation classes and/or open water.
10. Two or more islands or inclusions of upland within the wetland are present.
11. Dominant wetland class includes deep or shallow marsh or wooded swamp.
12. More than three acres of shallow permanent open water (less than 6.6 feet deep), including streams in or adjacent to wetland, are present.
13. Density of the wetland vegetation is high.
14. Wetland exhibits a high degree of plant species diversity.
15. Wetland exhibits a high degree of diversity in plant community structure (e.g., tree/ shrub/vine/grasses/mosses)
16. Plant/animal indicator species are present. (List species for project)
17. Animal signs observed (tracks, scats, nesting areas, etc.)
18. Seasonal uses vary for wildlife and wetland appears to support varied population diversity/abundance during different seasons.
19. Wetland supports known population of listed (rare, threatened, or endangered) species
20. Wetland contains or has potential to contain a high population of insects.
21. Wetland contains or has potential to contain large amphibian populations.
22. Wetland has a high avian utilization or its potential.
23. Indications of less disturbance-tolerant species are present.
24. Signs of wildlife habitat enhancement are present (birdhouses, nesting boxes, food sources, etc.).
25. Other

RECREATION (Consumptive and Non-Consumptive) — This value considers the suitability of the wetland and associated watercourses to provide recreational opportunities such as hiking, canoeing, boating, fishing, hunting, and other active or passive recreational activities. Consumptive opportunities consume or diminish the plants, animals, or other resources that are intrinsic to the wetland. Non- consumptive opportunities do not consume or diminish these resources of the wetland.

CONSIDERATIONS/QUALIFIERS
1. Wetland is part of a recreation area, park, forest, or refuge.
2. Fishing is available within or from the wetland.

3. Hunting is permitted in the wetland.
4. Hiking occurs or has potential to occur within the wetland.
5. Wetland is a valuable wildlife habitat.
6. The watercourse, pond, or lake associated with the wetland is unpolluted.
7. High visual/aesthetic quality of this potential recreation site.
8. Access to water is available at this potential recreation site for boating, kayaking, canoeing, or fishing.
9. The watercourse associated with this wetland is wide and deep enough to accommodate canoeing, kayaking, and/or non-powered boating.
10. Off-road public parking available at the potential recreation site.
11. Accessibility and travel ease is present at this site.
12. The wetland is within a short drive or safe walk from highly populated public and private areas.
13. Other

EDUCATIONAL/SCIENTIFIC VALUE — This value considers the suitability of the wetland as a site for an "outdoor classroom" or as a location for scientific study or research.

CONSIDERATIONS/QUALIFIERS
1. Wetland contains or is known to contain threatened, rare, or endangered species.
2. Little or no disturbance is occurring in this wetland.
3. Potential educational site contains a diversity of wetland classes which are accessible or potentially accessible.
4. Potential educational site is undisturbed and natural.
5. Wetland is considered to be a valuable wildlife habitat.
6. Wetland is located within a nature preserve or wildlife management area or on NPS lands.
7. Signs of wildlife habitat enhancement present (bird houses, nesting boxes, food sources, etc.).
8. Off-road parking at potential educational site suitable for school bus access in or near wetland.
9. Potential educational site is within safe walking distance or a short drive to schools.
10. Potential educational site is within safe walking distance to other plant communities.
11. Direct access to perennial stream at potential educational site is available.
12. Direct access to pond or lake at potential educational site is available.
13. No known safety hazards exist within the potential educational site.
14. Public access to the potential educational site is controlled.
15. Handicap accessibility is available.
16. Site is currently used for educational or scientific purposes.
17. Other

UNIQUENESS/HERITAGE — This value considers the effectiveness of the wetland or its associated waterbodies to provide certain special values. These may include archaeological sites, critical habitat for endangered species, its overall health and appearance, its role in the ecological system of the area, its relative importance as a typical wetland class for this geographic location. These functions are clearly valuable wetland attributes relative to aspects of public health, recreation, and habitat diversity.

CONSIDERATIONS/QUALIFIERS
1. Upland surrounding wetland is primarily urban.
2. Upland surrounding wetland is developing rapidly.
3. More than 3 acres of shallow permanent open water (less than 6.6 feet deep), including streams, occur in wetlands.
4. Three or more wetland classes are present.
5. Deep and/or shallow marsh or wooded swamp dominate.
6. High degree of interspersion of vegetation and/or open water occur in this wetland.
7. Well-vegetated stream corridor (15 feet on each side of the stream) occurs in this wetland.
8. Potential educational site is within a short drive or a safe walk from schools.
9. Off-road parking at potential educational site is suitable for school buses.
10. No known safety hazards exist within this potential educational site.
11. Direct access to perennial stream or lake exists at potential educational site.
12. Two or more wetland classes are visible from primary viewing locations.
13. Low-growing wetlands (marshes, scrub-shrub, bogs, open water) are visible from primary viewing

locations.
14. Half an acre of open water or 200 feet of stream is visible from the primary viewing locations.
15. Large area of wetland is dominated by flowering plants or plants that turn vibrant colors in different seasons.
16. General appearance of the wetland visible from primary viewing locations is unpolluted and/or undisturbed.
17. Overall view of the wetland is available from the surrounding upland.
18. Quality of the water associated with the wetland is high.
19. Opportunities for wildlife observations are available.
20. Historical buildings or historical dams are found within the wetland.
21. Presence of pond or pond site and remains of a dam occur within the wetland.
22. Wetland is within 50 yards of the nearest perennial watercourse.
23. Visible stone or earthen foundations, berms, dams, standing structures, or associated features occur within the wetland.
24. Wetland contains critical habitat for a state- or federally-listed threatened or endangered species.
25. Wetland is known to be a study site for scientific research.
26. Wetland is a natural landmark or recognized by the state natural heritage inventory authority as an exemplary natural community.
27. Wetland has local significance because it serves several functional values.
28. Wetland has local significance because it has biological, geological, or other features that are locally rare or unique.
29. Wetland is known to contain an important archaeological site.
30. Wetland is hydrologically connected to a state or federally designated scenic river.
31. Wetland is located in an area experiencing a high wetland loss rate.
32. Other

VISUAL QUALITY/AESTHETICS — This value considers the visual and aesthetic quality or usefulness of the wetland.

