U.S. Department
of Transportation
**Federal Transit
Administration**

REGION VIII
Colorado, Montana,
North Dakota,
South Dakota,
Utah and Wyoming

1961 Stout Street
Suite 13301
Denver, Colorado 80294
(303) 362-2400 (voice)

November 10, 2025

Mr. Carlos Braceras
Executive Director
Utah Department of Transportation
4501 South 2700 West
P.O. Box 141265
Salt Lake City, UT 84114-1265

Re: NEPA Reevaluation Approval for the **FrontRunner Forward Program – North of American Fork Double Track Project**

Dear Mr. Braceras:

Thank you for providing the environmental documentation for the reevaluation of the FrontRunner Forward Program – North of American Fork Double Track project. The project is planning to utilize Federal Transit Administration (FTA) Capital Investment Grants (CIG) Program funding to develop a double track alignment of the existing FrontRunner Commuter rail line from Lehi to Lindon, Utah County, Utah.

FTA understands the project design has been modified to extend the proposed double track by approximately 3.8 miles from American Fork south to Lindon. The extension would connect with the existing double track just north of Vineyard Station, resulting in an approximately 8-mile-long double track section. This additional double track would further improve reliability and reduce delay of FrontRunner between the existing American Fork and Vineyard stations. The proposed improvements include shifting approximately 2,000 feet of the existing mainline track, removing two power-operated turnouts, installing one double crossover, constructing 3,455 feet of retaining walls, constructing a new bridge over the American Fork River (bridge abutments were constructed in 2008), extending multiple culverts to accommodate the widened track bed, and widening the existing track bed.

Based on the findings of the reevaluation for the project, FTA understands the following clearances will be obtained and **additional** mitigation measures or **changes** to existing measures will be implemented prior to or during construction, as applicable:

- A detailed noise and vibration assessment will be conducted during final design and will consider both infrastructure changes and service.
- Installation of ballast mat under the new track adjacent to the existing track with ballast mat. Any ballast mat under existing track will be replaced where existing track is shifted.
- Floodplain development permits will be obtained from Lindon City and Utah County for impacts within city limits and in unincorporated areas.
- A stream alteration permit will be obtained from the Utah DWRi for work that occurs within 30 feet of the American Fork River.
- Authorization of US Army Corp of Engineers Nationwide Permit 14 will be obtained, as required. Compensatory mitigation requirements, if required, will be met by using mitigation credits from a UDOT-owned mitigation bank or through the development of a project-specific mitigation plan.
- In compliance with Section 7 of the Endangered Species Act, FTA will obtain concurrence from USFWS regarding FTA's updated findings and determination of effect (*may affect, but not likely to adversely affect*) for the June sucker prior to project construction within the immediate location of the species habitat identified within the project area.

- Construction near the American Fork River will occur outside the June sucker's avoidance window (April 15 to July 31).
- Construction will not occur within 300 feet of potentially suitable Ute ladies'-tresses habitat until three consecutive years of clearance surveys are complete. Early drainage work prior to this time will be confined to the existing drainage area between the existing UTA tracks and 8020 North in Lehi.
- Conservation measures identified in the *FrontRunner Forward North of American Fork Double Track Project Biological Assessment Report* (October 2025) will be followed.
- Stormwater from the construction site will be managed to control sediment discharges to the American Fork River.

Based on the documentation provided by your office, FTA concurs with the finding that the proposed project continues to meet the definition of a categorical exclusion (CE). FTA has also determined, as a result of the changes in project scope, the CE type for the project has changed to list D type "other" pursuant to 23 CFR §771.118(d). If you have any questions regarding this finding, please contact Robyn Kullas in my office at Robyn.Kullas@dot.gov or (303)362-2389. Please keep FTA informed of any additional changes to the project should they occur.

Sincerely,

DAVID L BECKHOUSE

Digitally signed by DAVID L BECKHOUSE
Date: 2025.11.10 09:21:09 -07'00'

David Beckhouse
Deputy Regional Administrator

Cc:
Brian Allen, Utah Department of Transportation
Jay Fox, Utah Transit Authority
Janelle Robertson, Utah Transit Authority
Patti Garver, Utah Transit Authority
Autumn Hu, Utah Transit Authority

FrontRunner Forward

North of American Fork Double Track Project

Environmental Reevaluation

November 2025

Table of Contents

List of Tables

List of Figures

Attachments

Abbreviations

APE	area of potential effects
CE	categorical exclusion
CFR	*Code of Federal Regulations*
CWA	Clean Water Act
D&RGW	Denver & Rio Grande Western Railroad
dB	decibels
DWRi	Division of Water Rights
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FPPA	Farmland Protection Policy Act
FTA	Federal Transit Administration
ID	identifier
ML	mainline
MPO	metropolitan planning organization
No.	number
PCN	preconstruction notification
PEL	planning and environmental linkage study
Project	North of American Fork Double Track Project
ROW	right-of-way
RTP	regional transportation plan
Section 106	Section 106 of the National Historic Preservation Act
Section 4(f)	Section 4(f) of the Department of Transportation Act of 1966
SHPO	Utah State Historic Preservation Office
TCE	temporary construction easement
UDEQ	Utah Department of Environmental Quality
UDOT	Utah Department of Transportation
USACE	U.S. Army Corps of Engineers
USC	*United States Code*
USFWS	U.S. Fish and Wildlife Service
UTA	Utah Transit Authority
VdB	vibration decibels
WFRC	Wasatch Front Regional Council

1 Introduction

The Utah Transit Authority (UTA) and Utah Department of Transportation (UDOT) are constructing a second track along about 4.2 miles of existing single track on the FrontRunner commuter rail line from just north of American Fork Station to the crossing at 2100 North in the cities of American Fork and Lehi in Utah County, Utah. The Federal Transit Administration (FTA) approved a categorical exclusion (CE) for the North of American Fork Double Track Project on August 16, 2023.

Since the CE was approved, UTA and UDOT are proposing to extend the North of American Fork Double Track Project (Project) by about 3.8 miles south (from UTA milepost S 30.3 south to UTA milepost S 34.1) in American Fork and Lindon (see Figure 1). The 3.8-mile extension would move the southern extent of the Project to meet with the existing double track just north of Vineyard Station, resulting in an approximately 8-mile-long double-track section. This additional double-track length would further improve reliability and reduce delay of FrontRunner between the existing American Fork and Vineyard Stations.

The Project is being reevaluated to document the anticipated environmental impacts of the proposed extension and to determine whether the Project still qualifies for a CE. The reevaluation also addresses a change in the affected environment within the original project area for two resources (threatened and endangered species, and noise and vibration) based on the review of the assessments performed for the 2023 CE.

The North of American Fork Double Track Project is one of many projects under the FrontRunner Forward Program (also known as the FrontRunner 2X project), which includes double tracking and realigning certain sections of FrontRunner, constructing a maintenance facility, and constructing a new infill station. Further details about investments associated with the FrontRunner Forward Program are included in a separate report, *FrontRunner Forward Strategic Double Track Recommended Service Alternative Overview – A Planning and Environmental Linkage Study (PEL)* (UTA 2025).

Figure 1. North of American Fork Double Track Project Expanded Project Area

2 Project Changes

The anticipated track work for the 3.8-mile extension consists of constructing 19,500 feet of track for a new FrontRunner UTA mainline (ML) number (No.) 2 west of the existing UTA ML No. 1, shifting about 2,000 feet of track on the existing UTA ML No. 1, removing two No. 20 power-operated turnouts, installing one No. 20 double crossover, constructing 3,455 feet of retaining walls, constructing a new bridge over the American Fork River (bridge abutments were constructed in 2008 with the FrontRunner South project), extending multiple culverts to accommodate the widened track bed, relocating utilities including a signal house adjacent to 5750 West at the southern end of the extension, and widening the existing track bed. Both permanent right-of-way (ROW) acquisition and temporary construction easements (TCEs) would be required for the Project. The preliminary design for the 3.8-mile extension is included in Attachment 1, *North of American Fork Double Track Project Concept Design*.[1]

Throughout this reevaluation and associated technical reports, the term "expanded project area" is used to describe the general study location and limits of the Project. The expanded project area was defined as an area about 3.8 miles long and about 150 feet wide centered over the existing rail corridor. The expanded project area was widened at grade crossings in the case that existing roadways need to be reprofiled with the addition of the second track. The term "design footprint" is used to describe the conceptual project design. The design footprint was used to assess impacts to resources and includes the anticipated limits of physical disturbance, including space for potential temporary construction workspaces, and the limits of anticipated ROW acquisition.

3 Changes to Environmental Impacts and Mitigation

This section summarizes the environmental impacts of the 3.8-mile extension. In addition, this section presents any changes or new mitigation actions needed. Table 2, *Changes to Environmental Impacts and Mitigation*, on page 11 summarizes the new environmental impacts and mitigation measures of the reevaluated environmental resources. The table also indicates whether no new impacts or mitigation are identified for a resource.

To help determine changes to resource impacts and mitigation, the 2023 CE worksheet and supporting technical documents were reviewed. In addition, publicly available environmental databases were reviewed to determine whether additional environmental resources could be present in the expanded project area. Additional environmental field surveys were completed for cultural, aquatic, and biological resources in the expanded project area. Resource-specific reports and documentation for the expanded project area are provided in Attachment 2, *Cultural, Historic, and Archaeological Resources*; Attachment 8, *Aquatic Resources Delineation Report*; and Attachment 10, *Biological Assessment*.

Section 3.1, *Resources with No Changes*, summarizes the project team's reevaluation findings that did not change from the 2023 CE. Section 3.2, *Resources with Changes*, presents the findings for more in-depth resource evaluations and the changes compared to the findings of the 2023 CE.

3.1 Resources with No Changes

Land Use and Zoning. The land use and zoning of the expanded project area are not expected to change as a result of the Project.

[1] Note that the preliminary design plan set in Attachment 1 is labeled "North of Vineyard Segment" to distinguish it from the original American Fork section.

Community Impacts. There would be no significant effects on the communities adjacent to the expanded project area.

Visual/Aesthetics. The expanded project area is adjacent to the rail corridor, which consists of residential, industrial, and other nonresidential types of land uses. The proposed 3.8-mile extension would not degrade or change the existing visual and aesthetic character of the site and surroundings.

Parks and Recreation Resources. There are no parks or recreation resources identified in the expanded project area.

Air Quality. There are no changes to the air quality findings compared to the findings in the 2023 CE. The project extension is included in the Mountainland Association of Governments' (MAG) 2023–2050 regional transportation plan (RTP) (MAG 2023), Amendment 1 includes the project extension (RTP project: T15). MAG's approved conformity determination report (MAG 2024), which used the latest planning assumptions and emissions estimates, confirms that MAG's 2023–2050 RTP and RTP Amendment 1 are consistent with and conform to the State Implementation Plan (SIP) or the U.S. Environmental Protection Agency's (EPA) interim conformity guidelines. The North of American Fork Double Track Project (UDOT PIN 20253) with the southern extension is included in MAG's 2025–2029 Transportation Improvement Program (TIP) (MAG 2025). The Project is not a project of air quality concern, and UTA and UDOT do not expect the Project to adversely affect local compliance with the National Ambient Air Quality Standards.

Hazardous Materials. The Utah Geospatial Resource Center's Land-related Contaminant and Cleanup database, the Utah Department of Environmental Quality's (UDEQ) online database, and a report by Environmental Data Resources, Inc., were reviewed for sites with known or suspected contamination in the hazardous materials evaluation area for the Project, which consisted of a 0.5-mile radius around the expanded project design footprint. Based on the site screening, several sites were identified. The project team reviewed information about the sites on UDEQ's Interactive Map (UDEQ 2025) and determined that none of the sites pose a substantial risk to the Project due to their distance away from the expanded project area. However, pursuant to the commitment in the 2023 CE, UTA and UDOT would conduct environmental due diligence by applicable ATSM standards during the final design of the Project to determine the current status of the sites near the project area and to determine whether hazardous materials are present before property acquisitions and construction occur.

See Attachment 3, *Hazardous Waste*, for a map showing the sites within a 0.5-mile radius of the project design footprint.

Farmland. The Farmland Protection Policy Act (FPPA) requires considering impacts to prime farmland, unique farmland, and farmland of statewide or local importance. Land "already in or committed to urban development." is exempt from the definition of farmland under the FPPA. Land along the Wasatch Front within city limits are usually committed to urban development in the city's land use plan. As shown in Attachment 4, *Farmland*, most of the expanded project area is considered urban (UGRC 2023), within incorporated city limits, or owned by UTA for transportation use.

However, parts of the expanded project area are in nonurban areas; specifically, three small areas that total about 3.61 acres of nonurban and/or unincorporated land. These three small areas of nonurban and unincorporated land are adjacent to the existing FrontRunner rail corridor and are bounded on all sides by incorporated urbanized areas of American Fork and Lindon. The project would impact one

nonurban and unincorporated area owned by the Timpanogos Special Service District (Non-urban Area #3 shown in Attachment 4) which provides wastewater treatment service to northern Utah County, and land for this facility would be considered part of the urban infrastructure. Because the total area for the other two parcels is small (less than 10 acres) and surrounded by incorporated urbanized areas, it is reasonable to assume that these unincorporated areas will be annexed into American Fork or Lindon when the private property owners decide to develop their properties. For this reason, the three small areas of nonurban and/or unincorporated land require no further evaluation.

Natural and Biological Resources. No changes were identified. The CE identifies a mitigation requirement that shrub and tree removal should occur outside the migratory bird nesting period, which is now April 1 to July 15. If clearing and grubbing does need to occur during nesting season, preconstruction surveys will be conducted to determine whether there are any occupied nests in the area of disturbance. This survey must be conducted no more than 1 week before tree removal.

Traffic and Parking. Six at-grade crossings would be modified to accommodate the additional UTA track with the 3.8-mile extension. These crossings are located at 200 South, Storrs Avenue, 100 West, 5750 West, 1100 South, and 1500 South in American Fork. The roadway approaching the at-grade crossings would be reprofiled with new railroad crossing gates and signals to accommodate the modifications. Since the average crossing speed of FrontRunner trains in the expanded project area is about 75 miles per hour, any potential increases in the gate closure time for two FrontRunner trains meeting at or near these crossings would be minimal.

A corridor-wide traffic and safety analysis has been conducted to evaluate the impacts of the future anticipated service increase along the FrontRunner corridor. The corridor-wide traffic and safety analysis is documented in a separate report, *FrontRunner Forward Corridor-level Traffic and Safety Technical Memorandum* (UTA 2023), and summarized in the PEL (UTA 2025). No traffic congestion issues were identified for any crossings in American Fork and Lindon due to service change.

There are no parking facilities in or near the expanded project extent. The Project changes would require temporary street closures and TCEs during construction; however, no permanent impact on either traffic or parking, and no major changes to existing roadways, are anticipated.

Utilities. Consistent with the 2023 CE, utilities within the expanded project area would be identified and the owners coordinated with during final design.

Construction Impacts. Construction impacts would not differ materially from what was identified in the 2023 CE.

Public Outreach and Agency Coordination. No additional public outreach has been conducted.

Safety and Security. There are no additional safety or security concerns associated with the proposed 3.8-mile extension. Existing pedestrian crossing gates and signals would be relocated as necessary to maintain safety and security requirements.

3.2 Resources with Changes

This section presents the reevaluation findings for the environmental impacts that have changed with the 3.8-mile extension, along with any changes to the previously committed (in the 2023 CE) or new mitigation actions. The resources with changes are land and property acquisition, relocation, leases and

easements; noise and vibration; floodplains; water resources and water quality; wetlands and waters of the U.S.; and threatened and/or endangered species.

3.2.1 Land/Property Acquisition, Relocation, Leases and Easements

The 3.8-mile extension would occur primarily in the UTA-owned ROW. Narrow areas of agricultural land and commercial and residential property situated to the west of the rail corridor would be acquired for the Project. A total of 54 parcels and about 5.58 acres of land would be permanently incorporated and/or temporarily acquired for the Project. These acquisitions consist of the following:

- Partial acquisition of 54 parcels that total 5.58 acres for the construction of the additional track. These parcels consist of agricultural land and commercial and residential property. There would be no relocations associated with the acquisition of these parcels.

Attachment 5, *Additional Land/Property Acquisition, Relocation, Leases and Easements*, contains a detailed breakdown of property impacts and exhibits that show the additional ROW required for the Project.

UTA and UDOT will conduct acquisitions in accordance with the provisions in the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 USC Section 61 and the implementing regulation 49 CFR Part 24).

3.2.2 Cultural, Historic, and Archaeological Resources

The original undertaking would result in **no adverse effect** under Section 106 of the National Historic Preservation Act and a **use with *de minimis* impact** under Section 4(f) of the Department of Transportation Act of 1966 for the [redacted]. The Utah State Historic Preservation Office (SHPO) concurred with FTA's finding on March 13, 2023.

Because of the 3.8-mile extension, the area of potential effect (APE) was expanded southward, as shown in the figure series provided in Attachment 2, *Cultural, Historic, and Archaeological Resources*. An additional archaeological inventory was conducted for the expanded APE in March 2024. The 2024 archaeological inventory identified [redacted]). [redacted] was previously determined eligible for the National Register of Historic Places under Criterion A for Transportation, and the recorded segment was previously determined eligible as a contributing resource in [redacted]. FTA has made the same determination of eligibility after independently evaluating the property.

Additionally, the 2024 architectural resources survey identified 11 historic-age resources, including eight buildings and three subdivisions, within the expanded APE. FTA has determined that the 11 identified historic-age resources are not eligible due to lack of significance and/or substantive alterations that have compromised their integrity.

The [redacted] within the expanded APE would be avoided by the changes to the undertaking for the extension. Therefore, FTA is retaining the finding of **no adverse effect** on [redacted] for this undertaking based on the effects on the site at [redacted] of the project extent (in the original APE). FTA is also retaining the corresponding findings of **use with *de minimis* impact** of [redacted] under Section 4(f). SHPO concurred with these findings in a letter to FTA dated [redacted].

Attachment 2 contains the expanded APE and site location figures, and the Section 106 consultation documentation.

3.2.3 Noise and Vibration

The noise and vibration assessment was completed to determine impacts due to infrastructure changes using FTA methodology for general assessment. The new FrontRunner track would be located on the west side of the existing FrontRunner track. For receivers east of the rail corridor, the noise levels would decrease slightly (less than 0.1 decibel [dB]) because some of the trains would be moved from the existing track to the proposed track which is farther west. For receivers west of the rail corridor where the new track would be added, the noise levels would increase slightly (up to 1.6 dB and less than 0.1 dB for most receivers). This increase does not meet the threshold for a noise impact.

After the 2023 CE was approved, information came to light that there is existing ballast mat in the original project area. Just south of the turnout south of 2100 North, there is a 1,000-foot-long section of ballast mat under the existing track. Because the ballast mat under the existing FrontRunner track is providing lower vibration levels, the addition of a new track without a ballast mat would increase vibration levels by more than 3 VdB, the vibration impact threshold, for three single-family residences west of track, even though the new track in this section would be on the east side of the existing track (farther from the residences).

At all locations in the expanded project area that do not have an existing ballast mat, no vibration impacts were identified. Because the ballast mat under existing FrontRunner track is providing a lower vibration levels, addition of a new track without a ballast mat would increase vibration levels by more than 3 VdB for some front row receivers, resulting in vibration impacts at 16 single-family residences west of track. See Attachment 6, *Noise and Vibration*, for the noise and vibration assessment, the locations of existing ballast mat, and locations of the anticipated impacted residences.

In addition, a corridor-level noise and vibration analysis was completed to determine impacts due to service increase. The corridor-level noise and vibration analysis is documented in a separate report, *FrontRunner Forward Corridor-Level Noise and Vibration Analysis Addendum Technical Memorandum* (UTA 2025), and summarized in the PEL (UTA 2025). The analysis identified noise impacts at four single-family residences within the project area (original and expanded sections) and no vibration impacts due to service change.

The recommended mitigation for the vibration impacts is to include a ballast mat under the new track adjacent to the existing track with ballast mat. A detailed noise and vibration assessment will be conducted during final design and will consider both infrastructure changes and service increase to determine reasonable and feasible mitigation. In addition, any ballast mat under existing track would be replaced where existing track is being shifted.

3.2.4 Floodplains

The floodplains near the project extension include one Federal Emergency Management Agency (FEMA) Special Floodplain Hazard Area Zone AE (1% chance of flooding each year) floodplains associated with Utah Lake. About 0.50 acre of Zone AE floodplain would be impacted in Lindon City by the 3.8-mile extension. UTA and UDOT do not expect this impact to cause a rise in Utah Lake's base flood elevation at this location. However, floodplain development permits from Lindon City and Utah County will be

obtained for the 0.50 acre of impacts to Zone AE floodplains within city limits and in unincorporated areas.

No FEMA floodplain has been established for the American Fork River in the expanded project area.[2] Attachment 7, *Floodplains*, shows the flood zones in and near the expanded project area. Also see Section 3.2.5, *Water Resources and Water Quality*.

3.2.5 Water Resources and Water Quality

There is one named surface water in the expanded project area: the American Fork River. For additional information about this surface water, see Section 3.2.6, *Wetlands and Waters of the U.S.*

The American Fork River crosses beneath the existing Union Pacific Railroad and FrontRunner tracks southeast of 100 West in American Fork. Constructing the extension would include adding a second UTA bridge to allow the new track (UTA ML No. 2) to cross over the American Fork River. The abutments for this new bridge were previously constructed, so UTA and UDOT do not anticipate any in-river work. A stream alteration permit from the Utah Division of Water Rights (DWRi) would be required since work would occur within 30 feet of the bank of the American Fork River.

Grading and adding ballast for a second track would add a small amount of impervious area and would slightly increase the amount of stormwater runoff from the FrontRunner track after construction. UTA and UDOT do not anticipate any impacts to surface water quality from the small amount of increased stormwater runoff.

Surface water quality could be impacted during construction; stormwater runoff from disturbed ground could cause erosion, carry sediment off site, and increase total suspended sediment and total dissolved solids concentrations in the American Fork River. As described in the 2023 CE, UDOT and UTA will prepare a stormwater pollution prevention plan (SWPPP) and obtain coverage under the Utah Pollutant Discharge Elimination System Construction General Permit UTRC00000 (CGP) before construction. The SWPPP will specify best management practices to limit erosion and control sediment discharge from the construction area to surface water bodies. The CGP and the SWPPP will include the expanded project area. No additional mitigation is required.

3.2.6 Wetlands and Waters of the U.S.

An aquatic resources survey in the expanded project area was conducted and the results presented in an aquatic resources delineation report (see Attachment 8, *Aquatic Resources Delineation Report*). These resources consist of 3.01 acres of palustrine emergent wetlands, 0.10 acres (159 linear feet) of perennial streams (American Fork River), and 0.19 acres (1,963 linear feet) of ditches.

The impacts from the extension would be about 0.30 acres to palustrine emergent wetlands and about 0.10 acres to ditches. Table 1 summarizes these impacts, and Attachment 9, *Wetlands and Waters of the U.S.*, provides exhibits that show the locations of the impacted aquatic resources.

[2] Federal Emergency Management Agency, Utah County, and American Fork City, Flood Insurance Rate Maps 49049C0302F, 49049C0306F, 49049C0307F, and 49049C0309F, effective June 19, 2020.

Table 1. Impacts to Wetlands and Waters of the U.S.

Aquatic Resource Type	Impacts of the Original Project (acres)	Additional Impacts (acres)	Total Impacts with the Extension (acres)
Wetlands	0.00	0.30	0.30
Streams	0.00	0.00	0.00
Canals and ditches	0.00	0.10	0.10

Because some of the aquatic resources identified in the expanded project area that would be impacted by the proposed double-track extension appear to have a continuous surface connection to a downstream water of the U.S., it is likely that the U.S. Army Corps of Engineers (USACE) would characterize these aquatic resources as jurisdictional according to Section 404 of the Clean Water Act (CWA). UDOT and UTA will submit a USACE Nationwide 14 Preconstruction Notification (PCN) because impacts would exceed 0.1 acres.

Mitigation for impacts, if needed, are available from a UDOT-owned mitigation bank (Northern Utah County Mitigation Bank, which is located near the northeast shore of Utah Lake in Lindon, Utah), or mitigation will be developed through a project-specific mitigation plan for this project.

3.2.7 Threatened and/or Endangered Species

Potentially suitable habitats for threatened and/or endangered species were identified within the original and expanded project areas. A biological assessment was prepared for the entire project area for informal consultation with the U.S. Fish and Wildlife Service (USFWS). Attachment 10, *Biological Assessment*, provides a detailed description of the assessment methods and conclusions related to the presence of suitable habitat and impacts to these species. The following conclusions are made for the threatened and endangered species.

Potentially suitable habitat was identified for two insect species that are proposed to be listed under the Endangered Species Act (ESA) in this reevaluation that was not identified in the 2023 CE: Suckley's cuckoo bumble bee (*Bombus suckleyi*) and monarch butterfly (*Danaus plexippus*). Potentially suitable habitat for one fish species listed as threatened under the ESA, June sucker (*Chasmistes liorus*), exists in the expanded project area (in the American Fork River). Additionally, potentially suitable habitat exists in the original and expanded project areas for Ute ladies'-tresses (*Spiranthes diluvialis*), which is listed as threatened under the ESA.

Suckley's Cuckoo Bumble Bee. Potentially suitable nesting and foraging habitat exists in the project area. Suckley's cuckoo bumble bees have not been observed in the United States since 2016 (USFWS 2024), and critical habitat has not been designated for this species. For these reasons, the Project would not jeopardize the continued existence of Suckley's cuckoo bumble bees.

Monarch Butterfly. Potentially suitable habitat for monarch butterfly was identified in the project area; however, the proposed critical habitat for this species is outside this area. For this reason, the Project would not jeopardize the continued existence of monarch butterflies.

June Sucker. Potentially suitable habitat for June sucker was identified in the American Fork River in the expanded project area. However, UTA and UDOT do not anticipate that the American Fork River would

be disturbed during work to be performed on the American Fork River bridge that carries UTA's commuter rail. Additionally, construction near the American Fork River would occur outside the June sucker's spawning period from May to June, and stormwater from the construction site would be managed to control sediment discharges to the stream to protect water quality and minimize indirect effects. Construction could affect June sucker adults, larvae, or potentially suitable habitat as a result of stormwater runoff occurring from earthwork near the American Fork River. Stormwater from the construction site would be managed to control sediment discharges to the stream, thereby protecting water quality and reducing indirect effects on the species.

Additionally, to minimize potential indirect impacts during the spawning avoidance period, any construction in the action area would occur outside the June sucker avoidance window of April 15 through July 31.

Ute Ladies'-tresses. A total of 4.15 acres of potentially suitable Ute ladies'-tresses habitat were identified in May and June 2024 in wet meadow wetlands at the south end of the expanded project area. About 1.14 acres of potentially suitable Ute ladies'-tresses habitat was identified in May 2025 in a pasture near the south end of the original project area. All of the potentially suitable habitat identified is outside the project design footprint and would be subject to indirect impacts only.

A clearance survey conducted in August 2024 in the 4.15-acres potentially suitable Ute ladies'-tresses habitat did not identify any Ute ladies'-tresses individual plants. Because the USFWS recommends that Ute ladies'-tresses surveys be conducted annually for 3 consecutive years (USFWS 2017), 2 more years (in 2025 and 2026) of clearance surveys will be conducted on these 4.15-acre of potentially suitable habitat identified in 2024 in wet meadow wetlands at the south end of the expanded project area. Additionally, 3 years of clearance surveys will be conducted (in 2025, 2026, and 2027) for the 1.14-acres of potentially suitable Ute ladies'-tresses habitat that were identified in 2025 in a pasture near the south end of the original project area. Construction would not occur within 300 feet of potentially suitable Ute ladies'-tresses habitat until three consecutive years of clearance surveys are complete, excluding the 1.14-acre potentially suitable Ute ladies'-tresses habitat that were identified in 2025 in a pasture near the south end of the original project area. Drainage work would start near this habitat in December 2026, however, the drainage work would be confined to the existing drainage area between the existing UTA tracks and 8020 North in Lehi, and the conservation measures described in the section *Conservation Measures* of Attachment 10, *Biological Assessment*.

Based on surveys completed to date and the evaluation of direct, indirect, interrelated, interdependent, and cumulative effects presented in the biological assessment for the Project as well as consultation with USFWS, FTA has determined that the Project **may affect, but is not likely to adversely affect** the June Sucker and Ute ladies'-tresses.

FTA informally consulted on the project with USFWS on July 21, 2025. On July 31, 2025, USFWS requested project GIS files which were sent by FTA on August 5, 2025. USFWS requested clarification on certain project improvements on August 25, 2025. FTA responded with project clarification in an email dated August 29, 2025. On September 22, 2025, USFWS requested an analysis of the June Sucker and an adjustment to the spawning timeframe for this species that was documented in the original consultation. On October 29, 2025, FTA provided USFWS with revised documentation incorporating these recommendations.

3.2.8 State and Local Permits, Policies and Ordinances.

The Project anticipates that the following additional permits and approvals will be needed:

- Section 404 Nationwide Permit 14 authorization from USACE
- Stream alteration permit from Utah DWRi for work within 30 feet of the American Fork River.
- Floodplain development permit from Lindon City
- Floodplain development permit from Utah County

4 Summary of Changes to Environmental Impacts

This section summarizes the environmental impacts associated with the North of American Fork Double Track Project reevaluation. Table 2 summarizes the resources with environmental impacts that have changed from the 2023 CE.

Table 2. Changes to Environmental Impacts and Mitigation

Environmental Resource	Environmental Impacts and Mitigation
Land Use and Zoning	No changes were identified.
Land/Property Acquisition, Relocation, Leases and Easements	54 parcels and about 5.58 acres of land would be permanently incorporated and/or temporarily acquired for the Project. No relocations are anticipated. No additional mitigation is required.
Community Impacts	No changes were identified.
Cultural, Historic, and Archaeological Resources and Section 4(f) Resources	An additional archaeological inventory was conducted for the expanded APE in March 2024. The 2024 archaeological inventory identified one previously recorded archaeological site within the expanded APE: the D&RGW (42UT1101). Site 42UT1101 was previously determined eligible for the National Register of Historic Places under Criterion A for Transportation, and the recorded segment was previously determined eligible as a contributing resource in 2005 and again in 2023. FTA has made the same determination of eligibility after independently evaluating the property. The D&RGW (42UT1101) within the expanded APE would be avoided by the changes to the undertaking for the extension. Therefore, FTA is retaining the finding of no adverse effect on site 42UT1101 for this undertaking based on the effects on the site at the north end of the project extent (in the original APE). FTA is also retaining the corresponding findings of use with de minimis impact of site 42UT1101 under Section 4(f). SHPO concurred with these findings in a letter dated September 23, 2025.
Visual/Aesthetic Resources	No changes were identified.
Parks and Recreation Resources and Section 4(f) Resources	No changes were identified.
Noise and Vibration	There would be 16 vibration impacts in the expanded project area and 3 newly identified vibration impacts in the original project area due to there being ballast mat installed under the existing track. In addition, a

Environmental Resource	Environmental Impacts and Mitigation
	corridor-level noise and vibration analysis was completed to determine impacts due to service increase. The analysis identified noise impacts at four single-family residences within the project area (original and expanded sections) and no vibration impacts due to service change. The recommended mitigation for the vibration impacts is to include a ballast mat under the new track adjacent to the existing track with ballast mat. A detailed noise and vibration assessment will be conducted during final design and will consider both infrastructure changes and service increase to determine reasonable and feasible mitigation. In addition, any ballast mat under existing track will be replaced where existing track is being shifted.
Air Quality	No changes were identified.
Hazardous Materials	No changes were identified.
Farmland	No changes were identified.
Floodplains	About 0.50 acre of Zone AE floodplain would be impacted by the 3.8-mile extension. UTA and UDOT do not expect this impact to cause a rise in Utah Lake's base flood elevation at this location. Floodplain development permits will be obtained from Lindon City and Utah County for the 0.50 acre of Utah Lake Zone AE impacts within city limits and in unincorporated areas.
Water Resources and Water Quality	During construction, stormwater runoff from disturbed areas could reduce water quality in the American Fork River. The previously identified CGP and SWPPP would include the expanded project area. A stream alteration permit will be obtained from the Utah DWRi for work that would occur within 30 feet of the American Fork River.
Wetlands and Waters of the U.S.	Additional impacts of about 0.30 acres to palustrine emergent wetlands and 0.10 acres to ditches were identified. These impacts would qualify for authorization under Section 404 Nationwide Permit 14. Compensatory mitigation requirements, if required, will be met by using mitigation credits from a UDOT-owned mitigation bank or through the development of a project-specific mitigation plan.
Threatened and/or Endangered Species	A total of 5.29 acres of potentially suitable Ute ladies'-tresses habitat could be indirectly affected by construction, specifically by fugitive dust emissions and the introduction and/or spread of noxious and invasive weeds. Indirect effects would be minimized by implementing conservation measures. Construction could affect June sucker adults, larvae, or potentially suitable habitat as a result of stormwater runoff occurring from earthwork near the American Fork River. Based on surveys completed to date and the evaluation of direct, indirect, interrelated, interdependent, and cumulative effects presented in the biological assessment for the Project as well as consultation with USFWS, FTA has determined that the Project **may affect, but not likely to adversely affect** the June sucker and Ute ladies'-tresses. The conservation measures listed in the *Biological Assessment* (Attachment 10) will be implemented to minimize indirect impacts.

Environmental Resource	Environmental Impacts and Mitigation
	Construction near the American Fork River will occur outside the June sucker's avoidance window from April 15 to July 31. Construction will not occur within 300 feet of potentially suitable Ute ladies'-tresses habitat until three consecutive years of clearance surveys are complete. Early drainage work prior to this time will be confined to the existing drainage area between the existing UTA tracks and 8020 North in Lehi.
Natural and Biological Resources	No changes were identified.
Traffic and Parking	No changes were identified.
Utilities	No changes were identified.
Construction Impacts	No changes were identified.
Safety and Security	No changes were identified.
Public Outreach and Agency Coordination	No changes were identified.
State and Local Permits	The Project will need the following additional permits and approvals: • Section 404 Nationwide Permit 14 authorization from USACE. • A stream alteration permit from Utah DWRi for work within 30 feet of the American Fork River. • Floodplain development permit from Lindon City. • Floodplain development permit from Utah County.

5 Conclusion

The expected impacts to the natural and built environment as a result of constructing the extension of the North of American Fork Double Track Project would not result in substantially different impacts than those identified in the original CE, which was approved on August 16, 2023, by FTA Region 8. The CE designation for the Project remains valid; however, as a result of the changes in project scope and associated findings, the CE list and type for the project has changed to list D "other" pursuant to 23 CFR §771.118(d).

The additional findings and/or mitigation are identified in Table 2, *Changes to Environmental Impacts and Mitigation*, in Section 4.

6 References

[MAG] Mountainland Association of Governments

2023 TransPlan50: Mountainland Association of Governments' 2023–2050 Regional Transportation Plan for Urban Utah County. https://mountainland.org/rtp.

2024 Emissions Analysis Report: Mountainland MPO TransPlan50 2050 Regional Transportation Plan. https://magutah.gov/static/files/transportation/TransPlan50/RTP%20AQ%20Conformity%20Determination%202024%20Amendment%201.pdf. Amended June 6, 2024.

2025 Transportation Improvement Program 2025–2029. https://mountainland.org/tip.

[UDEQ] Utah Department of Environmental Quality

2025 Interactive Map. https://enviro.deq.utah.gov. Accessed July 15, 2025.

[UDOT] Utah Department of Transportation
2025 Environmental Process Manual of Instruction. https://drive.google.com/file/d/1ajg8_FLyoHmdr9ebJf40423bb6SZ7HHO/view. March.

[UGRC] Utah Automated Geographic Reference Center.
2023 Utah Urban Areas Census 2020. https://opendata.gis.utah.gov/datasets/utah::utah-urban-areas-census-2020/explore?location=40.262561%2C-111.755884%2C-1.00. Accessed July 23, 2025.

[USFWS] U.S. Fish and Wildlife Service
2017 Interim Survey Requirements for Ute Ladies'-tresses Orchid (*Spiranthes diluvialis*) [revised]. Original date of publication November 23, 1992. https://www.fws.gov/sites/default/files/documents/SPDI_interimSurveyRequirements_1992_revised%202017.pdf.
2024 Suckley's Cuckoo Bumble Bee (*Bombus suckleyi*) Species Status Assessment. Version 1.0. https://iris.fws.gov/APPS/ServCat/DownloadFile/263505. August.

[UTA] Utah Transit Authority
2023 FrontRunner Forward Corridor-level Traffic and Safety Technical Memorandum. May.
2025 FrontRunner Forward Strategic Double Track Recommended Service Alternative Overview – A Planning and Environmental Linkage Study (PEL). May.
2025 FrontRunner Forward Corridor-Level Noise and Vibration Analysis Addendum Technical Memorandum. May.

ATTACHMENT 1

North of American Fork Extension Concept Design

UTAH
DEPARTMENT OF TRANSPORTATION

SEE SHEET NV_1-A FOR INDEX TO SHEETS

SHEET NO.
NV_1

U.S. Standard Units
(Inch-Pound Units)

ALL UNITS IN FEET UNLESS OTHERWISE NOTED

PLANS OF PROPOSED STATE TRANSIT FACILITY

CIG GRANT AND STATE FUNDED

S-R299(483) PIN: 21213

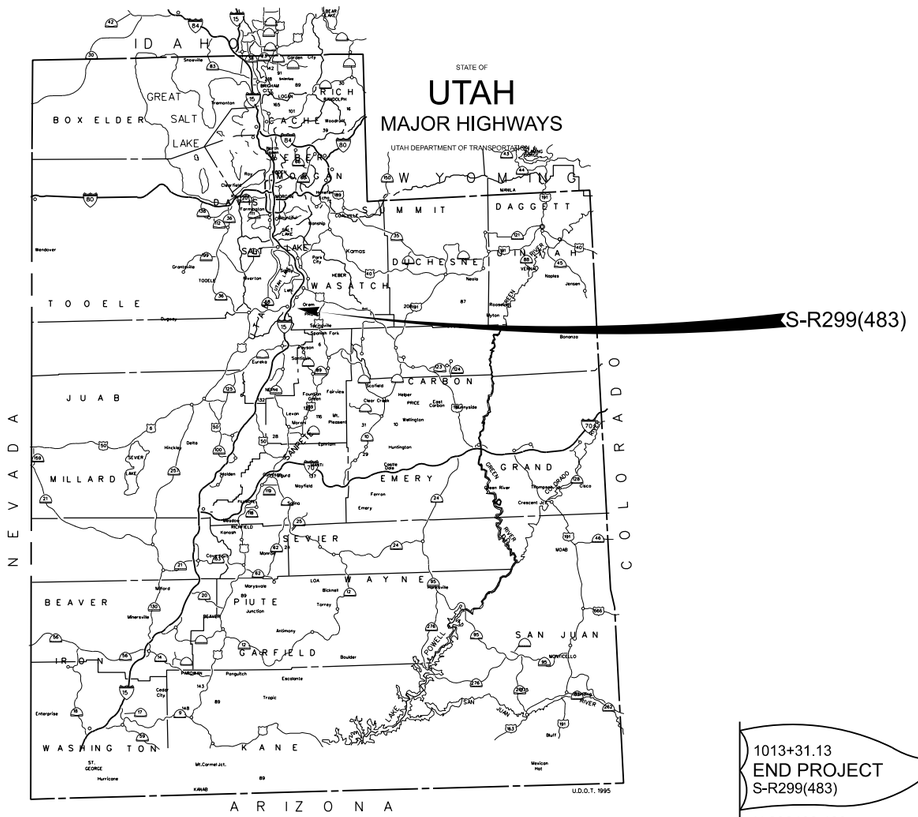
FRONTRUNNER POINT IMPROVEMENTS

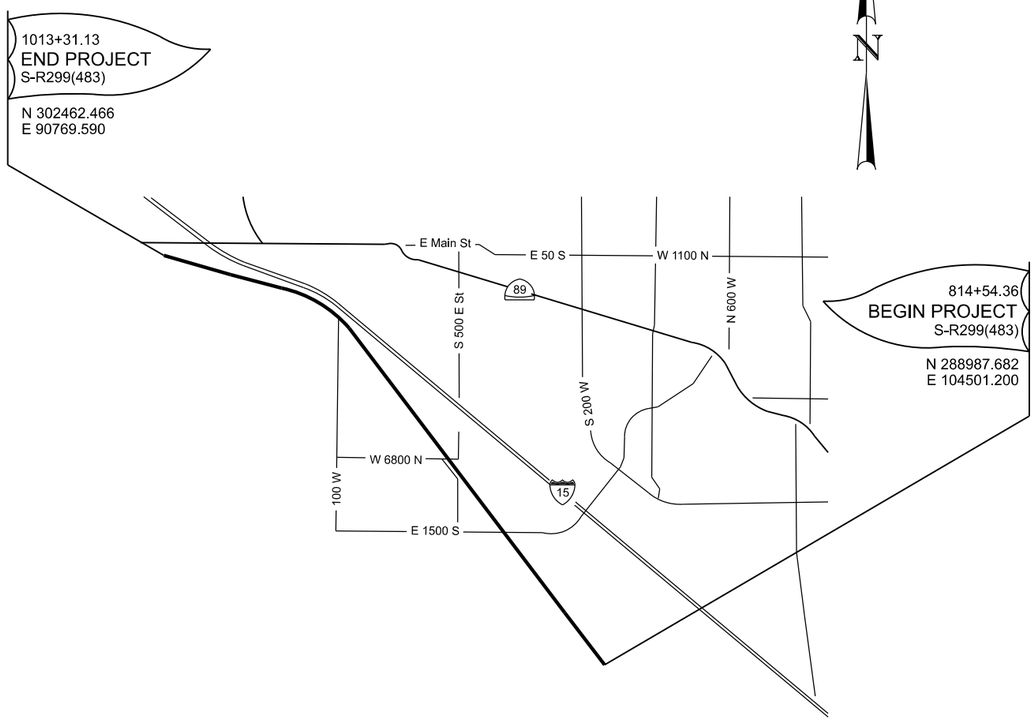
NORTH OF VINEYARD SEGMENT

UTAH COUNTY

LENGTH 3.765 MILES

30% PLAN SET





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CONTAINING THIS SIGNATURE

VERIFIED FOR SUBMISSION FOR ADVERTISEMENT

DESIGN ENGINEER

UTAH DEPARTMENT OF TRANSPORTATION

APPROVED FOR USE BY UDOT

REGION THREE PRECONSTRUCTION ENGINEER

$$file$$

$$date$$

INDEX TO SHEETS

RAIL DRAWINGS

SHEET NO.	NO. OF SHEETS	DESCRIPTION
NV_1	1	TITLE SHEET
NV_1-A	1	INDEX TO SHEETS
NV_1-B	1	ABBREVIATIONS & LEGEND
NV_HC-01 TO NV_HC-02	2	HORIZONTAL CONTROL
NV_CR-01 TO NC_CR-02	2	CROSS REFERENCE
NV_TS-01 TO NV_TS-02	2	TYPICAL SECTION
NV_RR-01 TO NV_RR-20	20	TRACK PLAN AND PROFILE
NV_RR-21 TO NV_RR-24	4	TRACK CROSS SECTIONS
NV_GC-01 TO NV_GC-07	7	GRADE CROSSING - PLAN & PROFILE
NV_DR-01 TO NV_DR-17	17	DRAINAGE
NV_UT-01 TO NV_UT-17	17	UTILITIES
S10A-S14B;RA03	11	SYSTEMS

INDEX TO SHEETS

STRUCTURE DRAWINGS

SHEET NO.	NO. OF SHEETS	DESCRIPTION
1 of 1	1	RETAINING WALL LOCATION PLAN
1 of 4	1	STRUCTURES S&L
2 of 4	1	STRUCTURES S&L
3 of 4	1	RAILROAD NOTES
4 of 4	1	RAILROAD CLEARANCES

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PROJECT: FRONTRUNNER POINT IMPROVEMENTS

NORTH OF VINEYARD SEGMENT

PROJECT NUMBER: S-R299(483) PIN 21213

INDEX TO SHEETS

SHEET NO. NV_1-A

2/7/2025 NV_1-A.dgn

LINE STYLES

SURFACE FEATURE LINE STYLES

- CUT — CUT CATCH LINE
- FILL — FILL CATCH LINE
- TEMPORARY BERM
- CABLE BARRIER
- BUILDING
- FENCE, CHAIN LINK
- FENCE, WIRE
- FENCE, WOOD
- FLOW LINE
- GUARDRAIL
- NOISE WALL
- PROPOSED UTA ML TRACK
- EXISTING UTA TRACK
- PROPOSED UPRR TRACK
- EXISTING UPRR TRACK
- PAVE CUT — PAVEMENT CUTTING
- SEDIMENT BARRIER
- SILT FENCE
- STRAW BALE
- VEGETATION LINE
- CONCRETE BARRIER
- PROPOSED RETAINING WALL

RIGHT OF WAY LINE STYLES

- SEC — SECTION LINE
- 1/4 — QUARTER SECTION LINE
- 40 — 40 ACRE LINE
- CITY BOUNDARY LINE
- ℄ — PROPERTY LINE
- N/A — HWY NO-ACCESS LINE
- R/W N/A — HWY R/W & NO-ACCESS LINE
- L/A — HWY LIMITED-ACCESS LINE
- R/W L/A — HWY R/W & LIMITED-ACCESS LINE
- RR — RAILROAD R/W LINE
- RR — EXISTING RAILROAD R/W LINE
- FRTG R/W — FRONTAGE ROAD R/W
- R/W — HIGHWAY R/W
- PE — PERPETUAL EASEMENT
- TE — TEMPORARY EASEMENT

SUBSURFACE/OVERHEAD LINE STYLES

- BCTV — CABLE BURIED
- CTV — CABLE OVERHEAD
- CONDUIT
- PC — PIPE CULVERT
- BE — ELECTRIC BURIED
- E — ELECTRIC OVERHEAD
- FO — FIBER OPTICS
- G — GAS
- IR — IRRIGATION
- PETRO — PETROLEUM
- SWR — SANITARY SEWER
- SD — STORM DRAIN
- BTEL — TELEPHONE BURIED
- TEL — TELEPHONE OVERHEAD
- WTR — WATER

SIGNAL LINE STYLES

- PWR — POWER SOURCE CIRCUIT
- SIG — SIGNAL CIRCUIT
- PED — PEDESTRIAN CIRCUIT
- PSH — PUSH BUTTON CIRCUIT
- DET — DETECTION CIRCUIT
- FUT — FUTURE CONDUIT
- LTG — LIGHTING CIRCUIT
- VID — VIDEO DETECTION CIRCUIT
- RAD — RADAR DETECTION CIRCUIT
- PEM — PREEMPTION CIRCUIT

SYMBOLS

- ATMS CABINET
- (A) CURB RETURN RADIUS
- TREE
- SIGN, GAS
- (1) HORIZONTAL CURVE (#)
- HORIZONTAL/VERTICAL P.I.
- HORIZONTAL/VERTICAL CURVE POINT
- METER
- JUNCTION BOX STREET LIGHT
- JUNCTION BOX
- LIGHT POLE
- (UP) UTILITY POLE
- PS POWER SOURCE
- MAIL BOX
- (ME) MANHOLE ELECTRIC
- (MG) MANHOLE GAS
- (MT) MANHOLE TELEPHONE
- (MSD) MANHOLE STORM DRAIN
- (MSS) MANHOLE SANITARY SEWER
- (MW) MANHOLE WATER
- MONUMENT
- 24:E PARCEL BALLOON
- RIGHT OF WAY MARKER
- SIGN (SINGLE POST)
- SIGN (DOUBLE POST)
- UNDERGROUND SERVICE PED

STANDARD ABBREVIATIONS

ABUT	ABUTMENT
CL, ℄	CENTERLINE
COMM	COMMUNICATIONS
CS	HORIZONTAL CURVE SPIRAL POINT
CWR	CONTINUOUSLY WELDED RAIL
E	EASTING
ELEV	ELEVATION
EX	EXISTING
L	LENGTH
ML	MAINLINE
MIN.	MINIMUM
MSE	MECHANICALLY STABILIZED EARTH
N	NORTHING
PC	HORIZONTAL POINT OF CURVATURE
PI	HORIZONTAL POINT OF INTERSECTION
PGL	PROFILE GRADE LINE
PT	HORIZONTAL POINT OF TANGENCY
PVC	POINT OF VERTICAL CURVATURE
PVI	POINT OF VERTICAL INTERSECTION
PVT	POINT OF VERTICAL TANGENCY
R/W	RIGHT OF WAY
SIG	SIGNALS
SC	HORIZONTAL SPIRAL CURVE POINT
ST	HORIZONTAL SPIRAL TANGENT POINT
STA	STATION
TS	HORIZONTAL TANGENT SPIRAL POINT
UP/UPRR	UNION PACIFIC RAILROAD
UTA	UTAH TRANSIT AUTHORITY

NOTE:
THE LINE STYLES AND SYMBOLS CONTAINED HEREIN ARE NOT ALL INCLUSIVE. ANY ADDITIONAL LINE STYLES NOT SHOWN HERE ARE SHOWN ON THEIR RESPECTIVE SHEETS WITHIN A LEGEND.