CONSIDERATIONS/QUALIFIERS
1. Multiple wetland classes are visible from primary viewing locations.
2. Emergent marsh and/or open water are visible from primary viewing locations.
3. A diversity of vegetative species is visible from primary viewing locations.
4. Wetland is dominated by flowering plants or plants that turn vibrant colors in different seasons.
5. Land use surrounding the wetland is undeveloped as seen from primary viewing locations.
6. Visible surrounding land use form contrasts with wetland.
7. Wetland views absent of trash, debris, and signs of disturbance.
8. Wetland is considered to be a valuable wildlife habitat.
9. Wetland is easily accessed.
10. Low noise level at primary viewing locations.
11. Unpleasant odors absent at primary viewing locations.
12. Relatively unobstructed sight line exists through wetland.
13. Other

ENDANGERED SPECIES HABITAT — This value considers the suitability of the wetland to support threatened or endangered species.

CONSIDERATIONS/QUALIFIERS
1. Wetland contains or is known to contain threatened or endangered species.
2. Wetland contains critical habitat for a state or federally listed threatened or endangered species.

Wetland Function-Value Evaluation Form

Wetland I.D: EDR-1 Corps manual wetland delineation: Yes

Wetland Human made? No Evaluation based on: Office_____ Field X

Latitude 37.8806006 Longitude -110.36902332 Prepared by: S. McNeish Date 10/2/2024

Adjacent land use: Recreation Distance to nearest roadway or other development: About 130' from Hite Marine Road

Dominant wetland systems present Riverine Contiguous undeveloped buffer zone present: Yes

How many tributaries contribute to the wetlands?: None Total area of wetlands: <0.01 acre

Function/Value	Suitability Y	Suitability N	Rationale (Ref#)	Comments
Groundwater Recharge/Discharge		X		The feature conveys seasonal flows and does not contribute to groundwater recharge or discharge within the study area.
Floodflow Alteration	X		9	The feature receives and conveys overland sheet flow from runoff from surrounding uplands, which provides limited floodflow alteration.
Fish and Shellfish Habitat		X		The feature does not provide suitable habitat to shellfish or fish due to its ephemeral flow regime.
Sediment/Toxicant Retention		X		The feature provides minimal sediment or toxicant retention due to its ephemeral flow regime.
Nutrient Removal		X		The feature provides minimal nutrient removal due to its ephemeral flow regime.
Production Export		X		The feature does not offer any production export due to its lack of vegetation, fish or shellfish, or other commercially used products.
Sediment/Shoreline Stabilization		X	3, 4	The feature primarily flows during stormwater runoff events and is subject to high amounts of erosion, scour, and channelization.
Wildlife Habitat		X	1, 3, 4, 5, 7	There is no wildlife habitat unique from the surrounding terrain.
Recreation		X	1, 3, 4, 7	The feature is not used for recreation.
Educational/Scientific Value		X	2, 4, 6	The feature sustains minimal education/scientific value.
Uniqueness/Heritage		X	17	The feature sustains minimal uniqueness/heritage value.
Visual Quality/Aesthetics		X	11, 12	Due to the prevalence of similar ephemeral riverine features in the area, this feature contributes minimally to the visual quality/aesthetics of the surrounding landscape.
Endangered Species Habitat		X		There is no endangered species habitat associated with the wetland features.
Other				

Wetland Function-Value Evaluation Form

Wetland I.D: EDR-2 Corps manual wetland delineation: Yes

Wetland Human made? No Evaluation based on: Office_____ Field X

Latitude 37.88059034 Longitude -110.3693721 Prepared by: S. McNeish Date 10/2/2024

Adjacent land use: Recreation Distance to nearest roadway or other development: About 60’ from Hite Marine Road

Dominant wetland systems present Riverine

Contiguous undeveloped buffer zone present: Yes

How many tributaries contribute to the wetlands?: None Total area of wetlands: 0.04 acre

Function/Value	Suitability Y	Suitability N	Rationale (Ref#)	Comments
Groundwater Recharge/Discharge		X		The feature conveys seasonal flows and does not contribute to groundwater recharge or discharge within the study area.
Floodflow Alteration	X		9	The feature receives and conveys overland sheet flow from runoff from surrounding uplands, which provides limited floodflow alteration.
Fish and Shellfish Habitat		X		The feature does not provide suitable habitat to shellfish or fish due to its ephemeral flow regime.
Sediment/Toxicant Retention		X		The feature provides minimal sediment or toxicant retention due to its ephemeral flow regime.
Nutrient Removal		X		The feature provides minimal nutrient removal due to its ephemeral flow regime.
Production Export		X		The feature does not offer any production export due to its lack of vegetation, fish or shellfish, or other commercially used products.
Sediment/Shoreline Stabilization		X	3, 4	The feature primarily flows during stormwater runoff events and is subject to high amounts of erosion, scour, and channelization.
Wildlife Habitat		X	1, 3, 4, 5, 7	There is no wildlife habitat unique from the surrounding terrain.
Recreation		X	1, 3, 4, 7	The feature is not used for recreation.
Educational/Scientific Value		X	2, 4, 6	The feature sustains minimal education/scientific value.
Uniqueness/Heritage		X	17	The feature sustains minimal uniqueness/heritage value.
Visual Quality/Aesthetics		X	11, 12	Due to the prevalence of similar ephemeral riverine features in the area, this feature contributes minimally to the visual quality/aesthetics of the surrounding landscape.
Endangered Species Habitat		X		There is no endangered species habitat associated with the wetland features.
Other				

Wetland Function-Value Evaluation Form

Wetland I.D: EDR-3 Corps manual wetland delineation: Yes

Wetland Human made? No Evaluation based on: Office_____ Field X

Latitude 37.88094707 Longitude -110.36976242 Prepared by: S. McNeish Date 10/2/2024

Adjacent land use: Recreation Distance to nearest roadway or other development: About 200' from Hite Marine Road

Dominant wetland systems present Riverine

Contiguous undeveloped buffer zone present: Yes

How many tributaries contribute to the wetlands?: None Total area of wetlands: 0.02 acre

Function/Value	Suitability Y	Suitability N	Rationale (Ref#)	Comments
Groundwater Recharge/Discharge		X		The feature conveys seasonal flows and does not contribute to groundwater recharge or discharge within the study area.
Floodflow Alteration	X		9	The feature receives and conveys overland sheet flow from runoff from surrounding uplands, which provides limited floodflow alteration.
Fish and Shellfish Habitat		X		The feature does not provide suitable habitat to shellfish or fish due to its ephemeral flow regime.
Sediment/Toxicant Retention		X		The feature provides minimal sediment or toxicant retention due to its ephemeral flow regime.
Nutrient Removal		X		The feature provides minimal nutrient removal due to its ephemeral flow regime.
Production Export		X		The feature does not offer any production export due to its lack of vegetation, fish or shellfish, or other commercially used products.
Sediment/Shoreline Stabilization		X	3, 4	The feature primarily flows during stormwater runoff events and is subject to high amounts of erosion, scour, and channelization.
Wildlife Habitat		X	1, 3, 4, 5, 7	There is no wildlife habitat unique from the surrounding terrain.
Recreation		X	1, 3, 4, 7	The feature is not used for recreation.
Educational/Scientific Value		X	2, 4, 6	The feature sustains minimal education/scientific value.
Uniqueness/Heritage		X	17	The feature sustains minimal uniqueness/heritage value.
Visual Quality/Aesthetics		X	11, 12	Due to the prevalence of similar ephemeral riverine features in the area, this feature contributes minimally to the visual quality/aesthetics of the surrounding landscape.
Endangered Species Habitat		X		There is no endangered species habitat associated with the wetland features.
Other				

Wetland Function-Value Evaluation Form

Wetland I.D: EDR-4 Corps manual wetland delineation: Yes

Wetland Human made? No Evaluation based on: Office ____ Field X

Latitude 37.88084116 Longitude -110.37033376 Prepared by: S. McNeish Date 10/2/2024

Adjacent land use: Recreation Distance to nearest roadway or other development: About 15' from Hite Marine Road

Dominant wetland systems present Riverine Contiguous undeveloped buffer zone present: Yes

How many tributaries contribute to the wetlands?: None Total area of wetlands: 0.17 acre

Function/Value	Suitability Y	Suitability N	Rationale (Ref#)	Comments
Groundwater Recharge/Discharge		X		The feature conveys seasonal flows and does not contribute to groundwater recharge or discharge within the study area.
Floodflow Alteration	X		9	The feature receives and conveys overland sheet flow from runoff from surrounding uplands, which provides limited floodflow alteration.
Fish and Shellfish Habitat		X		The feature does not provide suitable habitat to shellfish or fish due to its ephemeral flow regime.
Sediment/Toxicant Retention		X		The feature provides minimal sediment or toxicant retention due to its ephemeral flow regime.
Nutrient Removal		X		The feature provides minimal nutrient removal due to its ephemeral flow regime.
Production Export		X		The feature does not offer any production export due to its lack of vegetation, fish or shellfish, or other commercially used products.
Sediment/Shoreline Stabilization		X	3, 4	The feature primarily flows during stormwater runoff events and is subject to high amounts of erosion, scour, and channelization.
Wildlife Habitat		X	1, 3, 4, 5, 7	There is no wildlife habitat unique from the surrounding terrain.
Recreation		X	1, 3, 4, 7	The feature is not used for recreation.
Educational/Scientific Value		X	2, 4, 6	The feature sustains minimal education/scientific value.
Uniqueness/Heritage		X	17	The feature sustains minimal uniqueness/heritage value.
Visual Quality/Aesthetics		X	11, 12	Due to the prevalence of similar ephemeral riverine features in the area, this feature contributes minimally to the visual quality/aesthetics of the surrounding landscape.
Endangered Species Habitat		X		There is no endangered species habitat associated with the wetland features.
Other				

Wetland Function-Value Evaluation Form

Wetland I.D: EDR-5 Corps manual wetland delineation: Yes

Wetland Human made? No Evaluation based on: Office_____ Field X

Latitude 37.88142524 Longitude -110.37102082 Prepared by: S. McNeish Date 10/2/2024

Adjacent land use: Recreation Distance to nearest roadway or other development: About 250' from Hite Marine Road

Dominant wetland systems present Riverine Contiguous undeveloped buffer zone present: Yes

How many tributaries contribute to the wetlands?: None Total area of wetlands: 0.29 acre

Function/Value	Suitability Y	Suitability N	Rationale (Ref#)	Comments
Groundwater Recharge/Discharge		X		The feature conveys seasonal flows and does not contribute to groundwater recharge or discharge within the study area.
Floodflow Alteration	X		9	The feature receives and conveys overland sheet flow from runoff from surrounding uplands, which provides limited floodflow alteration.
Fish and Shellfish Habitat		X		The feature does not provide suitable habitat to shellfish or fish due to its ephemeral flow regime.
Sediment/Toxicant Retention		X		The feature provides minimal sediment or toxicant retention due to its ephemeral flow regime.
Nutrient Removal		X		The feature provides minimal nutrient removal due to its ephemeral flow regime.
Production Export		X		The feature does not offer any production export due to its lack of vegetation, fish or shellfish, or other commercially used products.
Sediment/Shoreline Stabilization		X	3, 4	The feature primarily flows during stormwater runoff events and is subject to high amounts of erosion, scour, and channelization.
Wildlife Habitat		X	1, 3, 4, 5, 7	There is no wildlife habitat unique from the surrounding terrain.
Recreation		X	1, 3, 4, 7	The feature is not used for recreation.
Educational/Scientific Value		X	2, 4, 6	The feature sustains minimal education/scientific value.
Uniqueness/Heritage		X	17	The feature sustains minimal uniqueness/heritage value.
Visual Quality/Aesthetics		X	11, 12	Due to the prevalence of similar ephemeral riverine features in the area, this feature contributes minimally to the visual quality/aesthetics of the surrounding landscape.
Endangered Species Habitat		X		There is no endangered species habitat associated with the wetland features.
Other				

Wetland Function-Value Evaluation Form

Wetland I.D: EDR-6 Corps manual wetland delineation: Yes

Wetland Human made? No Evaluation based on: Office_____ Field X

Latitude 37.88229795 Longitude -110.37191981 Prepared by: S. McNeish Date 10/2/2024