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PROFESSIONAL ENGINEER

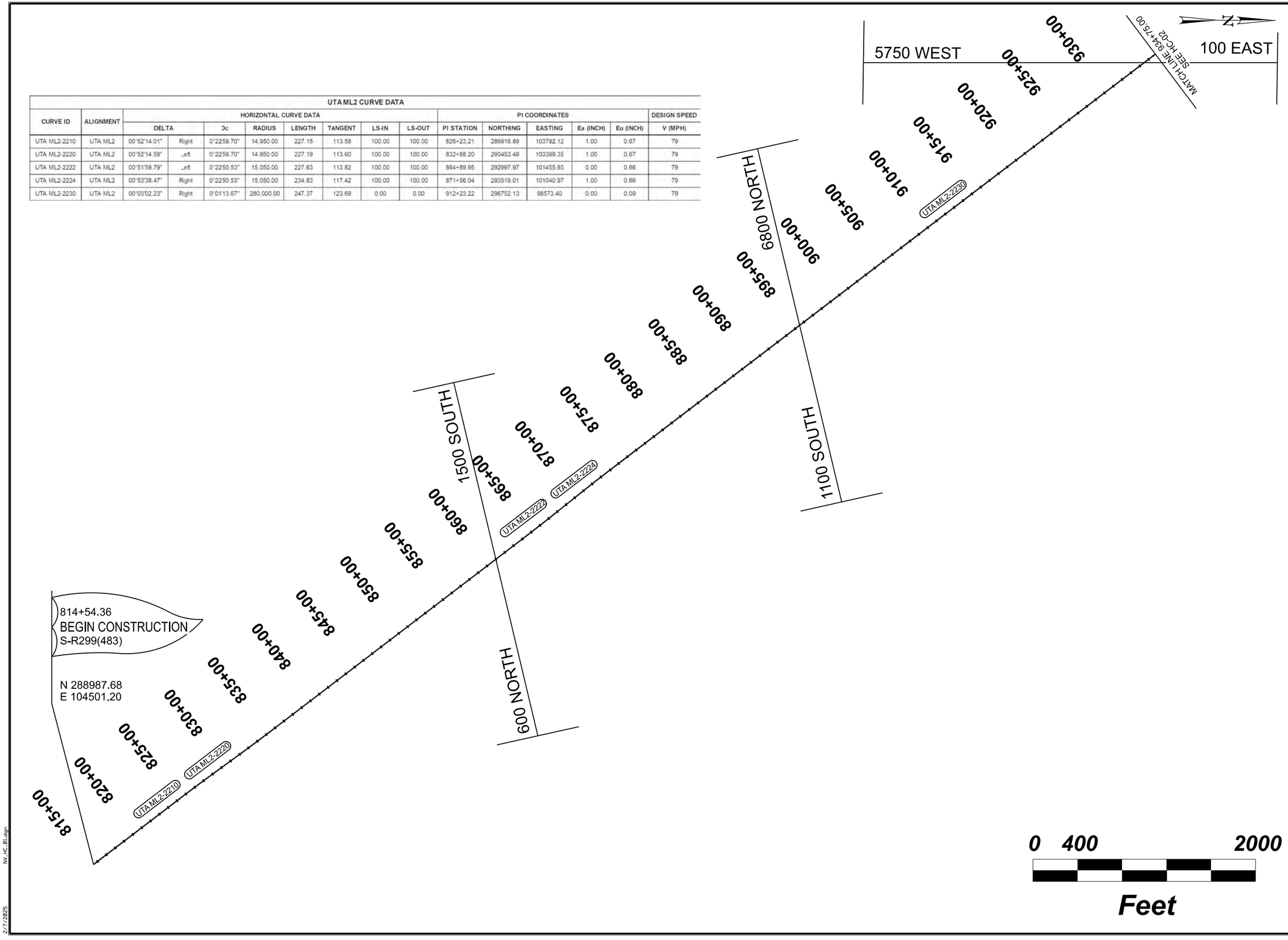
FRONTRUNNER POINT IMPROVEMENTS
NORTH OF VINEYARD SEGMENT
PROJECT | PROJECT NUMBER S-R299(483) PIN 21213

ABBREVIATIONS AND LEGENDS

SHEET NO. NV_1-B

NV_1-B.dgn
2/7/2025

UTA ML2 CURVE DATA															
CURVE ID	ALIGNMENT	HORIZONTAL CURVE DATA								PI COORDINATES					DESIGN SPEED
		DELTA		Dc	RADIUS	LENGTH	TANGENT	LS-IN	LS-OUT	PI STATION	NORTHING	EASTING	Ea (INCH)	Eu (INCH)	V (MPH)
UTA ML2-2210	UTA ML2	00°52'14.01"	Right	0°22'59.70"	14,950.00	227.15	113.58	100.00	100.00	826+23.21	289916.89	103792.12	1.00	0.67	79
UTA ML2-2220	UTA ML2	00°52'14.59"	Left	0°22'59.70"	14,950.00	227.19	113.60	100.00	100.00	832+88.20	290453.49	103399.35	1.00	0.67	79
UTA ML2-2222	UTA ML2	00°51'59.79"	Left	0°22'50.53"	15,050.00	227.63	113.82	100.00	100.00	864+89.95	292997.97	101455.93	0.00	0.66	79
UTA ML2-2224	UTA ML2	00°53'38.47"	Right	0°22'50.53"	15,050.00	234.83	117.42	100.00	100.00	871+56.04	293519.01	101040.97	1.00	0.66	79
UTA ML2-2230	UTA ML2	00°03'02.23"	Right	0°01'13.67"	280,000.00	247.37	123.69	0.00	0.00	912+23.22	296752.13	98573.40	0.00	0.09	79



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PROJECT: FRONTRUNNER POINT IMPROVEMENTS

NORTH OF VINEYARD SEGMENT

PROJECT NUMBER: S-R299(483) PIN 21213

HORIZONTAL CONTROL

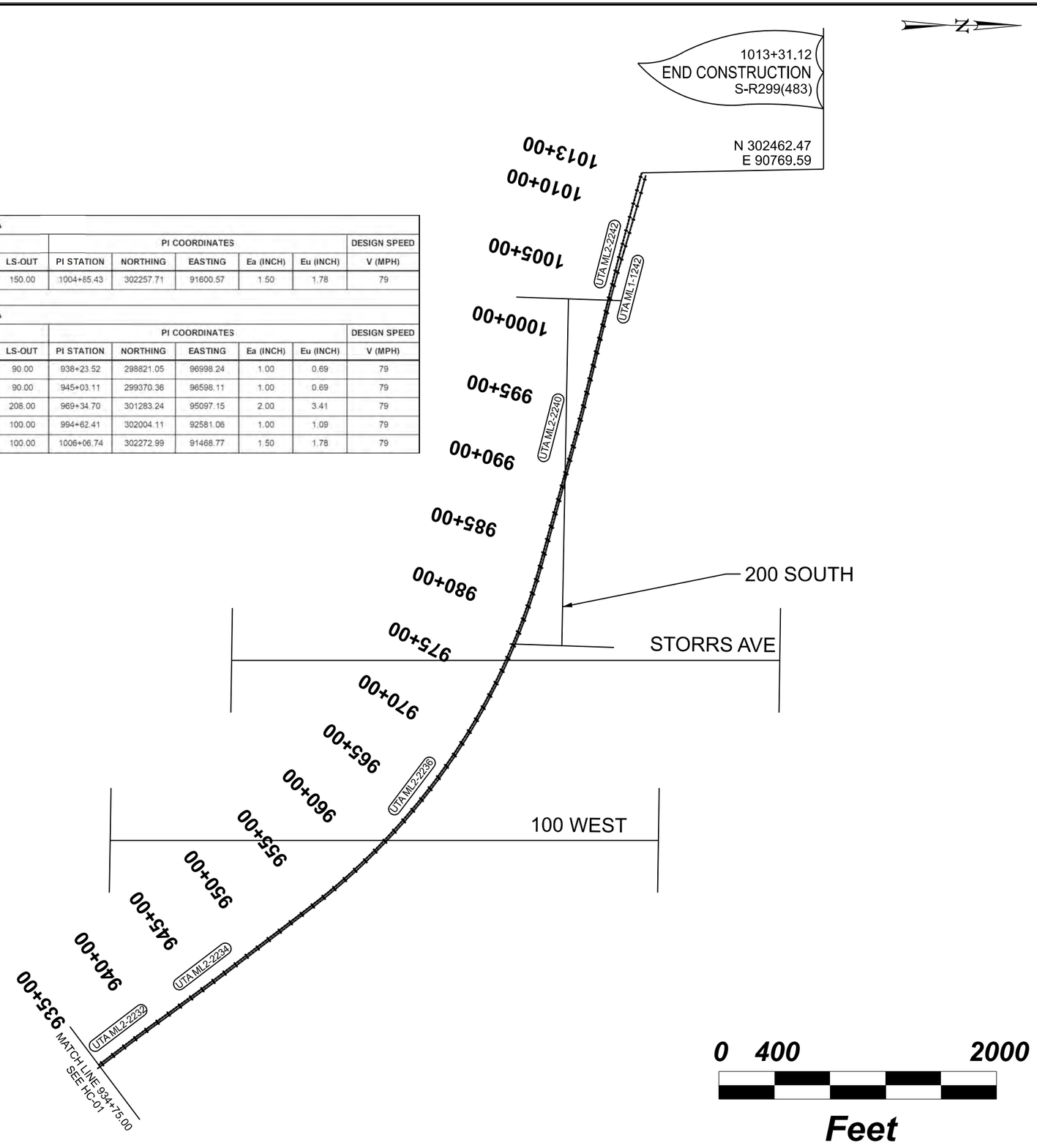
SHEET NO. NV_HC-01

NV_HC_01.dgn

2/7/2025

UTA ML1 CURVE DATA														
CURVE ID	ALIGNMENT	HORIZONTAL CURVE DATA								PI COORDINATES					DESIGN SPEED
		DELTA		Dc	RADIUS	LENGTH	TANGENT	LS-IN	LS-OUT	PI STATION	NORTHING	EASTING	Ea (INCH)	Eu (INCH)	V (MPH)
UTA ML1-1242	UTA ML1	01°44'21.05"	RT	0°44'59.97"	7,639.53	231.89	115.96	150.00	150.00	1004+85.43	302257.71	91600.57	1.50	1.78	79

UTA ML2 CURVE DATA															
CURVE ID	ALIGNMENT	HORIZONTAL CURVE DATA								PI COORDINATES					DESIGN SPEED
		DELTA		Dc	RADIUS	LENGTH	TANGENT	LS-IN	LS-OUT	PI STATION	NORTHING	EASTING	Ea (INCH)	Eu (INCH)	V (MPH)
UTA ML2-2232	UTA ML2	00°57'16.61"	RT	0°23'13.68"	14,815.00	246.83	123.25	90.00	90.00	938+23.52	298821.05	96998.24	1.00	0.69	79
UTA ML2-2234	UTA ML2	00°59'07.81"	LT	0°23'13.68"	14,785.00	254.31	127.33	90.00	90.00	945+03.11	299370.36	96598.11	1.00	0.69	79
UTA ML2-2236	UTA ML2	34°50'18.51"	LT	1°14'14.96"	4,614.75	2,805.98	1,498.75	208.00	208.00	969+34.70	301283.24	95097.15	2.00	3.41	79
UTA ML2-2240	UTA ML2	01°15'12.76"	LT	0°28'38.87"	11,985.00	262.21	133.84	100.00	100.00	994+62.41	302004.11	92581.06	1.00	1.09	79
UTA ML2-2242	UTA ML2	01°12'58.35"	RT	0°44'59.97"	12,000.00	254.72	115.96	100.00	100.00	1006+06.74	302272.99	91468.77	1.50	1.78	79



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PROJECT: FRONTRUNNER POINT IMPROVEMENTS
NORTH OF VINEYARD SEGMENT

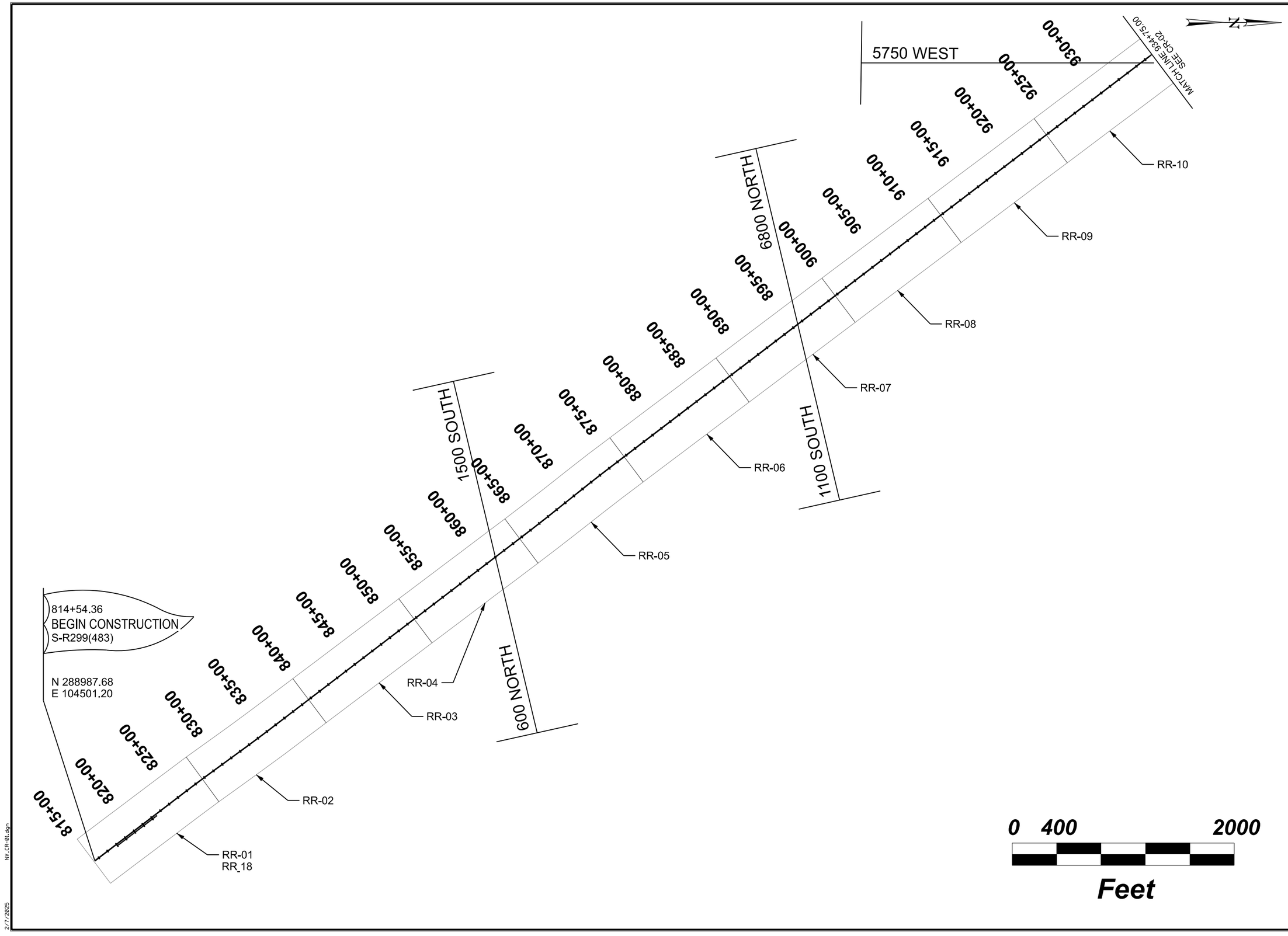
PROJECT NUMBER: S-R299(483) PIN 21213

HORIZONTAL CONTROL

SHEET NO. NV_HC-02

NV_HC-02.dgn

2/7/2025



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FRONTRUNNER POINT IMPROVEMENTS

NORTH OF VINEYARD SEGMENT

PROJECT

PROJECT NUMBER S-R299(483) PIN 21213

CROSS REFERENCE

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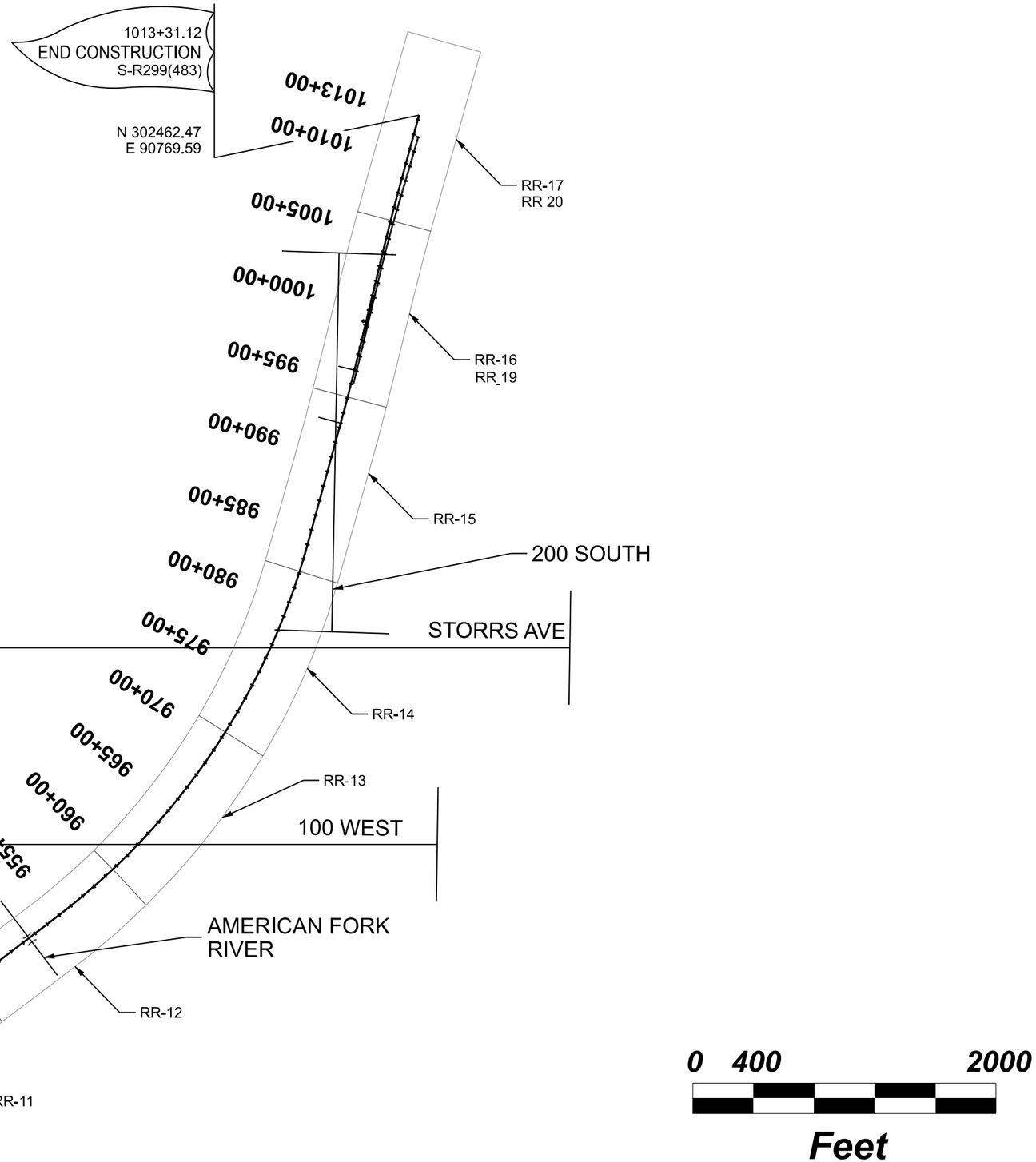

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NORTH OF VINEYARD SEGMENT

PIN 21213

S-R299(483)

CROSS REFERENCE

PROJECT

PROJECT NUMBER

SHEET NO. NV_CR-02

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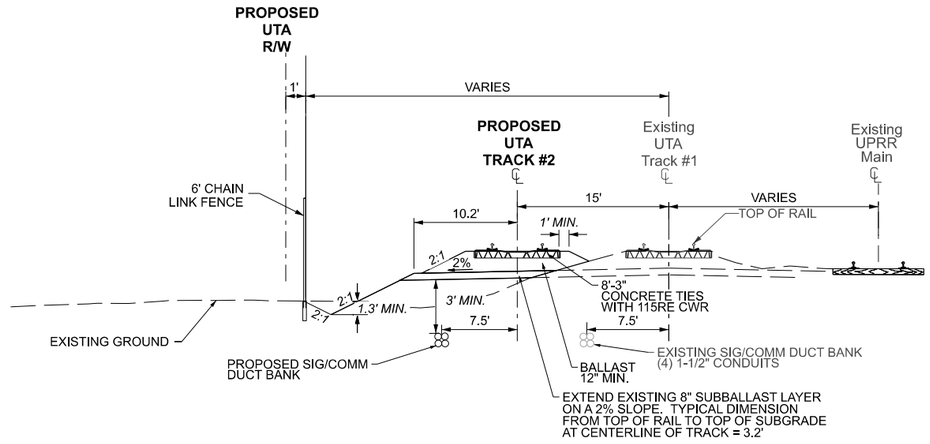
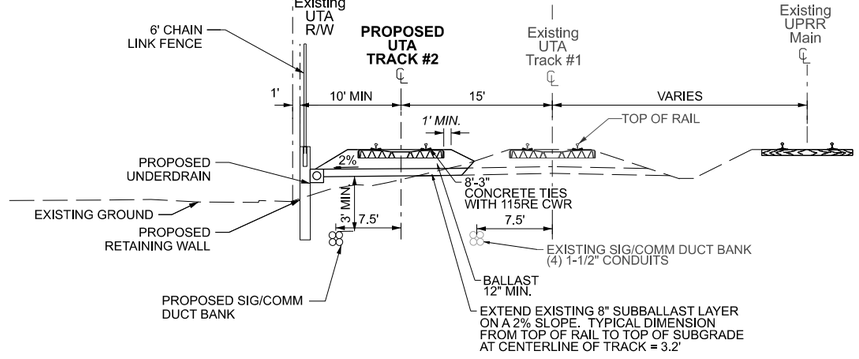
2/7/2025



PROPOSED SECOND MAINLINE

UTA TRACK #2

814+54 TO 846+50
861+65 TO 956+40
957+15 TO 962+33
964+92 TO 972+96
976+00 TO 976+94
989+76 TO 1013+31



PROPOSED SECOND MAINLINE WITH FILL WALL

UTA TRACK #2

846+50 TO 861+65
956+40 TO 957+15
962+33 TO 964+92
972+96 TO 976+00
976+94 TO 989+76

NOTES:

1. PROFILE GRADE LINE (PGL) LOCATED AT RAIL ALIGNMENT CENTERLINE AT THE ELEVATION OF THE LOW RAIL

0 3 15
Horiz. Feet

NV_TS-01.dgn
2/10/2025

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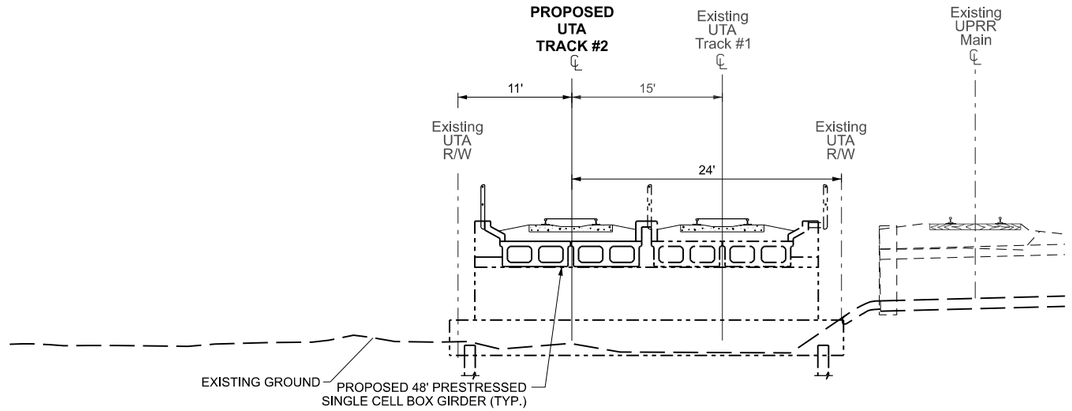
FRONTRUNNER POINT IMPROVEMENTS
NORTH OF VINEYARD SEGMENT
PROJECT
PROJECT NUMBER S-R299(483)
PIN 21213

TYPICAL SECTIONS

SHEET NO. NV_TS-01



PROPOSED SECOND MAINLINE ON AMERICAN FORK RIVER BRIDGE

UTA TRACK #2

953+38 TO 953+86

NOTES:

1. PROFILE GRADE LINE (PGL) LOCATED AT RAIL ALIGNMENT CENTERLINE AT THE ELEVATION OF THE LOW RAIL

0 3 15

Horiz. Feet

REVISIONS

NO.	DATE	APPROVED BY	REMARKS

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NORTH OF VINEYARD SEGMENT

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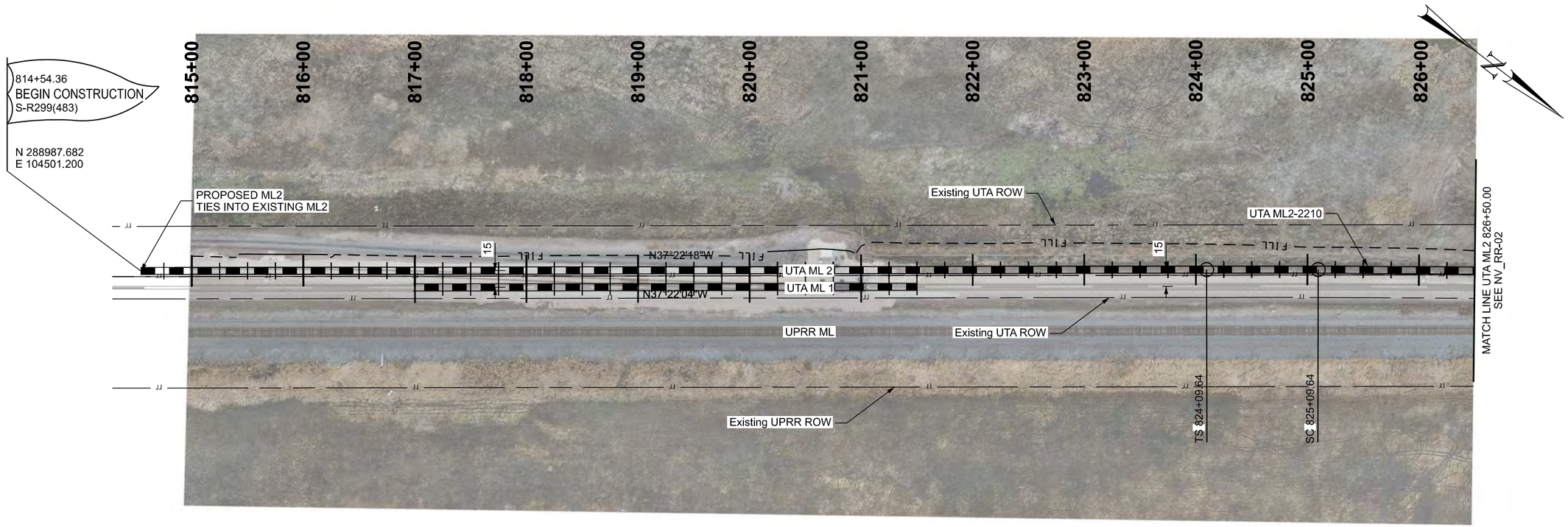
TYPICAL SECTIONS

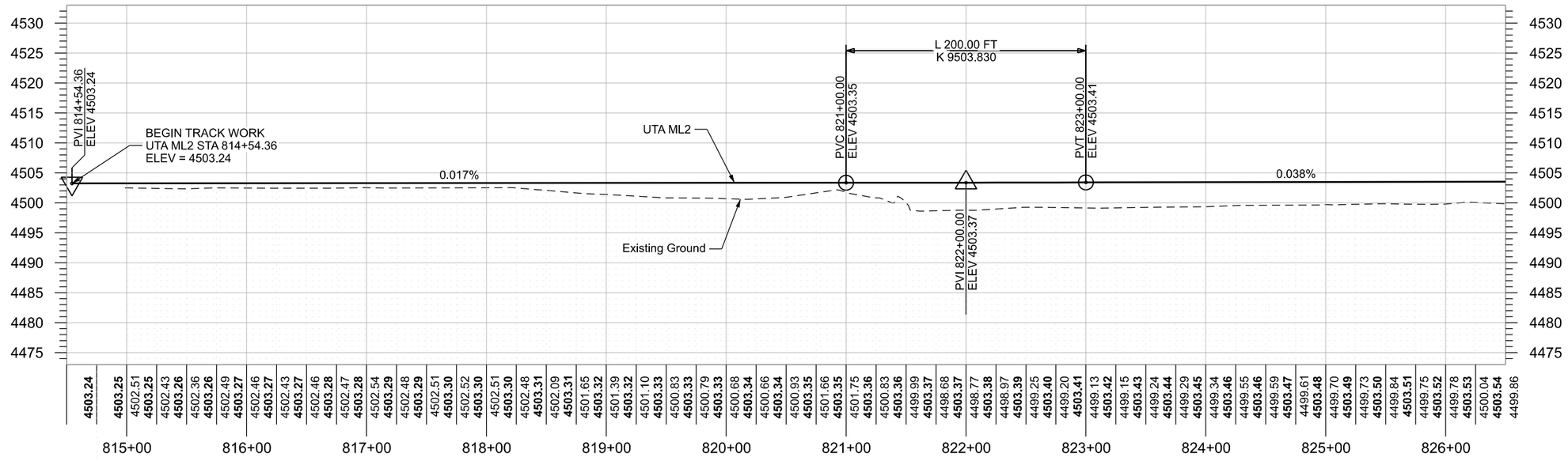
SHEET NO. NV_TS-02

NV_TS-02.dgn

2/10/2025



CURVE DATA							
ID NO.	R	Dc	LS-IN	LS-OUT	Ea (INCH)	Eu (INCH)	V (MPH)
UTA ML2-2210	14,950.00	0°22'59.70"	100.00	100.00	1.00	0.67	79



UTA ML2

REVISIONS

NO.	DATE	APPROVED BY	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
HDR

DRAWN BY AMG
QC CHECKED BY JS
DATE

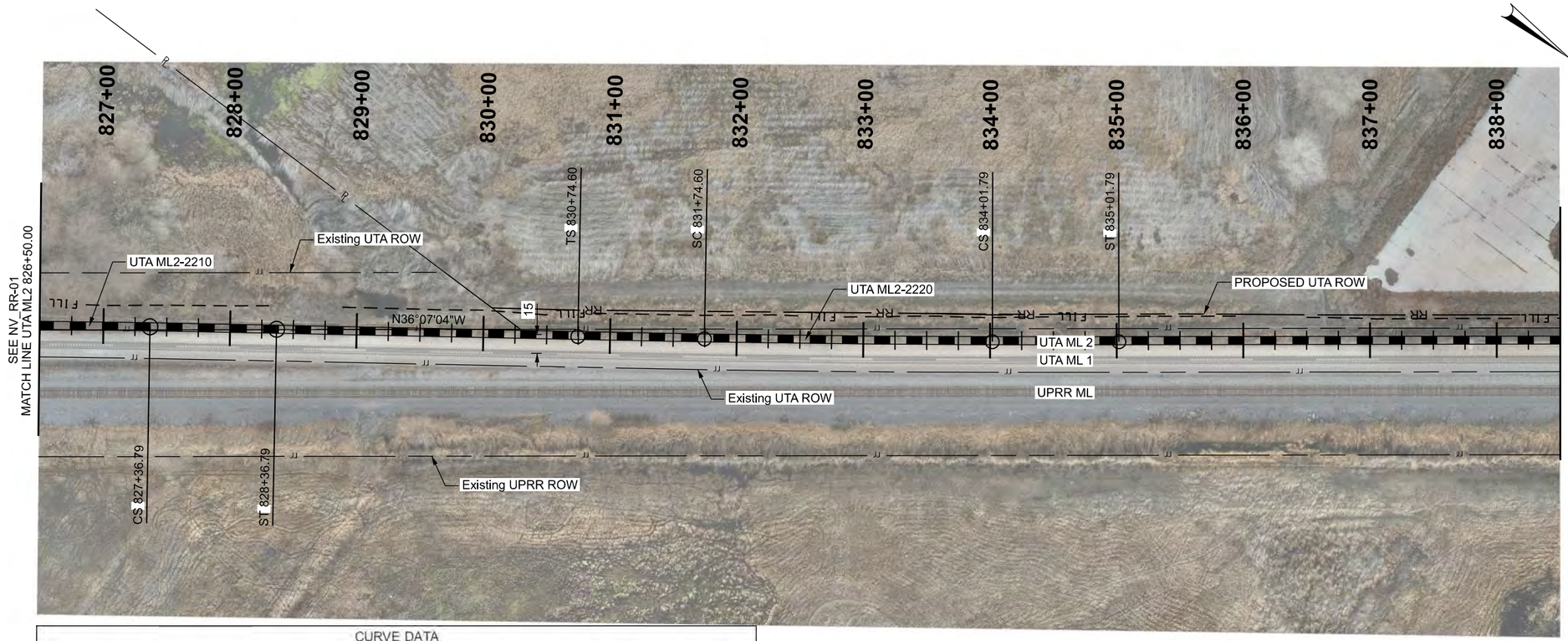
APPROVED
PROFESSIONAL ENGINEER

PROJECT: FRONTRUNNER POINT IMPROVEMENTS
NORTH OF VINEYARD SEGMENT
PROJECT NUMBER: S-R299(483) PIN 21213

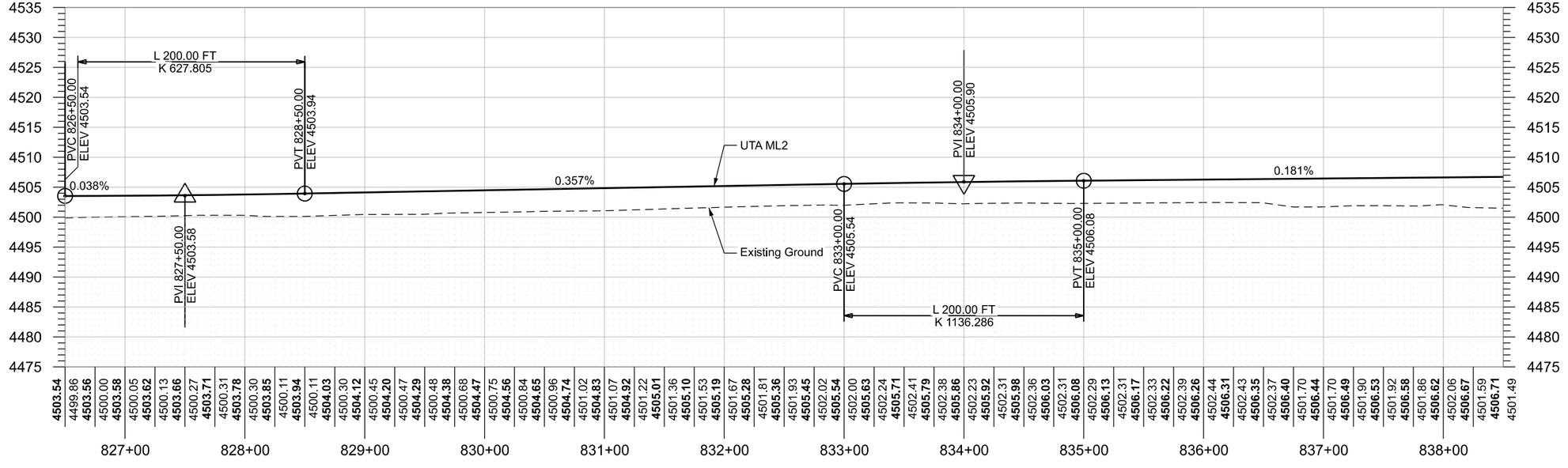
TRACK PLAN AND PROFILE

SHEET NO. NV_RR-01

NV_RR-01.dgn
2/11/2025



CURVE DATA							
ID NO.	R	Dc	LS-IN	LS-OUT	Ea (INCH)	Eu (INCH)	V (MPH)
UTA ML2-2210	14,950.00	0°22'59.70"	100.00	100.00	1.00	0.67	79
UTA ML2-2220	14,950.00	0°22'59.70"	100.00	100.00	1.00	0.67	79