Adjacent land use: Recreation Distance to nearest roadway or other development: About 730' from Hite Marine Road

Dominant wetland systems present Riverine Contiguous undeveloped buffer zone present: Yes

How many tributaries contribute to the wetlands?: None Total area of wetlands: 0.12 acre

Function/Value	Suitability Y	Suitability N	Rationale (Ref#)	Comments
Groundwater Recharge/Discharge		X		The feature conveys seasonal flows and does not contribute to groundwater recharge or discharge within the study area.
Floodflow Alteration	X		9	The feature receives and conveys overland sheet flow from runoff from surrounding uplands, which provides limited floodflow alteration.
Fish and Shellfish Habitat		X		The feature does not provide suitable habitat to shellfish or fish due to its ephemeral flow regime.
Sediment/Toxicant Retention		X		The feature provides minimal sediment or toxicant retention due to its ephemeral flow regime.
Nutrient Removal		X		The feature provides minimal nutrient removal due to its ephemeral flow regime.
Production Export		X		The feature does not offer any production export due to its lack of vegetation, fish or shellfish, or other commercially used products.
Sediment/Shoreline Stabilization		X	3, 4	The feature primarily flows during stormwater runoff events and is subject to high amounts of erosion, scour, and channelization.
Wildlife Habitat		X	1, 3, 4, 5, 7	There is no wildlife habitat unique from the surrounding terrain.
Recreation		X	1, 3, 4, 7	The feature is not used for recreation.
Educational/Scientific Value		X	2, 4, 6	The feature sustains minimal education/scientific value.
Uniqueness/Heritage		X	17	The feature sustains minimal uniqueness/heritage value.
Visual Quality/Aesthetics		X	11, 12	Due to the prevalence of similar ephemeral riverine features in the area, this feature contributes minimally to the visual quality/aesthetics of the surrounding landscape.
Endangered Species Habitat		X		There is no endangered species habitat associated with the wetland features.
Other				

Wetland Function-Value Evaluation Form

Wetland I.D: EDR-7 Corps manual wetland delineation: Yes

Wetland Human made? No Evaluation based on: Office_____ Field X

Latitude 37.88196807 Longitude -110.37184328 Prepared by: S. McNeish Date 10/2/2024

Adjacent land use: Recreation Distance to nearest roadway or other development: About 500' from Hite Marine Road

Dominant wetland systems present Riverine Contiguous undeveloped buffer zone present: Yes

How many tributaries contribute to the wetlands?: None Total area of wetlands: 0.22 acre

Function/Value	Suitability Y	Suitability N	Rationale (Ref#)	Comments
Groundwater Recharge/Discharge		X		The feature conveys seasonal flows and does not contribute to groundwater recharge or discharge within the study area.
Floodflow Alteration	X		9	The feature receives and conveys overland sheet flow from runoff from surrounding uplands, which provides limited floodflow alteration.
Fish and Shellfish Habitat		X		The feature does not provide suitable habitat to shellfish or fish due to its ephemeral flow regime.
Sediment/Toxicant Retention		X		The feature provides minimal sediment or toxicant retention due to its ephemeral flow regime.
Nutrient Removal		X		The feature provides minimal nutrient removal due to its ephemeral flow regime.
Production Export		X		The feature does not offer any production export due to its lack of vegetation, fish or shellfish, or other commercially used products.
Sediment/Shoreline Stabilization		X	3, 4	The feature primarily flows during stormwater runoff events and is subject to high amounts of erosion, scour, and channelization.
Wildlife Habitat		X	1, 3, 4, 5, 7	There is no wildlife habitat unique from the surrounding terrain.
Recreation		X	1, 3, 4, 7	The feature is not used for recreation.
Educational/Scientific Value		X	2, 4, 6	The feature sustains minimal education/scientific value.
Uniqueness/Heritage		X	17	The feature sustains minimal uniqueness/heritage value.
Visual Quality/Aesthetics		X	11, 12	Due to the prevalence of similar ephemeral riverine features in the area, this feature contributes minimally to the visual quality/aesthetics of the surrounding landscape.
Endangered Species Habitat		X		There is no endangered species habitat associated with the wetland features.
Other				

Wetland Function-Value Evaluation Form

Wetland I.D: EDR-8 Corps manual wetland delineation: Yes

Wetland Human made? No Evaluation based on: Office_____ Field X

Latitude 37.88312386 Longitude -110.37351531 Prepared by: S. McNeish Date 10/2/2024

Adjacent land use: Recreation Distance to nearest roadway or other development: About 830' from Hite Marine Road

Dominant wetland systems present Riverine Contiguous undeveloped buffer zone present: Yes

How many tributaries contribute to the wetlands?: None Total area of wetlands: 0.63 acre

Function/Value	Suitability Y	Suitability N	Rationale (Ref#)	Comments
Groundwater Recharge/Discharge		X		The feature conveys seasonal flows and does not contribute to groundwater recharge or discharge within the study area.
Floodflow Alteration	X		9	The feature receives and conveys overland sheet flow from runoff from surrounding uplands, which provides limited floodflow alteration.
Fish and Shellfish Habitat		X		The feature does not provide suitable habitat to shellfish or fish due to its ephemeral flow regime.
Sediment/Toxicant Retention		X		The feature provides minimal sediment or toxicant retention due to its ephemeral flow regime.
Nutrient Removal		X		The feature provides minimal nutrient removal due to its ephemeral flow regime.
Production Export		X		The feature does not offer any production export due to its lack of vegetation, fish or shellfish, or other commercially used products.
Sediment/Shoreline Stabilization		X	3, 4	The feature primarily flows during stormwater runoff events and is subject to high amounts of erosion, scour, and channelization.
Wildlife Habitat		X	1, 3, 4, 5, 7	There is no wildlife habitat unique from the surrounding terrain.
Recreation		X	1, 3, 4, 7	The feature is not used for recreation.
Educational/Scientific Value		X	2, 4, 6	The feature sustains minimal education/scientific value.
Uniqueness/Heritage		X	17	The feature sustains minimal uniqueness/heritage value.
Visual Quality/Aesthetics		X	11, 12	Due to the prevalence of similar ephemeral riverine features in the area, this feature contributes minimally to the visual quality/aesthetics of the surrounding landscape.
Endangered Species Habitat		X		There is no endangered species habitat associated with the wetland features.
Other				