UTA ML2

REVISIONS

NO.	DATE	APPROVED BY	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION

HDR

DRAWN BY AMG

QC CHECKED BY JS

DATE

APPROVED

PROFESSIONAL ENGINEER

PROJECT: FRONTRUNNER POINT IMPROVEMENTS

NORTH OF VINEYARD SEGMENT

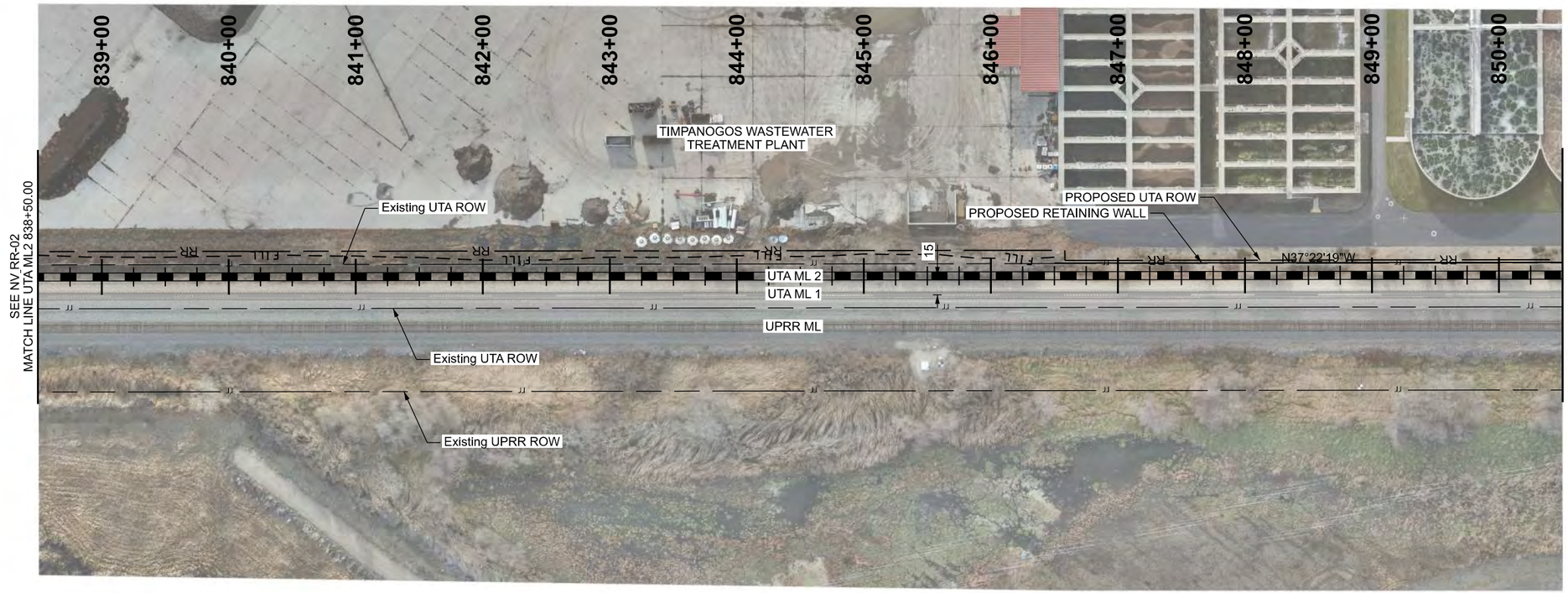
PROJECT NUMBER: S-R299(483) PIN 21213

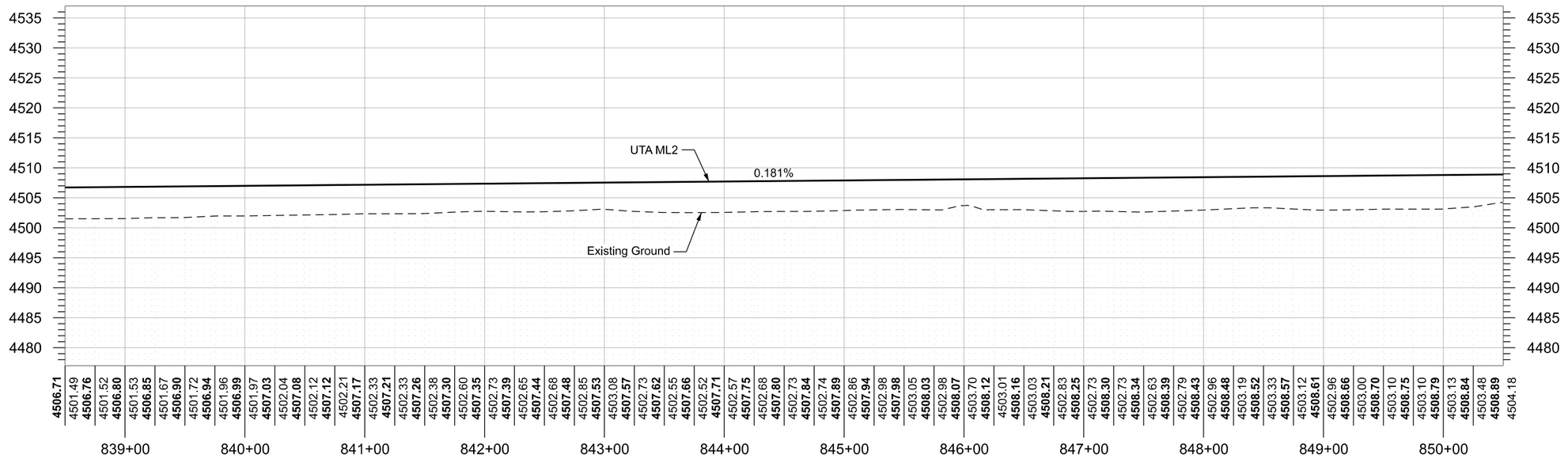
TRACK PLAN AND PROFILE

SHEET NO. NV_RR-02

NV_RR-02.dgn

2/11/2025





UTA ML2

REVISIONS				
NO.	DATE	APPROVED BY		REMARKS

UTAH DEPARTMENT OF TRANSPORTATION

HDR

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DATE

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PROFESSIONAL ENGINEER

PROJECT: FRONTRUNNER POINT IMPROVEMENTS
NORTH OF VINEYARD SEGMENT

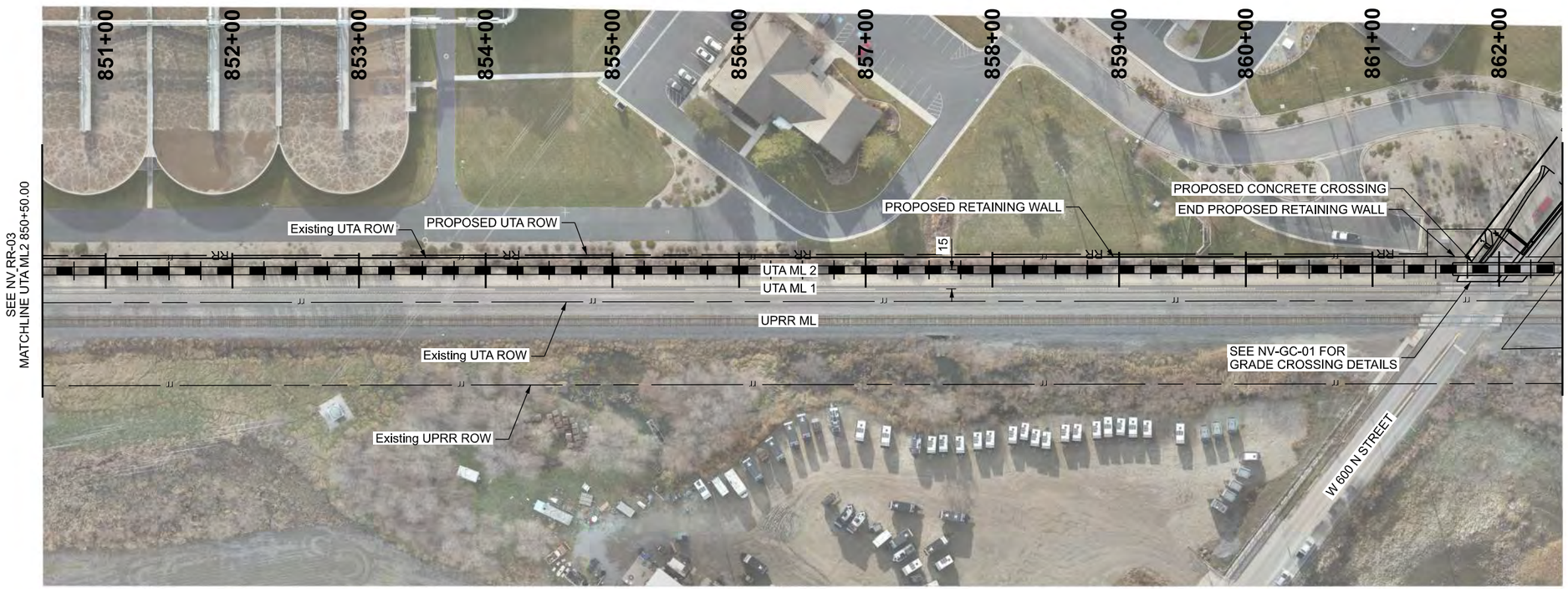
PROJECT NUMBER: S-R299(483) PIN 21213

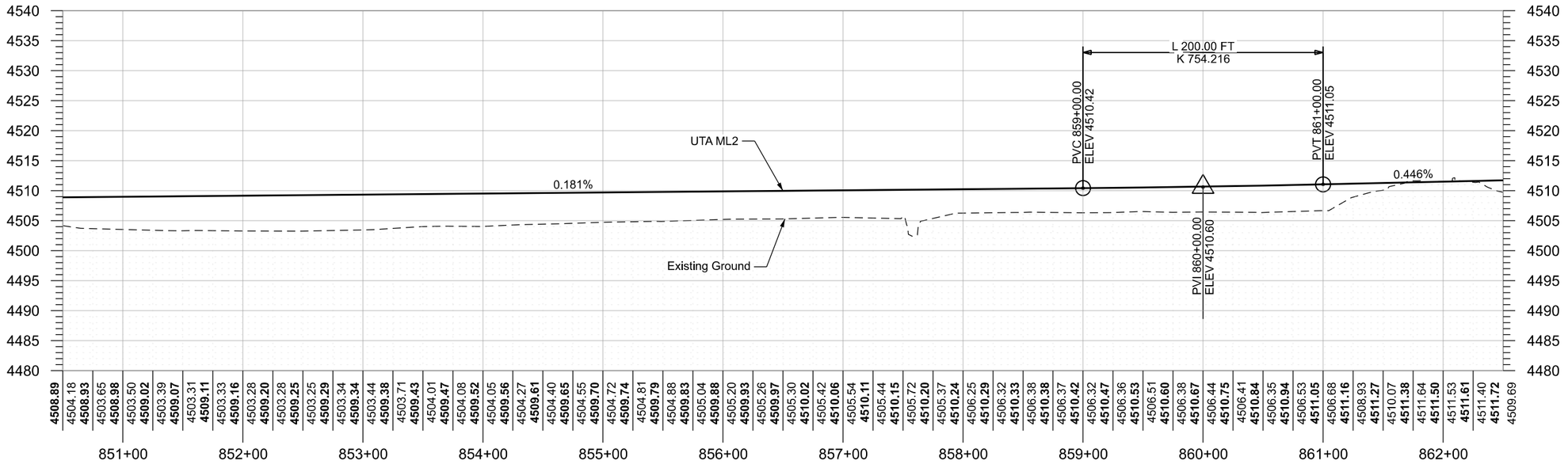
TRACK PLAN AND PROFILE

SHEET NO. NV_RR-03

NV_RR-03.dgn

2/11/2025





UTA ML2

NV_RR-04.dgn
2/11/2025

REVISIONS

NO.	DATE	APPROVED BY	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
HDR

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QC CHECKED BY JS
DATE

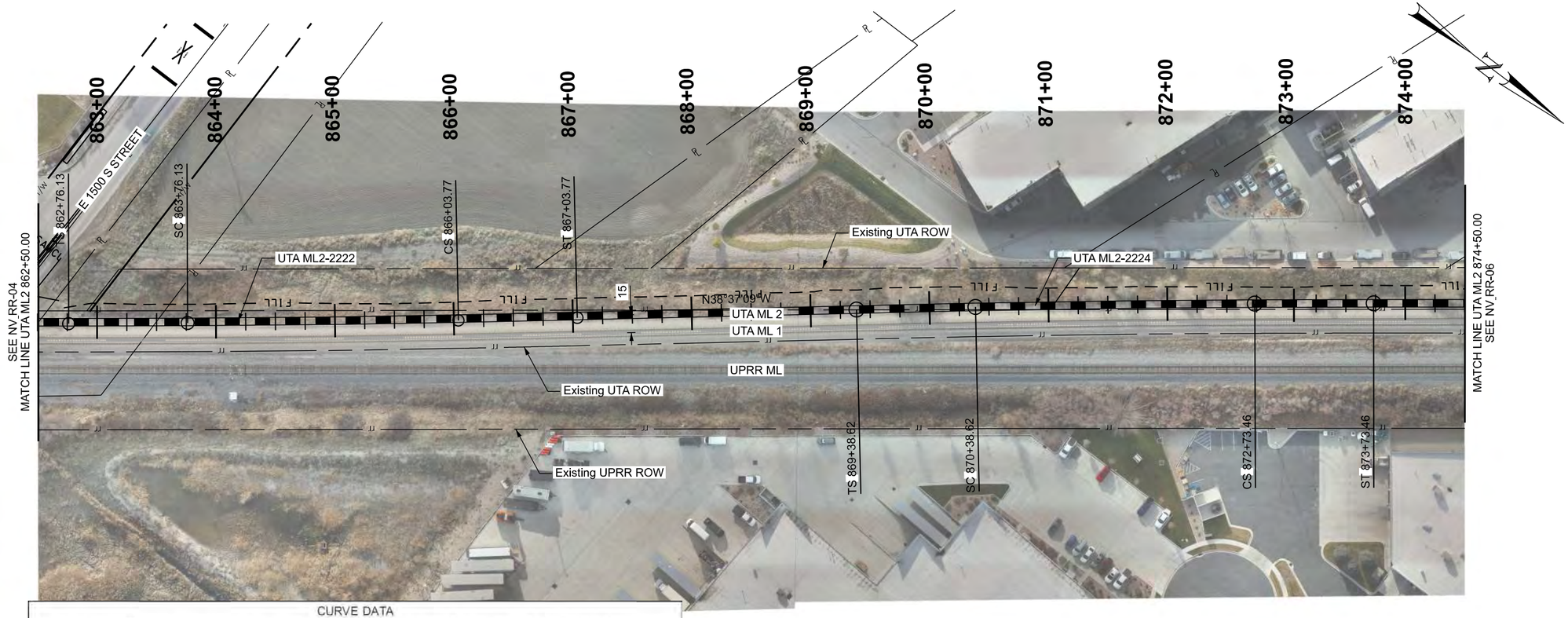
APPROVED
PROFESSIONAL ENGINEER

PROJECT: FRONTRUNNER POINT IMPROVEMENTS
NORTH OF VINEYARD SEGMENT

PROJECT NUMBER: S-R299(483) PIN 21213

TRACK PLAN AND PROFILE

SHEET NO. NV_RR-04



CURVE DATA							
ID NO.	R	Dc	LS-IN	LS-OUT	Ea (INCH)	Eu (INCH)	V (MPH)
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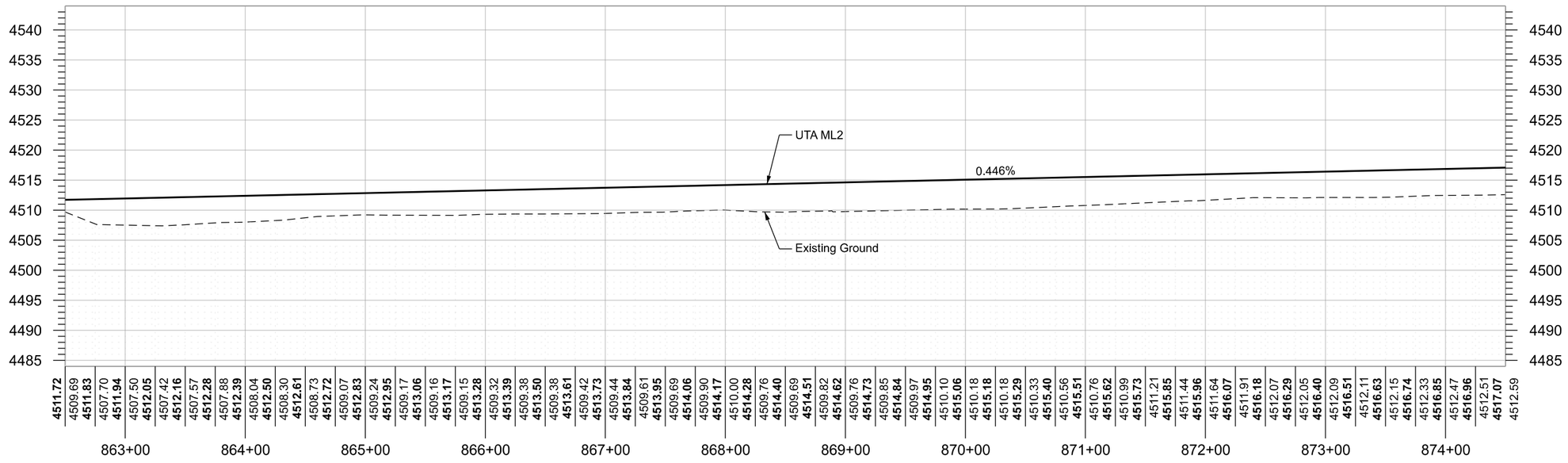
UTA ML2-2224	15,050.00	0°22'50.53"	100.00	100.00	1.00	0.66	79



UTA ML2

REVISIONS

NO.	DATE	APPROVED BY	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
HDR

DRAWN BY: AMG
QC CHECKED BY: JS
DATE:

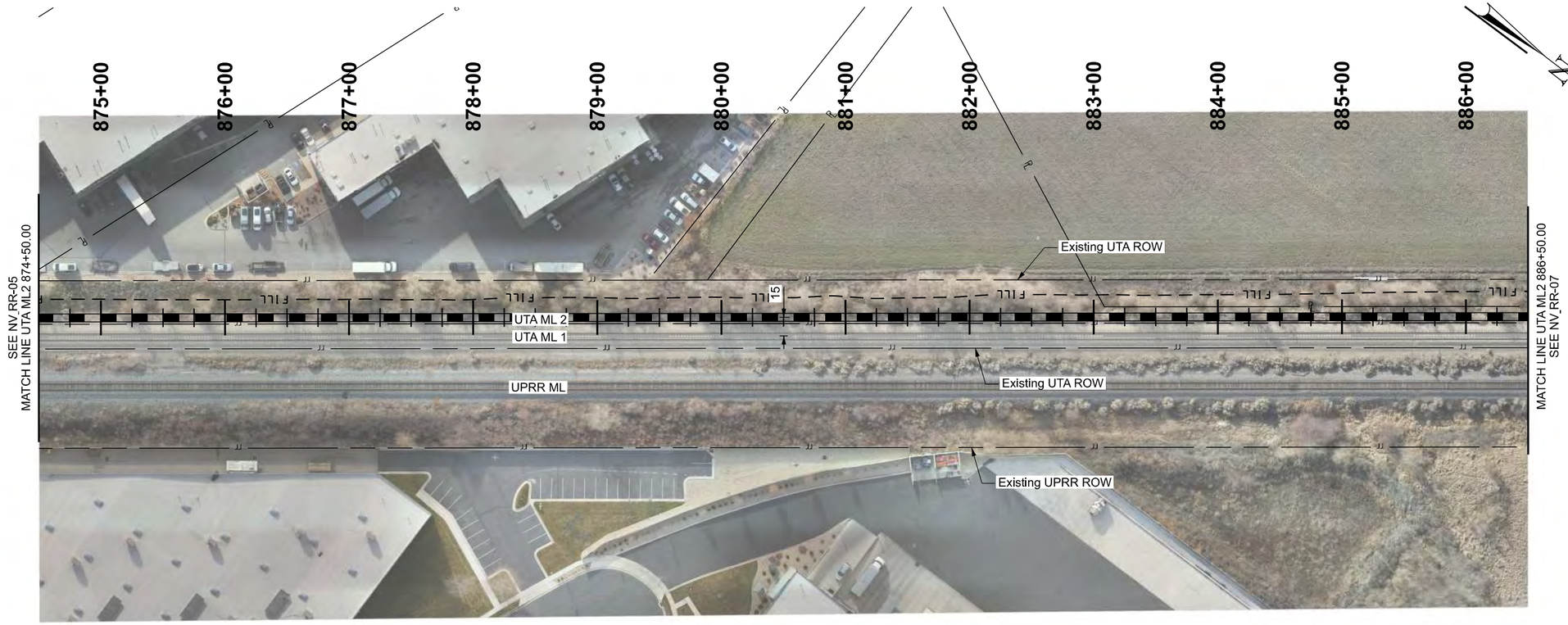
APPROVED:
PROFESSIONAL ENGINEER

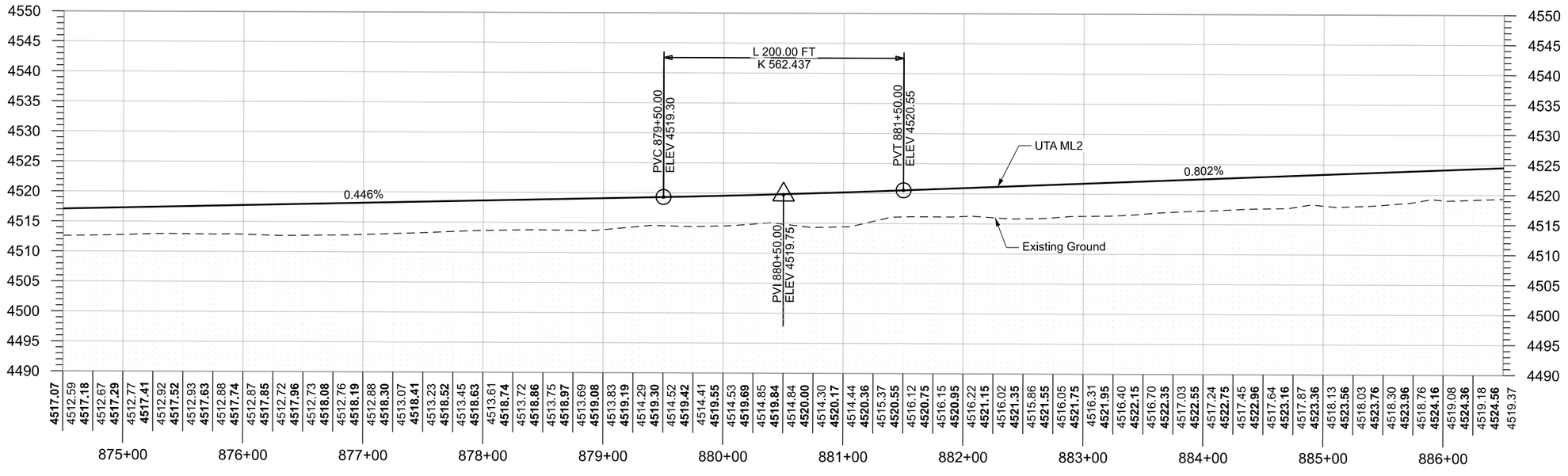
PROJECT: FRONTRUNNER POINT IMPROVEMENTS
NORTH OF VINEYARD SEGMENT
PROJECT NUMBER: S-R299(483)
PIN: 21213

TRACK PLAN AND PROFILE

SHEET NO. NV_RR-05

NV_RR-05.dgn
2/11/2025





UTA ML2

REVISIONS

NO.	DATE	APPROVED BY	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
HDR

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QC CHECKED BY JS
DATE

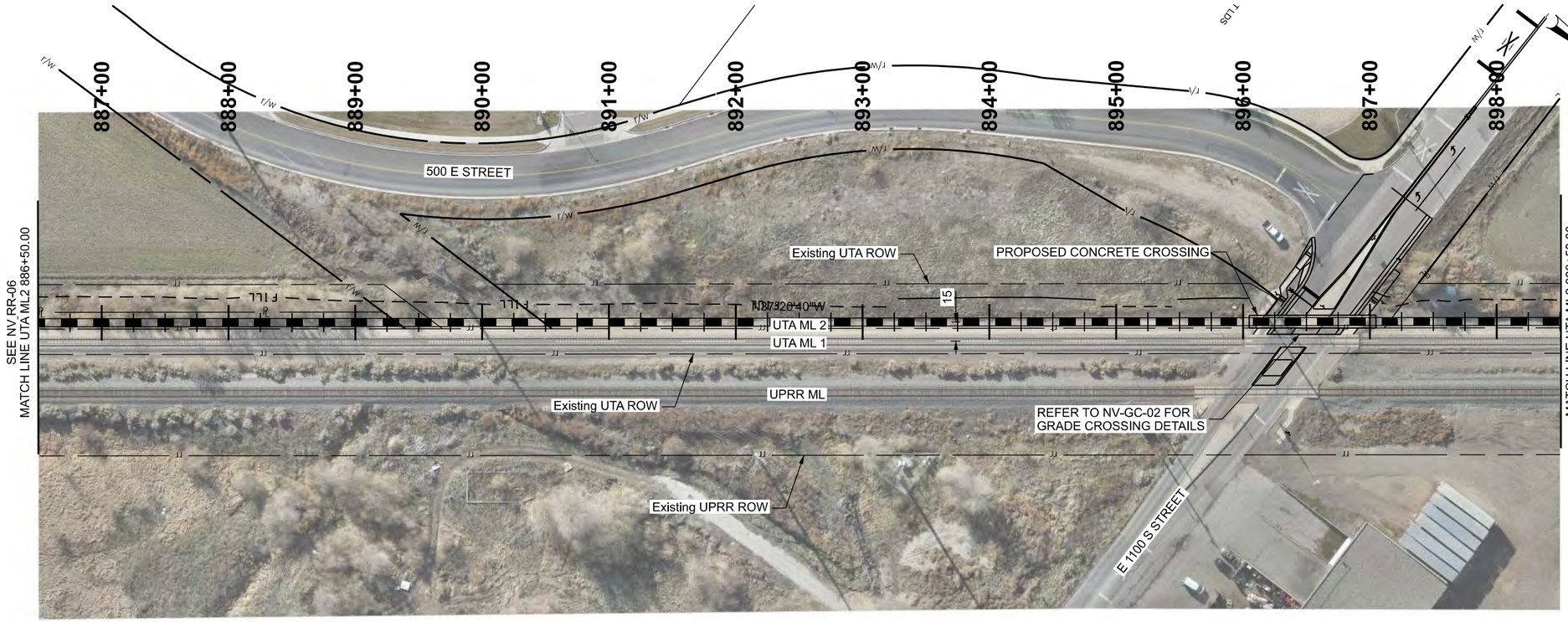
APPROVED
PROFESSIONAL ENGINEER

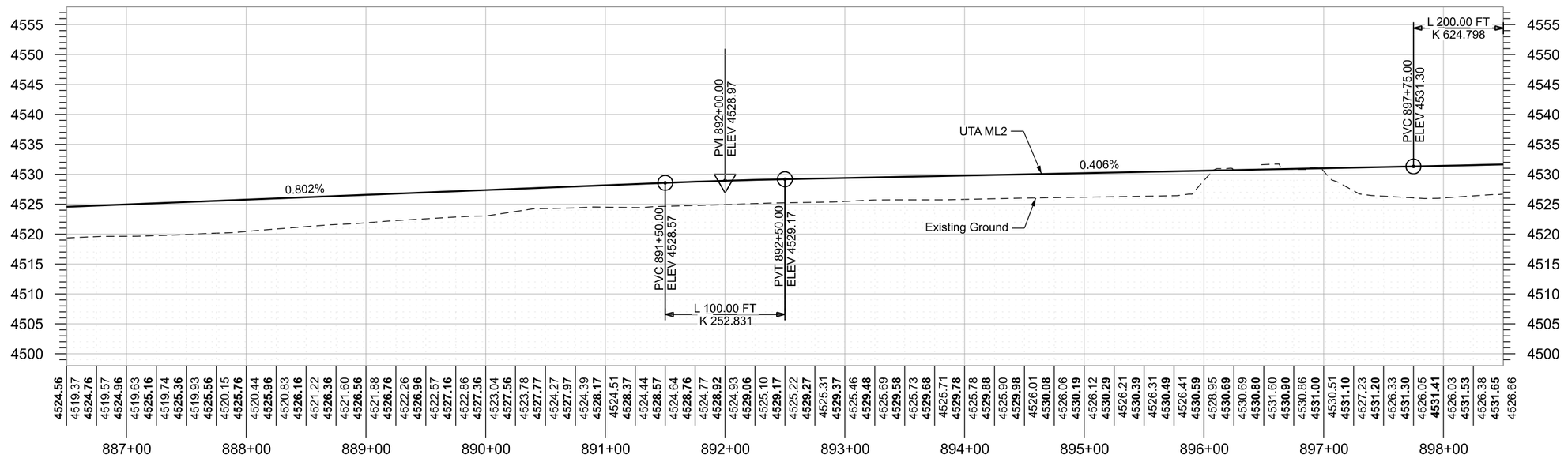
PROJECT: FRONTRUNNER POINT IMPROVEMENTS
NORTH OF VINEYARD SEGMENT
PROJECT NUMBER: S-R299(483) PIN 21213

TRACK PLAN AND PROFILE

SHEET NO. NV_RR-06

NV_RR-06.dgn
2/11/2025





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REVISIONS

NO.	DATE	APPROVED BY	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
HDR

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QC CHECKED BY JS
DATE

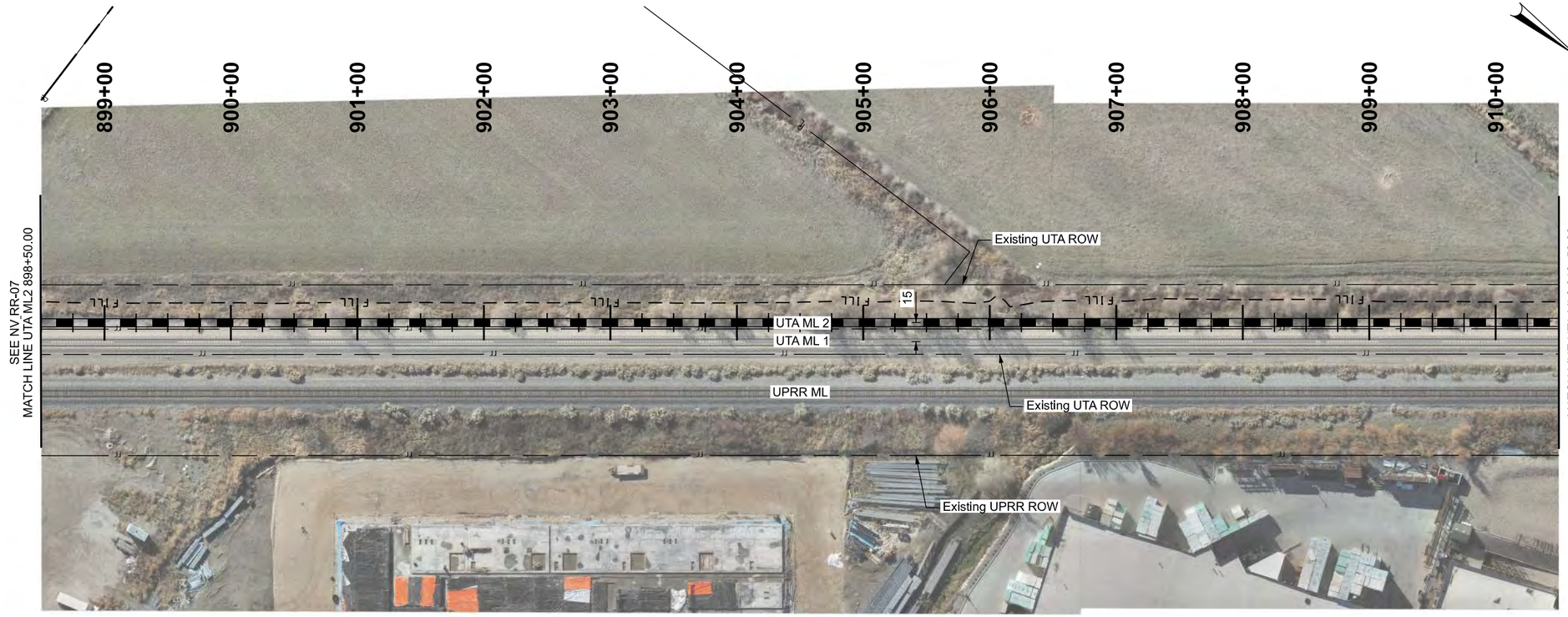
APPROVED
PROFESSIONAL ENGINEER

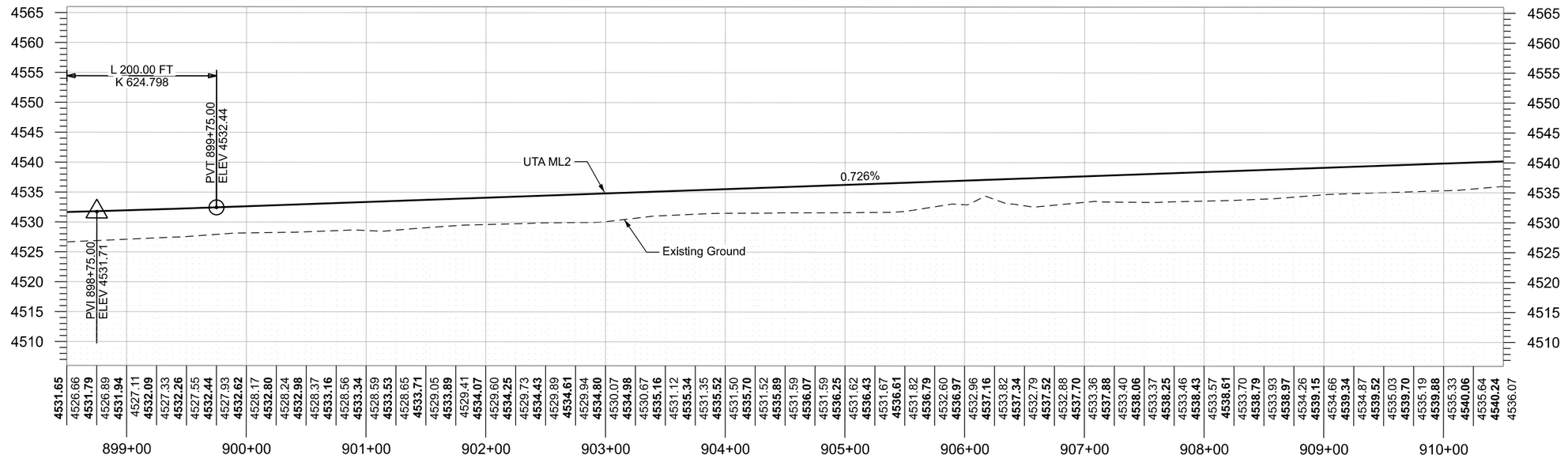
PROJECT: FRONTRUNNER POINT IMPROVEMENTS
NORTH OF VINEYARD SEGMENT
PROJECT NUMBER: S-R299(483) PIN 21213

TRACK PLAN AND PROFILE

SHEET NO. NV_RR-07

NV_RR-07.dgn
2/11/2025





UTA ML2

REVISIONS

NO.	DATE	APPROVED BY	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION

HDR

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QC CHECKED BY JS

DATE

APPROVED

PROFESSIONAL ENGINEER

PROJECT: FRONTRUNNER POINT IMPROVEMENTS

NORTH OF VINEYARD SEGMENT

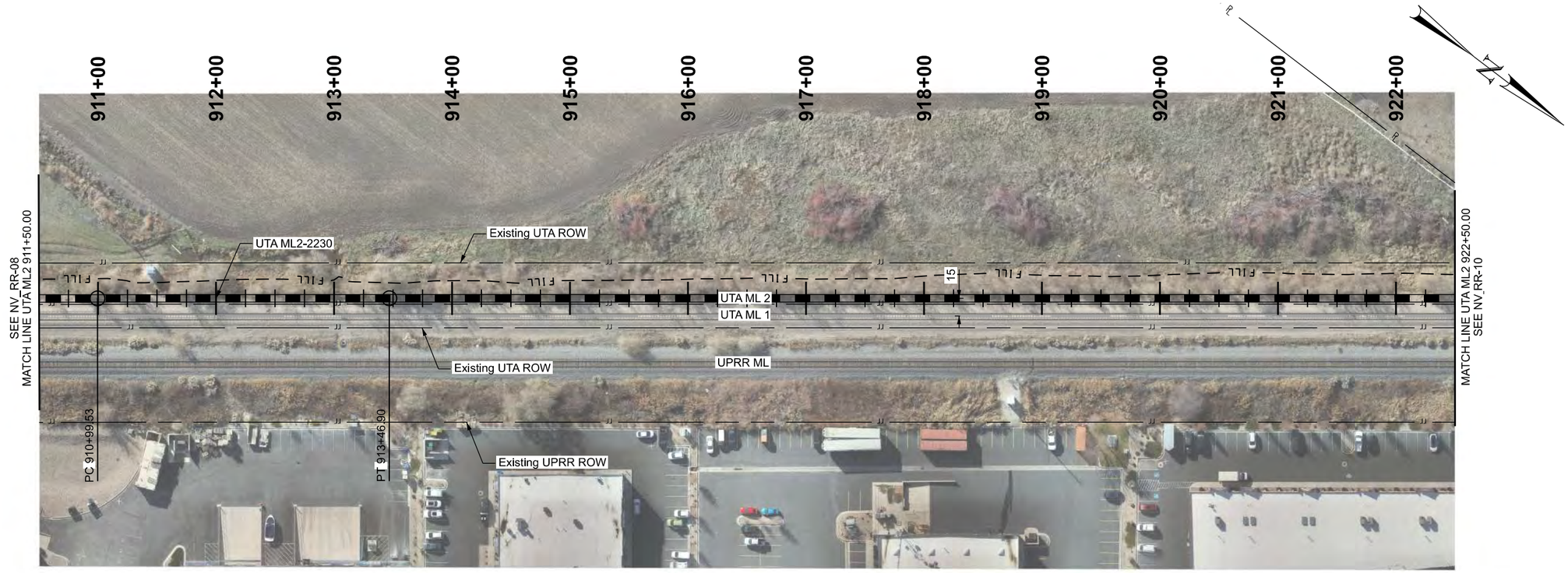
PROJECT NUMBER: S-R299(483) PIN 21213

TRACK PLAN AND PROFILE

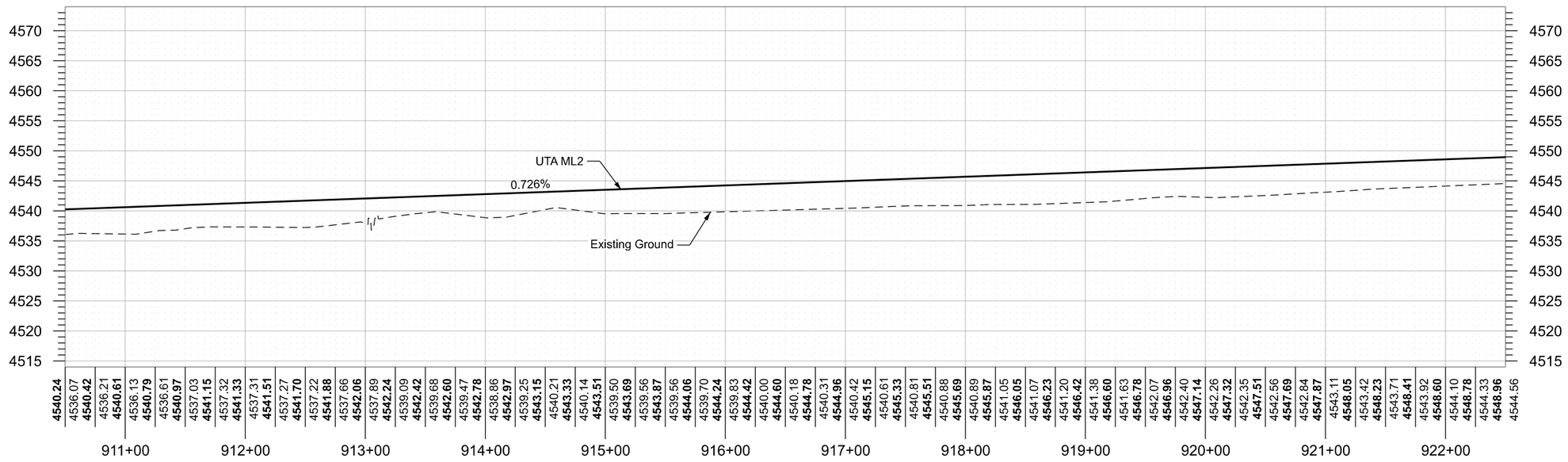
SHEET NO. NV_RR-08

NV_RR-08.dgn

2/11/2025



CURVE DATA							
ID NO.	R	Dc	LS-IN	LS-OUT	Ea (INCH)	Eu (INCH)	V (MPH)
UTA ML2-2230	280,000.00	00°03'02.23"	0.00	0.00	0.00	0.09	79



UTA ML2

NV_RR-09.dgn
2/11/2025

REVISIONS

NO.	DATE	APPROVED BY	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
HDR

DRAWN BY AMG
QC CHECKED BY JS
DATE

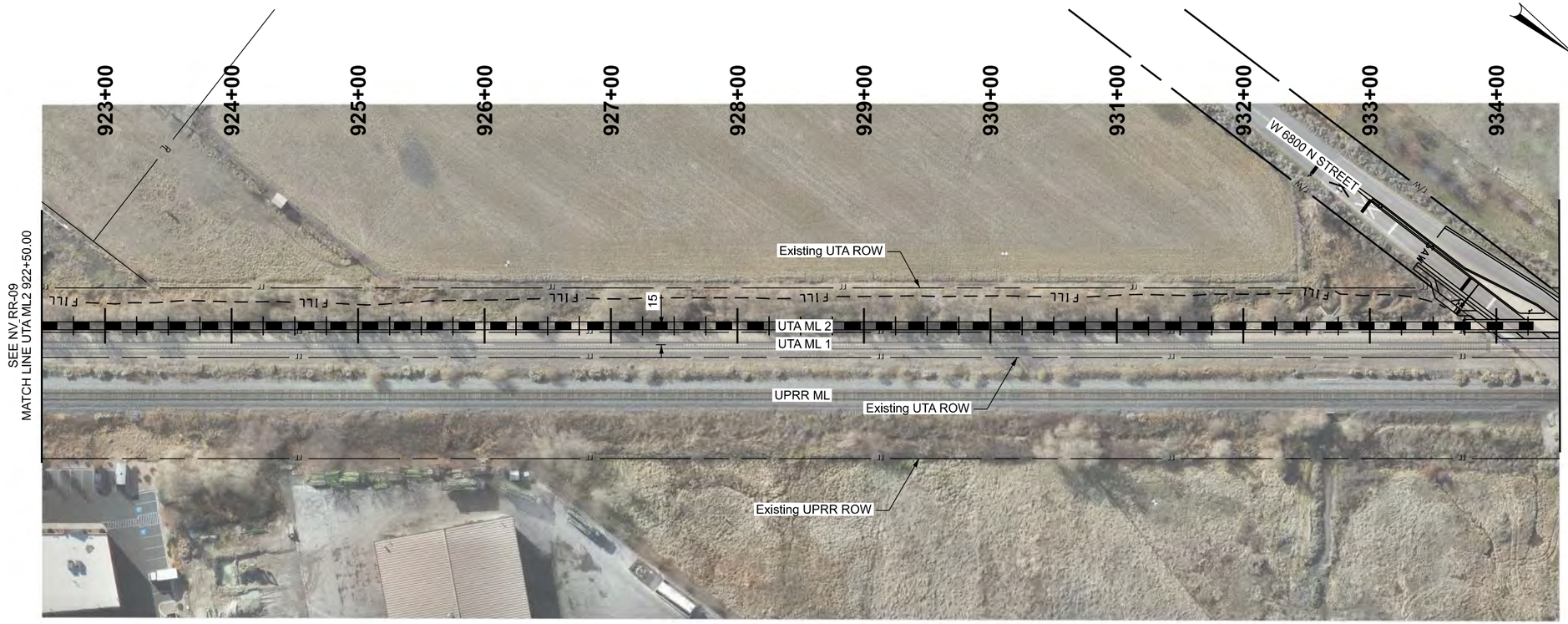
APPROVED
PROFESSIONAL ENGINEER

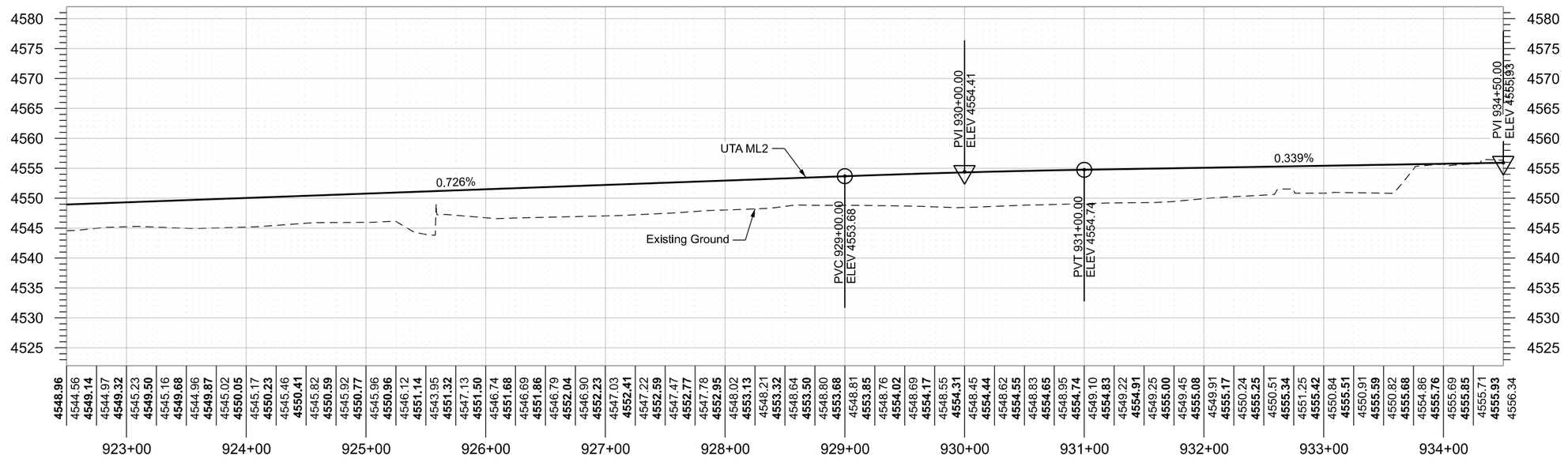
PROJECT: FRONTRUNNER POINT IMPROVEMENTS
NORTH OF VINEYARD SEGMENT

PROJECT NUMBER: S-R299(483) PIN 21213

TRACK PLAN AND PROFILE

SHEET NO. NV_RR-09





UTA ML2

REVISIONS

NO.	DATE	APPROVED BY	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION

HDR

DRAWN BY AMG

QC CHECKED BY JS

DATE

APPROVED

PROFESSIONAL ENGINEER

PROJECT: FRONTRUNNER POINT IMPROVEMENTS

NORTH OF VINEYARD SEGMENT

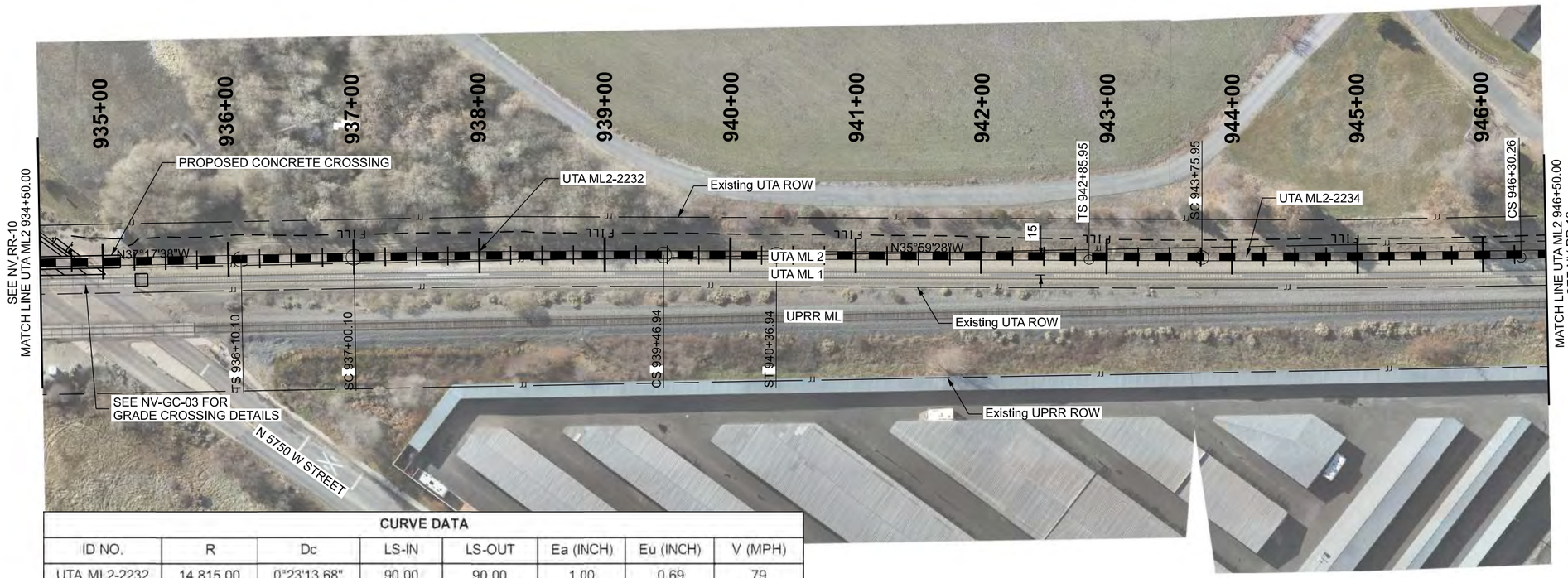
PROJECT NUMBER: S-R299(483) PIN 21213

TRACK PLAN AND PROFILE

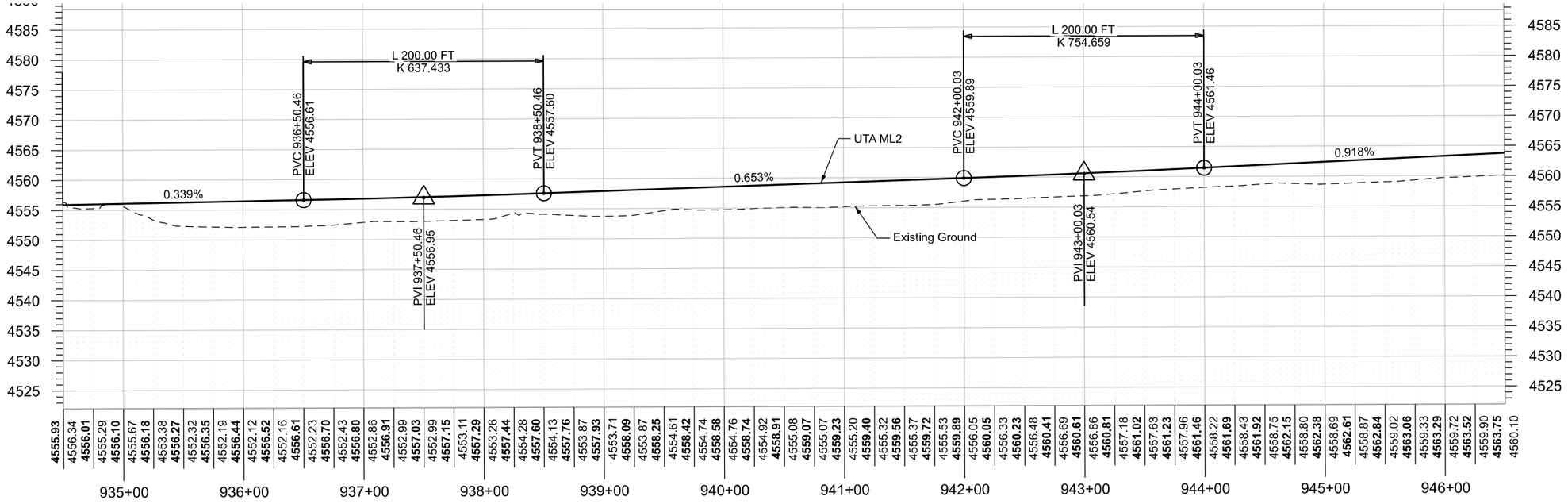
SHEET NO. NV_RR-10

NV_RR-10.dgn

2/11/2025



CURVE DATA							
ID NO.	R	Dc	LS-IN	LS-OUT	Ea (INCH)	Eu (INCH)	V (MPH)
UTA ML2-2232	14,815.00	0°23'13.68"	90.00	90.00	1.00	0.69	79
UTA ML2-2234	14,785.00	0°23'13.68"	90.00	90.00	1.00	0.69	79



UTA ML2

REVISIONS

NO.	DATE	APPROVED BY	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
HDR

DRAWN BY AMG
QC CHECKED BY JS
DATE

APPROVED
PROFESSIONAL ENGINEER

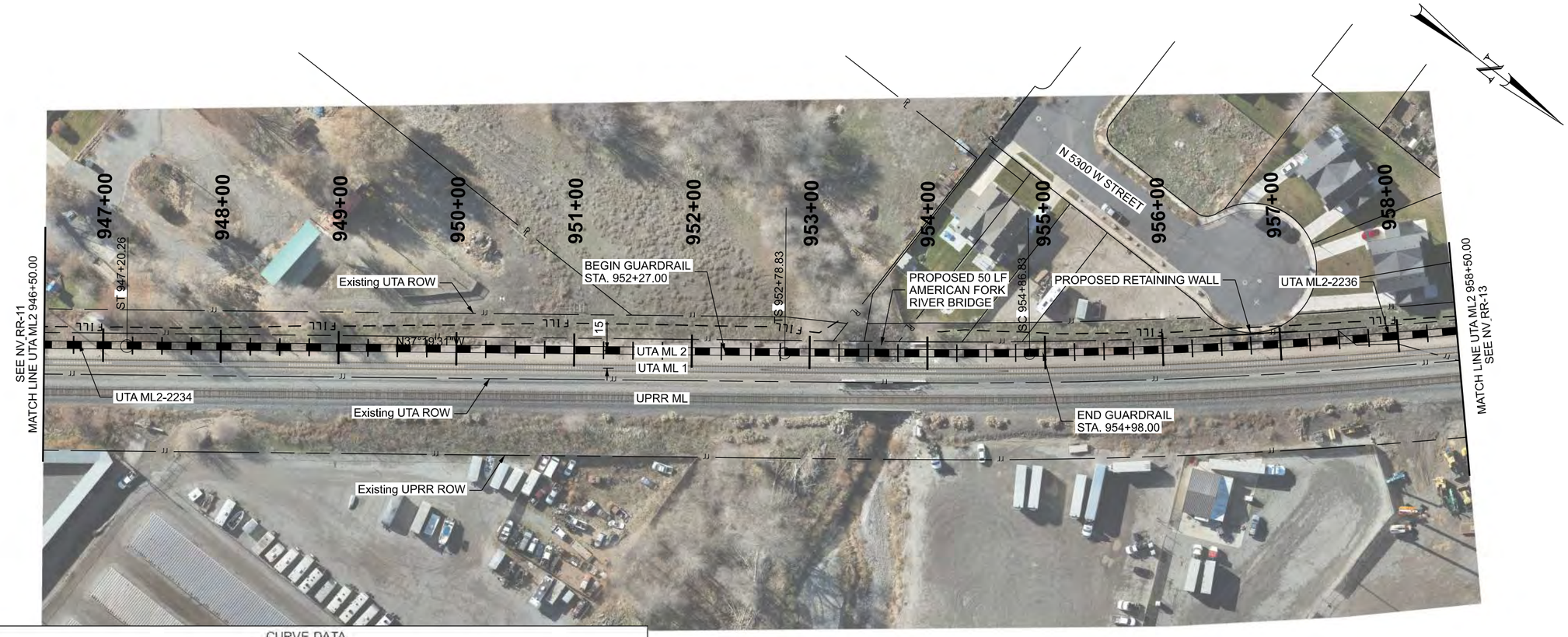
PROJECT: FRONTRUNNER POINT IMPROVEMENTS
NORTH OF VINEYARD SEGMENT

PROJECT NUMBER: S-R299(483) PIN 21213

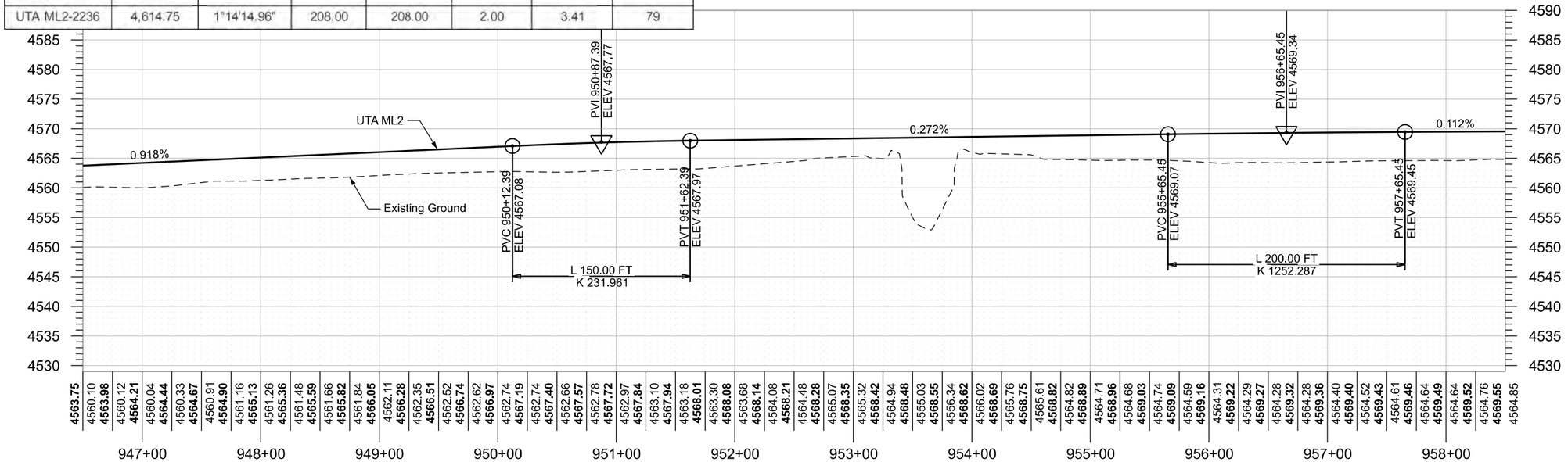
TRACK PLAN AND PROFILE

SHEET NO. NV_RR-11

NV_RR-11.dgn
2/11/2025



CURVE DATA							
ID NO.	R	Dc	LS-IN	LS-OUT	Ea (INCH)	Eu (INCH)	V (MPH)
UTA ML2-2234	14,785.00	0°23'13.68"	90.00	90.00	1.00	0.69	79
UTA ML2-2236	4,614.75	1°14'14.96"	208.00	208.00	2.00	3.41	79



UTA ML2

REVISIONS

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UTAH DEPARTMENT OF TRANSPORTATION
HDR

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QC CHECKED BY JS
DATE

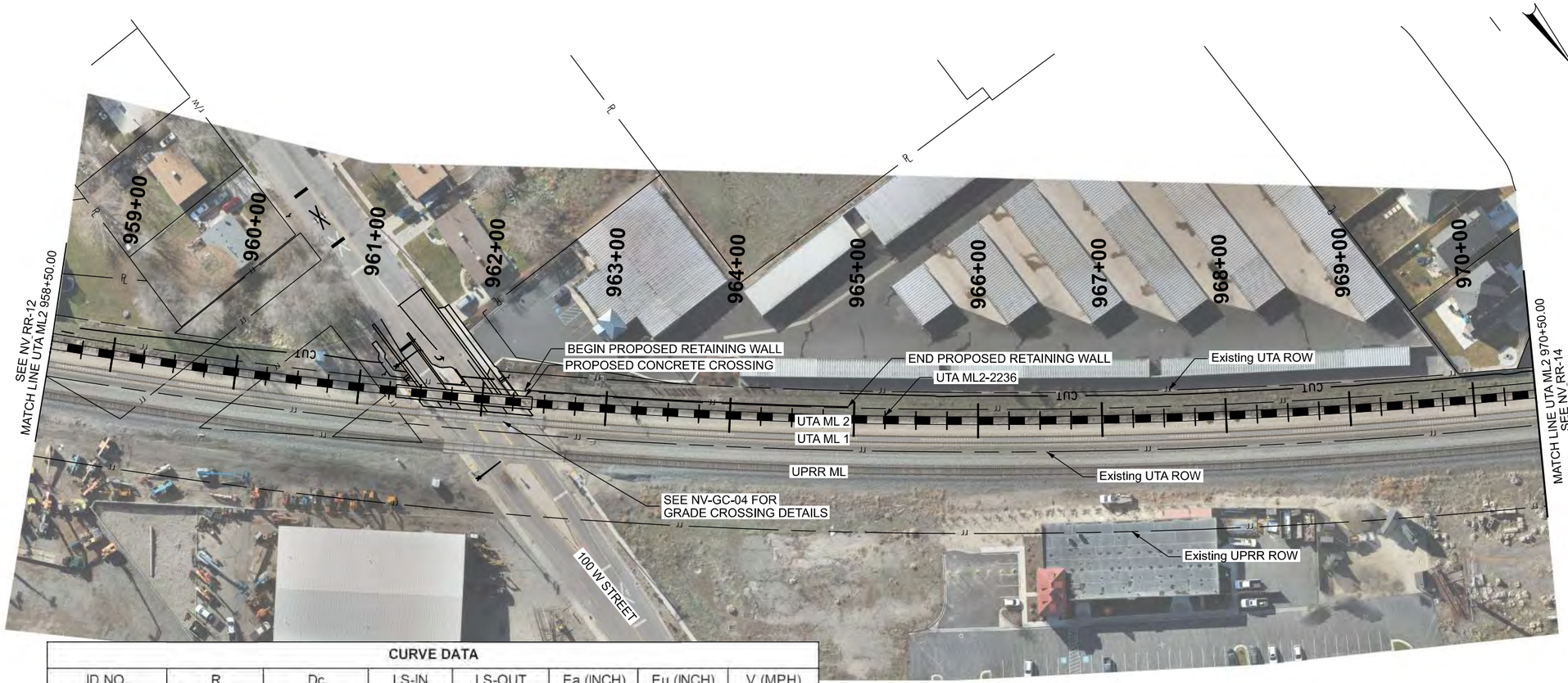
APPROVED
PROFESSIONAL ENGINEER

PROJECT: FRONTRUNNER POINT IMPROVEMENTS
NORTH OF VINEYARD SEGMENT
PROJECT NUMBER: S-R299(483) PIN 21213

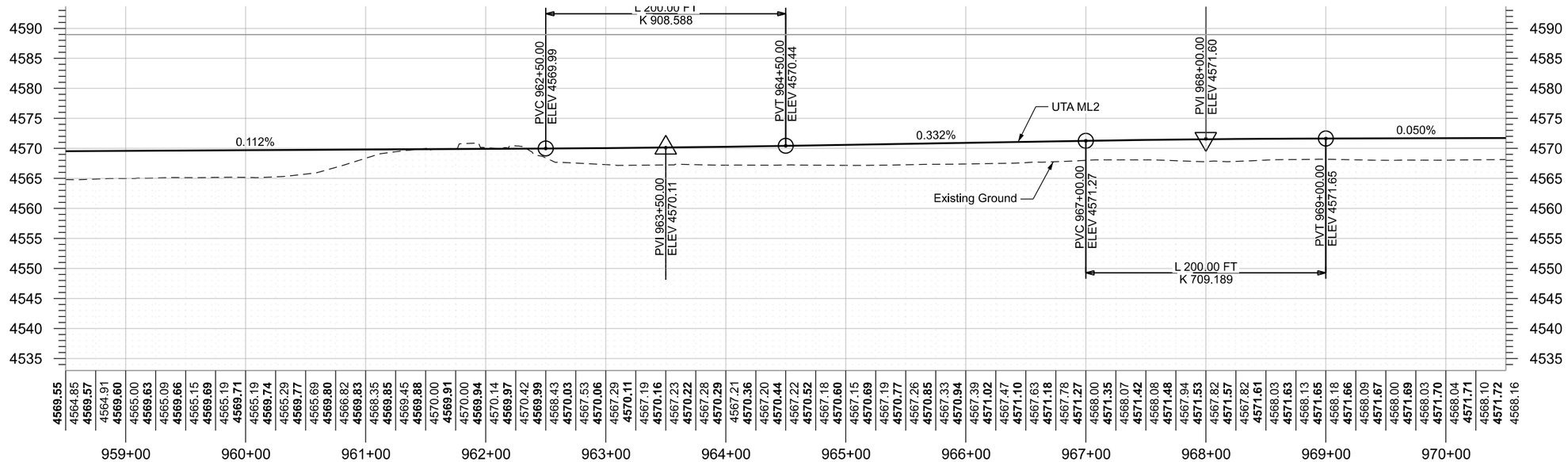
TRACK PLAN AND PROFILE

SHEET NO. NV_RR-12

NV_RR-12.dgn
2/11/2025



CURVE DATA							
ID NO.	R	Dc	LS-IN	LS-OUT	Ea (INCH)	Eu (INCH)	V (MPH)
UTA ML2-2236	4,614.75	1°14'14.96"	208.00	208.00	2.00	3.41	79



UTA ML2

REVISIONS

NO.	DATE	APPROVED BY	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
HDR

DRAWN BY AMG
QC CHECKED BY JS

APPROVED
PROFESSIONAL ENGINEER
DATE

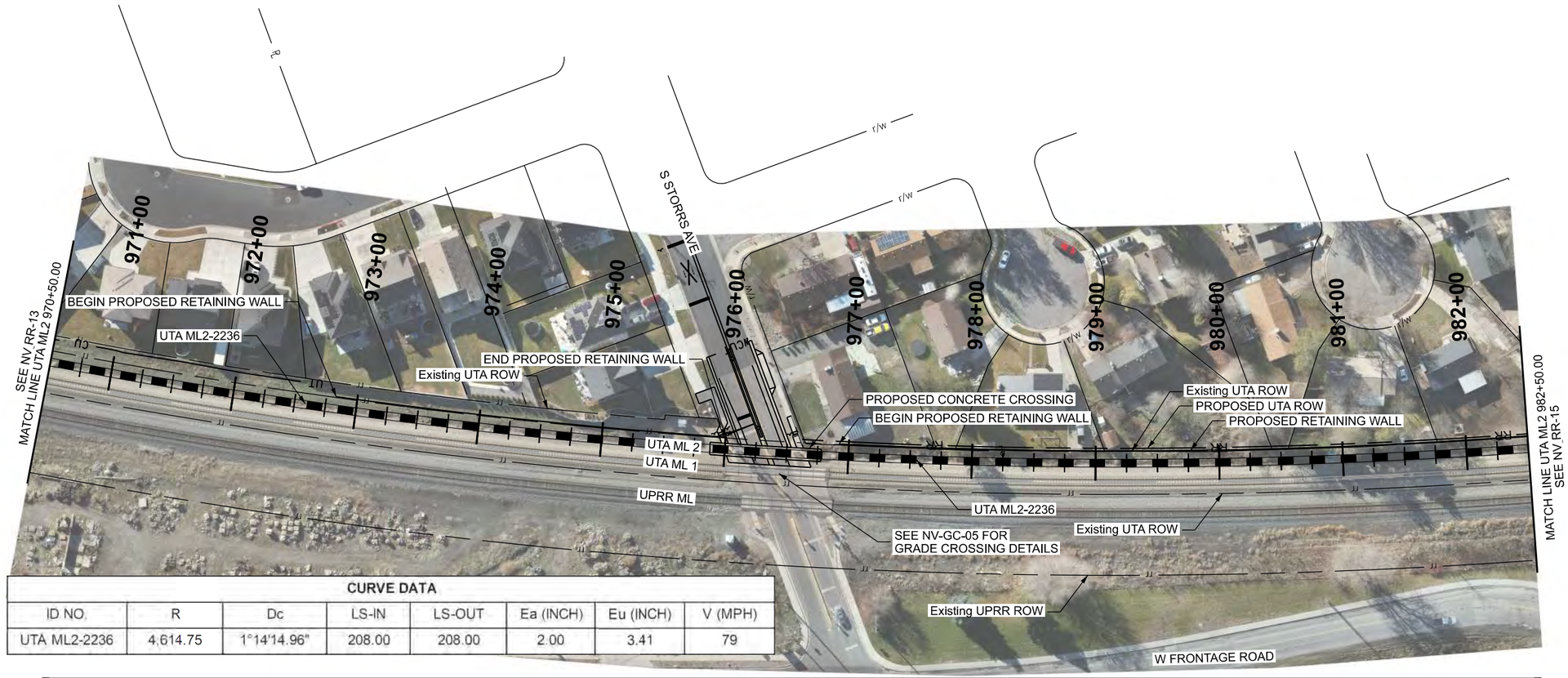
PROJECT: FRONTRUNNER POINT IMPROVEMENTS
NORTH OF VINEYARD SEGMENT

PROJECT NUMBER: S-R299(483) PIN 21213

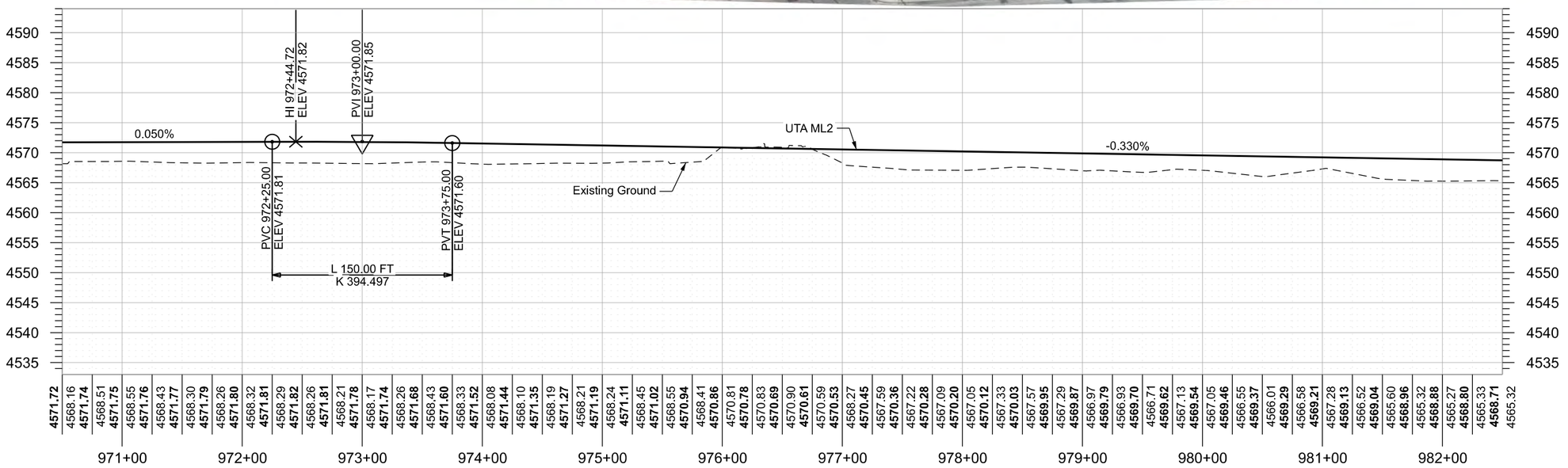
TRACK PLAN AND PROFILE

SHEET NO. NV_RR-13

NV_RR-13.dgn
2/11/2025



CURVE DATA							
ID NO.	R	Dc	LS-IN	LS-OUT	Ea (INCH)	Eu (INCH)	V (MPH)
UTA ML2-2236	4,614.75	1°14'14.96"	208.00	208.00	2.00	3.41	79



UTA ML2

REVISIONS

NO.	DATE	APPROVED BY	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION

HDR

DRAWN BY AMG

QC CHECKED BY JS

DATE

APPROVED

PROFESSIONAL ENGINEER

FRONTRUNNER POINT IMPROVEMENTS

NORTH OF VINEYARD SEGMENT

PROJECT

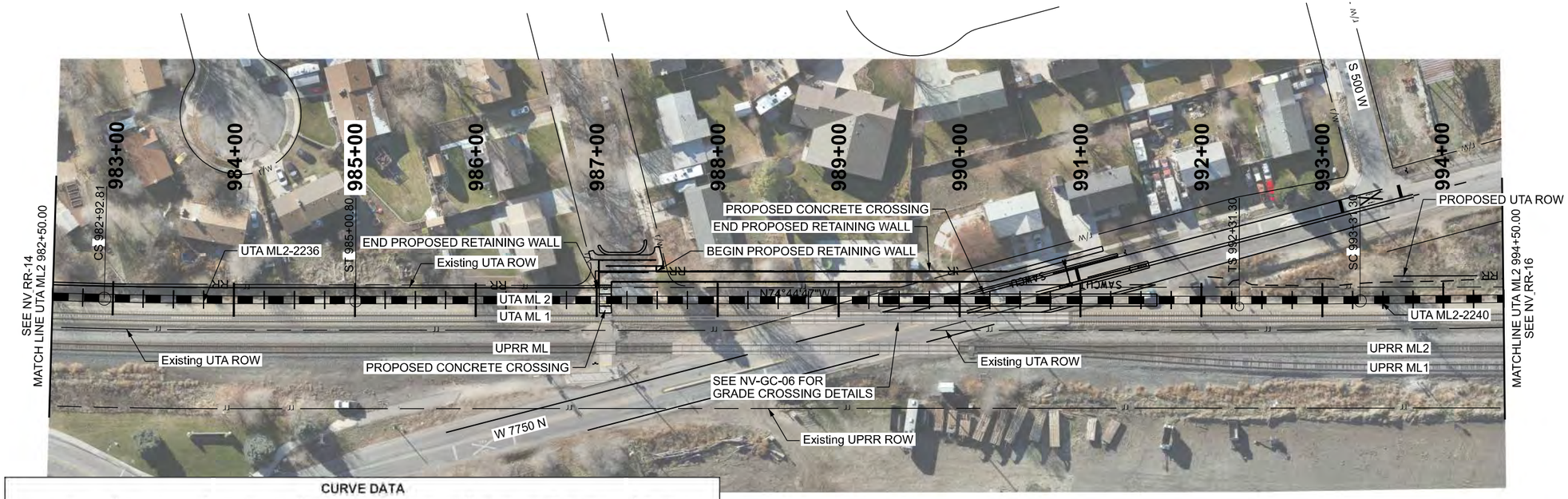
PROJECT NUMBER S-R299(483) PIN 21213

TRACK PLAN AND PROFILE

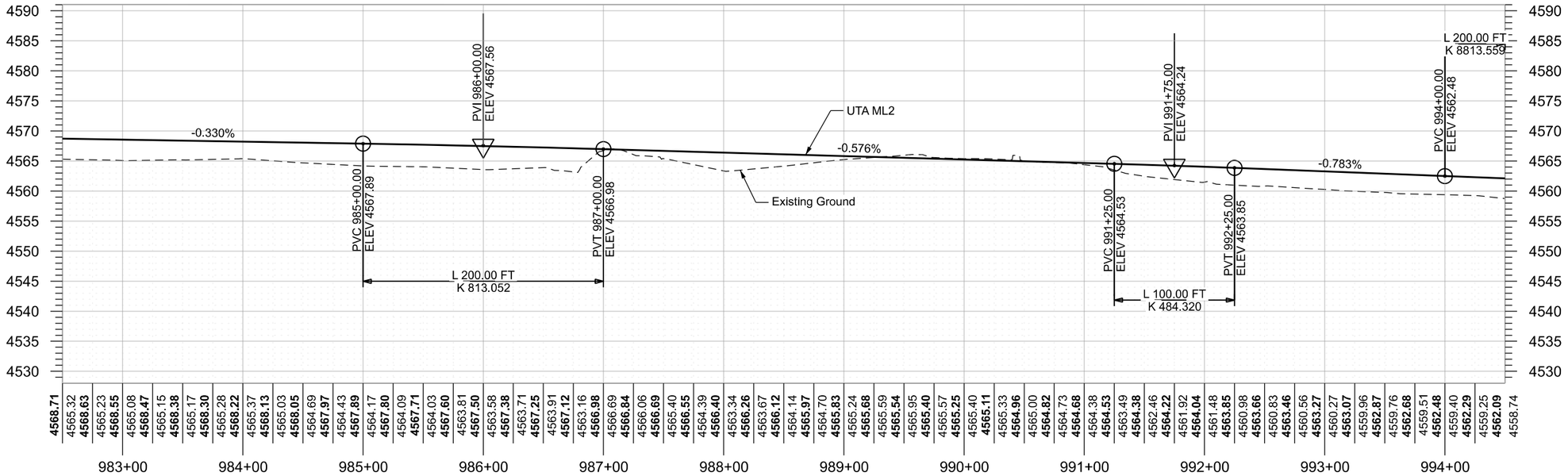
SHEET NO. NV_RR-14

NV_RR-14.dgn

2/11/2025



CURVE DATA							
ID NO.	R	Dc	LS-IN	LS-OUT	Ea (INCH)	Eu (INCH)	V (MPH)
UTA ML2-2236	4,614.75	1°14'14.96"	208.00	208.00	2.00	3.41	79
UTA ML2-2240	11,985.00	0°28'38.87"	100.00	100.00	1.00	1.09	79



UTA ML2

REVISIONS

NO.	DATE	APPROVED BY	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
HDR

DRAWN BY AMG
QC CHECKED BY JS
DATE

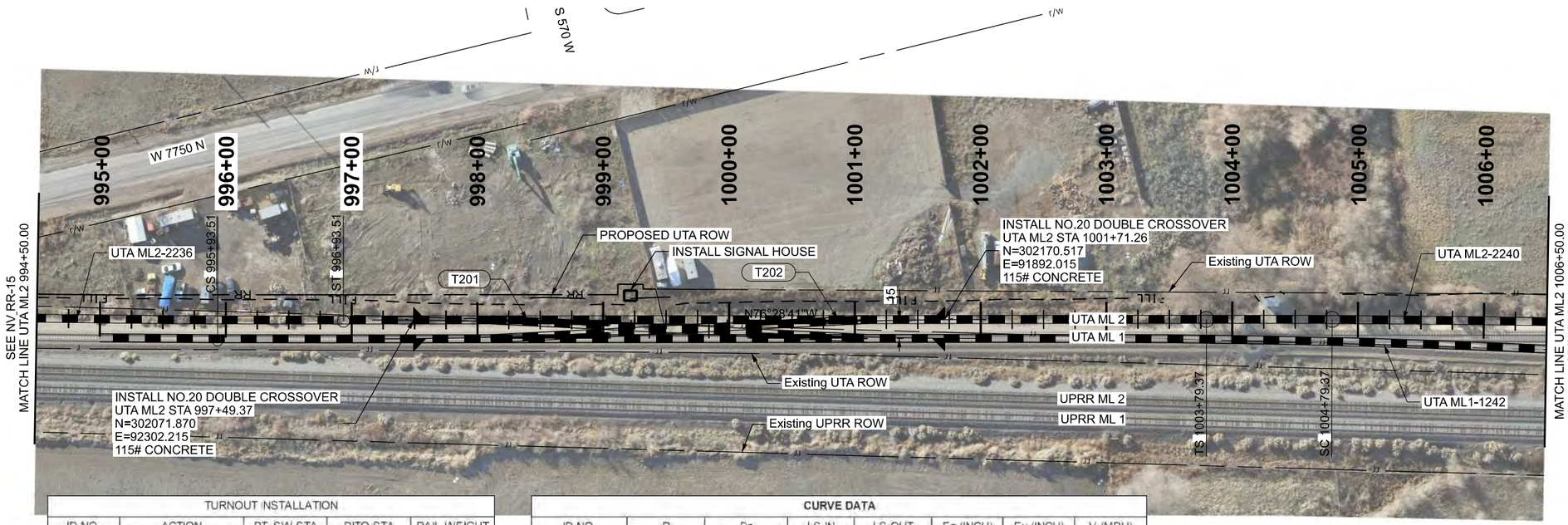
APPROVED
PROFESSIONAL ENGINEER

PROJECT: FRONTRUNNER POINT IMPROVEMENTS
NORTH OF VINEYARD SEGMENT
PROJECT NUMBER: S-R299(483) PIN 21213

TRACK PLAN AND PROFILE

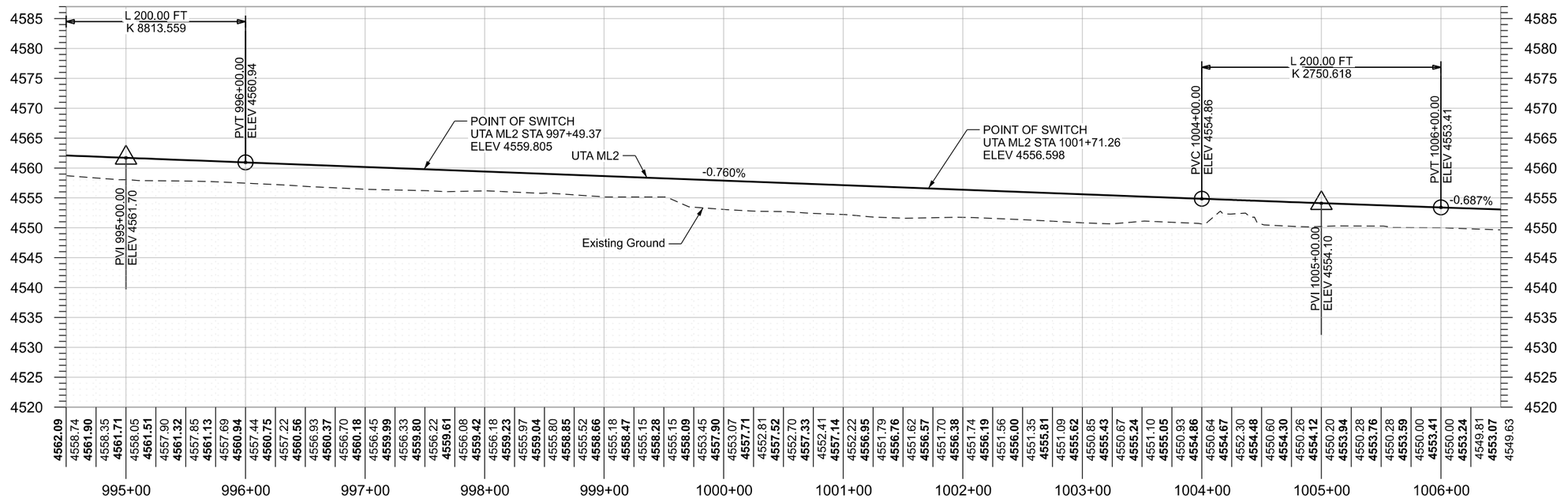
SHEET NO. NV_RR-15

NV_RR-15.dgn
2/11/2025



TURNOUT INSTALLATION				
ID NO.	ACTION	PT_SW STA	PITO STA	RAIL WEIGHT
T201	INSTALL #20 RH TO	997+49.37	998+10.40	115
T202	INSTALL #20 LH TO	1001+10.22	1001+71.26	115

CURVE DATA							
ID NO.	R	Dc	LS-IN	LS-OUT	Ea (INCH)	Eu (INCH)	V (MPH)
UTA ML2-2236	4,614.75	1°14'4.96"	208.00	208.00	2.00	3.41	79
UTA ML2-2240	11,985.00	0°28'38.87"	100.00	100.00	1.00	1.09	79



UTA ML2

NV_RR-16.dgn
2/11/2025

REVISIONS

NO.	DATE	APPROVED BY	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
HDR

DRAWN BY AMG
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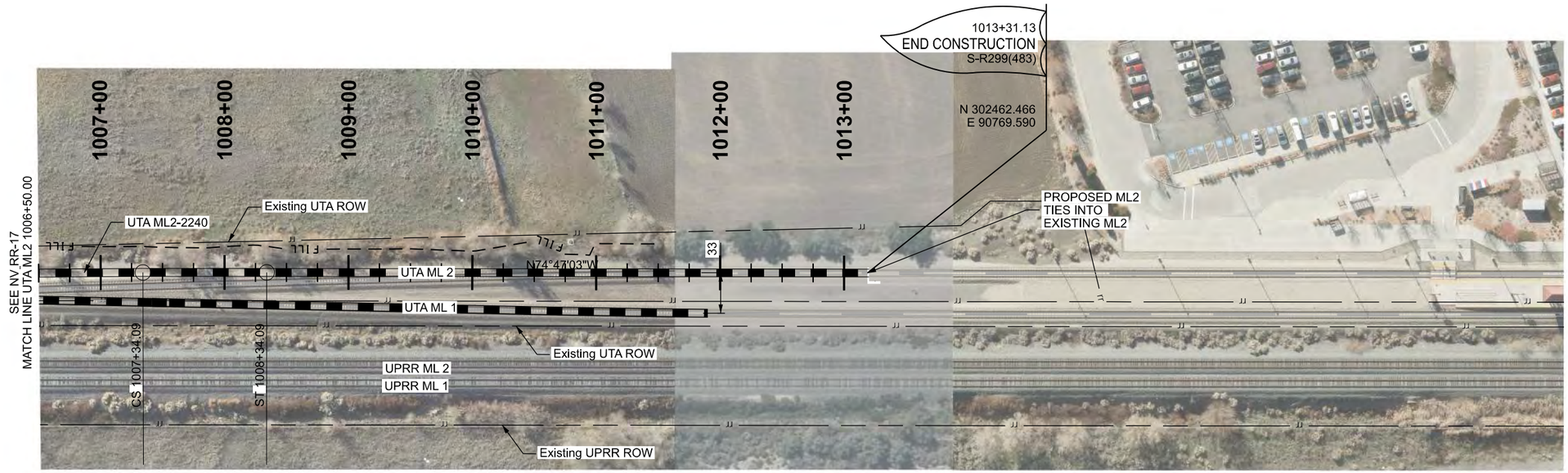
DATE

APPROVED
PROFESSIONAL ENGINEER

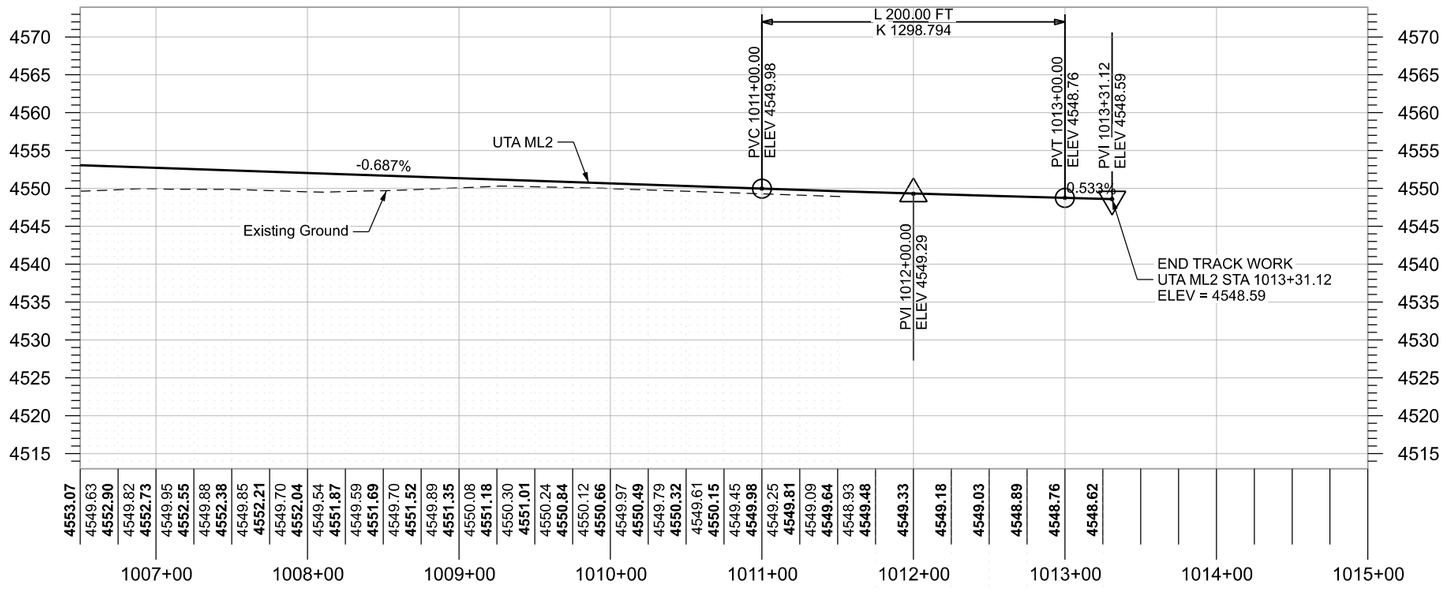
PROJECT: FRONTRUNNER POINT IMPROVEMENTS
NORTH OF VINEYARD SEGMENT
PROJECT NUMBER: S-R299(483) PIN 21213

TRACK PLAN AND PROFILE

SHEET NO. NV_RR-16



CURVE DATA							
ID NO.	R	Dc	LS-IN	LS-OUT	Ea (INCH)	Eu (INCH)	V (MPH)
UTA ML2-2240	11,985.00	0°28'38.87"	100.00	100.00	1.00	1.09	79



UTA ML2

REVISIONS

NO.	DATE	APPROVED BY	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
HDR

DRAWN BY AMG
QC CHECKED BY JS
DATE

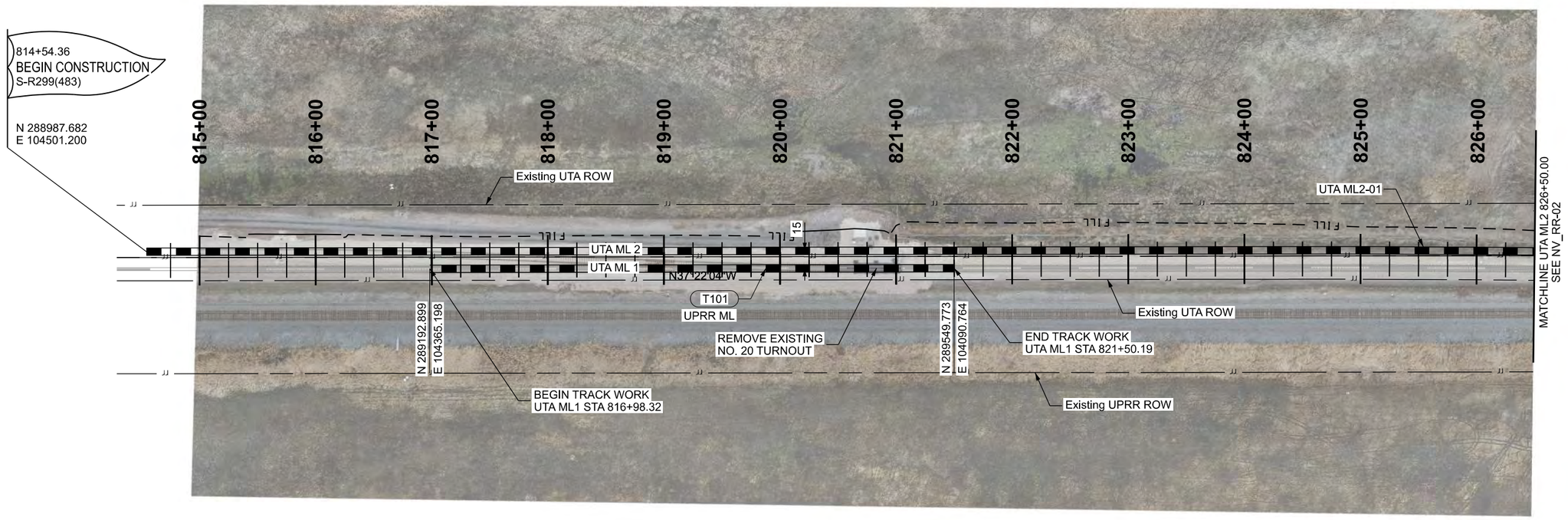
APPROVED
PROFESSIONAL ENGINEER

PROJECT: FRONTRUNNER POINT IMPROVEMENTS
NORTH OF VINEYARD SEGMENT
PROJECT NUMBER: S-R299(483)
PIN: 21213

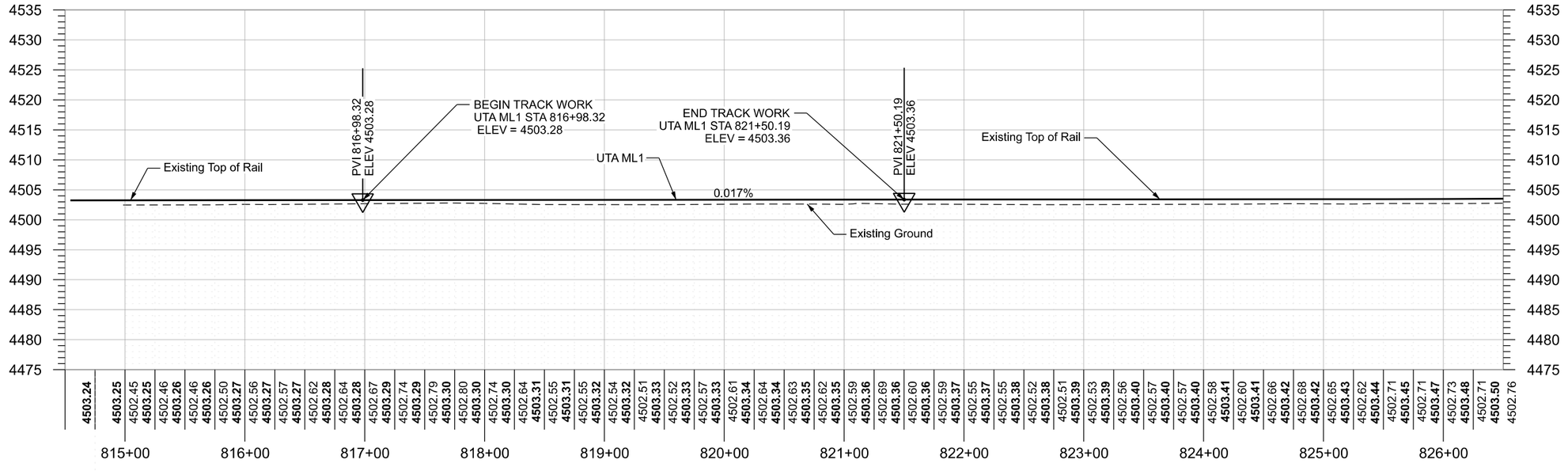
TRACK PLAN AND PROFILE

SHEET NO. NV_RR-17

NV_RR-17.dgn
2/11/2025



TURNOUT REMOVAL				
ID NO.	ACTION	PT_SW STA	PITO STA	RAIL WEIGHT
T101	REMOVE #20 RH TO	821+00.00	820+10.75	115



UTA ML1

NV_RR-18.dgn
2/11/2025

REVISIONS

NO.	DATE	APPROVED BY	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
HDR

DRAWN BY CKS
QC CHECKED BY JB
DATE

APPROVED

PROFESSIONAL ENGINEER

PROJECT: FRONTRUNNER POINT IMPROVEMENTS
NORTH OF VINEYARD SEGMENT

PROJECT NUMBER: S-R299(483) PIN 21213

TRACK PLAN AND PROFILE

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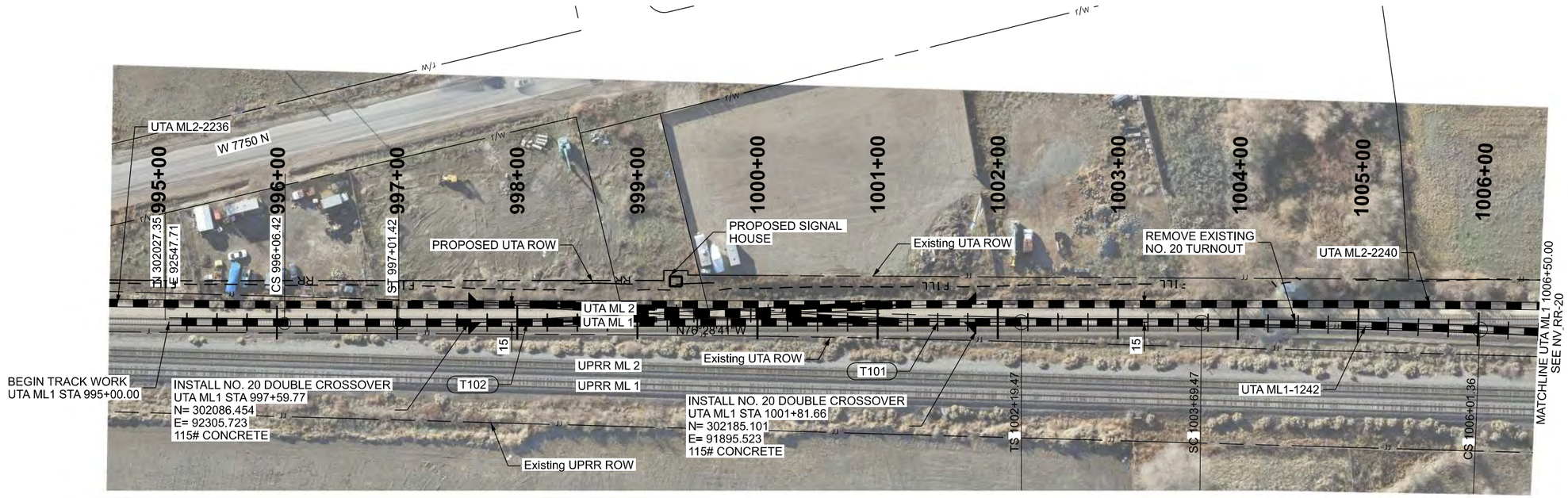
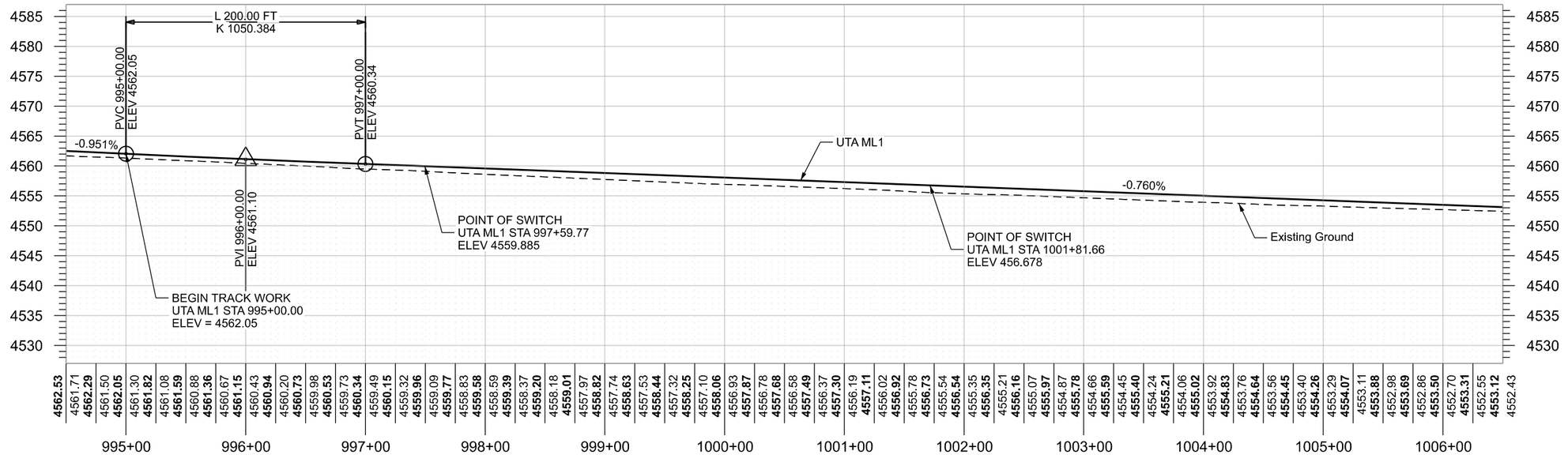


CURVE DATA							
ID NO.	R	Dc	LS-IN	LS-OUT	Ea (INCH)	Eu (INCH)	V (MPH)
UTA ML1-1242	7,639.53	0°44'59.97"	150.00	150.00	1.50	1.78	79

TURNOUT INSTALLATION				
ID NO.	ACTION	PT_SW STA	PITO STA	RAIL WEIGHT
T101	INSTALL #20 RH TO	1001+81.66	1001+20.62	115
T102	INSTALL #20 LH TO	997+59.77	998+20.81	115