Wetland Function-Value Evaluation Form

Wetland I.D: EDR-9 Corps manual wetland delineation: Yes

Wetland Human made? No Evaluation based on: Office_____ Field X

Latitude 37.88370008 Longitude -110.37513084 Prepared by: S. McNeish Date 10/2/2024

Adjacent land use: Recreation Distance to nearest roadway or other development: About 0.3 mile from Hite Marine Road

Dominant wetland systems present Riverine Contiguous undeveloped buffer zone present: Yes

How many tributaries contribute to the wetlands?: None Total area of wetlands: 0.01 acre

Function/Value	Suitability Y	Suitability N	Rationale (Ref#)	Comments
Groundwater Recharge/Discharge		X		The feature conveys seasonal flows and does not contribute to groundwater recharge or discharge within the study area.
Floodflow Alteration	X		9	The feature receives and conveys overland sheet flow from runoff from surrounding uplands, which provides limited floodflow alteration.
Fish and Shellfish Habitat		X		The feature does not provide suitable habitat to shellfish or fish due to its ephemeral flow regime.
Sediment/Toxicant Retention		X		The feature provides minimal sediment or toxicant retention due to its ephemeral flow regime.
Nutrient Removal		X		The feature provides minimal nutrient removal due to its ephemeral flow regime.
Production Export		X		The feature does not offer any production export due to its lack of vegetation, fish or shellfish, or other commercially used products.
Sediment/Shoreline Stabilization		X	3, 4	The feature primarily flows during stormwater runoff events and is subject to high amounts of erosion, scour, and channelization.
Wildlife Habitat		X	1, 3, 4, 5, 7	There is no wildlife habitat unique from the surrounding terrain.
Recreation		X	1, 3, 4, 7	The feature is not used for recreation.
Educational/Scientific Value		X	2, 4, 6	The feature sustains minimal education/scientific value.
Uniqueness/Heritage		X	17	The feature sustains minimal uniqueness/heritage value.
Visual Quality/Aesthetics		X	11, 12	Due to the prevalence of similar ephemeral riverine features in the area, this feature contributes minimally to the visual quality/aesthetics of the surrounding landscape.
Endangered Species Habitat		X		There is no endangered species habitat associated with the wetland features.
Other				

Wetland Function-Value Evaluation Form

Wetland I.D: EDR-10 Corps manual wetland delineation: Yes

Wetland Human made? No Evaluation based on: Office_____ Field X

Latitude 37.88457993 Longitude -110.37490243 Prepared by: S. McNeish Date 10/2/2024

Adjacent land use: Recreation Distance to nearest roadway or other development: About 0.3 mile from Hite Marine Road

Dominant wetland systems present Riverine Contiguous undeveloped buffer zone present: Yes

How many tributaries contribute to the wetlands?: None Total area of wetlands: 0.22 acre

Function/Value	Suitability Y	Suitability N	Rationale (Ref#)	Comments
Groundwater Recharge/Discharge		X		The feature conveys seasonal flows and does not contribute to groundwater recharge or discharge within the study area.
Floodflow Alteration	X		9	The feature receives and conveys overland sheet flow from runoff from surrounding uplands, which provides limited floodflow alteration.
Fish and Shellfish Habitat		X		The feature does not provide suitable habitat to shellfish or fish due to its ephemeral flow regime.
Sediment/Toxicant Retention		X		The feature provides minimal sediment or toxicant retention due to its ephemeral flow regime.
Nutrient Removal		X		The feature provides minimal nutrient removal due to its ephemeral flow regime.
Production Export		X		The feature does not offer any production export due to its lack of vegetation, fish or shellfish, or other commercially used products.
Sediment/Shoreline Stabilization		X	3, 4	The feature primarily flows during stormwater runoff events and is subject to high amounts of erosion, scour, and channelization.
Wildlife Habitat		X	1, 3, 4, 5, 7	There is no wildlife habitat unique from the surrounding terrain.
Recreation		X	1, 3, 4, 7	The feature is not used for recreation.
Educational/Scientific Value		X	2, 4, 6	The feature sustains minimal education/scientific value.
Uniqueness/Heritage		X	17	The feature sustains minimal uniqueness/heritage value.
Visual Quality/Aesthetics		X	11, 12	Due to the prevalence of similar ephemeral riverine features in the area, this feature contributes minimally to the visual quality/aesthetics of the surrounding landscape.
Endangered Species Habitat		X		There is no endangered species habitat associated with the wetland features.
Other				

Wetland Function-Value Evaluation Form

Wetland I.D: EDR-11 Corps manual wetland delineation: Yes

Wetland Human made? No Evaluation based on: Office ____ Field X

Latitude 37.88560554 Longitude -110.37622342 Prepared by: S. McNeish Date 10/2/2024

Adjacent land use: Recreation Distance to nearest roadway or other development: About 0.4 mile from Hite Marine Road

Dominant wetland systems present Riverine Contiguous undeveloped buffer zone present: Yes

How many tributaries contribute to the wetlands?: None Total area of wetlands: 0.01 acre

Function/Value	Suitability Y	Suitability N	Rationale (Ref#)	Comments
Groundwater Recharge/Discharge		X		The feature conveys seasonal flows and does not contribute to groundwater recharge or discharge within the study area.
Floodflow Alteration	X		9	The feature receives and conveys overland sheet flow from runoff from surrounding uplands, which provides limited floodflow alteration.
Fish and Shellfish Habitat		X		The feature does not provide suitable habitat to shellfish or fish due to its ephemeral flow regime.
Sediment/Toxicant Retention		X		The feature provides minimal sediment or toxicant retention due to its ephemeral flow regime.
Nutrient Removal		X		The feature provides minimal nutrient removal due to its ephemeral flow regime.
Production Export		X		The feature does not offer any production export due to its lack of vegetation, fish or shellfish, or other commercially used products.
Sediment/Shoreline Stabilization		X	3, 4	The feature primarily flows during stormwater runoff events and is subject to high amounts of erosion, scour, and channelization.
Wildlife Habitat		X	1, 3, 4, 5, 7	There is no wildlife habitat unique from the surrounding terrain.
Recreation		X	1, 3, 4, 7	The feature is not used for recreation.
Educational/Scientific Value		X	2, 4, 6	The feature sustains minimal education/scientific value.
Uniqueness/Heritage		X	17	The feature sustains minimal uniqueness/heritage value.
Visual Quality/Aesthetics		X	11, 12	Due to the prevalence of similar ephemeral riverine features in the area, this feature contributes minimally to the visual quality/aesthetics of the surrounding landscape.
Endangered Species Habitat		X		There is no endangered species habitat associated with the wetland features.
Other				