UTA ML1

REVISIONS

NO.	DATE	APPROVED BY	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
HDR

DRAWN BY AMG
QC CHECKED BY JS
DATE

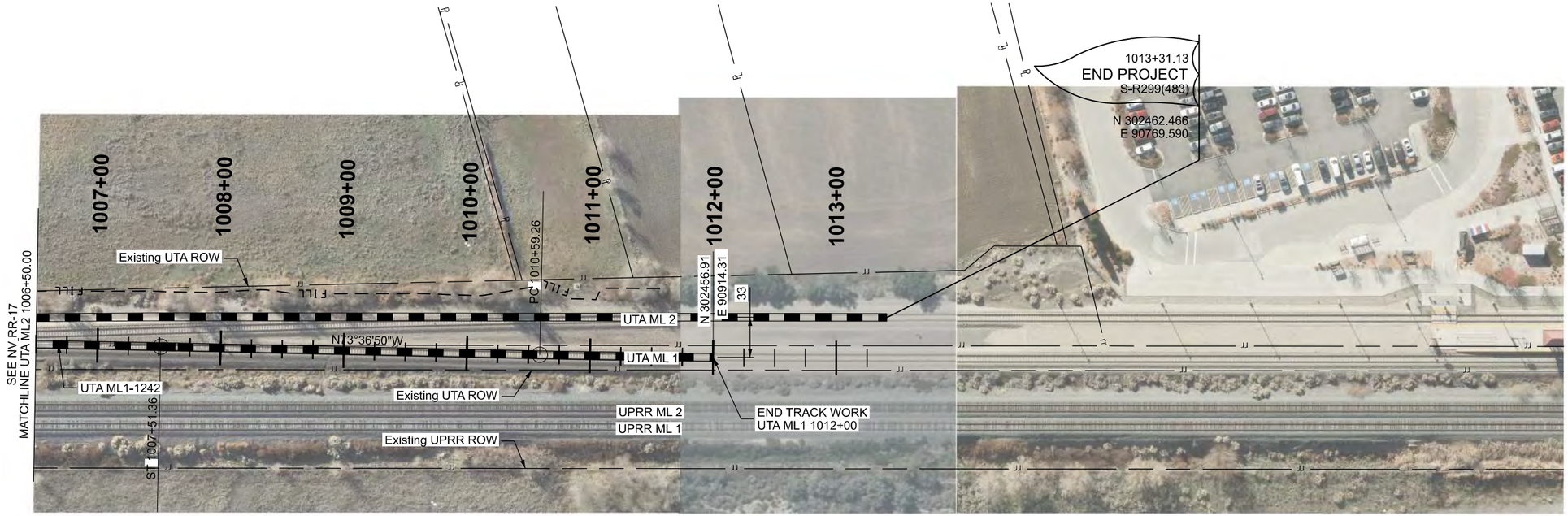
APPROVED
PROFESSIONAL ENGINEER

PROJECT: FRONTRUNNER POINT IMPROVEMENTS
NORTH OF VINEYARD SEGMENT
PROJECT NUMBER: S-R299(483)
PIN: 21213

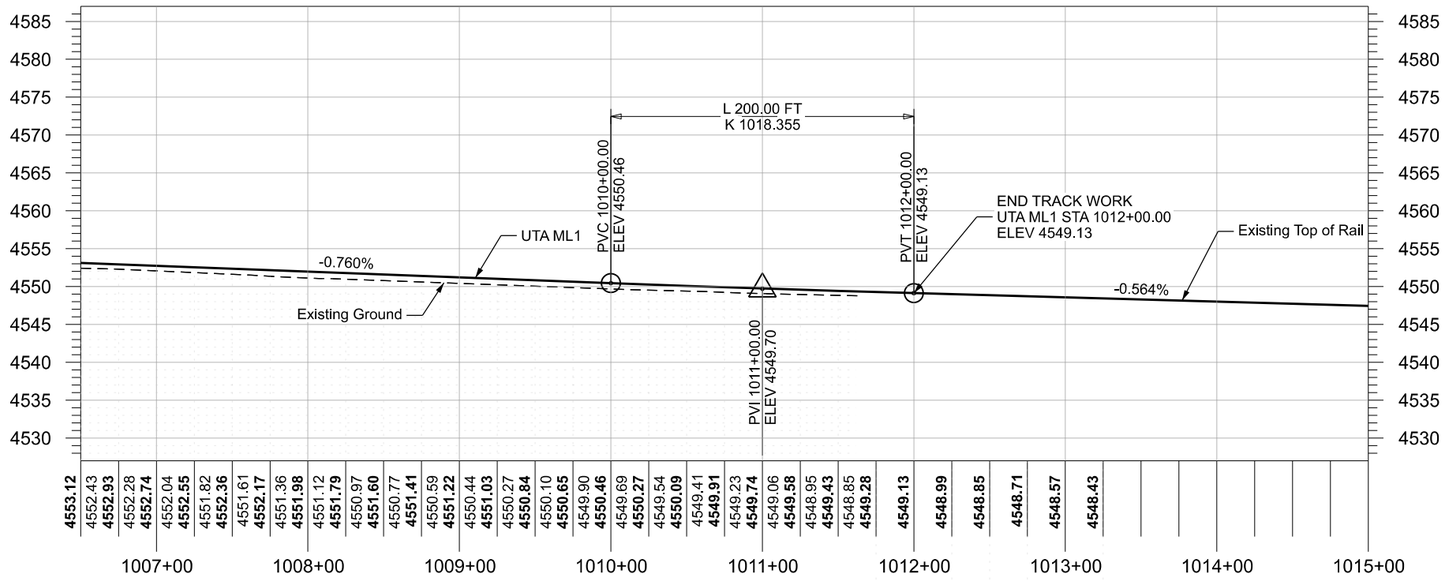
TRACK PLAN AND PROFILE

SHEET NO. NV_RR-19

NV_RR-19.dgn
2/11/2025



CURVE DATA							
ID NO.	R	Dc	LS-IN	LS-OUT	Ea (INCH)	Eu (INCH)	V (MPH)
UTA ML1-1242	7,639.53	0°44'59.97"	150.00	150.00	1.50	1.78	79



UTA ML1

REVISIONS

NO.	DATE	APPROVED BY	REMARKS

UTAH DEPARTMENT OF TRANSPORTATION
HDR

DRAWN BY AMG
QC CHECKED BY JS
DATE

APPROVED
PROFESSIONAL ENGINEER

PROJECT: FRONTRUNNER POINT IMPROVEMENTS
NORTH OF VINEYARD SEGMENT
PROJECT NUMBER: S-R299(483) PIN 21213

TRACK PLAN AND PROFILE

SHEET NO. NV_RR-20

NV_RR-20.dgn
2/11/2025

ATTACHMENT 2

Cultural, Historic, and Archaeological Resources

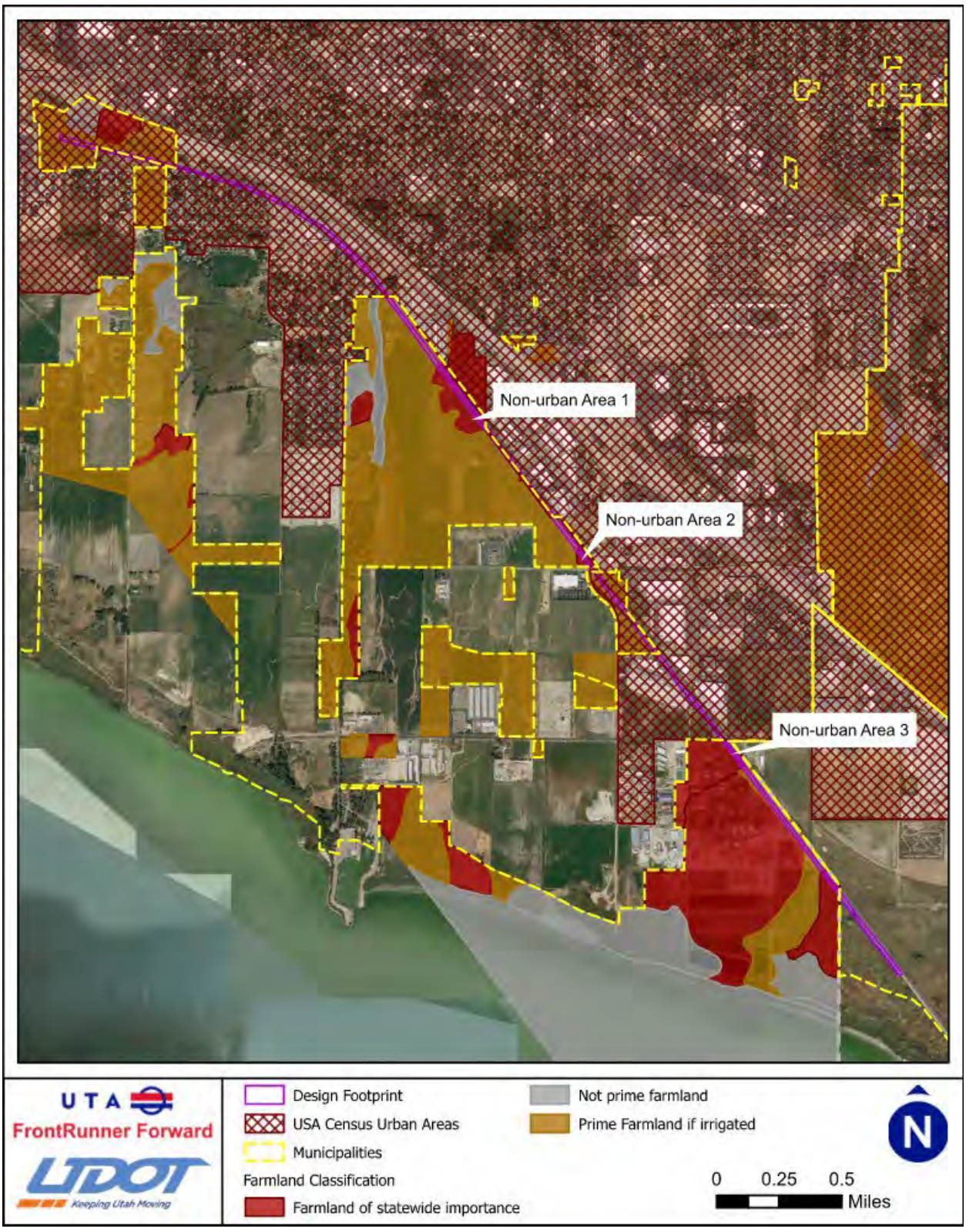
ATTACHMENT 3

Hazardous Waste


Greenland Service
International Auto
Alpine Valley Center
Holiday Oil(47)
Target Store (T-1814)
7-Eleven (36331)
7-Eleven (24298)
Hart's Gas and Food American Fork West
Al's Small Engine Repair
Robert L. Anderson
Holley Auto CoHOLLEY AUTO CO
OMS (7) American Fork
Arete Gymnastics LLC
Nielson Property Holdings, LC's
Thrive Foods
Intermountain Parts Cleaners (1)
Speedway (9435)
Maverick (695)
UTA
FrontRunner Forward
UDOT
Keeping Utah Moving
Legend
TIER II
Petroleum Storage Tank
Environmental Written Assurances
Used Oil Facilities
Design Footprint
Hazardous Materials Evaluation Area
N
0
0.5
Miles

ATTACHMENT 4

Farmland


Non-urban Area 1
Non-urban Area 2
Non-urban Area 3
UTA
FrontRunner Forward
UDOT
Keeping Utah Moving
Design Footprint
USA Census Urban Areas
Municipalities
Farmland Classification
Farmland of statewide importance
Not prime farmland
Prime Farmland if irrigated
N
0 0.25 0.5
Miles

ATTACHMENT 5

Additional Land/Property Acquisition, Relocation, Leases and Easements

Table A.5-1. ROW Parcel Impacts for the North of American Fork Double Track Project

Parcel ID	Owner [a]	Parcel Address [b]	Acquisition (acres)	Relocation?
130420028	RH JOHNSON CONSTRUCTION INC	518 W 200 SOUTH, AMERICAN FORK, UT 84003	0.32	No
130420063	NIELSEN PROPERTY HOLDINGS L C	AMERICAN FORK, UT 84003	0.16	No
130420065	WILLIAMSON FARMS LLC	84003	0.02	No
130420069	WILLIAMSON FARMS LLC	6686 W 7750 NORTH, AMERICAN FORK DISTR, UT 84003	0.04	No
130420117	WILLIAMSON FARMS LLC	6712 W 7750 NORTH, AMERICAN FORK DISTR, UT	0.02	No
130450006	JOHN ROBERTS	380 W 200 S AMERICAN FORK, UTAH	0.06	No
130500239	CHIPMAN, ROSEMARIE S (ET AL)	84003	0.05	No
130600070	AMERICAN FORK CITY	AMERICAN FORK, UT 84003	0.23	No
130610091	BROWN FRANK W LLC	84003	0.10	No
130610101	CORP OF PRES BISHOP CHURCH OF JESUS CHRIST OF LDS	84003	0.08	No
130610109	CORP OF PRES BISHOP CHURCH OF JESUS CHRIST OF LDS	84003	0.20	No
130630094	CENTRAL UTAH WATER CONSERVANCY DISTRICT	AMERICAN FORK, UT 84003	<0.01	No
130660041	BLACKHURST, PHARIS C & PAMELA F (ET AL)	7405 N 5750 WEST, AMERICAN FORK DISTR, UT	0.21	No
130790026	AMERICAN FORK CITY	AMERICAN FORK, UT 84003	0.09	No
130790033	TIMPANOGOS SPECIAL SERVICE DIST	5135 W 6400 NORTH, AMERICAN FORK DISTR, UT	2.58	No
140580021	UTAH COUNTY	LINDON, UT 84042	<0.01	No
456020001	PETERSON, TONY B & KRIS W (ET AL)	287 S STORRS AVE, AMERICAN FORK, UT	0.01	No
456020005	RICHINS, MCKAY & ASHLEY	232 W 310 SOUTH, AMERICAN FORK, UT	0.01	No

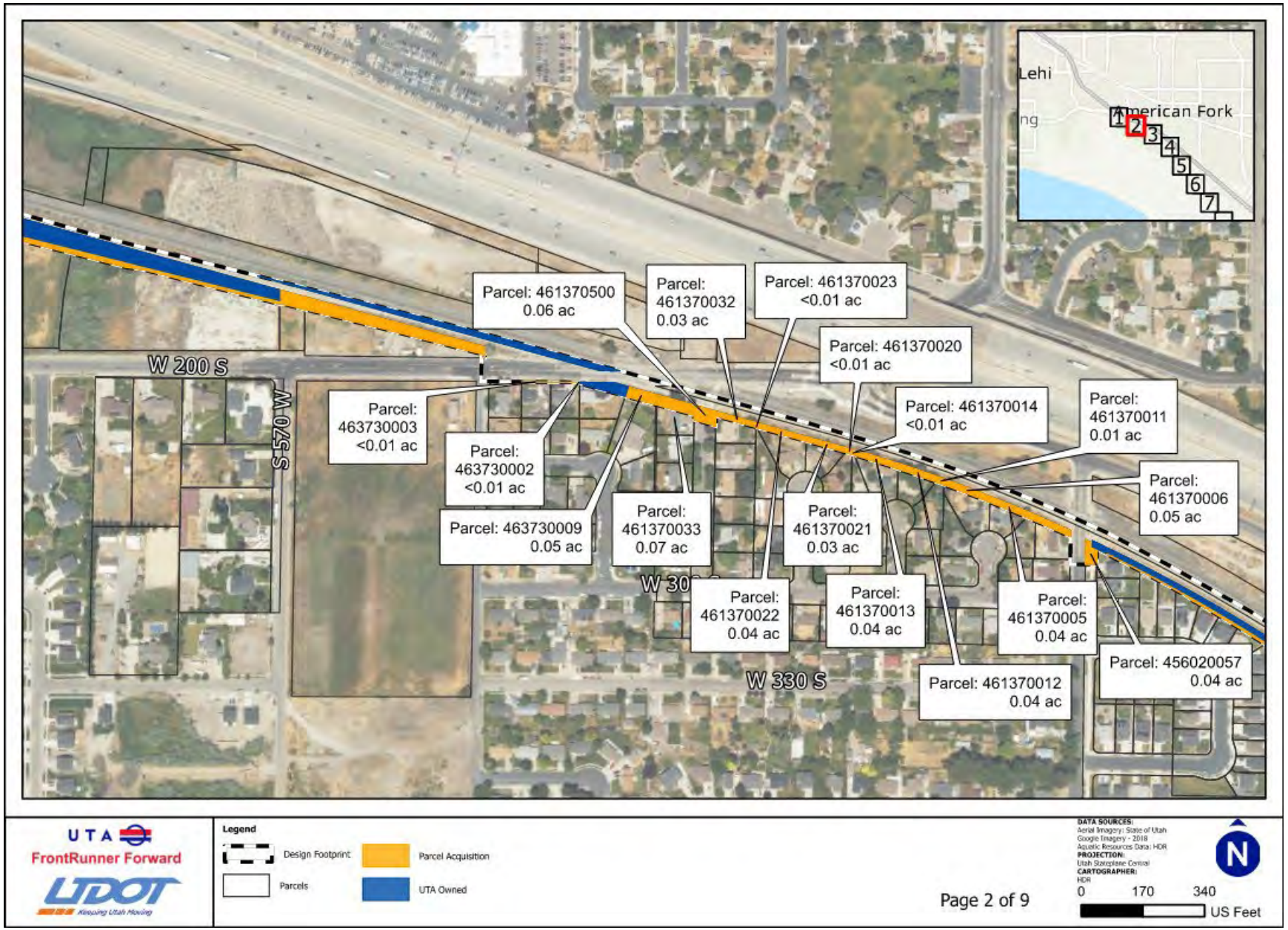
(*Continued on next page*)

Parcel ID	Owner [a]	Parcel Address [b]	Acquisition (acres)	Relocation?
456020006	CORBRIDGE, DALLIN	228 W 310 SOUTH, AMERICAN FORK, UT	0.01	No
456020057	AMERICAN FORK CITY	AMERICAN FORK, UT 84003	0.04	No
461370001	COTA, SEAN	284 S STORRS AV, AMERICAN FORK, UT 84003	0.04	No
461370004	FAUSETT, SHERIE L	283 S BARRATT CIR, AMERICAN FORK, UT 84003	0.01	No
461370005	PARTRIDGE, MATT & MELISSA	271 S BARRETT CIR, AMERICAN FORK, UT 84003	0.04	No
461370006	274 SOUTH BARRETT CIRCLE AMERICAN FORK UT LLC	274 S BARRETT CIR, AMERICAN FORK, UT 84003	0.05	No
461370011	FERGUSON, BRENNEN FLOYD & SARA CHRISTINE	273 S CLEGG CIR, AMERICAN FORK, UT 84003	0.01	No
461370012	BEST, REED WAYNE & LUANA ATOA	261 S CLEGG CIR, AMERICAN FORK, UT	0.04	No
461370013	RODRIGUEZ, MICHELLE MARIE CORREA (ET AL)	264 S CLEGG CIR, AMERICAN FORK, UT 84003	0.04	No
461370014	BRODY & REESE VENTURES LLC	272 S CLEGG CIR, AMERICAN FORK, UT 84003	<0.01	No
461370020	CLARK, RICHARD & EMILY	263 S CHADWICK CIR, AMERICAN FORK, UT 84003	<0.01	No
461370021	JOHNSON, DENYL NICOLE (ET AL)	261 S CHADWICK CIR, AMERICAN FORK, UT 84003	0.03	No
461370022	SORENSEN, PHILLIP G & KIMBERLY M	254 S CHADWICK CIR, AMERICAN FORK, UT 84003	0.04	No
461370023	LARSON, THOMAS DELL & MELVERNA SUE (ET AL)	266 S CHADWICK CIR, AMERICAN FORK, UT 84003	<0.01	No
461370032	CLARK, LARRY D & CINDY A	245 S 420 WEST, AMERICAN FORK, UT 84003	0.03	No
461370033	CLARK, STEVEN	238 S 420 WEST, AMERICAN FORK, UT 84003	0.07	No
461370500	MOUNTAIN MEADOWS	84003	0.06	No
463730002	BORJA, DAVID & YAJAIRA	475 W 200 SOUTH, AMERICAN FORK, UT 84003	<0.01	No
463730003	KIMBLE, DONALD H II & LADAWN I	487 W 200 SOUTH, AMERICAN FORK, UT 84003	<0.01	No

(*Continued on next page*)

Parcel ID	Owner [a]	Parcel Address [b]	Acquisition (acres)	Relocation?
463730009	JENSEN, NICKOLAS ALLEN & SHANTEL	448 W 230 SOUTH, AMERICAN FORK, UT 84003	0.05	No
515710001	AUELUA-NOTOA, REBECCA	178 W 310 SOUTH, AMERICAN FORK, UT 84003	0.01	No
515710002	JEPPESEN, DILLON	182 W 310 SOUTH, AMERICAN FORK, UT 84003	0.01	No
515710003	LEWIS, ANDREW & ASHLEY	188 W 310 SOUTH, AMERICAN FORK, UT 84003	0.01	No
515710004	PETERSON, BRIAN D	192 W 310 SOUTH, AMERICAN FORK, UT 84003	0.02	No
515710005	RICCIO, RYAN	311 S 190 WEST, AMERICAN FORK, UT 84003	0.01	No
535670001	AFIP 1375 LLC	1375 S 500 EAST, AMERICAN FORK, UT	0.03	No
535670002	AFIP 1349 LLC	1349 S 500 EAST, AMERICAN FORK, UT	0.03	No
535670003	TIMP INDUSTRIAL 1325 LLC	1325 S 500 EAST, AMERICAN FORK, UT	0.06	No
651410504	JONES, WILL S	383 S 50 WEST CIR, AMERICAN FORK, UT 84003	0.01	No
651410703	AMERICAN FORK CITY	AMERICAN FORK, UT 84003	0.02	No
651410705	CHADWICK, MARILYN BENNETT (ET AL)	431 S 50 WEST CIR, AMERICAN FORK, UT 84003	0.01	No
651410707	CHADWICK, MARILYN BENNETT (ET AL)	433 S 50 WEST CIR, AMERICAN FORK, UT 84003	0.01	No
657180001	CHADWICK, MARILYN BENNETT (ET AL)	417 S 50 WEST CIR, AMERICAN FORK, UT	0.02	No
130420120	WINDY CITY DEVELOPMENT LLC	84003	0.15	No
130440189	ROBERTS MFG INC	320 S 100 WEST, AMERICAN FORK, UT	0.15	No
130660054	BUCKWALTER, STEVEN J & LEE ANN	7058 N 5750 WEST, AMERICAN FORK DISTR, UT 84003	0.22	No
		Total	**5.58**	


Lehi
American Fork
1
2
3
4
5
6
7
W Main
15
Parcel: 130420117 0.02 ac
Parcel: 130420065 0.02 ac
Parcel: 130420120 0.15 ac
Parcel: 130420063 0.16 ac
Parcel: 130450006 0.06 ac
Parcel: 130420028 0.32 ac
Parcel: 130420069 0.04 ac
W 200 S
700 W
W 075 S
UTA FrontRunner Forward
UDOT Keeping Utah Moving
Legend
Design Footprint
Parcels
Parcel Acquisition
UTA Owned
Page 1 of 9
DATA SOURCES:
Aerial Imagery: State of Utah
Google Imagery - 2018
Aquatic Resources Data: HDR
PROJECTION:
Utah Stateplane Central
CARTOGRAPHER:
HDR
N
0 170 340
US Feet


Lehi
American Fork
1
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7
W 200 S
S 570 W
W 330 S
Parcel: 461370500
0.06 ac
Parcel:
461370032
0.03 ac
Parcel: 461370023
<0.01 ac
Parcel: 461370020
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Parcel: 461370014
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Parcel:
461370011
0.01 ac
Parcel:
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<0.01 ac
Parcel:
463730002
<0.01 ac
Parcel: 463730009
0.05 ac
Parcel:
461370033
0.07 ac
Parcel:
461370021
0.03 ac
Parcel:
461370006
0.05 ac
Parcel:
461370022
0.04 ac
Parcel:
461370013
0.04 ac
Parcel:
461370005
0.04 ac
Parcel: 456020057
0.04 ac
Parcel: 461370012
0.04 ac
UTA
FrontRunner Forward
UDOT
Legend
Design Footprint
Parcels
Parcel Acquisition
UTA Owned
Page 2 of 9
DATA SOURCES:
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Utah Stateplane Central
CARTOGRAPHER:
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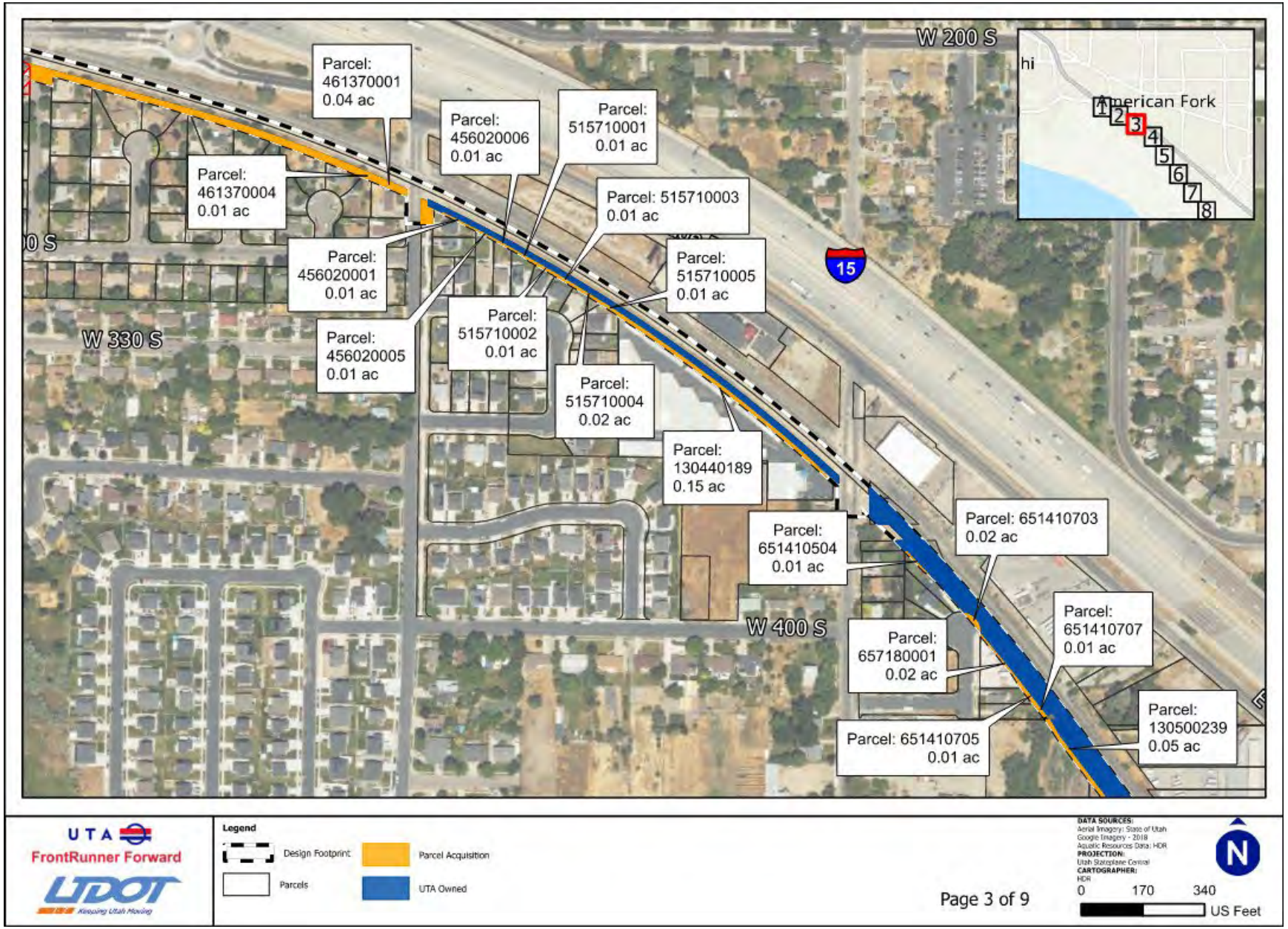
US Feet


W 200 S
W 330 S
W 400 S
15
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Parcel: 515710003 0.01 ac
Parcel: 456020001 0.01 ac
Parcel: 515710005 0.01 ac
Parcel: 515710002 0.01 ac
Parcel: 456020005 0.01 ac
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Parcel: 130440189 0.15 ac
Parcel: 651410504 0.01 ac
Parcel: 651410703 0.02 ac
Parcel: 651410707 0.01 ac
Parcel: 657180001 0.02 ac
Parcel: 651410705 0.01 ac
Parcel: 130500239 0.05 ac
American Fork
UTA FrontRunner Forward
UDOT
Legend
Design Footprint
Parcels
Parcel Acquisition
UTA Owned
Page 3 of 9
DATA SOURCES:
Aerial Imagery: State of Utah
Google Imagery - 2018
Aquatic Resources Data: HDR
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Utah Stateplane Central
CARTOGRAPHER:
HDR
0 170 340
US Feet
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E 400 S
W 400 S
E Frontage Rd
E 500 S
American Fork
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8
Parcel: 130500239
0.05 ac
15
Parcel:
130660041
0.21 ac
S 100 W
S 100 E
W 7300 N
UTA
FrontRunner Forward
UDOT
Legend
Design Footprint
Parcels
Parcel Acquisition
UTA Owned
Page 4 of 9
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Google Imagery - 2018
Aquatic Resources Data: HDR
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Utah Stateplane Central
CARTOGRAPHER:
HDR
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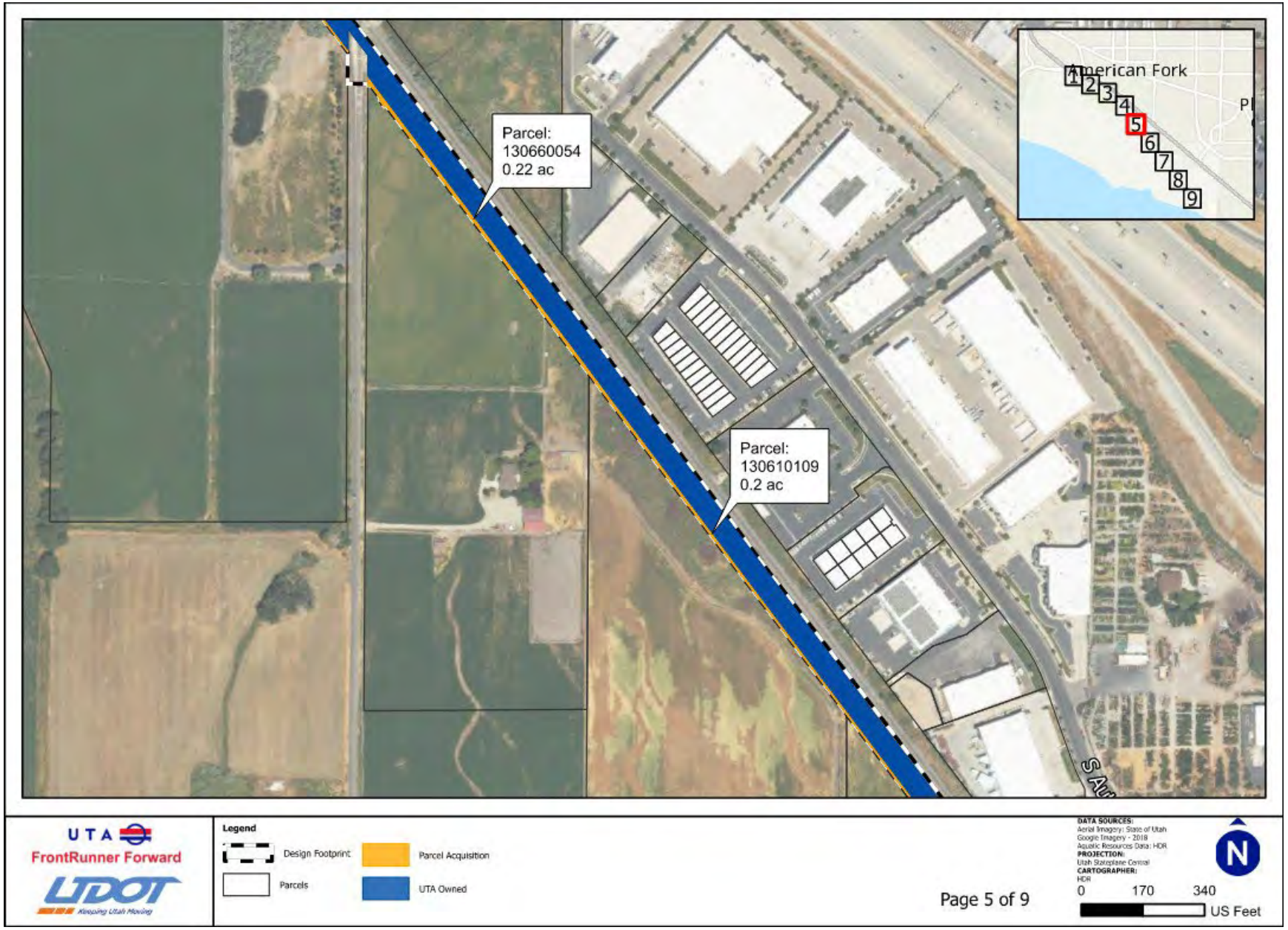
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American Fork
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UTA
FrontRunner Forward
UDOT
Legend
Design Footprint
Parcels
Parcel Acquisition
UTA Owned
Page 5 of 9
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Google Imagery - 2018
Aquatic Resources Data: HDR
PROJECTION:
Utah Stateplane Central
CARTOGRAPHER:
HDR
N
0
170
340
US Feet


Parcel:
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0.08 ac
Parcel:
130610091
0.1 ac
Parcel:
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0.23 ac
S Auto Mall Dr
500 E
W 6800 N
American Fork
1
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3
4
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6
7
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9
UTA
FrontRunner Forward
UDOT
Legend
Design Footprint
Parcel Acquisition
UTA Owned
Parcels
UDOT Owned
Page 6 of 9
DATA SOURCES:
Aerial Imagery: State of Utah
Google Imagery - 2018
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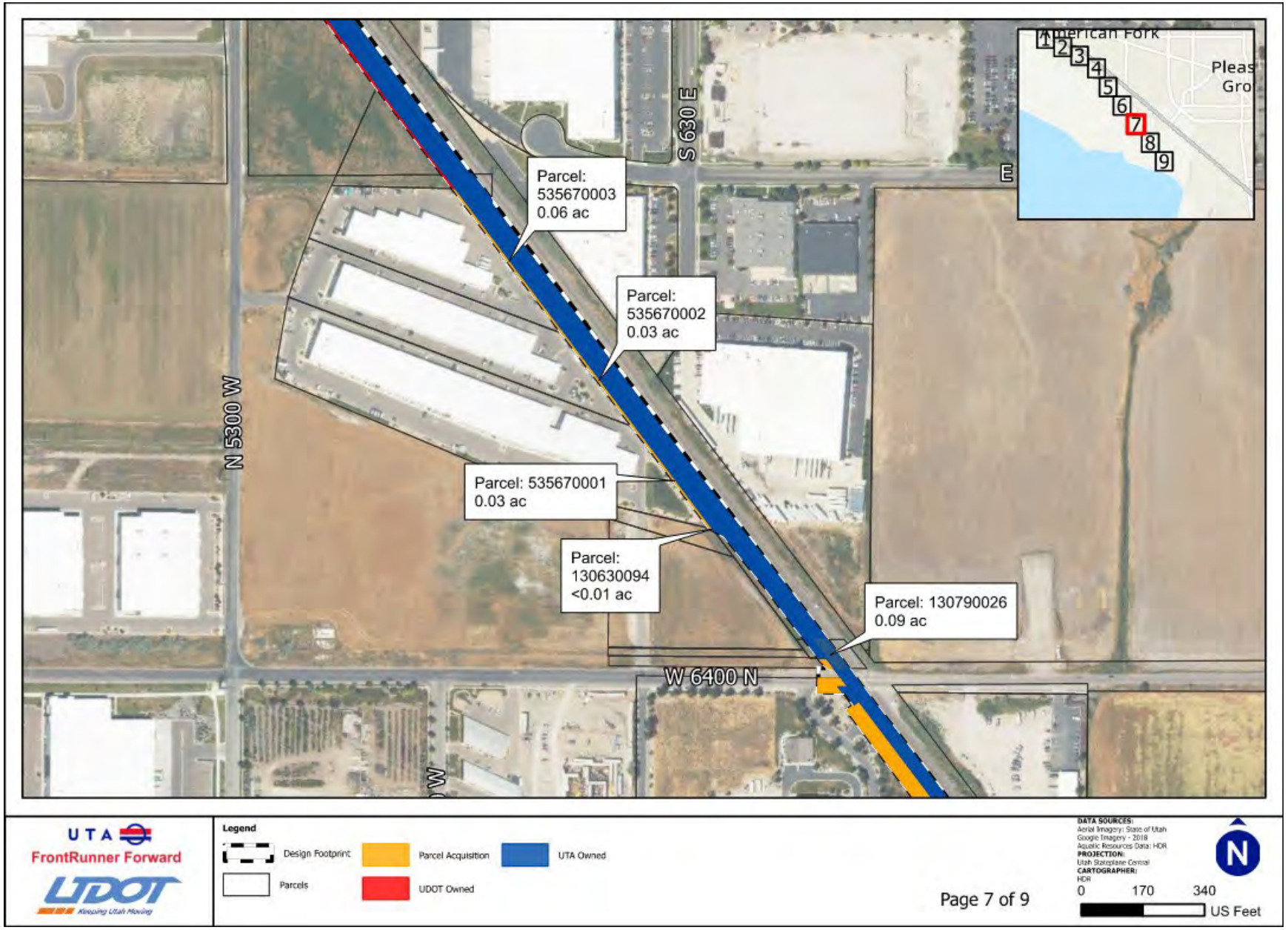
US Feet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0.09 ac
S 630 E
N 5300 W
W 6400 N
American Fork
Pleas
Gro
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UTA
FrontRunner Forward
UDOT
Keeping Utah Moving
Legend
Design Footprint
Parcels
Parcel Acquisition
UDOT Owned
UTA Owned
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Google Imagery - 2018
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Utah Stateplane Central
CARTOGRAPHER:
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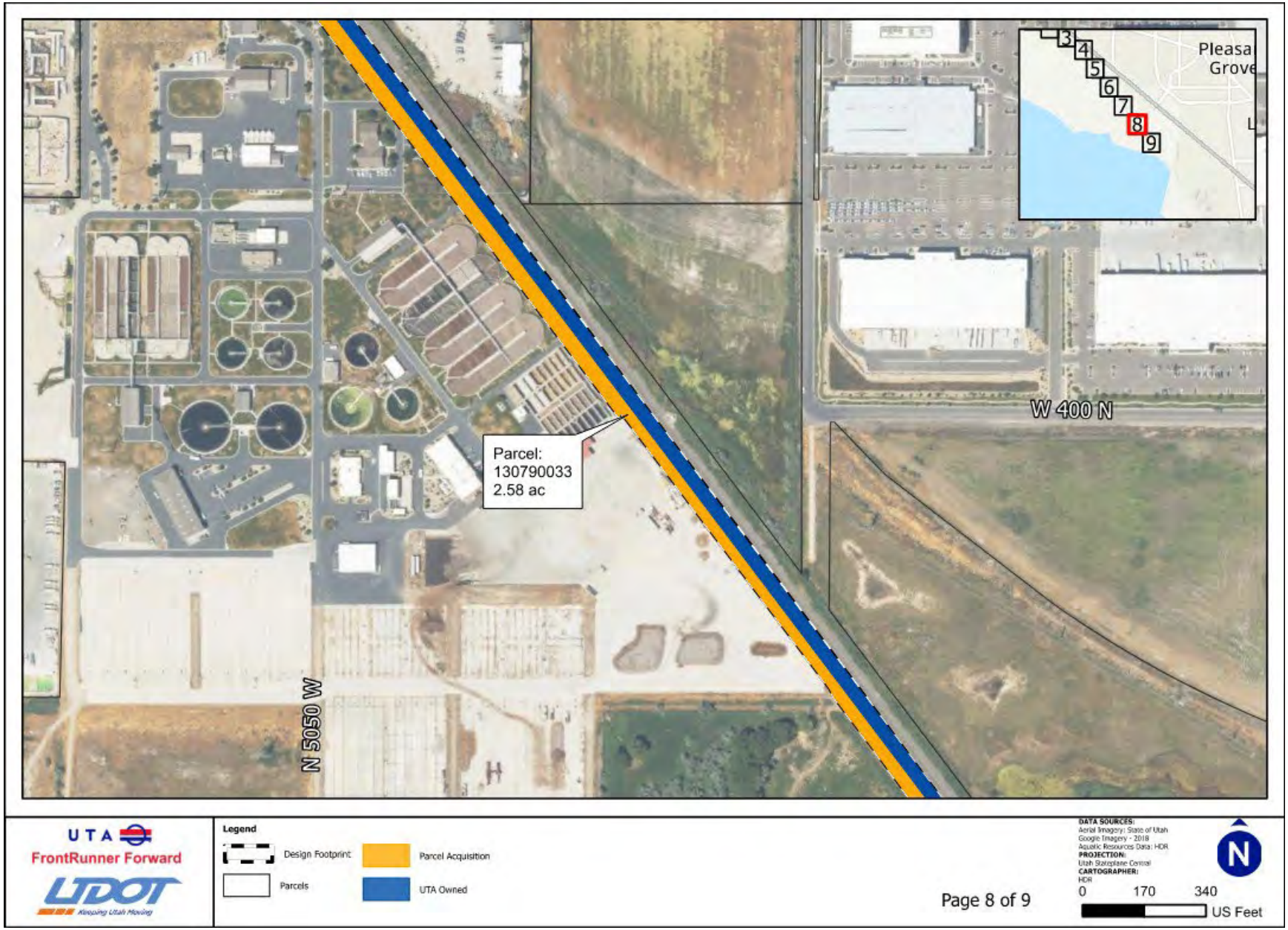
Page 7 of 9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N 5050 W
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UTA
FrontRunner Forward
UDOT
Legend
Design Footprint
Parcels
Parcel Acquisition
UTA Owned
Page 8 of 9
DATA SOURCES:
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Google Imagery - 2018
Aquatic Resources Data: HDR
PROJECTION:
Utah Stateplane Central
CARTOGRAPHER:
HDR
N
0
170
340
US Feet


Parcel:
140580021
<0.01 ac
Grove
5
6
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9
UTA
FrontRunner Forward
UDOT
Legend
Design Footprint
Parcel Acquisition
Parcels
UTA Owned
Page 9 of 9
DATA SOURCES:
Aerial Imagery: State of Utah
Google Imagery - 2018
Aquatic Resources Data: HDR
PROJECTION:
Utah Stateplane Central
CARTOGRAPHER:
HDR
0
170
340
US Feet
N

ATTACHMENT 6

Noise and Vibration

FrontRunner Forward Technical Memorandum

To: Utah Transit Authority

From: Lance Meister, Cross-Spectrum Acoustics, Inc.

Date: July 21, 2025

Subject: North of American Fork Double Track Project Noise and Vibration Assessment — Design Change to Extend Southern Section and Ballast Mat Vibration Update

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Summary

The purpose of this memorandum is to supplement the previous noise and vibration assessment of the North of American Fork Double Track Project (originally completed November 2022;). The original project consisted of double tracking approximately 4.2 miles of the FrontRunner Commuter Rail system from approximately 1 mile north of W. Vineyard Road to the south side of 2100 North in Lehi. The updated project extends double track from south, from the American Fork station to approximately 1 mile north of W. Vineyard Road (additional 3.8 miles). The original and extended sections are shown in Figure 1.

The anticipated track work for the 3.8-mile extension consists of constructing 19,500 track feet of a new FrontRunner UTA mainline (ML) number (No.) 2 west of the existing UTA ML No. 1, shifting about 2,000 track feet of the existing UTA ML No. 1, removing two No. 20 power operated turnouts, installing one No. 20 double crossover, constructing 3,455 track feet of retaining walls, constructing a new bridge over the American Fork River, extending multiple culverts to accommodate the widened track bed, relocating utilities including a signal house adjacent to 5750 West at the southern end of the extension, and widening the existing track bed.

The results of the original noise and vibration assessment (November 2022) indicated that there would be no noise or vibration impacts associated with the North of American Fork Double Track Project. This supplemental assessment was conducted to assess the noise and vibration impacts in the extended Southern Section. In the spring of 2025, information came to light about existing ballast mats under the tracks in the North of American Fork double track project area. Because there are two existing ballast masts, one near 2100 N in the Original Section (see Figure 2), and one near 7750 N in the Southern Section (see Figure 3), this supplemental assessment also include reassessment of the change in vibration levels due to the new track in the Original Section.

For the Original Section, there are no vibration impacts except where a ballast mat is beneath the existing UTA track. Near 2100 N where existing UTA track has a ballast mat, three single-family homes on the west side of track would experience vibration impacts.

For the Southern Section, there are noise and vibration sensitive receivers on the west side of the track south of the American Fork Station, but the remainder of the land use is not noise or vibration sensitive. Due to the number of freight trains and the distance from the receivers to the tracks in the South Section, the noise and vibration levels would not change enough to create an impact except where a ballast mat is beneath the existing UTA track. Near 7750 N where existing UTA track a has ballast mats, 16 single-family homes on the west side track would experience vibration impacts. Finally, the new No. 20 double crossover is not located near any noise or vibration sensitive receivers.

The recommended mitigation for the vibration impacts is to include a ballast mat under the new track adjacent to the existing track with ballast mat. A detailed vibration assessment will be conducted during final design and will consider both infrastructure changes and service increase to determine reasonable and feasible mitigation. In addition, any ballast mat under existing track would be replaced where existing track is being shifted.

Figure 1. North of American Fork Double Track Project

Federal Transit Administration Noise and Vibration Impact Criteria

The Federal Transit Administration (FTA) noise and vibration criteria for transit projects are detailed in the FTA's noise and vibration guidance manual.[1]

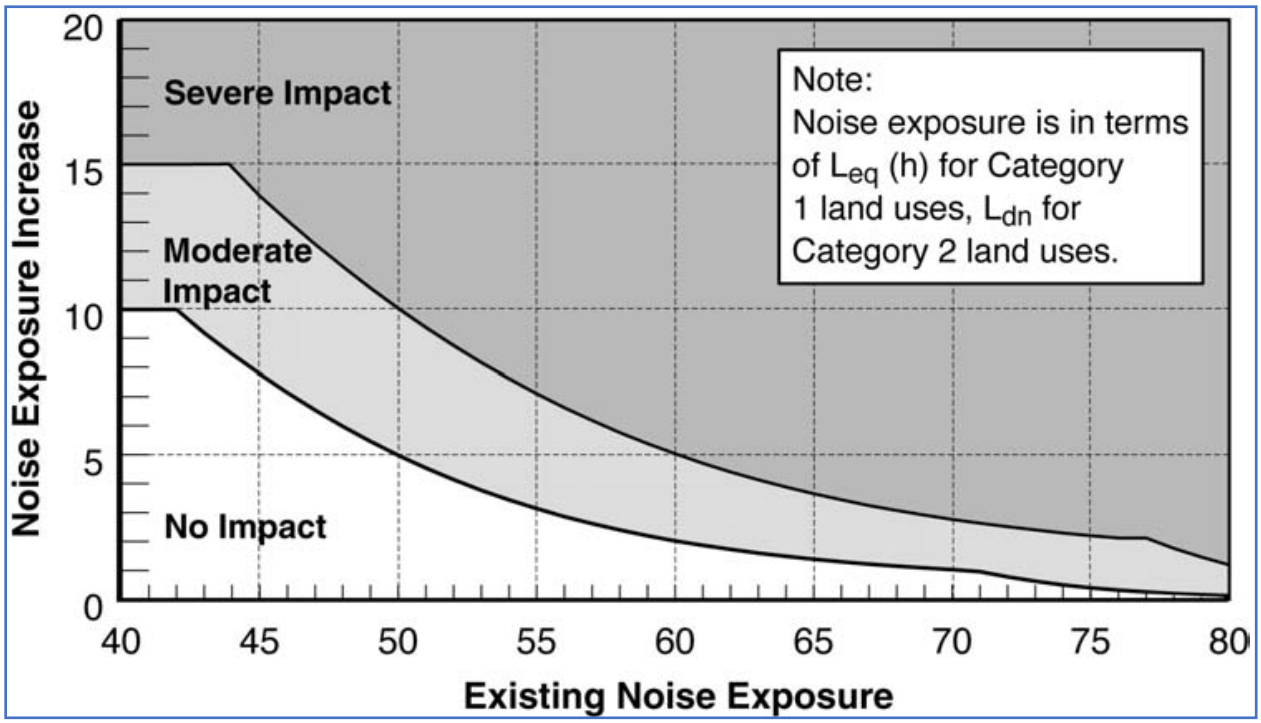
The FTA noise criteria are based on the land use category of the sensitive receptor. The descriptors and criteria for assessing noise impact vary according to land use categories adjacent to the project. For Category 2, land uses where people live and sleep (e.g., residential neighborhoods, hospitals, and hotels), the Day-Night Average Sound Level (Ldn) is the assessment parameter. For other land use types (Category 1 or 3) where there are noise-sensitive uses (e.g., outdoor concert areas, schools, and libraries), the equivalent continuous sound level (Leq) for an hour of noise sensitivity that coincides with train activity is the assessment parameter.

The noise impact criteria are defined by the two curves in Figure 2, which compares the change in noise due to the project to the existing noise before the introduction of the project. These criteria are used in projects where there is not a new project, but where there can be changes in noise, such as with the introduction of a second track. The FTA noise impact criteria include three levels of impact, as shown in Figure 2. The three levels of impact include:

- **No Impact:** In this range, the project is considered to have no impact since, on average, the introduction of the project will result in an insignificant increase in the number of people highly annoyed by the new project noise.
- **Moderate Impact:** Project-generated noise in this range is considered to cause impact at the threshold of measurable annoyance. Moderate impacts serve as an alert to project planners for potential adverse impacts and complaints from the community. Mitigation should be considered at this level of impact based on project specifics and details concerning the affected properties.
- **Severe Impact:** Project-generated noise in this range is likely to cause a high level of community annoyance. Noise mitigation should be applied for severe impacts where feasible.