Wetland Function-Value Evaluation Form

Wetland I.D: EDR-12 Corps manual wetland delineation: Yes

Wetland Human made? No Evaluation based on: Office ____ Field X

Latitude 37.88592953 Longitude -110.37661102 Prepared by: S. McNeish Date 10/2/2024

Adjacent land use: Recreation Distance to nearest roadway or other development: About 0.4 mile from Hite Marine Road

Dominant wetland systems present Riverine Contiguous undeveloped buffer zone present: Yes

How many tributaries contribute to the wetlands?: None Total area of wetlands: 0.10 acre

Function/Value	Suitability Y	Suitability N	Rationale (Ref#)	Comments
Groundwater Recharge/Discharge		X		The feature conveys seasonal flows and does not contribute to groundwater recharge or discharge within the study area.
Floodflow Alteration	X		9	The feature receives and conveys overland sheet flow from runoff from surrounding uplands, which provides limited floodflow alteration.
Fish and Shellfish Habitat		X		The feature does not provide suitable habitat to shellfish or fish due to its ephemeral flow regime.
Sediment/Toxicant Retention		X		The feature provides minimal sediment or toxicant retention due to its ephemeral flow regime.
Nutrient Removal		X		The feature provides minimal nutrient removal due to its ephemeral flow regime.
Production Export		X		The feature does not offer any production export due to its lack of vegetation, fish or shellfish, or other commercially used products.
Sediment/Shoreline Stabilization		X	3, 4	The feature primarily flows during stormwater runoff events and is subject to high amounts of erosion, scour, and channelization.
Wildlife Habitat		X	1, 3, 4, 5, 7	There is no wildlife habitat unique from the surrounding terrain.
Recreation		X	1, 3, 4, 7	The feature is not used for recreation.
Educational/Scientific Value		X	2, 4, 6	The feature sustains minimal education/scientific value.
Uniqueness/Heritage		X	17	The feature sustains minimal uniqueness/heritage value.
Visual Quality/Aesthetics		X	11, 12	Due to the prevalence of similar ephemeral riverine features in the area, this feature contributes minimally to the visual quality/aesthetics of the surrounding landscape.
Endangered Species Habitat		X		There is no endangered species habitat associated with the wetland features.
Other				

Wetland Function-Value Evaluation Form

Wetland I.D: EDR-13 Corps manual wetland delineation: Yes

Wetland Human made? No Evaluation based on: Office_____ Field X

Latitude 37.88611555 Longitude -110.37849447 Prepared by: S. McNeish Date 10/2/2024

Adjacent land use: Recreation Distance to nearest roadway or other development: About 0.5 mile from Hite Marine Road

Dominant wetland systems present Riverine Contiguous undeveloped buffer zone present: Yes

How many tributaries contribute to the wetlands?: None Total area of wetlands: 0.11 acre

Function/Value	Suitability Y	Suitability N	Rationale (Ref#)	Comments
Groundwater Recharge/Discharge		X		The feature conveys seasonal flows and does not contribute to groundwater recharge or discharge within the study area.
Floodflow Alteration	X		9	The feature receives and conveys overland sheet flow from runoff from surrounding uplands, which provides limited floodflow alteration.
Fish and Shellfish Habitat		X		The feature does not provide suitable habitat to shellfish or fish due to its ephemeral flow regime.
Sediment/Toxicant Retention		X		The feature provides minimal sediment or toxicant retention due to its ephemeral flow regime.
Nutrient Removal		X		The feature provides minimal nutrient removal due to its ephemeral flow regime.
Production Export		X		The feature does not offer any production export due to its lack of vegetation, fish or shellfish, or other commercially used products.
Sediment/Shoreline Stabilization		X	3, 4	The feature primarily flows during stormwater runoff events and is subject to high amounts of erosion, scour, and channelization.
Wildlife Habitat		X	1, 3, 4, 5, 7	There is no wildlife habitat unique from the surrounding terrain.
Recreation		X	1, 3, 4, 7	The feature is not used for recreation.
Educational/Scientific Value		X	2, 4, 6	The feature sustains minimal education/scientific value.
Uniqueness/Heritage		X	17	The feature sustains minimal uniqueness/heritage value.
Visual Quality/Aesthetics		X	11, 12	Due to the prevalence of similar ephemeral riverine features in the area, this feature contributes minimally to the visual quality/aesthetics of the surrounding landscape.
Endangered Species Habitat		X		There is no endangered species habitat associated with the wetland features.
Other				

Wetland Function-Value Evaluation Form

Wetland I.D: EDR-14 Corps manual wetland delineation: Yes

Wetland Human made? No Evaluation based on: Office ____ Field X

Latitude 37.88485548 Longitude -110.38040274 Prepared by: S. McNeish Date 10/2/2024

Adjacent land use: Recreation Distance to nearest roadway or other development: About 0.5 mile from Hite Marine Road

Dominant wetland systems present Riverine Contiguous undeveloped buffer zone present: Yes

How many tributaries contribute to the wetlands?: None Total area of wetlands: 0.06 acre