[1] Federal Transit Administration, Transit Noise and Vibration Impact Assessment Manual, FTA Report No. 0123, September 2018.

Figure 2. FTA Cumulative Noise Impact Criteria



SOURCE: FTA 2018

The FTA vibration criteria for new projects without existing vibration sources are based on the vibration level and number of project operations, and not on the increase in vibration levels. As the number of operations increase, the vibration impact threshold becomes more stringent. In a project location with existing vibration from trains (which is the case for the Project), the criterion is based on a change in vibration relative to the existing. For locations with more than 12 operations per day (such as the FrontRunner corridor), vibration impact occurs when the increase in vibration is at least 3 vibration decibels (VdB) over the existing vibration levels.

Noise and Vibration Assessment Methodology

The noise and vibration impact assessment methodology is the same as that described in the original North of American Fork technical memorandum, which follows the FTA's noise and vibration guidance manual. A detailed noise assessment and a general vibration assessment were conducted for the project.

Impact Assessment for Ballast Mat for Original North of American Fork Section

The new UTA track would be located on the east side of the existing FrontRunner track for the north third of the segment. Just south of the turnout south of W 2100 N, there is a 1,000-foot long section of ballast mat under the existing tracks. Because the existing ballast mat under existing FrontRunner track is providing lower existing vibration levels, the addition of a new track without a ballast mat would increase vibration levels by more than 3 VdB for some front row vibration sensitive receivers west of track even though the new track would be on the east side of the existing track (further from the

residences). The vibration levels would increase by more than the 3 VdB threshold relative to the existing levels at three single-family residences. The location of the vibration impacts are shown in Figure 2.

Affected Environment for Extended Southern Section

The land use adjacent to the expanded project area includes a residential community just to the south of the American Fork station on the west side of the track. The remaining land use is commercial and open spaces on both sides of the track with no noise or vibration sensitivity. The existing noise levels range from 56-81 decibel A-weighted (dBA) Ldn, depending on the distance from the tracks to the receiver, and the number of rows of intervening buildings. The existing noise is dominated by the Union Pacific (UP) freight train operations.

Impact Assessment for Extended Southern Section

The North of American Fork Double Track Project design changes would be located on the west side of the existing FrontRunner. For receivers east of the rail corridor, the noise levels would decrease slightly (less than 0.1 decibel [dB]). For receivers west of the rail corridor where the new track will be added, the noise levels would increase slightly (up to 1.6 dB and less than 0.1 dB for most receivers). The new No. 20 double crossover is not located near any noise or vibration sensitive receivers.

At all locations in the design change sections that do not have an existing ballast mat, the vibration levels would increase by less than 3 VdB, which is the threshold for vibration impact, and there would be no vibration impacts. Because the existing ballast mat under the existing FrontRunner track is providing lower existing vibration levels, addition of a new track without a ballast mat would increase vibration levels by more than 3 VdB for some front row receivers. ?The vibration levels would increase by more than the 3 VdB threshold relative to the existing levels at 16 single-family residences. The location of the vibration impacts is shown in Figure 3.

Mitigation

The recommended mitigation for the vibration impacts would be to include a ballast mat under the new track adjacent to the existing track with ballast mat so that the project vibration levels would be comparable to the existing vibration levels. Vibration measurements would need to be conducted to ensure that the ballast mat is designed properly to reduce the vibration levels from the UTA locomotive and passenger cars.

Figure 2. Vibration Impact Locations – Original North of American Fork Section

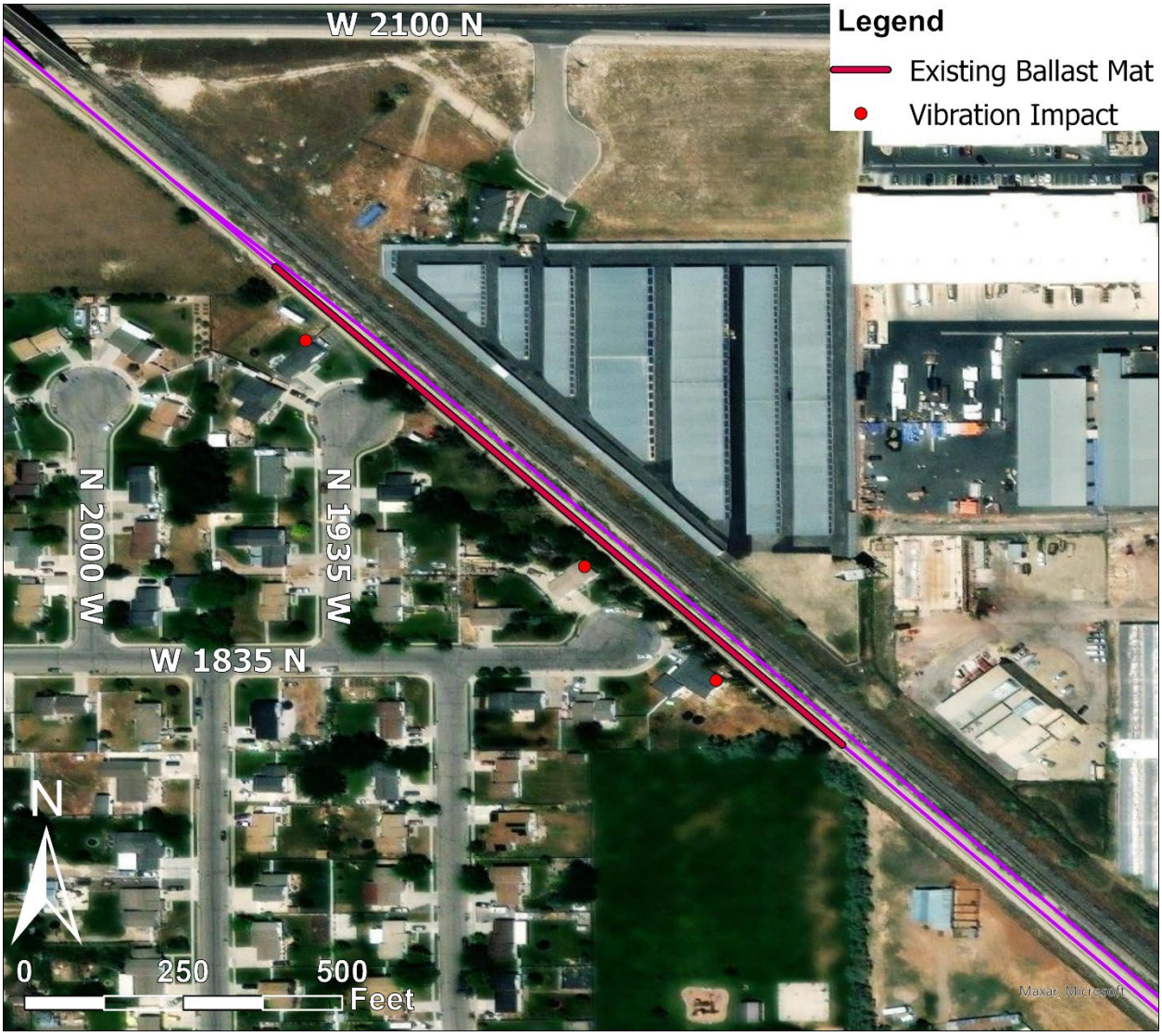
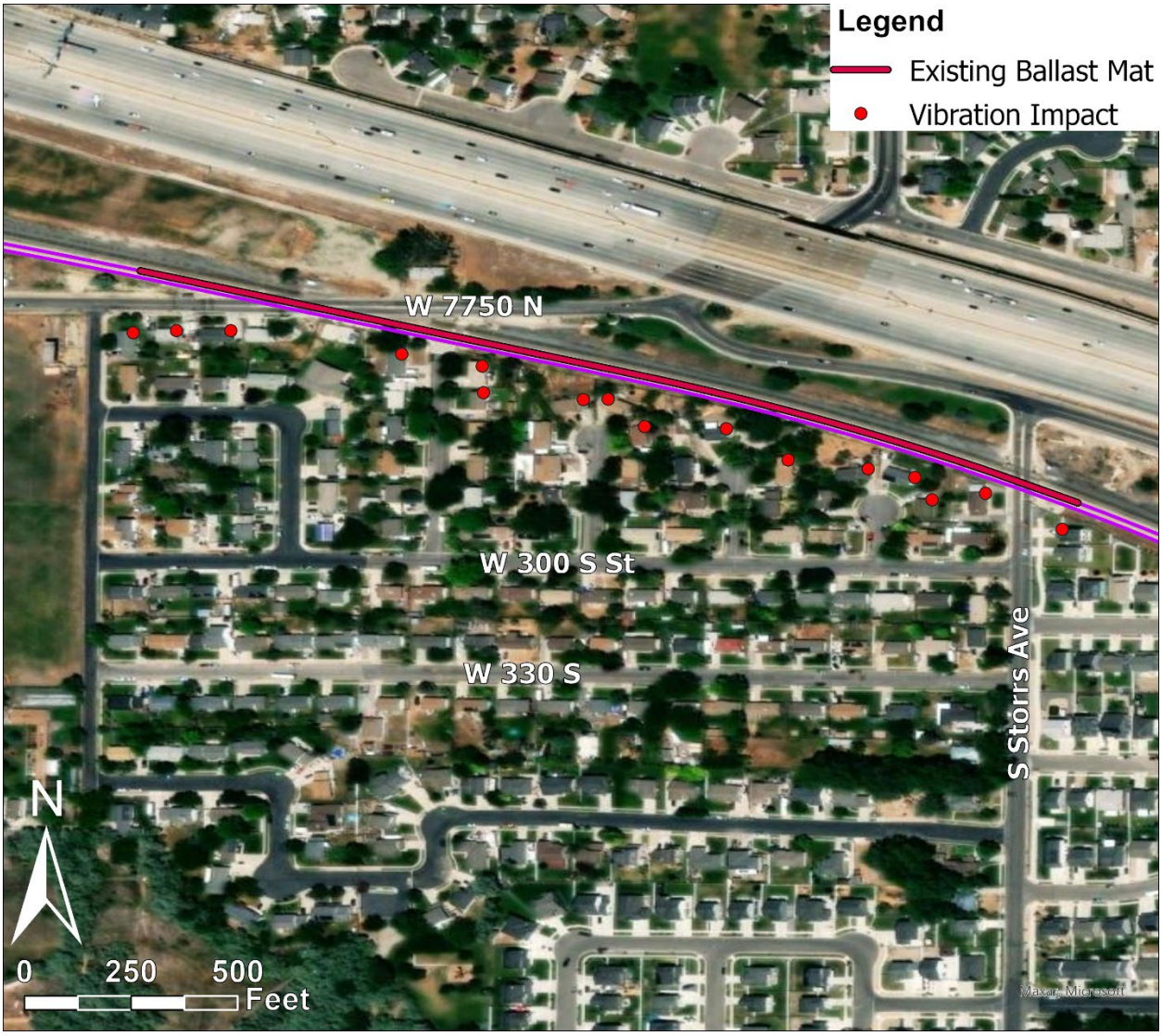


Figure 3. Vibration Impact Locations – Extended Southern Section



Receiver Number	Land Use Information	Building Row	Name	Land Use Category	Dwelling Units	Segment	Section	Distance to New UTA Track	Distance to Existing UTA Track	Distance to UP Track	New Crossover (Y/N)	Calculated Existing Noise	Moderate Impact Criteria	Severe Impact Criteria	Change in Noise	Impact
300	Single-family	1		2	1		American Fork	34	50	70	N	71.1	1.0	5.6	0.5	--
301	Single-family	1		2	1		American Fork	35	50	73	N	70.9	1.0	5.6	0.5	--
302	Single-family	1		2	1		American Fork	127	142	168	N	64.5	1.5	7.3	0.1	--
303	Single-family	1		2	1		American Fork	99	114	140	N	65.9	1.3	6.9	0.1	--
304	Single-family	1		2	1		American Fork	222	237	263	N	61.2	1.9	8.5	0.0	--
305	Single-family	1		2	1		American Fork	34	49	74	N	70.8	1.0	5.6	0.5	--
306	Single-family	1		2	1		American Fork	60	75	101	N	68.4	1.1	6.2	0.2	--
307	Single-family	1		2	1		American Fork	73	88	114	N	67.4	1.2	6.4	0.2	--
308	Single-family	1		2	1		American Fork	155	170	196	N	63.4	1.6	7.7	0.1	--
309	Single-family	1		2	1		American Fork	35	50	76	N	70.7	1.0	5.7	0.5	--
310	Single-family	1		2	1		American Fork	42	57	83	N	70.0	1.1	5.8	0.4	--
311	Single-family	1		2	1		American Fork	49	64	90	N	69.3	1.1	6.0	0.3	--
312	Single-family	1		2	3		American Fork	107	122	148	N	65.5	1.4	7.0	0.1	--
313	Single-family	1		2	1		American Fork	44	59	85	N	69.8	1.1	5.9	0.4	--
314	Single-family	1		2	1		American Fork	83	98	119	N	67.0	1.2	6.5	0.2	--
315	Single-family	1		2	1		American Fork	97	112	131	N	66.3	1.3	6.8	0.1	--
316	Single-family	1		2	1		American Fork	264	280	298	N	60.3	2.0	8.9	0.0	--
317	Single-family	1		2	1		American Fork	214	229	247	N	61.6	1.8	8.3	0.1	--
318	Single-family	2		2	1		American Fork	344	359	377	N	55.6	3.0	11.2	0.0	--
319	Single-family	1		2	1		American Fork	319	334	351	N	59.1	2.2	9.4	0.0	--
320	Single-family	1		2	1		American Fork	239	254	271	N	60.9	1.9	8.6	0.0	--
321	Single-family	1		2	1		American Fork	96	111	130	N	66.3	1.3	6.7	0.1	--
322	Single-family	1		2	1		American Fork	155	170	190	N	63.5	1.6	7.6	0.1	--
323	Single-family	1		2	1		American Fork	94	109	127	N	66.5	1.3	6.7	0.1	--
324	Single-family	1		2	1		American Fork	97	112	128	N	66.4	1.3	6.7	0.1	--
325	Single-family	1		2	1		American Fork	54	69	85	N	69.5	1.1	5.9	0.2	--
332	Single-family	1		2	1		American Fork	184	169	153	N	64.8	1.4	7.2	0.0	--
335	Single-family	1		2	1		American Fork	198	198	173	N	63.9	1.5	7.5	0.0	--
337	Single-family	1		2	1		American Fork	336	338	311	N	59.8	2.1	9.1	0.0	--
338	Single-family	1		2	1		American Fork	439	442	414	N	57.7	2.5	10.0	0.0	--
339	Single-family	1		2	1		American Fork	530	532	505	N	56.3	2.8	10.8	0.0	--
340	Single-family	1		2	1		American Fork	574	577	549	N	55.8	3.0	11.1	0.0	--
341	Single-family	1		2	1		American Fork	171	186	145	N	65.0	1.4	7.1	0.0	--
342	Single-family	1		2	1		American Fork	163	178	138	N	65.4	1.4	7.0	0.0	--
343	Single-family	1		2	1		American Fork	257	272	232	N	61.8	1.8	8.3	0.0	--
344	Single-family	1		2	1		American Fork	219	234	194	N	63.0	1.6	7.8	0.0	--
345	Single-family	1		2	1		American Fork	364	379	339	N	59.1	2.2	9.4	0.0	--
346	Single-family	1		2	1		American Fork	242	257	216	N	62.3	1.7	8.1	0.0	--
347	Single-family	1		2	1		American Fork	203	218	178	N	63.6	1.6	7.6	0.0	--
348	Single-family	1		2	1		American Fork	181	196	156	N	64.6	1.5	7.3	0.0	--
349	Single-family	1		2	1		American Fork	257	272	232	N	61.8	1.8	8.3	0.0	--
350	Single-family	1		2	1		American Fork	198	213	173	N	63.8	1.5	7.5	0.0	--
352	Single-family	1		2	1		American Fork	205	198	238	N	62.0	1.7	8.2	0.0	--
354	Single-family	1		2	1		American Fork	129	144	168	N	64.5	1.5	7.3	0.1	--
355	Single-family	1		2	1		American Fork	103	118	143	N	65.7	1.3	6.9	0.1	--
356	Single-family	1		2	1		American Fork	77	92	117	N	67.2	1.2	6.5	0.2	--
357	Single-family	1		2	1		American Fork	59	74	99	N	68.5	1.1	6.2	0.2	--
358	Single-family	1		2	1		American Fork	49	64	89	N	69.3	1.1	6.0	0.3	--
359	Single-family	1		2	1		American Fork	39	54	79	N	70.3	1.0	5.8	0.4	--
360	Single-family	1		2	1		American Fork	67	82	107	N	67.9	1.2	6.3	0.2	--
361	Single-family	1		2	1		American Fork	53	68	96	N	68.8	1.1	6.1	0.3	--
362	Single-family	1		2	1		American Fork	60	75	98	N	68.6	1.1	6.2	0.2	--
363	Single-family	1		2	1		American Fork	93	108	130	N	66.4	1.3	6.7	0.1	--
364	Single-family	1		2	1		American Fork	62	78	98	N	68.5	1.1	6.2	0.2	--
365	Single-family	1		2	1		American Fork	50	66	86	N	69.5	1.1	5.9	0.3	--

Union Pacific Inputs

Source	Ref SEL at 50ft, dBA	
Freight Cars	85.4	From Creat
Loco - Diesel	97	From Creat
Loco - Electri	90	
DMU	85	
Loco Horn	113	

Trains/Day	Pk Hour		Day	Night
3.5	1	Schedule:	0.145833	0.145833
^^In EACH Direction			Locos	Cars
		Consist:	5	120

Front Runner Inputs

Source	Ref SEL at 50ft, dBA
Commuter R	82
Loco - Diesel	92
Loco - Electri	90
DMU	85
Loco Horn	103

Existing

Trains/Day	Pk Hour		Day	Night
27	2	Schedule:	1.466667	0.555556
^^In EACH Direction			Locos	Cars
		Consist:	1	4

ATTACHMENT 7

Floodplains


W Main St
American Fork
E State Rd
S 500 E
15
89
Utah Lake
UTA
FrontRunner Forward
UDOT
Keeping Utah Moving
Design Footprint
Flood Hazard Zone
A
AE
AE - Floodway
N
0
0.5
Miles

ATTACHMENT 8

Aquatic Resources Delineation Report

FrontRunner Forward

North of American Fork Double Track Project Reevaluation

Aquatic Resources Delineation Report

July 2025

Contents

Tables

Appendices

Acronyms and Abbreviations

Acronym	Definition
GPS	global positioning system
I-15	Interstate 15
NWPL	National Wetland Plant List
OHWM	ordinary high water mark
project	North of American Fork Double Track Project Reevaluation
SP	sampling point
ssp.	subspecies
TNW	traditional navigable water
U.S.	United States
UDOT	Utah Department of Transportation
UP	Union Pacific Railroad
USACE	U.S. Army Corps of Engineers
USDA NRCS	U.S. Department of Agriculture, Natural Resources Conservation Service
UTA	Utah Transit Authority

Introduction

On behalf of the Utah Transit Authority (UTA) in coordination with Utah Department of Transportation (UDOT), HDR, has prepared this aquatic resources delineation report in support of the UTA North of American Fork Double Track Project Reevaluation in Utah County, Utah.

The purpose of this report is to identify and describe aquatic resources in the delineation survey area (survey area) for the project (see Appendix A, *Project Overview Map*). The results of the delineation are summarized in Table 3. The jurisdictional status of the delineated aquatic resources is subject to determination by the U.S. Army Corps of Engineers (USACE).

Aquatic Resources Delineation Survey Area

The survey area is located along the existing UTA FrontRunner corridor in the cities of American Fork and Lindon in Utah County. The survey area runs roughly from UTA milepost S 30.3 south to UTA milepost S 34.1 and includes areas adjacent to the corridor to accommodate proposed double track. The survey area covers about 78 acres and includes land owned by public and private entities.

The survey area can be accessed from the USACE Bountiful Field Office by the following route: head toward I-15, continue south on I-15 for about 38 miles, take exit 276, continue on 500 South for about 0.3 mile, and turn left onto 1100 South and continue for about 360 feet. As defined by the Public Land Survey System, the survey area is located in Sections 22, 23, 25, 26, 31, and 36; Township 5 South; Ranges 1 and 2 East. The elevation in the survey area ranges from about 4,490 to 4,570 feet above mean sea level.

Contact Information

Project Applicant and Owner

Utah Transit Authority
Attention: Janelle Robertson
(801) 512-3023
jarobertson@rideuta.com

Utah Department of Transportation, Environmental Services
Attention: Rod Hess
(801) 830-9589
rhess@utah.gov

Land Ownership

Land in the survey area is owned by public and private entities. Contact and access information for landowners can be coordinated as necessary.

Contact Information for the Delineation Consultant

The delineation was performed by HDR.

HDR, Inc.
2825 E. Cottonwood Parkway, Suite 200
Salt Lake City, Utah 84121

Delineation Lead:

Joshua McMillin
(801) 509-8143
joshua.mcmillin@hdrinc.com

Field Biologists:

Amy Croft, Michael Perkins, and Evan Blanford

Delineation Methodology

The delineation team conducted delineation fieldwork to map aquatic resources during 2024. All areas within the approximately 78-acre survey area were included in the delineation. Appendix B, *Aquatic Resources Delineation Map Series*, provides maps of the aquatic resources that were delineated in the survey area.

Preliminary Data Gathering

Before conducting delineation fieldwork, the delineation team reviewed information from several sources, including the following:

- Aerial images of the project area
- Topography and surface water maps from the U.S. Geological Survey
- National Hydric Soils List for Utah (USDA NRCS 2025a)
- Prior surveys and delineations across parts of the survey area
- U.S. Fish and Wildlife Service's National Wetlands Inventory maps
- U.S. Department of Agriculture, Natural Resources Conservation Service's (USDA NRCS) Web Soil Survey (USDA NRCS 2025b)
- USACE delineation manuals and delineation reference guides (described below in, *Delineation Procedures*)

Delineation Procedures

The delineation was conducted in accordance with the following delineation manuals and delineation reference guides:

- *Corps of Engineers Wetlands Delineation Manual* (USACE 1987)
- *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008)

- *National Ordinary High Water Mark Field Delineation Manual for Rivers and* Streams (USACE 2025)
- USACE regulatory guidance letters and joint agency regulations, policies, references, and guidance

The delineation team assessed the entire survey area to determine the presence or absence of aquatic features. The routine method was applied by selecting sampling point locations in the field. These sampling points were placed at locations where landform, vegetative, or hydrologic characteristics indicated the potential for wetlands. A minimum of one set of paired sampling points (one in a wetland and one just outside the wetland boundary) was established to help delineate each wetland or wetland complex. Additional sampling points were located as needed to help determine wetland boundaries.

The delineation team recorded detailed information about vegetation, soils, and hydrologic characteristics for each sampling point and used this information to determine whether an area qualifies as a wetland and to help identify the wetland boundaries. All datasheets are included in Appendix C, *Delineation Data Forms*, and representative sampling point photographs are included in Appendix D, *Representative Aquatic Resource Photographs*.

Based on the information gathered from sampling points and observable changes in elevation and plant communities, the delineation team mapped aquatic resource boundaries in the survey area through a combination of global positioning system (GPS)-based field mapping (using ArcGIS Field Maps, a sub-meter GPS receiver, and a tablet or mobile phone) and desktop digitization using images from Hexagon from 2021. To produce aquatic resources delineation maps for the survey area, data were exported into geographic information systems (GIS) software (ArcGIS Pro 3.3.2).

Wetlands

A determination of the occurrence of wetlands is based on the presence or absence of hydrophytic (wetland) vegetation, hydric (wetland) soils, and wetland hydrology. The presence of all three criteria is necessary for an area to be designated as a wetland unless problematic conditions or significant disturbance is identified and evaluated in accordance with delineation procedures. Wetland boundaries are considered to be a line across which the vegetation, soils, and hydrologic characteristics begin or cease to meet wetland criteria.

Vegetation

Hydrophytic vegetation refers to the plant life that occurs in areas where the frequency and duration of inundation or soil saturation produce permanently or periodically saturated soils of sufficient duration to exert a controlling influence on the plant species present (USACE 1987). Hydrophytic vegetation indicators include (1) a prevalence of hydrophytic vegetation—that is, a majority of dominant plant species are facultative, facultative wetland, or obligate wetland plants as listed in the National Wetland Plant List (NWPL; USACE 2023)—and (2) morphological or physiological adaptations to saturated soil conditions.

Table 1 lists the most recent NWPL indicator statuses assigned to plant species for the purpose of delineating wetlands (Lichvar and others 2012). A list of plant species observed at delineation sampling points, including their indicator status, is provided in Appendix E, *Plant Species Observed*.

Table 1. Wetland Indicator Status System

Indicator Status	Indicator Symbol	Definition
Obligate wetland	OBL	Plants that almost always occur in wetlands.
Facultative wetland	FACW	Plants that usually occur in wetlands but could occur in non-wetlands.
Facultative	FAC	Plants that occur in wetlands and non-wetlands.
Facultative upland	FACU	Plants that usually occur in non-wetlands but could occur in wetlands.
Upland plants	UPL	Plants that almost never occur in wetlands.
Not listed	NL	Plants that are not listed on the NWPL and therefore are assumed to be upland.
Source: Lichvar and others 2012		

The delineation team documented vegetation within a sample plot surrounding each sampling point location. Each polygon area was visually inspected, and plant species were identified and procedures for hydrophytic vegetation indicators were applied. Vegetation was considered hydrophytic when over 50% of the dominant species had an indicator status of facultative (FAC), facultative wetland (FACW), or obligate (OBL) or, in cases where the dominance was less than or equal to 50%, when the Prevalence Index was less than 3.0.

Soils

Hydric soils are soils that are saturated, flooded, or ponded for long enough during the growing season to develop anaerobic conditions in the upper part of the soil profile. Anaerobic conditions favor the growth and regeneration of hydrophytic vegetation. Hydric soil indicators are formed predominantly by the accumulation or loss of iron, manganese, sulfur, or carbon compounds in a saturated and anaerobic environment. The delineation team used a standard Munsell soil color chart to determine the soil matrix and mottle colors (Munsell Color 2009). In accordance with USACE methodology, soil profiles were investigated at sampling points in the survey area and were examined for indicators of hydric conditions.

Hydrology

The term *wetland hydrology* encompasses all hydrologic characteristics of areas that are periodically inundated or have soils saturated to the surface at some time during the growing season. Areas with evident characteristics of wetland hydrology are those where the presence of water has an overriding influence on the characteristics of vegetation and soils due to anaerobic and reducing conditions, respectively. Wetland hydrology indicators include obvious characteristics such as surface water, soil saturation, and water table depth. Other indicators include soil cracking, a salt crust, drainage patterns, water-stained leaves, and the presence of oxidized rhizospheres. The delineation team evaluated hydrology at each sampling point in the survey area.

Other (Non-wetland) Aquatic Resources

This delineation team also evaluated the presence of aquatic resources other than wetlands potentially subject to USACE's jurisdiction. In nontidal areas, USACE maintains jurisdiction over areas below the ordinary high water mark (OHWM) in water features such as navigable streams, rivers, and lakes, and tributaries to navigable waters.

The delineation team delineated non-wetland aquatic features based on the presence of a bed and bank and an OHWM (USACE 2005, 2025). Potentially jurisdictional non-wetland features were delineated along the OHWM. If a feature did not exhibit a bed and bank and an OHWM, and did not show distinct vegetation changes, it was not further evaluated as a potential aquatic resource or considered to be a potentially jurisdictional water. Additionally, if a feature exists in a culvert or pipe, it was not further evaluated as a potential aquatic resource.

Existing Conditions

The survey area consists primarily of the existing UTA and UP tracks; roads and road shoulders; urban land developed for residential, industrial, and commercial uses; disturbed uplands adjacent to roads; and some wetland and riparian areas.

The survey area is part of the Moist Wasatch Front Footslopes subregion in the Central Basin and Range Ecoregion (Woods and others 2001). The Moist Wasatch Front Footslopes supports the majority of Utah's population and commercial activity, and it is fed by perennial streams and aqueducts that originate in the Wasatch Range. The average annual precipitation in the survey area is 12.84 inches (U.S. Climate Data 2025). Weather data for the survey area were obtained from historical records collected in Orem, Utah.

The delineation field reconnaissance was conducted on May 19 and 29, and October 30, 2024. During the field surveys, temperatures ranged from 34 to 94 degrees Fahrenheit, skies were mostly sunny to partly cloudy, and there was no measurable precipitation (NOAA 2025).

General Hydrology

The survey area is located in the Utah Lake watershed (hydrologic unit code 16020201) (USGS 2025). Utah Lake releases water into the Jordan River which flows north through the Salt Lake Valley and discharges to the Great Salt Lake. Utah Lake is located in the center of Utah County, where it receives flows from multiple perennial streams (including the American Fork River) that originate in the Wasatch Mountains to the east. Utah Lake's only outlet is the Jordan River to the north.

The surface waters in the survey area include one named stream (American Fork River) and many ditches.

General Soil Conditions

A total of 12 soil types were identified in the survey area (Table 2), the following 4 of which are listed as hydric in the National Hydric Soils List for Utah (USDA NRCS 2025a):

- Chipman-McBeth complex
- Cobbly alluvial land
- McBeth silt loam
- McBeth silt loam, moderately saline

Table 2 lists the 12 soil types that were identified in the survey area. Soil map unit boundaries for the survey area are provided in Appendix F, *USDA NRCS Custom Soil Resource Report* (USDA NRCS 2025b).

Table 2. Soil Types Identified in the Survey Area

Soil Name	Map Unit Symbol	Acreage
Chipman silty clay loam	Ck	21.5
Chipman silty clay loam, moderately deep water table	Cm	<0.1
Chipman silty clay loam, moderately saline	Cn	7.0
Chipman-McBeth complex	Cp	15.6
Cobbly alluvial land	CU	0.4
McBeth silt loam	Mh	6.5
McBeth silt loam, moderately saline	Mn	1.7
Parleys loam, 0 to 4 percent slopes	1000	0.4
Provo gravelly fine sandy loam	Pw	0.1
Redola loam, 0 to 3 percent slopes	RdA	8.0
Steed gravelly sandy loam	Se	12.2
Steed sandy loam	Sd	4.4
Total		**77.8**

General Plant Community Types

In general, the survey area consists primarily of urban land developed for residential, industrial, and commercial uses; disturbed uplands adjacent to the UTA and UP right-of-way; and some wetland and riparian areas.

Upland Communities

Common upland species in the survey area include basin big sagebrush (*Artemisia tridentata*), Canada thistle (*Cirsium arvense*), cheatgrass (*Bromus tectorum*), crested wheatgrass (*Agropyron cristatum*), tall wheatgrass (*Thinopyrum ponticum*), and whitetop (*Cardaria draba*). Plant species' naming conventions are according to the USDA NRCS Plants Database (USDA NRCS 2025c).

Wetland Communities

All wetlands in the survey area were delineated as palustrine emergent wetlands. These wetland communities range in hydrologic regime from being inundated temporarily or only seasonally or intermittently saturated to inundated semipermanently or permanently. Common species in these communities include common reed (*Phragmites australis*), hardstem bulrush (*Schoenoplectus acutus*), broadleaf cattail (*Typha latifolia*), mountain rush (*Juncus arcticus* ssp. *littoralis*), reed canarygrass (*Phalaris arundinacea*), saltgrass (*Distichlis spicata*), and common threesquare (*Schoenoplectus pungens*).

Riparian Communities

A riparian community was observed growing along the banks of the American Fork River and adjacent to some small wetlands and ditches delineated in the survey area. Common riparian species in the survey area include boxelder (*Acer negundo*), crack willow (*Salix fragilis*), Fremont cottonwood (*Populus fremontii*), narrowleaf willow (*Salix exigua*), and Russian olive (*Elaeagnus angustifolia*).

Results

This section describes the results of the aquatic resources delineation survey. The maps in Appendix B, *Aquatic Resources Delineation Map Series*, show the extent of aquatic resources in the survey area and the locations of wetland delineation sampling points. To help delineate potential wetlands and other (non-wetland) aquatic resources in the survey area, the delineation team completed 28 wetland determination forms and one OHWM delineation datasheet (see Appendix C, *Delineation Data Forms*). Appendix C also includes a summary of the wetland delineation sampling points collected by the delineation team ordered by their locations on the map sheets in Appendix B.

The entire delineation survey area is about 78 acres and contains a total of 3.30 acres of aquatic resources. These resources consist of 3.01 acres of palustrine emergent wetlands, 0.10 acre (159 linear feet) of perennial streams, and 0.19 acre (1,963 linear feet) of ditches. Table 3 summarizes all of the aquatic resource features that were delineated.

Wetlands

Thirteen palustrine emergent wetlands totaling 3.01 acres were delineated in the survey area. Appendix B, *Aquatic Resources Delineation Map Series*, includes maps of delineated wetlands and associated wetland delineation sampling point locations. Characteristics of the delineated wetlands are summarized in Table 3. Table 3 also provides information about the size, classification, and location of wetlands delineated in the survey area.

Other (Non-wetland) Aquatic Resources

Other (non-wetland) aquatic resources identified in the survey area consist of perennial streams and ditches.

Perennial Streams

One perennial stream channel (P-1) that totals 0.10 acre (159 linear feet) was delineated in the survey area. This perennial stream channel is a segment of the American Fork River. The width of the American Fork River in the survey area varies from 24 to 37 feet, and its condition is somewhat degraded with steep banks and a lack of floodplain functionality, although the river supports a woody riparian community in the survey area. Appendix B, *Aquatic Resources Delineation Map Series*, includes maps of delineated streams, and Table 3 provides information about size, classification, and location of perennial stream channel P-1.

Open-water Ponds

No open-water ponds were delineated in the survey area.

Ditches

Seventeen ditch segments totaling 0.19 acre (1,963 linear feet) were delineated in the survey area. All of these segments have a defined bed and bank and an OHWM. Table 3 summarizes the ditches delineated in the survey area.

Table 3. Aquatic Resources Summary

Aquatic Resource Feature Name	Cowardin Code[a]	Size (acres)[b]	Length (feet)[c]	Latitude[d]	Longitude[d]	Map Page Number(s)[e]	Description
Wetlands							
PEM-1	PEM	0.11	—	40.36420822	–111.7956543	4	Wetland PEM-1 is located in a depression adjacent to the UP tracks west of 5750 West in American Fork. This wetland is characterized by sampling point SP-1. Observations in this wetland include hydrophytic vegetation with broadleaf cattail; hydric soil indicators A4 (Hydrogen Sulfide); and surface water, high water table, and saturation as primary hydrology indicators. Hydric soils were assumed with the presence of obligate vegetation and surface water. The hydrology source for this wetland is stormwater runoff from adjacent tracks and ponding of precipitation. Wetland PEM-1 drains through a culvert into a wetland complex east of 5750 West that includes wetlands PEM-2a and PEM-2b. This complex drains into ditch D-2a, which continues south through a culvert into ditch D-2b. Ditch D-2b flows into a culvert beneath 5750 West and continues south, eventually draining into Utah Lake, a TNW.
PEM-2a	PEM	0.08	—	40.36339569	–111.7948074	4, 5	Wetlands PEM-2a and PEM-2b are located adjacent to the UP tracks east of 5750 West in American Fork. These wetlands are characterized by sampling point SP-3. Observations in these wetlands include hydrophytic vegetation with hardstem bulrush and Virginia creeper (*Parthenocissus quinquefolia*); hydric soil indicators A4 (Hydrogen Sulfide) and F6 (Redox Dark Surface); and high water table, saturation, and hydrogen sulfide odor as primary hydrology indicators. The hydrology source for these wetlands is stormwater runoff from adjacent roadways and tracks, and ditch D-2a. Wetlands PEM-2a and PEM-2b drain into ditch D-2a, which continues south through a culvert into ditch D-2b. Ditch D-2b flows into a culvert beneath 5750 West and continues south, eventually draining into Utah Lake.
PEM-2b	PEM	0.12	—	40.36263657	–111.7940903	4, 5	

(*Continued on next page*)

PEM-3a	PEM	0.03	—	40.36022568	–111.791687	5	Wetlands PEM-3a and PEM-3b are located adjacent to the UP tracks west of Auto Mall Drive in American Fork. These wetlands are characterized by sampling point SP-8. Observations in these wetlands include hydrophytic vegetation with common reed, hydric soil indicator F6 (Redox Dark Surface), and saturation as a primary hydrology indicator. The hydrology source for these wetlands is stormwater runoff from adjacent roadways and tracks. Wetlands PEM-3a and PEM-3b are likely non-jurisdictional because they lack a continuous surface connection to a relatively permanent water or any other downstream WOTUS.
PEM-3b	PEM	0.02	—	40.3600769	–111.7915268	5	
PEM-4a	PEM	0.15	—	40.3471527	–111.7786484	7, 8	Wetlands PEM-4a and PEM-4b are located adjacent to the UP tracks south of 6400 North in American Fork. These wetlands are characterized by sampling points SP-15 and SP-17. Observations in these wetlands include hydrophytic vegetation with narrowleaf willow, common reed, arctic rush, and reed canarygrass; hydric soil indicators A9 (1 cm Muck) and F6 (Redox Dark Surface); and surface water, high water table, and saturation as primary hydrology indicators. The hydrology source for these wetlands is a ditch outside the survey area, runoff from adjacent tracks, ponding of precipitation, and shallow groundwater.
PEM-4b	PEM	0.17	—	40.3464737	–111.7779694	7, 8	

(*Continued on next page*)

PEM-5a	PEM	0.43	—	40.3450699	–111.7765808	8	Wetlands PEM-5a, PEM-5b, and PEM-5c are located adjacent to the UP tracks south of 6400 North in American Fork. These wetlands are characterized by sampling point SP-20 and SP-27. Observations in these wetlands include hydrophytic vegetation with common reed, reed canarygrass, and mountain rush; hydric soil indicator F6 (Redox Dark Surface); and surface water, high water table, and saturation as primary hydrology indicators. The hydrology source for these wetlands is a ditch outside the survey area, runoff from adjacent tracks, ponding of precipitation, and shallow groundwater. Wetlands PEM-5b and PEM-5c are located in a wetland mitigation bank owned by UDOT. This wetland complex flows through a culvert beneath the tracks, where it drains into ditch D-9. Ditch D-9 flows southwest into wetland PEM-6, which continues beyond the survey area and drains into Utah Lake.
PEM-5b	PEM	0.88	—	40.34237289	–111.7738953	8, 9	
PEM-5c	PEM	0.64	—	40.3391037	–111.7706223	9	
PEM-6	PEM	0.04	—	40.34025192	–111.7723389	9	Wetland PEM-6 is located adjacent to the UTA tracks south of 6400 North in American Fork. This wetland is characterized by sampling point SP-23. Observations in this wetland include hydrophytic vegetation with common reed and broadleaf cattail, hydric soil indicators A11 (Depleted Below Dark Surface) and F3 (Depleted Matrix), and high water table and saturation as primary hydrology indicators. The hydrology source for this wetland is ditch D-9. Wetland PEM-6 continues beyond the survey area and drains into Utah Lake.

(*Continued on next page*)

PEM-7a	PEM	0.08	—	40.36420822	–111.7956543	9	Wetlands PEM-7a and PEM-7b are located adjacent to the UTA tracks south of 6400 North in American Fork. These wetlands are characterized by sampling point SP-25. Observations in these wetlands include hydrophytic vegetation with reed canarygrass and saltgrass, hydric soil indicator A11 (Depleted Below Dark Surface), and saturation as a primary hydrology indicator. The hydrology source for these wetlands is from runoff from adjacent tracks, ponding of precipitation, and shallow groundwater. Wetlands PEM-7a and PEM-7b continue beyond the survey area and drain into Utah Lake.
PEM-7b	PEM	0.26	—	40.36339569	–111.7948074	9	
Perennial Stream Channels							
P-1 (American Fork River)	R2UB	0.10	159	40.3676567	–111.7993393	4	The American Fork River originates in the Wasatch Range east of the survey area and drains into Utah Lake. The American Fork River supports some riparian vegetation but does not support any low terrace wetlands in the survey area. The average delineated width to the OHWM is 29 feet.
Ditches							
D-1a	R6	0.01	179	40.3736687	–111.8156967	1	Ditch D-1a flows east into ditch D-1b, which loses its OHWM and dissipates into uplands. Ditches D-1a and D-1b are likely non-jurisdictional because they do not carry a relatively permanent flow of water.
D-1b	R6	0.01	217	40.3735123	–111.8148575	1	
D-2a	R5	0.01	38	40.3632011	–111.7946396	4, 5	Ditch D-2a flows southwest into a culvert beneath the UTA and UP tracks into ditch D-2b. Ditch D-2b flows into a culvert beneath 5750 West and continues south, eventually draining into Utah Lake. Ditches D-2a and D-2b carry a relatively permanent flow of water.
D-2b	R5	0.01	30	40.3630028	–111.7949600	4, 5	
D-3	R6	0.03	735	40.3621292	–111.7941437	5	Ditch D-3 is located east of 5750 West in American Fork. Ditch D-3 is used for irrigation and dissipates into uplands. Ditch D-3 is likely non-jurisdictional because it does not carry a relatively permanent flow of water.

(*Continued on next page*)

D-4a	R5	0.02	223	40.3619232	–111.7933807	5	Ditch D-4a flows south into a culvert beneath the UTA and UP tracks into ditch D-4b. Ditch D-4b continues south beyond the survey area, where it eventually drains into Utah Lake. Ditches D-4a and D-4b carry a relatively permanent flow of water.
D-4b	R5	0.01	78	40.3637772	–111.7933197	5	
D-5a	R5	<0.01	49	40.3589439	–111.7904282	5	Ditch D-5a flows south into a culvert beneath the UTA and UP tracks into ditch D-5b. Ditch D-5b continues south beyond the survey area, where it eventually drains into Utah Lake. Ditches D-5a and D-5b carry a relatively permanent flow of water.
D-5b	R5	0.01	73	40.3587036	–111.7906799	5	
D-6a	R5	0.01	46	40.3574791	–111.7889633	6	Ditch D-6a flows south into a culvert beneath the UTA and UP tracks into ditch D-6b. Ditch D-6b continues south beyond the survey area, where it eventually drains into Utah Lake. Ditches D-6a and D-6b carry a relatively permanent flow of water.
D-6b	R5	0.01	58	40.3571625	–111.7891541	6	
D-7a	R5	0.01	87	40.3540115	–111.7854996	6	Ditch D-7a flows south into a culvert beneath the UTA and UP tracks into ditch D-7b. Ditch D-7b continues south into a culvert beyond the survey area, where it eventually drains into Utah Lake. Ditches D-7a and D-7b carry a relatively permanent flow of water.
D-7b	R5	<0.01	10	40.3535423	–111.7856140	6	
D-8a	R5	<0.01	22	40.3468132	–111.7783050	7, 8	Ditch D-8a flows southwest into a culvert. Then, ditch D-8b continues into a culvert beneath the UTA and UP tracks into ditch D-8c. Ditch D-8c continues southwest and eventually drains into Utah Lake. Ditches D-8a, D-8b, and D-8c carry a relatively permanent flow of water.
D-8b	R5	<0.01	4	40.3467560	–111.7783660	7, 8	
D-8c	R5	0.01	59	40.3466225	–111.7861023	7, 8	

(Continued on next page)

D-9	R5	0.03	55	40.3403969	–111.7724533	9	Ditch D-9 is located adjacent to the UTA tracks south of 6400 North in American Fork. Ditch D-9 flows south into Utah Lake. Ditch D-9 carries a relatively permanent flow of water.

[a] Codes from *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin and others 1979): **PEM** (emergent, palustrine), **R2UB** (unconsolidated bottom, lower perennial, riverine), **R5** (unknown perennial, riverine), and **R6** (a wetland, spring, stream, river, pond or lake that only exists for a short period).

[b] Displayed values are rounded to two decimal places, so the totals might not match the sum of the reported values exactly.

[c] Coordinates for the center point each feature are listed.

[d] Displayed values are rounded to the nearest whole linear foot, so the totals might not match the sum of the reported values exactly.

[e] See Appendix B, *Aquatic Resources Delineation Map Series*.

Delineation Summary

All areas in the delineation survey area were assessed to determine the presence or absence of aquatic resources, including wetlands and other waters, in accordance with the procedures and guidelines established by USACE. There is a total of 3.30 acres of aquatic resources in the survey area. These resources consist of 3.01 acres of palustrine emergent wetlands, 0.10 acre (159 linear feet) of perennial streams, and 0.19 acre (1,963 linear feet) of ditches. Table 3 summarizes the aquatic resource features that were delineated. All features recorded and mapped are included in Appendix B, *Aquatic Resources Delineation Map Series*.

Jurisdictional Status of Delineated Aquatic Resources

Aquatic resources in the survey area do not have an identifiable connection to interstate or foreign commerce, and they do not include any interstate waters or TNW. The descriptions in Table 3 above provide information that USACE could use to help determine the jurisdictional status of each delineated aquatic resource feature.

Typically, an applicant is required to submit an approved jurisdictional determination request with a delineation report in order for USACE to determine the jurisdictional status of delineated aquatic resources. As a delineation report, this document does not provide information regarding the expected impacts of the project. The permit applicant would coordinate with USACE before constructing the project to determine permitting requirements under Section 404 of the Clean Water Act.