Function/Value	Suitability Y	Suitability N	Rationale (Ref#)	Comments
Groundwater Recharge/Discharge		X		The feature conveys seasonal flows and does not contribute to groundwater recharge or discharge within the study area.
Floodflow Alteration	X		9	The feature receives and conveys overland sheet flow from runoff from surrounding uplands, which provides limited floodflow alteration.
Fish and Shellfish Habitat		X		The feature does not provide suitable habitat to shellfish or fish due to its ephemeral flow regime.
Sediment/Toxicant Retention		X		The feature provides minimal sediment or toxicant retention due to its ephemeral flow regime.
Nutrient Removal		X		The feature provides minimal nutrient removal due to its ephemeral flow regime.
Production Export		X		The feature does not offer any production export due to its lack of vegetation, fish or shellfish, or other commercially used products.
Sediment/Shoreline Stabilization		X	3, 4	The feature primarily flows during stormwater runoff events and is subject to high amounts of erosion, scour, and channelization.
Wildlife Habitat		X	1, 3, 4, 5, 7	There is no wildlife habitat unique from the surrounding terrain.
Recreation		X	1, 3, 4, 7	The feature is not used for recreation.
Educational/Scientific Value		X	2, 4, 6	The feature sustains minimal education/scientific value.
Uniqueness/Heritage		X	17	The feature sustains minimal uniqueness/heritage value.
Visual Quality/Aesthetics		X	11, 12	Due to the prevalence of similar ephemeral riverine features in the area, this feature contributes minimally to the visual quality/aesthetics of the surrounding landscape.
Endangered Species Habitat		X		There is no endangered species habitat associated with the wetland features.
Other				

Wetland Function-Value Evaluation Form

Wetland I.D: EDR-15 Corps manual wetland delineation: Yes

Wetland Human made? No Evaluation based on: Office_____ Field X

Latitude 37.88484975 Longitude -110.37931432 Prepared by: S. McNeish Date 10/2/2024

Adjacent land use: Recreation Distance to nearest roadway or other development: About 0.4 mile from Hite Marine Road

Dominant wetland systems present Riverine Contiguous undeveloped buffer zone present: Yes

How many tributaries contribute to the wetlands?: None Total area of wetlands: 0.18 acre

Function/Value	Suitability Y	Suitability N	Rationale (Ref#)	Comments
Groundwater Recharge/Discharge		X		The feature conveys seasonal flows and does not contribute to groundwater recharge or discharge within the study area.
Floodflow Alteration	X		9	The feature receives and conveys overland sheet flow from runoff from surrounding uplands, which provides limited floodflow alteration.
Fish and Shellfish Habitat		X		The feature does not provide suitable habitat to shellfish or fish due to its ephemeral flow regime.
Sediment/Toxicant Retention		X		The feature provides minimal sediment or toxicant retention due to its ephemeral flow regime.
Nutrient Removal		X		The feature provides minimal nutrient removal due to its ephemeral flow regime.
Production Export		X		The feature does not offer any production export due to its lack of vegetation, fish or shellfish, or other commercially used products.
Sediment/Shoreline Stabilization		X	3, 4	The feature primarily flows during stormwater runoff events and is subject to high amounts of erosion, scour, and channelization.
Wildlife Habitat		X	1, 3, 4, 5, 7	There is no wildlife habitat unique from the surrounding terrain.
Recreation		X	1, 3, 4, 7	The feature is not used for recreation.
Educational/Scientific Value		X	2, 4, 6	The feature sustains minimal education/scientific value.
Uniqueness/Heritage		X	17	The feature sustains minimal uniqueness/heritage value.
Visual Quality/Aesthetics		X	11, 12	Due to the prevalence of similar ephemeral riverine features in the area, this feature contributes minimally to the visual quality/aesthetics of the surrounding landscape.
Endangered Species Habitat		X		There is no endangered species habitat associated with the wetland features.
Other				

Wetland Function-Value Evaluation Form

Wetland I.D: EDR-16 Corps manual wetland delineation: Yes

Wetland Human made? No Evaluation based on: Office ____ Field X

Latitude 37.88714358 Longitude -110.37995296 Prepared by: S. McNeish Date 10/2/2024

Adjacent land use: Recreation Distance to nearest roadway or other development: About 0.5 mile from Hite Marine Road

Dominant wetland systems present Riverine Contiguous undeveloped buffer zone present: Yes

How many tributaries contribute to the wetlands?: None Total area of wetlands: 0.32 acre

Function/Value	Suitability Y	Suitability N	Rationale (Ref#)	Comments
Groundwater Recharge/Discharge		X		The feature conveys seasonal flows and does not contribute to groundwater recharge or discharge within the study area.
Floodflow Alteration	X		9	The feature receives and conveys overland sheet flow from runoff from surrounding uplands, which provides limited floodflow alteration.
Fish and Shellfish Habitat		X		The feature does not provide suitable habitat to shellfish or fish due to its ephemeral flow regime.
Sediment/Toxicant Retention		X		The feature provides minimal sediment or toxicant retention due to its ephemeral flow regime.
Nutrient Removal		X		The feature provides minimal nutrient removal due to its ephemeral flow regime.
Production Export		X		The feature does not offer any production export due to its lack of vegetation, fish or shellfish, or other commercially used products.
Sediment/Shoreline Stabilization		X	3, 4	The feature primarily flows during stormwater runoff events and is subject to high amounts of erosion, scour, and channelization.
Wildlife Habitat		X	1, 3, 4, 5, 7	There is no wildlife habitat unique from the surrounding terrain.
Recreation		X	1, 3, 4, 7	The feature is not used for recreation.
Educational/Scientific Value		X	2, 4, 6	The feature sustains minimal education/scientific value.
Uniqueness/Heritage		X	17	The feature sustains minimal uniqueness/heritage value.
Visual Quality/Aesthetics		X	11, 12	Due to the prevalence of similar ephemeral riverine features in the area, this feature contributes minimally to the visual quality/aesthetics of the surrounding landscape.
Endangered Species Habitat		X		There is no endangered species habitat associated with the wetland features.
Other				

Wetland Function-Value Evaluation Form

Wetland I.D: EDR-17 Corps manual wetland delineation: Yes

Wetland Human made? No Evaluation based on: Office ____ Field X

Latitude 37.88920805 Longitude -110.37273018 Prepared by: S. McNeish Date 10/2/2024

Adjacent land use: Recreation Distance to nearest roadway or other development: About 0.2 mile from Utah State Route 95

Dominant wetland systems present Riverine Contiguous undeveloped buffer zone present: Yes

How many tributaries contribute to the wetlands?: None Total area of wetlands: 0.03 acre