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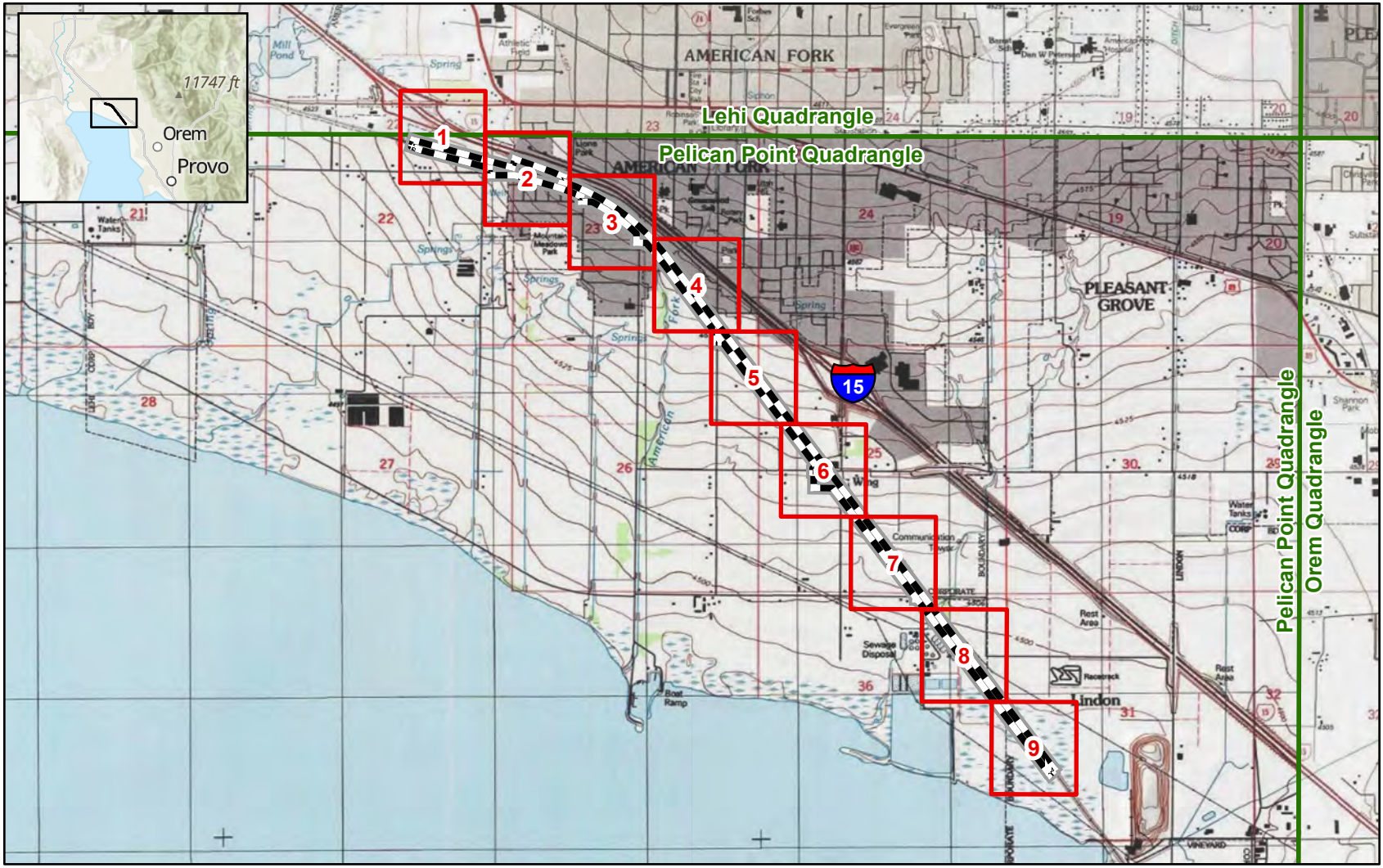
Appendix A

Project Overview Map



UTA FrontRunner Forward

UDOT Keeping Utah Moving

Legend

- Delineation Survey Area
- Aquatic Resource Delineation Pages
- USGS 7.5 Minute Quadrangle Boundary

DATA SOURCES:
Aerial Imagery: State of Utah
Google Imagery - 2018
Aquatic Resources Data: HDR
PROJECTION:
Utah Stateplane Central
CARTOGRAPHER:
HDR

0 1,000 2,000
US Feet

N

Appendix B

Aquatic Resources Delineation Map Series

UTA FrontRunner Forward

UDOT Keeping Utah Moving

Legend

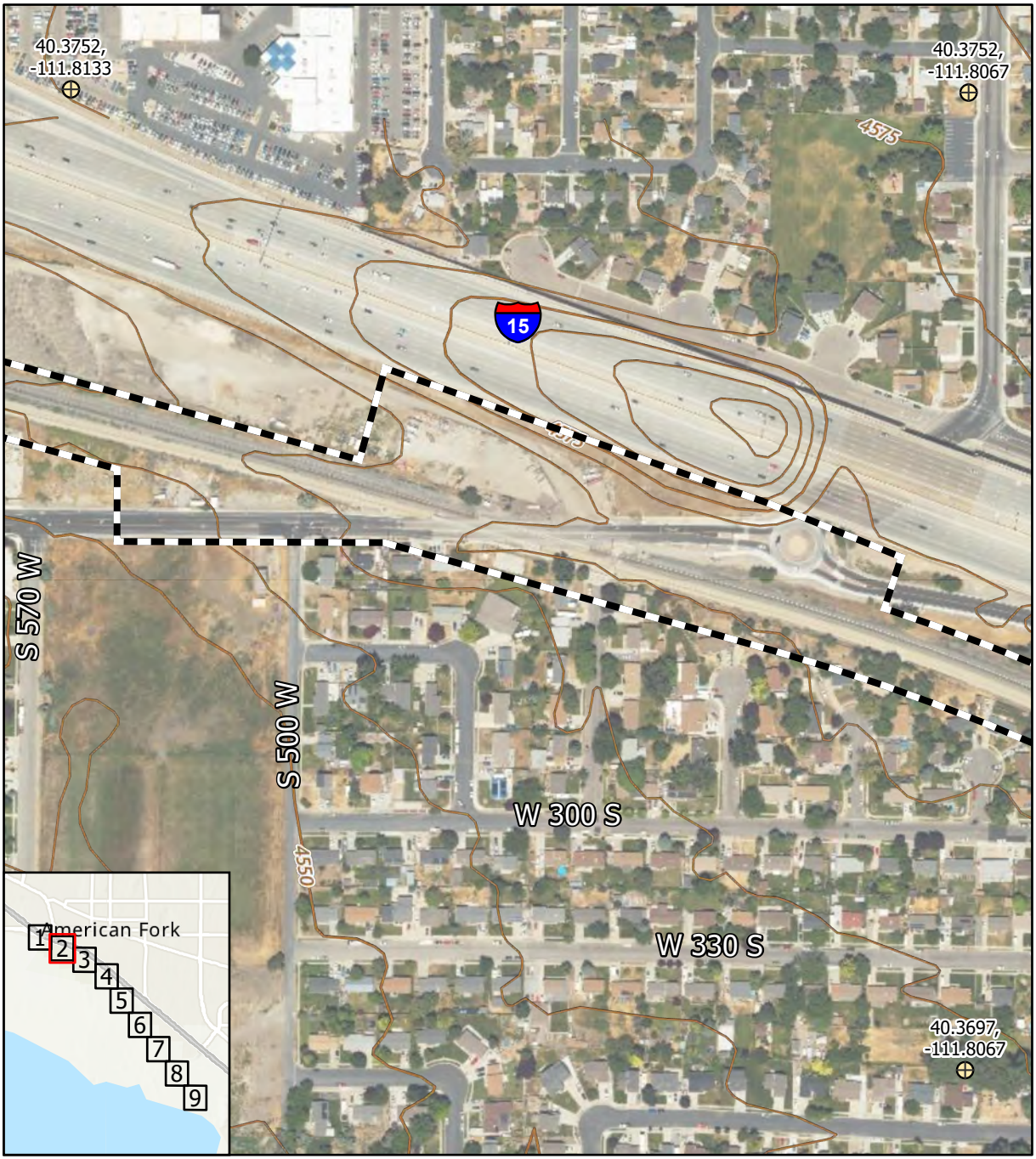
- Delineation Survey Area
- Geographic Control Points
- Photo Points
- OHWM Transects

Aquatic Resources

- Ditch

N

0 150 Feet



UTA FrontRunner Forward

UDOT Keeping Utah Moving

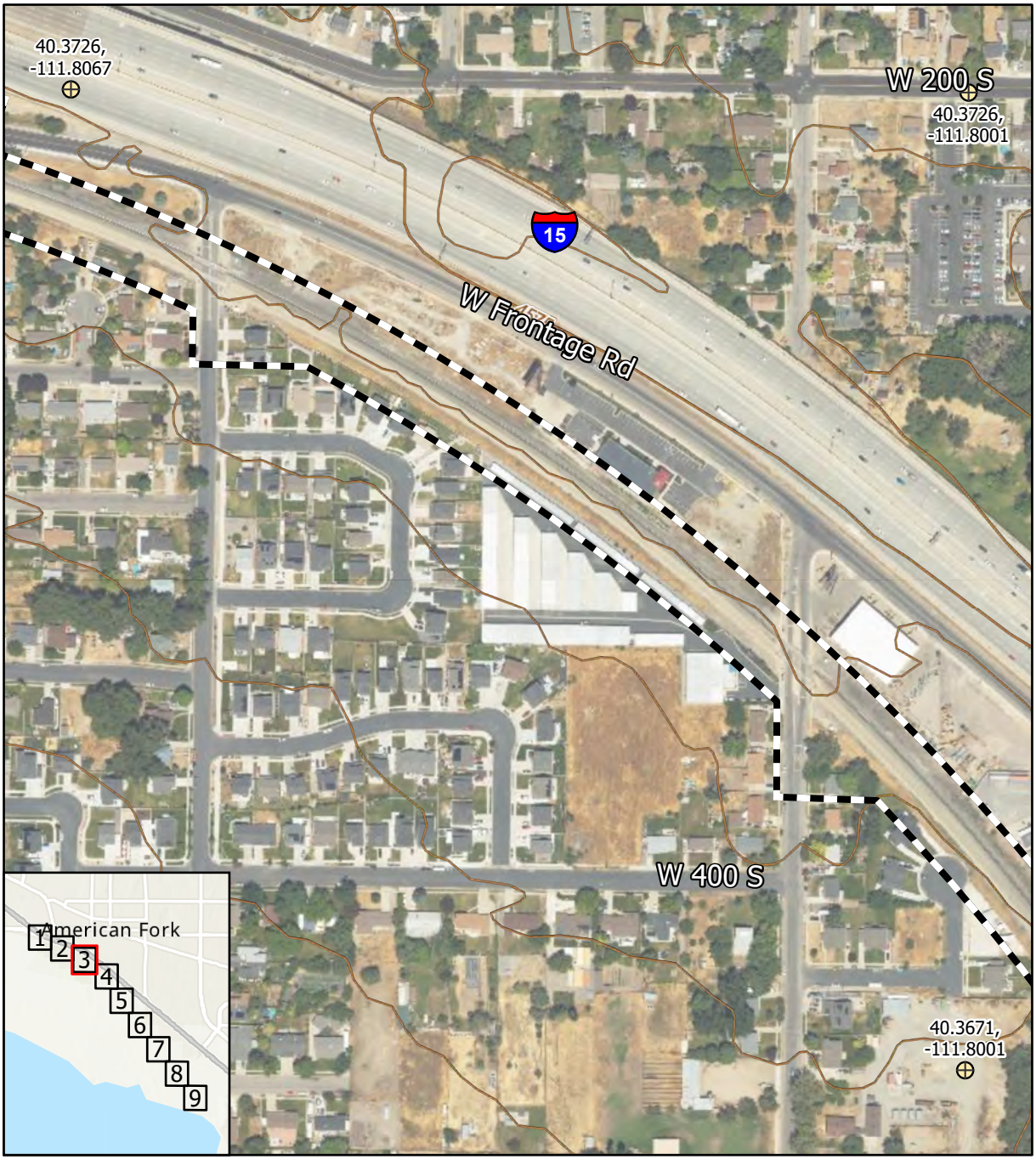
Legend

Delineation Survey Area

Geographic Control Points

N

0 150 Feet



UTA FrontRunner Forward

UDOT Keeping Utah Moving

Legend

Delineation Survey Area

Geographic Control Points

N

0 150 Feet

UTA FrontRunner Forward

UDOT Keeping Utah Moving

Legend

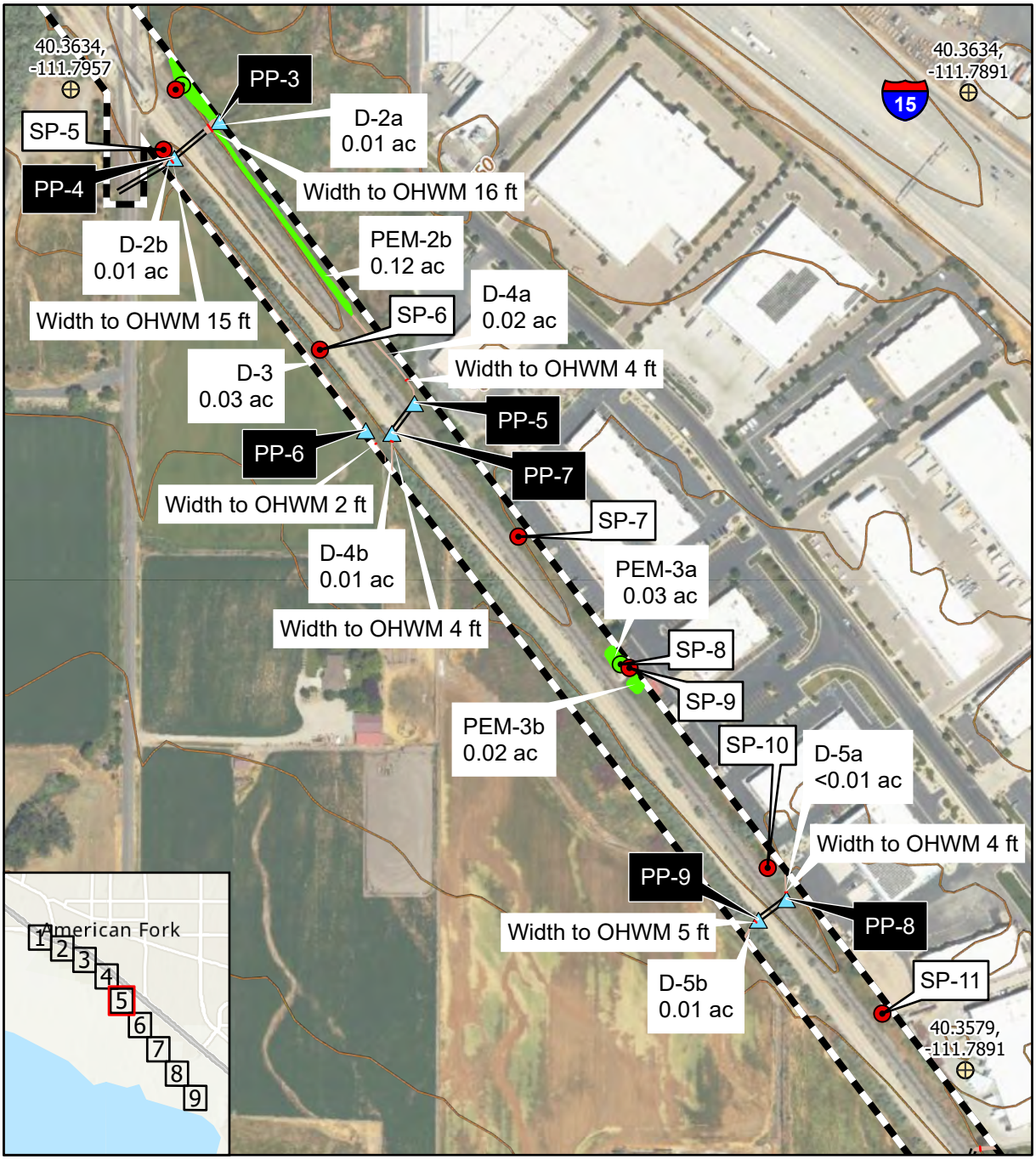
- Delineation Survey Area
- Geographic Control Points
- Photo Points
- OHWM Transects
- In Point Wetland
- Out Point NonWetland
- Culvert

Aquatic Resources

- Palustrine Emergent Wetland
- Perennial Stream
- Ditch

N

0 150 Feet



UTA FrontRunner Forward

UDOT Keeping Utah Moving

Legend

- Delineation Survey Area
- Geographic Control Points
- Photo Points
- OHWM Transects
- In Point Wetland
- Out Point NonWetland
- Culvert

Aquatic Resources

- Palustrine Emergent Wetland
- Ditch

N

0 150 Feet

UTA FrontRunner Forward

UDOT Keeping Utah Moving

Legend

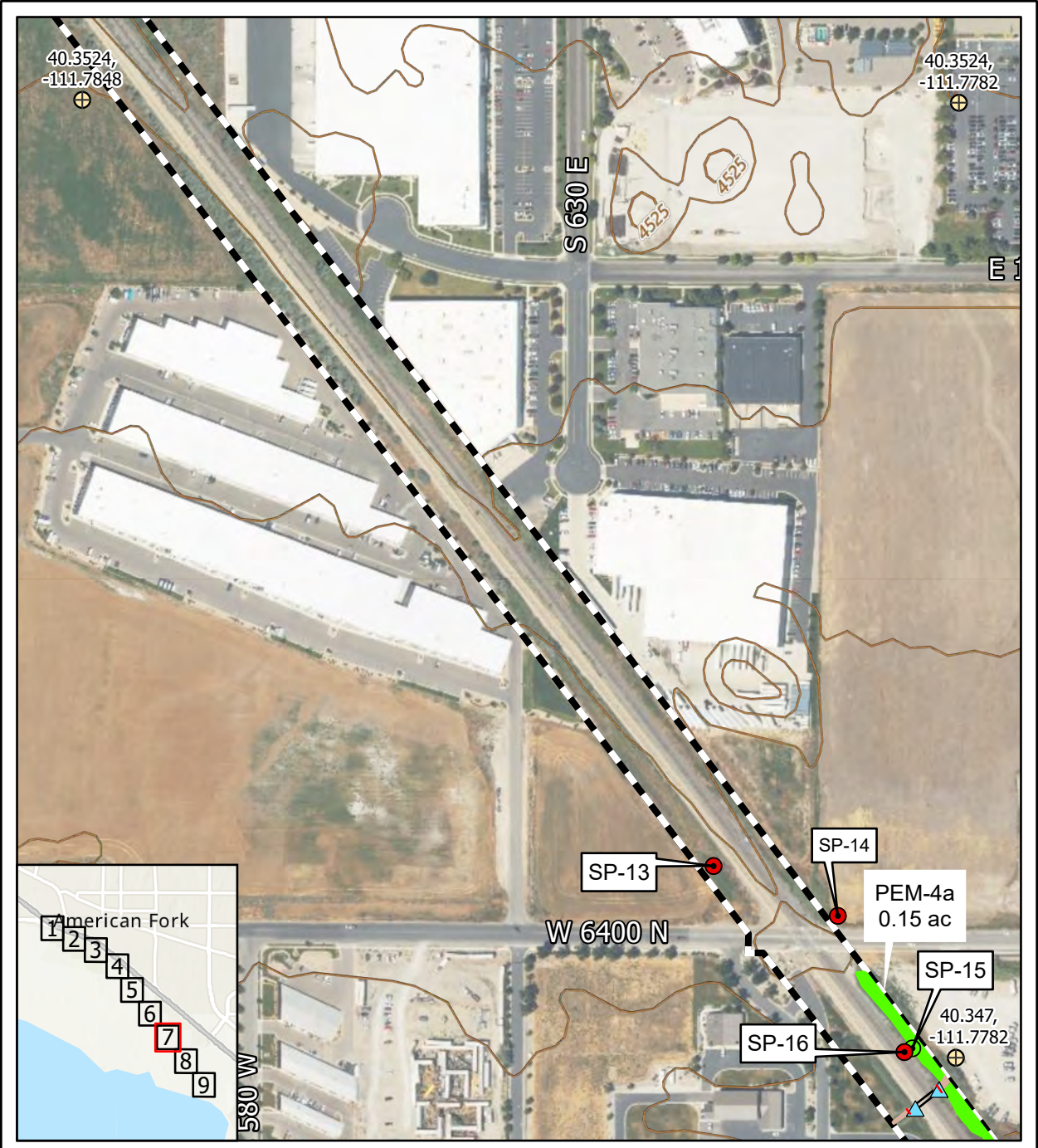
- Delineation Survey Area
- Geographic Control Points
- Photo Points
- OHWM Transects
- Out Point NonWetland
- Culvert

Aquatic Resources

- Ditch

N

0 150 Feet



UTA FrontRunner Forward

UDOT Keeping Utah Moving

Legend

- Delineation Survey Area
- Geographic Control Points
- Photo Points
- OHWM Transects
- In Point Wetland
- Out Point NonWetland
- Culvert

Aquatic Resources

- Palustrine Emergent Wetland
- Ditch

N

0 150 Feet

UTA FrontRunner Forward

UDOT Keeping Utah Moving

Legend

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- Out Point NonWetland
- Culvert

Aquatic Resources

- Palustrine Emergent Wetland
- Ditch

N

0 150 Feet

UTA FrontRunner Forward

UDOT Keeping Utah Moving

Legend

- Delineation Survey Area
- Geographic Control Points
- Photo Points
- OHWM Transects
- In Point Wetland
- Out Point NonWetland
- Culvert

Aquatic Resources

- Palustrine Emergent Wetland
- Ditch

N

0 150 Feet

Appendix C

Delineation Data Forms

Table C-1. Delineation Data Forms Summary

Map ID	Hydrophytic Vegetation Present?	Hydric Soils Present?	Wetland Hydrology Present?	Sampled Area within Wetland?	Map Sheet Number(s)[a]
SP-1	Yes	Yes	Yes	Yes	4
SP-2	No	—	No	No	4
SP-3	Yes	Yes	Yes	Yes	4, 5
SP-4	No	—	No	No	4, 5
SP-5	Yes	Yes	No	No	4, 5
SP-6	Yes	Yes	No	No	5
SP-7	Yes	No	No	No	5
SP-8	Yes	Yes	Yes	Yes	5
SP-9	No	—	No	No	5
SP-10	Yes	No	No	No	5
SP-11	Yes	No	No	No	5, 6
SP-12	Yes	No	No	No	6
SP-13	Yes	No	No	No	6
SP-14	Yes	No	No	No	6
SP-15	Yes	Yes	Yes	Yes	6, 7
SP-16	No	—	No	No	6, 7
SP-17	Yes	Yes	Yes	Yes	8
SP-18	Yes	No	Yes	No	8
SP-19	Yes	No	No	No	8
SP-20	Yes	Yes	Yes	Yes	8
SP-21	No	—	No	No	8
SP-22	No	Yes	Yes	No	9
SP-23	Yes	Yes	Yes	Yes	9
SP-24	No	—	No	No	9
SP-25	Yes	Yes	Yes	Yes	9
SP-26	No	—	No	No	9
SP-27	Yes	Yes	Yes	Yes	9
SP-28	No	—	No	No	9

[a] See Appendix B, *Aquatic Resources Delineation Map Series*.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 05/29/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-1
Investigator(s): Josh McMillin, Evan Blanford Section, Township, Range: T5S R1E S23
Landform (hillside, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR): LRR D Lat: 40.364013671875 Long: -111.795440673828 Datum: NAD83
Soil Map Unit Name: Chipman-McBeth complex NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation , Soil , or Hydrology 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 X No
Hydric Soil Present? Yes X No
Wetland Hydrology Present? Yes X No

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

Remarks:
Hydric soils assumed with presence of surface water and obligate vegetation. Sampling point meets criteria of a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Typha latifolia*	90	Yes	OBL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	90 =Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

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

Prevalence Index = B/A = 1.00

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
X 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** X **No**

Remarks:
Hydrophytic vegetation present.

SOIL

Sampling Point: SP-1

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

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

Remarks:

Hydric soils assumed with obligate vegetation and surface water.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches): 13
Water Table Present?	Yes X	No ___	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches):

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

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

Remarks:

Hydrology present with surface water, high water table, and saturation as primary hydrology indicators.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 05/29/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-2
Investigator(s): Josh McMillin, Evan Blanford Section, Township, Range: T5S R1E S23
Landform (hillside, terrace, etc.): Local relief (concave, convex, none): Slope (%):
Subregion (LRR): LRR D Lat: 40.3639526367187 Long: -111.795379638672 Datum: NAD83
Soil Map Unit Name: Chipman-McBeth complex NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

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

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

Remarks:
Sampling point located on railroad ballast. No soil pit dug with a lack of hydrophytic vegetation and surface hydrology indicators. Sampling point does not meet the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: (A)
Total Number of Dominant Species Across All Strata: (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: (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** X

Remarks:
No vegetation present.

SOIL

Sampling Point: SP-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

No soil pit dug with a lack of hydrophytic vegetation and surface hydrology indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

(includes capillary fringe)

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

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

Remarks:

No surface wetland hydrology indicators present.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 05/19/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-3
Investigator(s): Amy Croft, Evan Blanford Section, Township, Range: T5S R1E S23
Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0
Subregion (LRR): LRR D Lat: 40.3634223937988 Long: -111.794853210449 Datum: NAD83
Soil Map Unit Name: Chipman-McBeth complex NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ 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 X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

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

Remarks:
Sampling point meets the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Elaeagnus angustifolia*	10	Yes	FAC
2.			
3.			
4.			
	10 =Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Schoenoplectus acutus*	100	Yes	OBL
2. *Parthenocissus quinquefolia*	30	Yes	FAC
3. *Phragmites australis*	10	No	FACW
4. *Juncus articus spp. littoralis*	5	No	FACW
5.			
6.			
7.			
8.			
	145 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	100	x 1 =	100
FACW species	15	x 2 =	30
FAC species	40	x 3 =	120
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	155 (A)		250 (B)

Prevalence Index = B/A = 1.61

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X 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** X **No** ____

Remarks:
Hydrophytic vegetation present.

SOIL

Sampling Point: SP-3

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/1	100					Loamy/Clayey	
8-20	10YR 2/1	97	10YR 5/8	3	C	M	Loamy/Clayey	Prominent redox concentrations

[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)
- X 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)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

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

Remarks:

Hydric soil indicator A4 (Hydrogen Sulfide) and F6 (Redox Dark Surface) present.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ___ Surface Water (A1)
- X High Water Table (A2)
- X 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)
- X Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___		
Water Table Present?	Yes X	No ___	Depth (inches): 5		
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 2	**Wetland Hydrology Present?**	**Yes** X **No** ___

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

Remarks:

Hydrology present with high water table, saturation, and hydrogen sulfide odor as primary hydrology indicators.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 05/19/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-4
Investigator(s): Amy Croft, Evan Blanford Section, Township, Range: T5S R1E S23
Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): None Slope (%): 20
Subregion (LRR): LRR D Lat: 40.363395690918 Long: -111.794906616211 Datum: NAD83
Soil Map Unit Name: Chipman-McBeth complex NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

Remarks:
Sampling point located on railroad ballast. No soil pit dug with lack of hydrophytic vegetationa and surface hydrology indicators. Sampling point does not meet the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ =Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1.			
2.			
3.			
4.			
5.			
	____ =Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	____ =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ =Total Cover		

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

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: ____ (A)
Total Number of Dominant Species Across All Strata: ____ (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (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** X

Remarks:
No vegetation present.

SOIL

Sampling Point: SP-4

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** ____

Remarks:
No soil pit dug with lack of hydrophytic vegetation and surface hydrology indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? Yes ____ No ____ Depth (inches): ____

Water Table Present? Yes ____ No ____ Depth (inches): ____

Saturation Present? Yes ____ No ____ Depth (inches): ____

(includes capillary fringe)

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

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

Remarks:
No surface wetland hydrology indicators present.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 05/19/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-5
Investigator(s): Michael Perkins, Josh McMillin Section, Township, Range: T5S R1E S23
Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0
Subregion (LRR): LRR D Lat: 40.3630599975586 Long: -111.794990539551 Datum: NAD83
Soil Map Unit Name: Chipman-McBeth complex NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ 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 X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes ____ No X

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

Remarks:
Sampling point does not meet the criteria for a wetland. Site appears to be drying out from reduced hydrology.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Phragmites australis*	140	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	140 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	=Total Cover		

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

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	140	x 2 =	280
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	140 (A)		280 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X 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** X **No** ____

Remarks:
Hydrophytic vegetation present.

SOIL

Sampling Point: SP-5

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 2/1	100					Loamy/Clayey	
9-20	10YR 4/1	97	7.5YR 4/6	3	C	M	Loamy/Clayey	Prominent redox concentrations

[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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

Hydric soil indicator F3 (Depleted Matrix) present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

Remarks:

Does not meet the criteria for wetland hydrology.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 05/19/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-6
Investigator(s): Michael Perkins, Josh McMillin Section, Township, Range: T5S R1E S26
Landform (hillside, terrace, etc.): Toeslope Local relief (concave, convex, none): none Slope (%): 1
Subregion (LRR): LRR D Lat: 40.3619422912598 Long: -111.793838500977 Datum: NAD83
Soil Map Unit Name: Chipman-McBeth complex NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ 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 X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes ____ No X

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

Remarks:
Sampling point does not meet the criteria for a wetland. Site appears to be drying out from reduced hydrology.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Elaeagnus angustifolia*	10	Yes	FAC
2.			
3.			
4.			
	10	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: 5 ft radius)			
1. *Phragmites australis*	100	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
		=Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	110 (A)		230 (B)

Prevalence Index = B/A = 2.09

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X 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** X **No** ____

Remarks:
Hydrophytic vegetation present.

SOIL

Sampling Point: SP-6

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 2/1	100					Loamy/Clayey	
8-14	10YR 2/1	85	7.5YR 4/6	15	C	M	Loamy/Clayey	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: Cobble

Depth (inches): 14

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

Remarks:
Hydric soil indicator F6 (Redox Dark Surface) present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

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

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

Remarks:
Does not meet the criteria for wetland hydrology.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 05/29/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-7
Investigator(s): Josh McMillin, Evan Blanford Section, Township, Range: T5S R1E S26
Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 3
Subregion (LRR): LRR D Lat: 40.360897064209 Long: -111.792381286621 Datum: NAD83
Soil Map Unit Name: Chipman-McBeth complex NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ 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 X No ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X

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

Remarks:
Sampling point does not meet the criteria for a wetland. Site appears to be drying out from reduced hydrology.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1. *Rosa woodsii*	1	No	FACU
2.			
3.			
4.			
5.			
	1 =Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Phalaris arundinacea*	120	Yes	FACW
2. *Phragmites australis*	15	No	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	135 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	135	x 2 =	270
FAC species	0	x 3 =	0
FACU species	1	x 4 =	4
UPL species	0	x 5 =	0
Column Totals:	136 (A)		274 (B)

Prevalence Index = B/A = 2.01

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X 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** X **No** ____

Remarks:
Hydrophytic vegetation present.

SOIL

Sampling Point: SP-7

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	100					Loamy/Clayey	
4-13	10YR 2/1	100					Loamy/Clayey	
13-18	10YR 4/1	90	10YR 4/6	10	C	M	Loamy/Clayey	Redox is prominent

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:
No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

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

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

Remarks:
No wetland hydrology indicators present.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 05/29/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-8
Investigator(s): Josh McMillin, Evan Blanford Section, Township, Range: T5S R1E S25
Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRR): LRR D Lat: 40.3601837158203 Long: -111.791625976562 Datum: NAD83
Soil Map Unit Name: Chipman-McBeth complex NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ 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 X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

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

Remarks:
Sampling point meets the criteria for a wetland.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: 30 ft radius)			
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Phragmites australis*	100	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X 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** X **No** ____

Remarks:
Hydrophytic vegetation present.

SOIL

Sampling Point: SP-8

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	N 2.5/	100					Loamy/Clayey	
6-19	N 2.5/	93	10YR 6/8	7	C	M	Loamy/Clayey	Reddox is Prominent

[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)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

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

Remarks:

Hydric soil indicator F6 (Redox Dark Surface) present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___		
Water Table Present?	Yes X	No ___	Depth (inches): 17		
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 9	**Wetland Hydrology Present?**	**Yes** X **No** ___

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

Remarks:

Hydrology present with saturation as a primary hydrology indicator.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 05/29/2024

Applicant/Owner: UDOT State: UT Sampling Point: SP-9

Investigator(s): Josh McMillin, Evan Blanford Section, Township, Range: T5S R1E S25

Landform (hillside, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): 45

Subregion (LRR): LRR D Lat: 40.360164642334 Long: -111.791564941406 Datum: NAD83

Soil Map Unit Name: Chipman-McBeth complex NWI classification:

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

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

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

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

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

Remarks:
Sampling point located on railroad ballast. No soil pit dug with lack of hydrophytic vegetation and surface hydrology indicators. Sampling point does not meet the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ =Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1.			
2.			
3.			
4.			
5.			
	____ =Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1.	100	Yes	
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____ =Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust ____

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

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

Remarks:
No vegetation present.

SOIL

Sampling Point: SP-9

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

No soil pit dug with lack of hydrophytic vegetation and surface hydrology indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

(includes capillary fringe)

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

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

Remarks:

No surface wetland hydrology indicators present.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 05/29/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-10
Investigator(s): Josh McMillin, Evan Blanford Section, Township, Range: T5S R1E S25
Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRR): LRR D Lat: 40.3590431213379 Long: -111.790542602539 Datum: NAD83
Soil Map Unit Name: McBeth silt loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ 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 X No ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X

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

Remarks:
Sampling point does not meet the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Elaeagnus angustifolia*	10	Yes	FAC
2.			
3.			
4.			
	10	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1. *Rosa woodsii*	25	Yes	FACU
2.			
3.			
4.			
5.			
	25	=Total Cover	
Herb Stratum (Plot size: 5 ft radius)			
1. *Phragmites australis*	75	Yes	FACW
2. *Asclepias speciosa*	2	No	FAC
3. *Maianthemum stellatum*	2	No	FACU
4.			
5.			
6.			
7.			
8.			
	79	=Total Cover	
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	____	=Total Cover	

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 3 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	75	x 2 =	150
FAC species	12	x 3 =	36
FACU species	27	x 4 =	108
UPL species	0	x 5 =	0
Column Totals:	114 (A)		294 (B)

Prevalence Index = B/A = 2.58

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X 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** X **No** ____

Remarks:
Hydrophytic vegetation present.

SOIL

Sampling Point: SP-10

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	N 2.5/	100					Loamy/Clayey	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:
No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

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

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

Remarks:
No hydrology indicators present.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 05/29/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-11
Investigator(s): Josh McMillin, Evan Blanford Section, Township, Range: T5S R1E S25
Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0
Subregion (LRR): LRR D Lat: 40.3582305908203 Long: -111.789703369141 Datum: NAD83
Soil Map Unit Name: McBeth silt loam NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ 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 X No ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X

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

Remarks:
Sampling point does not meet the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1. *Rosa woodsii*	30	Yes	FACU
2.			
3.			
4.			
5.			
	30 =Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Phragmites australis*	90	Yes	FACW
2. *Maianthemum stellatum*	5	No	FACU
3.			
4.			
5.			
6.			
7.			
8.			
	95 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	90	x 2 =	180
FAC species	0	x 3 =	0
FACU species	35	x 4 =	140
UPL species	0	x 5 =	0
Column Totals:	125 (A)		320 (B)

Prevalence Index = B/A = 2.56

Hydrophytic Vegetation Indicators:
___ Dominance Test is >50%
X 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** X **No** ____

Remarks:
Hydrophytic vegetation present.

SOIL

Sampling Point: SP-11

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	N 2.5/	100					Loamy/Clayey	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:
No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

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

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

Remarks:
No hydrology indicators present.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 05/19/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-12
Investigator(s): Michael Perkins, Josh McMillin Section, Township, Range: T5S R1E S25
Landform (hillside, terrace, etc.): Basin Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRR): LRR D Lat: 40.3554267883301 Long: -111.787406921387 Datum: NAD83
Soil Map Unit Name: Chipman silty clay loam, moderately saline NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ 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 X No ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X

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

Remarks:
Sampling point does not meet the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Phragmites australis*	80	Yes	FACW
2. *Phalaris arundinacea*	20	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X 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** X **No** ____

Remarks:
Hydrophytic vegetation present. Appears to be drying out.

SOIL

Sampling Point: SP-12

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/1	100					Loamy/Clayey	
10-18	10YR 3/1	99	7.5YR 5/8	1	C	M	Loamy/Clayey	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:
No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

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

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

Remarks:
Does not meet the criteria for wetland hydrology.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 05/19/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-13
Investigator(s): Amy Croft, Evan Blanford Landform Section, Township, Range: T5S R1E S25
(hillside, terrace, etc.): Hillside Local relief (concave, convex, none): None Slope (%): 0
Subregion (LRR): LRR D Lat: 40.3480453491211 Long: -111.780029296875 Datum: NAD83
Soil Map Unit Name: Chipman silty clay loam, moderately saline NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes x No (If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes x No
Are Vegetation , Soil , or Hydrology 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 X No
Hydric Soil Present? Yes No X
Wetland Hydrology Present? Yes No X

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

Remarks:
Sampling point does not meet the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1. *Salix exigua*	90	Yes	FACW
2.			
3.			
4.			
5.			
	90 =Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Phalaris arundinacea*	10	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	10 =Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X 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** X **No**

Remarks:
Hydrophytic vegetation present.

SOIL

Sampling Point: SP-13

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-11	10YR 2/1	100					Loamy/Clayey	
11-20	2.5Y 3/1	100					Loamy/Clayey	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

(includes capillary fringe)

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

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

Remarks:

Does not meet the criteria for wetland hydrology.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 05/19/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-14
Investigator(s): Amy Croft, Evan Blanford Landform Section, Township, Range: T5S R1E S36
(hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0.5
Subregion (LRR): LRR D Lat: 40.3477630615234 Long: -111.779098510742 Datum: NAD83
Soil Map Unit Name: Chipman silty clay loam, moderately saline NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ 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 X No ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X

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

Remarks:
Sampling point does not meet the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1. *Salix exigua*	30	Yes	FACW
2.			
3.			
4.			
5.			
	30 =Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Phalaris arundinacea*	110	Yes	FACW
2. *Rumex crispus*	5	No	FAC
3.			
4.			
5.			
6.			
7.			
8.			
	115 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	140	x 2 =	280
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	145 (A)		295 (B)

Prevalence Index = B/A = 2.03

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X 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** X **No** ____

Remarks:
Hydrophytic vegetation present.

SOIL

Sampling Point: SP-14

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2	100					Loamy/Clayey	
10-18	2.5Y 3/1	78	2.5Y 6/2	15	D	M	Loamy/Clayey	
			10YR 5/8	7	C	M		Prominent redox concentrations

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:
No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

(includes capillary fringe)

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

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

Remarks:
Does not meet the criteria for wetland hydrology.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 10/30/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-15
Investigator(s): Joshua McMillin, Amy Croft Section, Township, Range: T5S R1E S36
Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 0
Subregion (LRR): LRR D Lat: 40.34700775 Long: -111.7785492 Datum: NAD83
Soil Map Unit Name: Chipman silty clay loam, moderately saline NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation____, Soil____, or Hydrology____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation____, Soil____, or Hydrology____ 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 X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

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

Remarks:
Sampling point meets the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1. *Salix exigua*	25	Yes	FACW
2.			
3.			
4.			
5.			
	25 =Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Phragmites australis*	110	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	110 =Total Cover		
Woody Vine Stratum (Plot size: 5 ft radius)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	135	x 2 =	270
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	135 (A)		270 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X 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** X **No** ____

Remarks:
Hydrophytic vegetation present.

SOIL

Sampling Point: SP-15

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	N 2.5/	100					Muck	Dense roots
6-16	10YR 3/1	97	10YR 4/6	3	C	M	Loamy/Clayey	Rocky

[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)**
- X 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)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

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

Remarks:
Hydric soil indicators A9 (1 cm Muck) and F6 (Redox Dark Surface) present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches):	1
Water Table Present?	Yes X	No ___	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches):	0

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

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

Remarks:
Wetland hydrology present with surface water, high water table, and saturation as primary hydrology indicators.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 10/30/2024

Applicant/Owner: UDOT State: UT Sampling Point: SP-16

Investigator(s): Joshua McMillin, Amy Croft Section, Township, Range: T5S R1E S36

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

Subregion (LRR): LRR D Lat: 40.34698486 Long: -111.7786102 Datum: NAD83

Soil Map Unit Name: Chipman silty clay loam, moderately saline NWI classification: None

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

Are Vegetation____, Soil____, or Hydrology____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation____, Soil____, or Hydrology____ naturally problematic? (If needed, explain any answers in Remarks.)

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

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

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

Remarks:
Sampling point located on railroad ballast. No sampling pit dug with lack of hydrophytic vegetation and surface hydrology indicators. Sampling point does not meet the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
Woody Vine Stratum (Plot size: 5 ft radius)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum ____ % Cover of Biotic Crust 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (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** X

Remarks:
No vegetation present.

SOIL

Sampling Point: SP-16

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:
No sampling pit dug with lack of hydrophytic vegetation and surface hydrology indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

Remarks:
No surface wetland hydrology indicators present.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 10/30/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-17
Investigator(s): Joshua McMillin, Amy Croft Section, Township, Range: T5S R1E S36
Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0
Subregion (LRR): LRR D Lat: 40.34619141 Long: -111.7776871 Datum: NAD83
Soil Map Unit Name: Chipman silty clay loam NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ 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 X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

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

Remarks:
Sampling point meets the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Juncus arcticus spp. littoralis*	80	Yes	FACW
2. *Phalaris arundinacea*	25	Yes	FACW
3. *Nasturtium officinale*	5	No	OBL
4.			
5.			
6.			
7.			
8.			
	110 =Total Cover		
Woody Vine Stratum (Plot size: 5 ft radius)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	105	x 2 =	210
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	110 (A)		215 (B)
Prevalence Index = B/A =			1.95

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X 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** X **No** ____

Remarks:
Hydrophytic vegetation present.

SOIL

Sampling Point: SP-17

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	N 2.5/	100					Muck	Roots w/ muck
7-13	10YR 3/1	100					Loamy/Clayey	
13-20	10YR 3/1	95	10YR 4/6	5	C	M	Loamy/Clayey	Prominent redox concentrations

[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)**
- X 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)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

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

Remarks:
Hydric soil indicators A9 (1 cm Muck) and F6 (Redox Dark Surface) present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes	X	No ___	Depth (inches):	1
Water Table Present?	Yes	X	No ___	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes	X	No ___	Depth (inches):	0

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

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

Remarks:
Wetland hydrology present with surface water, high water table, and saturation as primary hydrology indicators.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 10/30/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-18
Investigator(s): Joshua McMillin, Amy Croft Section, Township, Range: T5S R1E S36
Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0
Subregion (LRR): LRR D Lat: 40.34613037 Long: -111.7776489 Datum: NAD83
Soil Map Unit Name: Chipman silty clay loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ 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 X No ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes X No ____

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

Remarks:
Sampling point does not meet the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Phalaris arundinacea*	120	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	120 =Total Cover		
Woody Vine Stratum (Plot size: 5 ft radius)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	120	x 2 =	240
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	120 (A)		240 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X 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** X **No** ____

Remarks:
Hydrophytic vegetation present.

SOIL

Sampling Point: SP-18

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	N 2.5/	100					Loamy/Clayey	Roots
6-15	10YR 3/1	100					Loamy/Clayey	
15-20	10YR 3/1	95	10YR 4/6	5	C	M	Loamy/Clayey	Prominent redox concentrations

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

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

Remarks:
No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches): 2
Water Table Present?	Yes X	No ___	Depth (inches): 13
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

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

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

Remarks:
Wetland hydrology present with saturation as a primary hydrology indicator.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 10/30/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-19
Investigator(s): Joshua McMillin, Amy Croft Section, Township, Range: T5S R1E S36
Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0.5
Subregion (LRR): LRR D Lat: 40.34597778 Long: -111.7775116 Datum: NAD83
Soil Map Unit Name: Chipman silty clay loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation____, Soil____, or Hydrology____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation____, Soil____, or Hydrology____ 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 X No ____
Hydric Soil Present? Yes ____ No X
Wetland Hydrology Present? Yes ____ No X

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

Remarks:
Sampling point does not meet the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Deschampsia cespitosa*	110	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	110 =Total Cover		
Woody Vine Stratum (Plot size: 5 ft radius)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	110	x 2 =	220
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	110 (A)		220 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X 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** X **No** ____

Remarks:
Hydrophytic vegetation present.

SOIL

Sampling Point: SP-19

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 2/2	100					Loamy/Clayey	Roots
6-15	N 2.5/	100					Loamy/Clayey	
15-21	10YR 3/1	100					Loamy/Clayey	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:
No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

Remarks:
Does not meet wetland hydrology criteria.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 10/30/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-20
Investigator(s): Joshua McMillin, Amy Croft Section, Township, Range: T5S R1E S36
Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 0.5
Subregion (LRR): LRR D Lat: 40.34582901 Long: -111.777359 Datum: NAD83
Soil Map Unit Name: Chipman silty clay loam NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ 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 X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

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

Remarks:
Sampling point meets the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Phalaris arundinacea*	120	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	120 =Total Cover		
Woody Vine Stratum (Plot size: 5 ft radius)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 1 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	120	x 2 =	240
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	120 (A)		240 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X 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** X **No** ____

Remarks:
Hydrophytic vegetation present.

SOIL

Sampling Point: SP-20

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	N 2.5/	100					Loamy/Clayey	Roots
8-18	10YR 3/1	95	10YR 4/6	5	C	M	Loamy/Clayey	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

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

Remarks:
Hydric soil indicator F6 (Redox Dark Surface) present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___		
Water Table Present?	Yes X	No ___	Depth (inches): 10		
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0	**Wetland Hydrology Present?**	**Yes** X **No** ___

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

Remarks:
Wetland hydrology present with high water table and saturation as primary hydrology indicators.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 10/30/2024

Applicant/Owner: UDOT State: UT Sampling Point: SP-21

Investigator(s): Joshua McMillin, Amy Croft Section, Township, Range: T5S R1E S36

Landform (hillside, terrace, etc.): Flat Local relief (concave, convex, none): None Slope (%): 5

Subregion (LRR): LRR D Lat: 40.34579468 Long: -111.7774124 Datum: NAD83

Soil Map Unit Name: Chipman silty clay loam NWI classification: None

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

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

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

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

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

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

Remarks:
Sampling point taken on railroad ballast. No soil pit with lack of hydrophytic vegetation and surface hydrology indicators. Sampling point does not meet the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
Woody Vine Stratum (Plot size: 5 ft radius)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (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** X

Remarks:
No vegetation present.

SOIL

Sampling Point: SP-21

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

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

Remarks:
No soil pit with lack of hydrophytic vegetation and surface hydrology indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

Remarks:
No surface wetland hydrology indicators present.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 05/19/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-22
Investigator(s): Michael Perkins, Josh McMillin Section, Township, Range: T5S R1E S36
Landform (hillside, terrace, etc.): Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRR): LRR D Lat: 40.3409271240234 Long: -111.772911071777 Datum: NAD83
Soil Map Unit Name: Chipman-McBeth complex NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

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

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

Remarks:
Sampling point does not meet the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Cardaria draba*	70	Yes	UPL
2. *Phragmites australis*	50	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	120 =Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	70	x 5 =	350
Column Totals:	120 (A)		450 (B)

Prevalence Index = B/A = 3.75

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

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

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

Remarks:
Upland vegetation community.

SOIL

Sampling Point: SP-22

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 2/2						Loamy/Clayey	
10-15	10YR 4/2	90	7.5YR 5/8	10	C	M	Loamy/Clayey	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: Cobble

Depth (inches): 15

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

Remarks:
Hydric soil indicator F3 (Depleted Matrix) present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 4

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

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

Remarks:
Hydrology present with saturation as a primary hydrology indicator.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 05/19/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-23
Investigator(s): Michael Perkins, Josh McMillin Section, Township, Range: T5S R2E S31
Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRR): LRR D Lat: 40.3402404785156 Long: -111.772308349609 Datum: NAD83
Soil Map Unit Name: Chipman-McBeth complex NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ 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 X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

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

Remarks:
Sampling point meets the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Phragmites australis*	15	Yes	FACW
2. *Typha latifolia*	5	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
	20 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	15	x 2 =	30
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	20 (A)		35 (B)

Prevalence Index = B/A = 1.75

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X 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** X **No** ____

Remarks:
Hydrophytic vegetation present.

SOIL

Sampling Point: SP-23

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/1	100					Loamy/Clayey	
4-20	10YR 4/1	80	10YR 2/1	15	D		Loamy/Clayey	
			10YR 4/6	5	C	M		

[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)**
- X 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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

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

Remarks:

Hydric soil indicators A11 (Depleted Below Dark Surface) and F3 (Depleted Matrix) present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___		
Water Table Present?	Yes X	No ___	Depth (inches): 9		
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0	**Wetland Hydrology Present?**	**Yes** X **No** ___

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

Remarks:

Hydrology present with high water table and saturation as primary hydrology indicators.