Function/Value	Suitability Y	Suitability N	Rationale (Ref#)	Comments
Groundwater Recharge/Discharge		X		The feature conveys seasonal flows and does not contribute to groundwater recharge or discharge within the study area.
Floodflow Alteration	X		9	The feature receives and conveys overland sheet flow from runoff from surrounding uplands, which provides limited floodflow alteration.
Fish and Shellfish Habitat		X		The feature does not provide suitable habitat to shellfish or fish due to its ephemeral flow regime.
Sediment/Toxicant Retention		X		The feature provides minimal sediment or toxicant retention due to its ephemeral flow regime.
Nutrient Removal		X		The feature provides minimal nutrient removal due to its ephemeral flow regime.
Production Export		X		The feature does not offer any production export due to its lack of vegetation, fish or shellfish, or other commercially used products.
Sediment/Shoreline Stabilization		X	3, 4	The feature primarily flows during stormwater runoff events and is subject to high amounts of erosion, scour, and channelization.
Wildlife Habitat		X	1, 3, 4, 5, 7	There is no wildlife habitat unique from the surrounding terrain.
Recreation		X	1, 3, 4, 7	The feature is not used for recreation.
Educational/Scientific Value		X	2, 4, 6	The feature sustains minimal education/scientific value.
Uniqueness/Heritage		X	17	The feature sustains minimal uniqueness/heritage value.
Visual Quality/Aesthetics		X	11, 12	Due to the prevalence of similar ephemeral riverine features in the area, this feature contributes minimally to the visual quality/aesthetics of the surrounding landscape.
Endangered Species Habitat		X		There is no endangered species habitat associated with the wetland features.
Other				

Wetland Function-Value Evaluation Form

Wetland I.D: LP-1 Corps manual wetland delineation: Yes

Wetland Human made? Yes Evaluation based on: Office_____ Field X

Latitude 37.89023702 Longitude -110.37564741 Prepared by: S. McNeish Date 10/1/2024

Adjacent land use: Recreation Distance to nearest roadway or other development: 0.1 mile from Utah State Route 95

Dominant wetland systems present Lacustrine

Contiguous undeveloped buffer zone present: Yes

How many tributaries contribute to the wetlands?: One Total area of wetlands: 3.61 acres

Function/Value	Suitability Y	Suitability N	Rationale (Ref#)	Comments
Groundwater Recharge/Discharge	X		7	LP-1 receives flows from IDR-1 and is associated with Lake Powell, a perennial water, which contributes to groundwater recharge.
Floodflow Alteration	X		9	LP-1 is sustained by input from upgradient watersheds and river systems and can retain inputs, which provides floodflow alteration.
Fish and Shellfish Habitat	X		4, 5, 6, 7, 10, 12	LP-1 provides fish and shellfish habitat.
Sediment/Toxicant Retention	X		10	LP-1 receives sediment and toxicants from upgradient systems and adjacent lands during precipitation runoff events.
Nutrient Removal	X		3, 5	LP-1 receives nutrients from upgradient systems and adjacent lands during precipitation runoff events.
Production Export	X		1, 6	Fish and shellfish inhabitants promote nutrient cycling and provide potential food sources within the area, which contributes to LP-1's production export value.
Sediment/Shoreline Stabilization		X	3, 4, 11	LP-1's sparse vegetation provides minimal stabilization for Lake Powell's streambanks and shorelines against erosion.
Wildlife Habitat	X		4, 5, 6, 7, 8	
Recreation	X		1, 2, 7, 8, 9, 10, 11	LP-1 is used for recreation activities, such as fishing and boating.
Educational/Scientific Value		X	6, 8, 12	LP-1 provides minimal education/scientific value.
Uniqueness/Heritage		X	9, 11, 17, 22	LP-1 provides minimal uniqueness/heritage value.
Visual Quality/Aesthetics	X		2, 9, 11, 12	The canyon walls and undeveloped land surrounding LP-1 provide for high visual quality and overall aesthetics.
Endangered Species Habitat		X		LP-1 does not provide any suitable habitat for any endangered species.
Other				

Wetland Function-Value Evaluation Form

Wetland I.D: OW-1 Corps manual wetland delineation: Yes

Wetland Human made? Yes Evaluation based on: Office ____ Field X

Latitude 37.89050757 Longitude -110.37425695 Prepared by: S. McNeish Date 10/2/2024

Adjacent land use: Recreation Distance to nearest roadway or other development: About 0.1 mile from Utah State Route 95

Dominant wetland systems present Lacustrine Contiguous undeveloped buffer zone present: Yes

How many tributaries contribute to the wetlands?: None Total area of wetlands: 3.08 acres

Function/Value	Suitability Y	Suitability N	Rationale (Ref#)	Comments
Groundwater Recharge/Discharge	X		7	OW-1 receives flows from IDR-1 and LP-1 and is associated with Lake Powell, a perennial water, which contributes to groundwater recharge.
Floodflow Alteration	X		9	OW-1 is sustained by input from upgradient watersheds and river systems and can retain inputs, which provides floodflow alteration.
Fish and Shellfish Habitat	X		4, 5, 6, 7, 10, 12	OW-1 provides fish and shellfish habitat.
Sediment/Toxicant Retention	X		10	OW-1 receives sediment and toxicants from upgradient systems and adjacent lands during precipitation runoff events.
Nutrient Removal	X		3, 5	OW-1 receives nutrients from upgradient systems and adjacent lands during precipitation runoff events.
Production Export	X		1, 6	Fish and shellfish inhabitants promote nutrient cycling and provide potential food sources within the area, which contributes to OW-1's production export value.
Sediment/Shoreline Stabilization		X	3, 4, 11	
Wildlife Habitat	X		4, 5, 6, 7, 8	
Recreation	X		1, 2, 7, 8, 9, 10, 11	OW-1 is used for recreation activities, such as fishing and boating.
Educational/Scientific Value		X	6, 8, 12	OW-1 provides minimal education/scientific value.
Uniqueness/Heritage		X	9, 11, 17, 22	OW-1 provides minimal uniqueness/heritage value.
Visual Quality/Aesthetics	X		2, 9, 11, 12	The canyon walls and undeveloped land surrounding OW-1 provide for high visual quality and overall aesthetics.
Endangered Species Habitat		X		OW-1 does not provide suitable habitat for any endangered species.
Other				