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

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

Project/Site: UTA FR2X City/County: Utah Sampling Date: 05/19/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-24
Investigator(s): Michael Perkins, Josh McMillin Section, Township, Range: T5S R2E S31
Landform (hillside, terrace, etc.): Local relief (concave, convex, none): None Slope (%): 3
Subregion (LRR): LRR D Lat: 40.3402709960937 Long: -111.772247314453 Datum: NAD83
Soil Map Unit Name: Chipman-McBeth complex NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)
Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No
Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

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

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

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

Remarks:
Smapling point taken on railroad ballast. Soil pit not dug with lack of hydrophytic vegetation and surface hydrology indicators. Sampling point does not meet the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Bromus tectorum*	70	Yes	UPL
2. *Cardaria draba*	5	No	UPL
3.			
4.			
5.			
6.			
7.			
8.			
	75 =Total Cover		
Woody Vine Stratum (Plot size:)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 25 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

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

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

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	75	x 5 =	375
Column Totals:	75 (A)		375 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

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

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

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

Remarks:
Upland vegetation community.

SOIL

Sampling Point: SP-24

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ____ **No** ____

Remarks:

No soil pit dug with a lack of hydrophytic vegetation and surface hydrology indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present? Yes ____ No ____ Depth (inches): ____

Water Table Present? Yes ____ No ____ Depth (inches): ____

Saturation Present? Yes ____ No ____ Depth (inches): ____

(includes capillary fringe)

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

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

Remarks:

No surface wetland hydrology indicators observed.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 05/19/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-25
Investigator(s): Michael Perkins, Josh McMillin Section, Township, Range: T5S R2E S31
Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRR): LRR D Lat: 40.3383102416992 Long: -111.770439147949 Datum: NAD83
Soil Map Unit Name: Chipman-McBeth complex NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ 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 X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

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

Remarks:
Sampling point meets the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Phragmites australis*	10	No	FACW
2. *Phalaris arundinacea*	50	Yes	FACW
3. *Cirsium arvense*	10	No	FACU
4. *Distichlis spicata*	40	Yes	FAC
5.			
6.			
7.			
8.			
	110 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust ____

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	60	x 2 =	120
FAC species	40	x 3 =	120
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	110 (A)		280 (B)

Prevalence Index = B/A = 2.55

Hydrophytic Vegetation Indicators:

X Dominance Test is >50%
X 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** X **No** ____

Remarks:
Hydrophytic vegetation present.

SOIL

Sampling Point: SP-25

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/1	100					Loamy/Clayey	
8-20	10YR 4/2	75	10YR 3/1	20	D	M		
			10YR 5/6	3	C	M		Redox is prominent.

[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)**
- X 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)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

Hydric soil indicator A11 (Depleted Below Dark Surface) and F3 (Depleted Matrix) present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

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

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

Remarks:

Hydrology present with saturation as a primary hydrology indicator.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 05/19/2024

Applicant/Owner: UDOT State: UT Sampling Point: SP-26

Investigator(s): Michael Perkins, Josh McMillin Section, Township, Range: T5S R2E S31

Landform (hillside, terrace, etc.): Slope Local relief (concave, convex, none): None Slope (%): 5

Subregion (LRR): LRR D Lat: 40.3383255004883 Long: -111.770401000977 Datum: NAD83

Soil Map Unit Name: Chipman-McBeth complex NWI classification:

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

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

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

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

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

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

Remarks:
Sampling point located on railroad ballast. No soil pit dug with lack of hydrophyic vegetation and surface hydrology indicators. Sampling point does not meet the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	=Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust ____

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (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** X

Remarks:
No vegetation present.

SOIL

Sampling Point: SP-26

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

No soil pit dug with lack of hydrophyic vegetation and surface hydrology indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

(includes capillary fringe)

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

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

Remarks:

No surface wetland hydrology indicators.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 05/19/2024
Applicant/Owner: UDOT State: UT Sampling Point: SP-27
Investigator(s): Michael Perkins, Josh McMillin Section, Township, Range: T5S R2E S31
Landform (hillside, terrace, etc.): Terrace Local relief (concave, convex, none): Concave Slope (%): 1
Subregion (LRR): LRR D Lat: 40.3379287719727 Long: -111.769401550293 Datum: NAD83
Soil Map Unit Name: Chipman-McBeth complex NWI classification:
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ 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 X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

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

Remarks:
Sampling point meets the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1. *Phragmites australis*	60	Yes	FACW
2. *Juncus arcticus spp. littoralis*	40	Yes	FACW
3.			
4.			
5.			
6.			
7.			
8.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	=Total Cover		

% Bare Ground in Herb Stratum 0 % Cover of Biotic Crust 0

Dominance Test worksheet:
Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)
Total Number of Dominant Species Across All Strata: 2 (B)
Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:
X Dominance Test is >50%
X 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** X **No** ____

Remarks:
Hydrophytic vegetation community.

SOIL

Sampling Point: SP-27

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 2/1	100					Loamy/Clayey	
7-15	10YR 3/1	96	7.5YR 5/8	4	C	M	Loamy/Clayey	Redox is prominent

[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)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: ___

Depth (inches): ___

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

Remarks:

Hydric soil indicator F6 (Redox Dark Surface) present.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches):	1	
Water Table Present?	Yes X	No ___	Depth (inches):	0	
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches):	0	**Wetland Hydrology Present?** **Yes** X **No** ___

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

Remarks:

Hydrology present with surface water, high water table, and saturation as primary hydrology indicators.

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

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

Project/Site: UTA FR2X City/County: Utah County Sampling Date: 05/19/2024

Applicant/Owner: UDOT State: UT Sampling Point: SP-28

Investigator(s): Michael Perkins, Josh McMillin Landform Section, Township, Range: T5S R2E S31

(hillside, terrace, etc.): Terrace Local relief (concave, convex, none): concave Slope (%): 1

Subregion (LRR): LRR D Lat: 40.337890625 Long: -111.769477844238 Datum: NAD83

Soil Map Unit Name: Chipman-McBeth complex NWI classification:

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

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

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

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

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

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

Remarks:
Sampling point on railroad ballast. No soil pit dug due to lack of hydrophytic vegetation and surface hydrology indicators. Sampling point does not meet the criteria for a wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ =Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft radius)			
1.			
2.			
3.			
4.			
5.			
	____ =Total Cover		
Herb Stratum (Plot size: 5 ft radius)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	____ =Total Cover		
Woody Vine Stratum (Plot size: ____)			
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: ____ (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: ____ (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** X

Remarks:
No vegetation present.

SOIL

Sampling Point: SP-28

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

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

Remarks:

No soil pit dug due to lack of hydrophytic vegetation and surface hydrology indicators.

HYDROLOGY

Wetland Hydrology Indicators:

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

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

Secondary Indicators (minimum of two required)

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

Field Observations:

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

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

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

(includes capillary fringe)

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

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

Remarks:

No surface wetland hydrology indicators.

U.S. Army Corps of Engineers (USACE)

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

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

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

AGENCY DISCLOSURE NOTICE

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

Project ID #: P-1 (American Fork River)	Site Name: UTA FrontRunner Point Improvements	Date and Time: 5/19/2024
Location (lat/long): 40.3676567, -111.7993393	Investigator(s): Michael Perkins, Joshua McMillin	

Step 1 Site overview from remote and online resources

Check boxes for online resources used to evaluate site:

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

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

There were no recent extreme events at the time of field survey.

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

The American Fork River is lined with riprap beneath the UTA and UP tracks.

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

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

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

Geomorphic indicators

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

Sediment indicators

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

Vegetation Indicators

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

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

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

Ancillary indicators

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

Other observed indicators? Describe:

Some portions of the stream transition from a lack of vegetation to woody shrubs.

Project ID #: P-1 (American Fork River)

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

Step 5 Describe rationale for location of OHWM

The location of the OHWM was determined by break in bank slopes and changes in vegetation type and cover. Banks are armored with riprap and there is some presence of woody shrubs.

Additional observations or notes

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

Photo log attached? ☐ Yes ☒ No If no, explain why not: Photos are included in Attachment C.

List photographs and include descriptions in the table below.

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

Photo Number	Photograph description

Appendix D

Representative Aquatic Resource Photographs

Delineation Sampling Point SP-1

Site Photo
Orientation: North | Date: 5/29/2024

Delineation Sampling Point SP-2

Site Photo
Orientation: Southwest | Date: 5/29/2024

Delineation Sampling Point SP-3

Soil Pit Photo
Date: 5/19/2024

Site Photo
Orientation: East | Date: 5/19/2024

Delineation Sampling Point SP-4

Site Photo
Orientation: North | Date: 5/19/2024

Delineation Sampling Point SP-5

Soil Pit Photo
Date: 5/19/2024

Site Photo
Orientation: West | Date: 5/19/2024

Delineation Sampling Point SP-6

Soil Pit Photo
Date: 5/19/2024

Site Photo
Orientation: Southwest | Date: 5/19/2024

Delineation Sampling Point SP-7

Soil Pit Photo
Date: 5/29/2024

Delineation Sampling Point SP-8

Site Photo
Orientation: North | Date: 5/29/2024

Delineation Sampling Point SP-9

Site Photo
Orientation: West | Date: 5/29/2024

Delineation Sampling Point SP-10

Soil Pit Photo
Date: 5/29/2024

Site Photo
Orientation: West | Date: 5/29/2024

Delineation Sampling Point SP-11

Soil Pit Photo
Date: 5/29/2024

Site Photo
Orientation: East | Date: 5/29/2024

Delineation Sampling Point SP-12

Soil Pit Photo
Date: 5/19/2024

Site Photo
Orientation: Southeast | Date: 5/19/2024

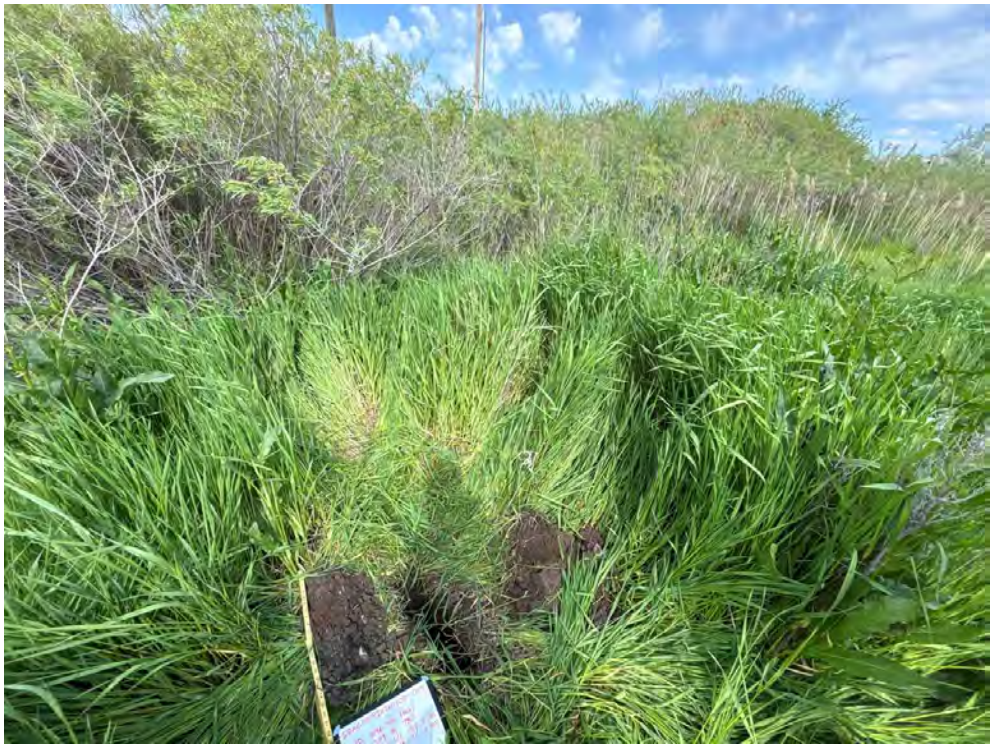
Delineation Sampling Point SP-13

Soil Pit Photo
Date: 5/19/2024

Site Photo
Orientation: West | Date: 5/19/2024

Delineation Sampling Point SP-14

Soil Pit Photo
Date: 5/19/2024



Site Photo
Orientation: West | Date: 5/19/2024

Delineation Sampling Point SP-15

Soil Pit Photo
Date: 10/30/2024

Site Photo
Orientation: Southeast | Date: 10/30/2024

Delineation Sampling Point SP-16

Site Photo
Orientation: South | Date: 10/30/2024

Delineation Sampling Point SP-17

Soil Pit Photo
Date: 10/30/2024

Site Photo
Orientation: Southeast | Date: 10/30/2024

Delineation Sampling Point SP-18

Soil Pit Photo
Date: 10/30/2024

Site Photo
Orientation: South | Date: 10/30/2024

Delineation Sampling Point SP-19

Soil Pit Photo
Date: 10/30/2024

Site Photo
Orientation: North | Date: 10/30/2024

Delineation Sampling Point SP-20

Soil Pit Photo
Date: 10/30/2024

Site Photo
Orientation: South | Date: 10/30/2024

Delineation Sampling Point SP-21

Site Photo
Orientation: North | Date: 10/30/2024

Delineation Sampling Point SP-22

Soil Pit Photo
Date: 5/19/2024

Site Photo
Orientation: South | Date: 5/19/2024

Delineation Sampling Point SP-23

Soil Pit Photo
Date: 5/19/2024

Site Photo
Orientation: Southwest **|** Date: 5/19/2024

Delineation Sampling Point SP-24

Site Photo
Orientation: Southeast | Date: 5/19/2024

Delineation Sampling Point SP-25

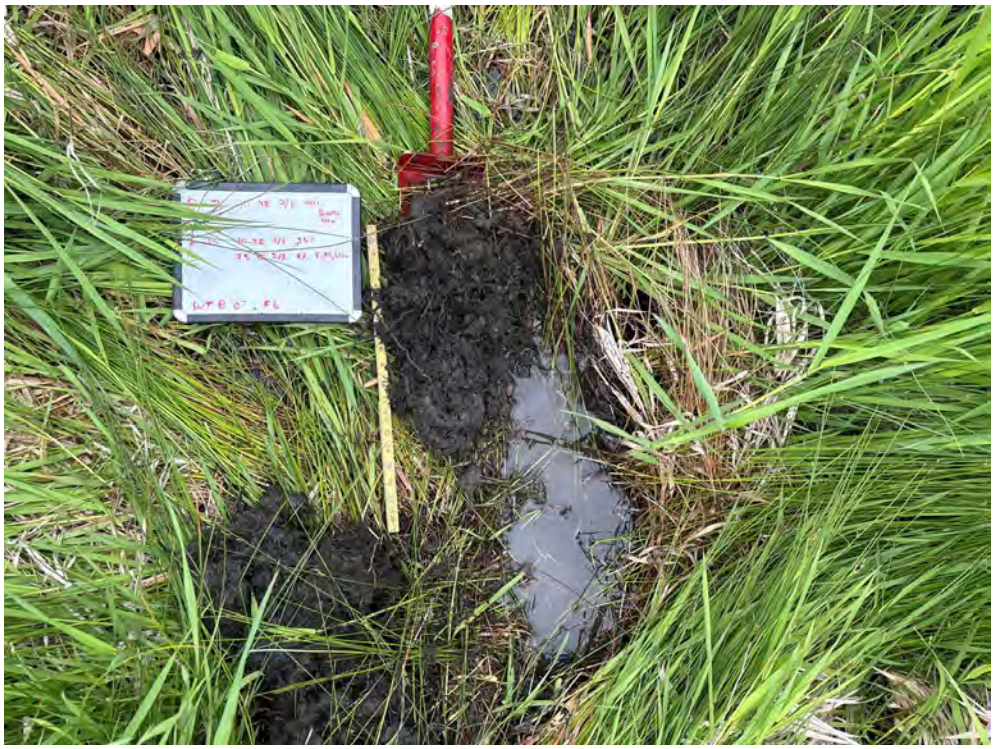
Soil Pit Photo
Date: 5/19/2024

Site Photo
Orientation: South | Date: 5/19/2024

Delineation Sampling Point SP-26

Site Photo
Orientation: South | Date: 5/19/2024

Delineation Sampling Point SP-27



Soil Pit Photo
Date: 5/19/2024

Site Photo
Orientation: Southwest | Date: 5/19/2024

Delineation Sampling Point SP-28

Site Photo
Orientation: West | Date: 5/19/2024

Perennial Stream Segment P-1 (American Fork River)

Associated Photo Point in Appendix B: Photo Point PP-2
Orientation: East, Upstream | Date: 5/19/2024

Associated Photo Point in Appendix B: Photo Point PP-2
Orientation: West, Downstream | Date: 5/19/2024

Ditch D-1

Representative Photo of Segment D-1b
Associated Photo Point in Appendix B: Photo Point PP-1
Orientation: Southeast, Upstream **|** Date: 5/19/2024

Ditch D-2

Representative Photo of Segment D-2a
Associated Photo Point in Appendix B: Photo Point PP-3
Orientation: West, Downstream | Date: 5/29/2024

Representative Photo of Segment D-2b
Associated Photo Point in Appendix B: Photo Point PP-4
Orientation: West, Downstream | Date: 5/29/2024

Ditch D-3

Representative Photo of Segment D-3
Associated Photo Point in Appendix B: Photo Point PP-6
Orientation: North, Upstream **|** Date: 5/19/2024

Ditch D-4

Representative Photo of Segment D-4a
Associated Photo Point in Appendix B: Photo Point PP-5
Orientation: East, Upstream | Date: 5/29/2024

Representative Photo of Segment D-4b
Associated Photo Point in Appendix B: Photo Point PP-7
Orientation: West, Downstream | Date: 5/19/2024

Ditch D-5

Representative Photo of Segment D-5a
Associated Photo Point in Appendix B: Photo Point PP-8
Orientation: East, Upstream | Date: 5/29/2024

Representative Photo of Segment D-5b
Associated Photo Point in Appendix B: Photo Point PP-9
Orientation: West, Downstream | Date: 5/19/2024

Ditch D-6

Representative Photo of Segment D-6b
Associated Photo Point in Appendix B: Photo Point PP-10
Orientation: East, Upstream **|** Date: 5/19/2024

Ditch D-7

Representative Photo of Segment D-7a
Associated Photo Point in Appendix B: Photo Point PP-11
Orientation: East, Upstream **|** Date: 5/19/2024

Ditch D-8

Representative Photo of Segment D-8a
Associated Photo Point in Appendix B: Photo Point PP-12
Orientation: East, Upstream **|** Date: 10/30/2024

Representative Photo of Segment D-8c
Associated Photo Point in Appendix B: Photo Point PP-13
Orientation: West, Downstream **|** Date: 10/30/2024

Ditch D-9

Representative Photo of Segment D-9
Associated Photo Point in Appendix B: Photo Point PP-14
Orientation: East, Upstream **|** Date: 5/19/2024

Appendix E

Plant Species Observed

Table E-1. Plant Species Observed

Scientific Name[a]	Common Name[b]	Wetland Indicator Status[c]
Artemisia tridentata	basin big sagebrush	UPL
Asclepias speciosa	showy milkweed	FAC
Bromus tectorum	cheatgrass	UPL
Cardaria draba	whitetop	UPL
Carduus nutans	nodding plumeless thistle	FACU
Cirsium arvense	Canada thistle	FACU
Distichlis spicata	saltgrass	FAC
Elaeagnus angustifolia	Russian olive	FAC
Juncus arcticus ssp. littoralis (J. balticus)	mountain rush	FACW
Lepidium latifolium	broadleaved pepperweed	FAC
Maianthemum stellatum	starry false lily of the valley	FACU
Parthenocissus quinquefolia	Virginia creeper	FAC
Phalaris arundinacea	reed canarygrass	FACW
Phragmites australis	common reed	FACW
Rosa woodsii	Wood's rose	FACU
Rumex crispus	curly dock	FAC
Salix exigua	narrowleaf willow	FACW
Schoenoplectus acutus	hardstem bulrush	OBL
Schoenoplectus pungens	common threesquare	OBL
Thinopyrum intermedium	intermediate wheatgrass	UPL
Typha latifolia	broadleaf cattail	OBL

[a, b] Naming conventions according to USDA NRCS Plants Database (https://plants.usda.gov).

[c] Indicator Status as assigned for the Arid West Region in the National Wetland Plant List (USACE 2022).
FAC = facultative; **FACU** = facultative upland; **FACW** = facultative wetland; **UPL** = upland plants (or not listed species assumed to be upland); **OBL** = obligate wetland.

Appendix F

USDA NRCS Custom Soil Resource Report

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Utah County, Utah - Central Part

North of American Fork Double Track Project Reevaluation

April 8, 2025

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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Contents

How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

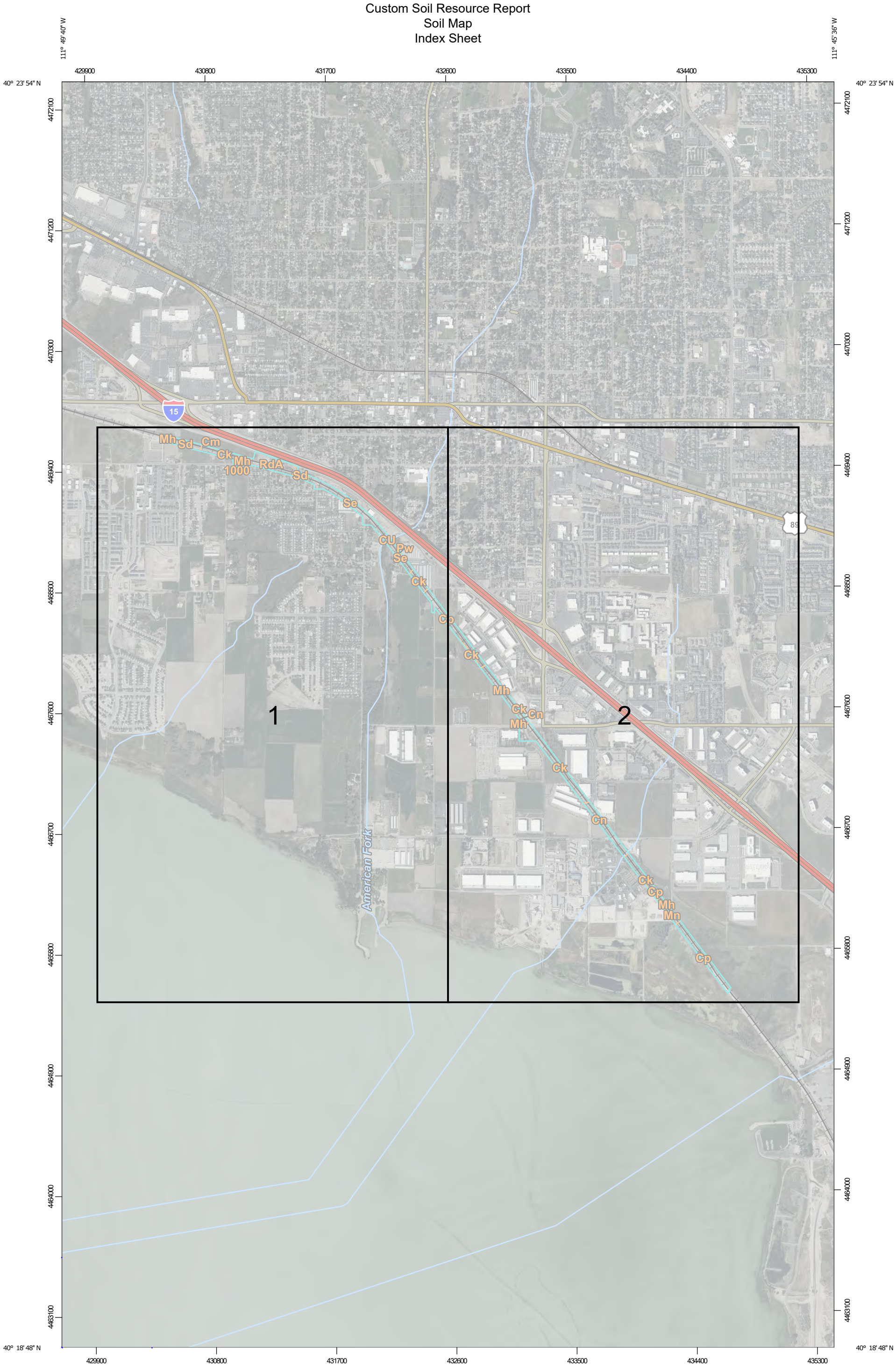
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map
Index Sheet



Custom Soil Resource Report
Soil Map
Map sheet 1 of 2

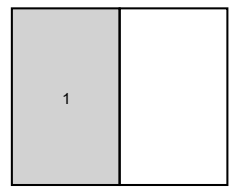
Map Scale: 1:12,000 if printed on B portrait (11" x 17") sheet.

N

Meters
0 150 300 600 900

Feet
0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84



Map Sheet Location

111° 47' 38" W
111° 45' 47" W
40° 22' 30" N
40° 20' 11" N
432700
433100
433500
433900
434300
434700
435100
4469600
4469200
4468800
4468400
4468000
4467600
4467200
4466800
4466400
4466000
4465600

E 200 S
Pacific Dr
89
W 870 N
S 460 E
S 300 E
S 500 E
N 4850 W
S 2000 W
E 600 S
E 70 S
E 1000 S
500
Exit 276
Cp
Ck
Mh
Cn
5300
S 630 E
6800
15
Pleasant Grove
E 1300 S
W 6400 N
Pleasant Grove Blvd
S 580 E
5050 W
Driveway
Mn
doTERRA

Joins sheet 1

Map Scale: 1:12,000 if printed on B portrait (11" x 17") sheet.

N

Meters
0 150 300 600 900

Feet
0 500 1000 2000 3000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84

2

Map Sheet Location

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Utah County, Utah - Central Part
Survey Area Data: Version 17, Aug 28, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 17, 2023—Sep 25, 2023

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
1000	Parleys loam, 0 to 4 percent slopes	0.4	0.5%
Ck	Chipman silty clay loam	21.5	27.7%
Cm	Chipman silty clay loam, moderately deep water table	0.0	0.0%
Cn	Chipman silty clay loam, moderately saline	7.0	8.9%
Cp	Chipman-McBeth complex	15.6	20.1%
CU	Cobbly alluvial land	0.4	0.5%
Mh	McBeth silt loam	6.5	8.4%
Mn	McBeth silt loam, moderately saline	1.7	2.1%
Pw	Provo gravelly fine sandy loam	0.1	0.1%
RdA	Redola loam, 0 to 3 percent slopes	8.0	10.3%
Sd	Steed sandy loam	4.4	5.6%
Se	Steed gravelly sandy loam	12.2	15.7%
Totals for Area of Interest		**77.8**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They

generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Utah County, Utah - Central Part

1000—Parleys loam, 0 to 4 percent slopes

Map Unit Setting

National map unit symbol: 2tjtg
Elevation: 4,210 to 5,400 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 49 to 51 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Parleys and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Parleys

Setting

Landform: Stream terraces, lake terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits and/or alluvium derived from igneous and sedimentary rock

Typical profile

Ap - 0 to 6 inches: loam
A - 6 to 15 inches: loam
Bt - 15 to 26 inches: clay loam
Bk - 26 to 33 inches: silty clay loam
CBk - 33 to 48 inches: silt loam
C - 48 to 60 inches: stratified fine sand to silty clay loam

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 35 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: High (about 10.8 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: R028AY310UT - Upland Loam (Bonneville Big Sagebrush) North

Other vegetative classification: Upland Loam (Mountain Big Sagebrush) (028AY310UT)
Hydric soil rating: No

Minor Components

Unnamed soils
Percent of map unit: 15 percent
Hydric soil rating: No

Ck—Chipman silty clay loam

Map Unit Setting
National map unit symbol: j6ws
Elevation: 4,500 to 4,800 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 130 to 150 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Chipman and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chipman

Setting
Landform: Lake terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits derived from mixed sources

Typical profile
Apca - 0 to 8 inches: silty clay loam
Alg - 8 to 16 inches: silty clay loam
C1cag - 16 to 20 inches: silty clay loam
C2ca - 20 to 27 inches: silty clay loam
C3ca - 27 to 44 inches: loam
C4cag - 44 to 60 inches: clay loam

Properties and qualities
Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 30 to 60 inches
Frequency of flooding: Rare
Frequency of ponding: None

Calcium carbonate, maximum content: 60 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): 2w
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: C
Ecological site: R028AY012UT - Semiwet Fresh Meadow
Hydric soil rating: No

Minor Components

Mcbeth

Percent of map unit: 5 percent
Landform: Flood plains, alluvial fans, lake terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear, concave
Across-slope shape: Concave, convex, linear
Ecological site: R028AY012UT - Semiwet Fresh Meadow
Hydric soil rating: Yes

Bramwell

Percent of map unit: 5 percent

Ironton

Percent of map unit: 5 percent
Landform: Lake terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R028AY012UT - Semiwet Fresh Meadow
Hydric soil rating: Yes

Cm—Chipman silty clay loam, moderately deep water table

Map Unit Setting

National map unit symbol: j6wt
Elevation: 4,500 to 4,800 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 130 to 150 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Chipman and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chipman

Setting

Landform: Lake terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits derived from mixed sources

Typical profile

Apca - 0 to 8 inches: silty clay loam
Alg - 8 to 16 inches: silty clay loam
C1cag - 16 to 20 inches: silty clay loam
C2ca - 20 to 27 inches: silty clay loam
C3ca - 27 to 44 inches: loam
C4cag - 44 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 60 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: D
Ecological site: R028AY012UT - Semiwet Fresh Meadow
Hydric soil rating: No

Minor Components

Depressional soils

Percent of map unit: 5 percent
Landform: Depressions on lake terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: R028AY001UT - Alkali Bottom (Alkali Sacaton)
Hydric soil rating: Yes

Cn—Chipman silty clay loam, moderately saline

Map Unit Setting

National map unit symbol: j6wv
Elevation: 4,500 to 4,800 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 130 to 150 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Chipman and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chipman

Setting

Landform: Lake terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits derived from mixed sources

Typical profile

Apca - 0 to 8 inches: silty clay loam
Alg - 8 to 16 inches: silty clay loam
C1cag - 16 to 20 inches: silty clay loam
C2ca - 20 to 27 inches: silty clay loam
C3ca - 27 to 44 inches: loam
C4cag - 44 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 60 percent
Maximum salinity: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 30.0
Available water supply, 0 to 60 inches: Moderate (about 7.6 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: D

Ecological site: R028AY001UT - Alkali Bottom (Alkali Sacaton)
Hydric soil rating: No

Minor Components

Depressional soils
Percent of map unit: 3 percent
Landform: Depressions on lake terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: R028AY001UT - Alkali Bottom (Alkali Sacaton)
Hydric soil rating: Yes

Strongly saline-alkali soils
Percent of map unit: 2 percent

Cp—Chipman-McBeth complex

Map Unit Setting
National map unit symbol: j6wx
Elevation: 4,500 to 4,800 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 130 to 150 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Chipman and similar soils: 60 percent
Mcbeth and similar soils: 40 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Chipman

Setting
Landform: Lake terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits derived from mixed sources

Typical profile
Apca - 0 to 8 inches: silty clay loam
Alg - 8 to 16 inches: silty clay loam
C1cag - 16 to 20 inches: silty clay loam
C2ca - 20 to 27 inches: silty clay loam
C3ca - 27 to 44 inches: loam
C4cag - 44 to 60 inches: clay loam

Properties and qualities
Slope: 0 to 1 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 60 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water supply, 0 to 60 inches: High (about 10.0 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: D
Ecological site: R028AY012UT - Semiwet Fresh Meadow
Hydric soil rating: No

Description of Mcbeth

Setting

Landform: Lake terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed sources

Typical profile

Ap - 0 to 8 inches: silt loam
A1 - 8 to 12 inches: silt loam
C1g - 12 to 18 inches: silt loam
C2g - 18 to 24 inches: very fine sandy loam
C3g - 24 to 53 inches: silt loam
C4g - 53 to 68 inches: silt loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water supply, 0 to 60 inches: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C/D
Ecological site: R028AY012UT - Semiwet Fresh Meadow
Hydric soil rating: Yes

CU—Cobbly alluvial land

Map Unit Setting

National map unit symbol: j6wq
Elevation: 4,200 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 120 to 150 days
Farmland classification: Not prime farmland

Map Unit Composition

Aquic xerofluvents and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Aquic Xerofluvents

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Lacustrine deposits derived from mixed sources

Typical profile

H1 - 0 to 60 inches: extremely cobbly coarse sandy loam

Properties and qualities

Slope: 1 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: Frequent
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water supply, 0 to 60 inches: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B
Ecological site: R028AY014UT - Semiwet Fresh Streambank
Hydric soil rating: Yes

Minor Components

Depressional soils

Percent of map unit: 5 percent
Landform: Depressions on lake terraces
Landform position (three-dimensional): Tread, dip
Down-slope shape: Linear, concave
Across-slope shape: Linear, concave
Ecological site: R028AY001UT - Alkali Bottom (Alkali Sacaton)
Hydric soil rating: Yes

Mh—McBeth silt loam

Map Unit Setting

National map unit symbol: j6yj
Elevation: 4,500 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 130 to 150 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Mcbeth and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mcbeth

Setting

Landform: Flood plains, alluvial fans, lake terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear, concave
Across-slope shape: Concave, convex, linear
Parent material: Alluvium derived from mixed sources

Typical profile

Ap - 0 to 8 inches: silt loam
A1 - 8 to 12 inches: silt loam
C1g - 12 to 18 inches: silt loam
C2g - 18 to 24 inches: very fine sandy loam
C3g,C4g - 24 to 68 inches: silt loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: Occasional

Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water supply, 0 to 60 inches: High (about 10.1 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: C/D
Ecological site: R028AY012UT - Semiwet Fresh Meadow
Hydric soil rating: Yes

Minor Components

Chipman

Percent of map unit: 5 percent
Hydric soil rating: No

Mn—McBeth silt loam, moderately saline

Map Unit Setting

National map unit symbol: j6yk
Elevation: 4,500 to 4,600 feet
Mean annual precipitation: 12 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 130 to 150 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Mcbeth and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mcbeth

Setting

Landform: Flood plains, alluvial fans, lake terraces
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Linear, concave
Across-slope shape: Concave, convex, linear
Parent material: Alluvium derived from mixed sources

Typical profile

Ap - 0 to 8 inches: silt loam
A1 - 8 to 12 inches: silt loam
C1g - 12 to 18 inches: silt loam
C2g - 18 to 24 inches: very fine sandy loam
C3g,C4g - 24 to 68 inches: silt loam

Properties and qualities

Slope: 0 to 1 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 12 to 24 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water supply, 0 to 60 inches: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 6w
Hydrologic Soil Group: C/D
Ecological site: R028AY001UT - Alkali Bottom (Alkali Sacaton)
Hydric soil rating: Yes

Pw—Provo gravelly fine sandy loam

Map Unit Setting

National map unit symbol: j6zh
Elevation: 4,500 to 4,800 feet
Mean annual precipitation: 11 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 130 to 150 days
Farmland classification: Not prime farmland

Map Unit Composition

Provo and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Provo

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Alluvium derived from limestone, sandstone, quartzite, and shale

Typical profile

Ap - 0 to 7 inches: gravelly fine sandy loam
A1g - 7 to 15 inches: gravelly fine sandy loam
C1g - 15 to 25 inches: extremely gravelly sand
IIC2 - 25 to 40 inches: extremely gravelly loamy sand
IIC3 - 40 to 60 inches: extremely gravelly sand

Properties and qualities

Slope: 1 to 3 percent

Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 18 to 48 inches
Frequency of flooding: Rare
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water supply, 0 to 60 inches: Very low (about 2.8 inches)

Interpretive groups

Land capability classification (irrigated): 4w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: B
Ecological site: R028AY014UT - Semiwet Fresh Streambank
Hydric soil rating: No

Minor Components

Sunset

Percent of map unit: 5 percent

RdA—Redola loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: j6zp
Elevation: 4,600 to 5,000 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 46 to 48 degrees F
Frost-free period: 130 to 150 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Redola and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Redola

Setting

Landform: Alluvial fans, flood plains
Landform position (three-dimensional): Talf, dip
Down-slope shape: Concave, linear
Across-slope shape: Convex, concave
Parent material: Alluvium derived from limestone and sandstone

Typical profile

Ap - 0 to 8 inches: loam
C1,C2 - 8 to 30 inches: loam

C3 - 30 to 50 inches: stratified gravelly coarse sand to very fine sandy loam
IIC4 - 50 to 60 inches: gravelly coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water supply, 0 to 60 inches: Moderate (about 8.1 inches)

Interpretive groups

Land capability classification (irrigated): 2c
Land capability classification (nonirrigated): 3c
Hydrologic Soil Group: B
Ecological site: R028AY006UT - Loamy Bottom (Great Basin Wildrye)
Other vegetative classification: Loamy Bottom (Great Basin Wildrye) (028AY006UT)
Hydric soil rating: No

Minor Components

Martin

Percent of map unit: 5 percent

Sd—Steed sandy loam

Map Unit Setting

National map unit symbol: j6zs
Elevation: 4,550 to 5,200 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 47 to 50 degrees F
Frost-free period: 150 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Steed and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Steed

Setting

Landform: Alluvial fans
Down-slope shape: Concave
Across-slope shape: Convex
Parent material: Alluvium derived from limestone, sandstone, quartzite, and shale

Typical profile

A1 - 0 to 7 inches: sandy loam
C1 - 7 to 31 inches: extremely gravelly loamy sand
C2,C3 - 31 to 60 inches: extremely gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Ecological site: R028AY014UT - Semiwet Fresh Streambank
Hydric soil rating: No

Se—Steed gravelly sandy loam

Map Unit Setting

National map unit symbol: j6zt
Elevation: 4,550 to 5,200 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 47 to 50 degrees F
Frost-free period: 150 to 170 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Steed and similar soils: 95 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Steed

Setting

Landform: Flood plains
Landform position (three-dimensional): Talf, dip
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Alluvium derived from limestone, sandstone, quartzite, and shale

Typical profile

A1 - 0 to 7 inches: gravelly sandy loam

C1 - 7 to 31 inches: extremely gravelly loamy sand
C2,C3 - 31 to 60 inches: extremely gravelly sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 48 to 72 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Calcium carbonate, maximum content: 40 percent
Maximum salinity: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Sodium adsorption ratio, maximum: 5.0
Available water supply, 0 to 60 inches: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): 4s
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Ecological site: R028AY014UT - Semiwet Fresh Streambank
Hydric soil rating: No

Minor Components

Provo

Percent of map unit: 5 percent

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ATTACHMENT 9

Wetlands and Waters of the U.S.


D-1a
0.01 ac
D-1b
0.01 ac
D-4b
0.01 ac
D-2b
0.01 ac
D-5b
0.01 ac
D-6b
0.01 ac
D-8c
0.01 ac
D-9
0.03 ac
PEM-6
0.04 ac
PEM-7b
0.26 ac
Lehi
UTA
FrontRunner Forward
UDOT
Keeping Utah Moving
Legend
Impact Boundary
Palustrine Emergent Wetland
Ditch
N
0
0.5
Miles

ATTACHMENT 10

Biological Assessment

FrontRunner Forward

North of American Fork Double Track Project

Biological Assessment

June 2025

Table of Contents

List of Tables

List of Figures

Appendixes

Appendix A. IPaC Report
Appendix B. UTA FrontRunner American Fork River Bridge Inspection Memo

Abbreviations

CE	categorical exclusion
CFR	Code of Federal Regulations
ESA	Endangered Species Act
FTA	Federal Transit Administration
GIS	geographic information systems
IPaC	Information, Planning, and Conservation System
ML	mainline
No.	number
Project	North of American Fork Double Track Project
spp.	multiple unknown or unspecified species within a genus
SWPPP	stormwater pollution prevention plan
TCE	temporary construction easement
UDOT	Utah Department of Transportation
UDWR	Utah Division of Wildlife Resources
UP	Union Pacific Railroad
USFWS	United States Fish and Wildlife Service
USGS	U.S. Geological Survey
UTA	Utah Transit Authority

Introduction

The Utah Transit Authority (UTA) and the Utah Department of Transportation (UDOT) are constructing a second track along about 8 miles of existing single track on the FrontRunner commuter rail line from UTA milepost 26 S south to UTA milepost 34 S in the cities of American Fork, Lehi, and Lindon in Utah County, Utah. The North of American Fork Double Track Project is one of many projects under the FrontRunner Forward Program (also known as the FrontRunner 2X project), which includes double tracking and realigning certain sections of FrontRunner and constructing a new infill station.

This biological assessment analyzes the expected effects of the Project on listed species and/or their designated and proposed critical habitat under the provisions of the federal Endangered Species Act (ESA). The Project is receiving funds from the Federal Transit Administration (FTA) and requires Section 7 consultation with the U.S. Fish and Wildlife Service (USFWS).

Project Description

The anticipated track work consists of constructing 41,900 track-feet of a new FrontRunner UTA mainline (ML) number (No.) 2 west of the existing UTA ML No. 1, shifting about 5,500 track-feet of the existing UTA ML No. 1, removing two No. 20 power-operated turnouts, installing one No. 20 double crossover, constructing 9,200 track-feet of retaining walls, constructing a new bridge over the American Fork River, constructing a new box culvert at the Waste Ditch, extending multiple culverts to accommodate the widened track bed, relocating utilities including a signal house adjacent to 5750 West in American Fork and a signal house north of 2100 North in Lehi, and widening the existing track bed. Both permanent right-of-way acquisition and temporary construction easements (TCEs) would be required for the Project.

The additional length of double track would further improve reliability and reduce delays on FrontRunner between the existing Lehi and Orem Central Stations.

Construction Schedule

The Project would be constructed in phases between about December 2026 and September 2029.

Conservation Measures

Conservation measures for the Project will consist of the following:

- Removing vegetation could introduce noxious species into the surrounding areas. To prevent further, permanent effects, UTA and UDOT will minimize temporary impacts to vegetation once construction is complete and no further disturbance is anticipated.
- All fill materials brought onto the construction site will be required to be free of contamination from chemical or petroleum products per UDOT's *Standard Specifications for Road and Bridge Construction* (UDOT's Standard Specifications; UDOT 2025), Section 02056, Embankment, Borrow, and Backfill. Topsoil for landscaping must also be free of weeds and other undesirable plants that have germinated and are actively growing per UDOT's Standard Specifications, Section 02912, Topsoil.
- Disturbed areas will be reseeded.
- Compacted soils will be ripped, stabilized, and reseeded.

- The contractor will be required to follow noxious weed mitigation and control measures identified in the most recent version of UDOT's Standard Specifications, Section 02924, Noxious Weed Control.
- Because more than 1 acre of ground would be disturbed by the Project, the Project would require a Utah Pollutant Discharge Elimination System (UPDES) General Stormwater Discharge Permit and a stormwater pollution prevention plan (SWPPP) consistent with UDOT's Standard Specifications, Section 01355, Environmental Compliance, Part 1.13, Stormwater Management Compliance. The SWPPP will identify measures to reduce impacts to receiving waters from construction activities including site grading, materials handling and storage, fueling, and equipment maintenance. Restoration efforts will also be monitored to ensure successful revegetation as typically required by an SWPPP.
- Construction near the American Fork River will occur outside the June sucker spawning period from May to June.
- Construction would generate fugitive dust from demolition, excavation, pile driving, paving, and other construction activities. When controlling dust is necessary to protect motorists or area residents as well as vegetation communities, UTA and UDOT, or their contractor, will take measures to reduce fugitive dust generated by construction. Dust-suppression techniques such as watering or chemical stabilization of exposed soil, conducting opacity observations and checks, washing vehicle tires, or using other dust-minimization techniques approved by the Utah Division of Air Quality will be applied by UTA and UDOT, or their contractor, during construction in accordance with UDOT's Standard Specifications, Section 01355, Environmental Protection, Part 1.10, Fugitive Emissions and Fugitive Dust, and Standard Specification 01572, Dust Control and Watering (UDOT 2025).
- UTA and UDOT will conduct 3 more years of clearance surveys for Ute ladies'-tresses. All surveys will be conducted according to the *U.S. Fish and Wildlife Service (USFWS) Utah Field Office Guidelines for Conducting and Reporting Botanical Inventories and Monitoring of Federally Listed, Proposed and Candidate Plants* (USFWS 2011) and the revised version of the 1992 *Interim Survey Requirements for Ute Ladies'-tresses Orchid (Spiranthes diluvialis)* (USFWS 2017a).
- Potentially suitable Ute ladies'-tresses habitat identified adjacent to the rail corridor and project footprint will be flagged and protected. Construction crews will be provided information about the importance of containing all work activities to the rail corridor and project footprint and will be instructed that no disturbance can occur outside the project footprint or in areas flagged for protection.

On January 7, 2025, USFWS issued a proposed rule to remove Ute ladies'-tresses from the Federal List of Endangered and Threatened Plants. If the species is delisted, the future planned surveys would not be required or conducted, and the associated Ute ladies'-tresses conservation measures would not apply.

Project Action Area

The ESA regulations define the action area as all areas that would be affected directly or indirectly by the federal action (50 Code of Federal Regulations [CFR] Section 402.02). In this biological assessment, specific action areas are defined for federally listed plants, fish, wildlife, and insects because not all impacts from construction and operation would occur equally across these taxa. The action areas for the plants, fish, birds, and insects evaluated in the following sections are described below.

- *Plants.* The *U.S. Fish and Wildlife Service (USFWS) Utah Field Office Guidelines for Conducting and Reporting Botanical Inventories and Monitoring of Federally Listed, Proposed and Candidate Plants* (USFWS 2011) stipulates that a 300-foot buffer be applied to a project footprint to account for potential indirect impacts to plants. Therefore, the action area for plants consists of the Project's footprint plus a 300-foot buffer.
- *Fish.* The action area for fish consists of streams and other surface waters in the Project's footprint.
- *Birds.* The action area for birds consists of the Project's footprint plus a 0.5-mile buffer.
- *Insects.* The action area for insects consists of the Project's footprint.

The action areas are located in the Moist Wasatch Front Footslopes subregion of the Central Basin and Range Ecoregion (Woods and others 2001). The subregion supports most of Utah's population and commercial activity and is fed by perennial streams and aqueducts that originate in the Wasatch Range. The action areas are in the Utah Lake watershed, hydrologic unit code 16020201 (USGS 2025). The American Fork River crosses the project area at about 430 South in American Fork.

The action areas consist primarily of existing UTA FrontRunner and Union Pacific Railroad (UP) tracks, disturbed upland areas, commercial and residential development, several small wetlands, and a riparian community adjacent to the American Fork River. Common plant species observed in the upland areas include common reed (*Phragmites australis*), Woods' rose (*Rosa woodsii*), narrowleaf willow (*Salix exigua*), Russian olive (*Elaeagnus angustifolia*), whitetop (*Cardaria draba*), rubber rabbitbrush (*Ericameria nauseosa*), cheatgrass (*Bromus tectorum*), and other upland grass species.

Dominant species observed in the wetland areas include broadleaf cattail (*Typha latifolia*), hardstem bullrush (*Schoenoplectus acutus*), Virginia creeper (*Parthenocissus quinquefolia*), common reed, mountain rush (*Juncus arcticus littoralis*), saltgrass (*Distichlis spicata*), Canada thistle (*Cirsium arvense*), and reed canarygrass (*Phalaris arundinacea*). The riparian community adjacent to the American Fork River includes boxelder (*Acer negundo*), Fremont cottonwood (*Populus fremontii*), crack willow (*Salix fragilis*), and narrowleaf willow.

Federally Listed Species Considered

USFWS's Information, Planning, and Conservation System (IPaC) website was used to obtain a list of federally threatened, endangered, or candidate species that might occur in the action areas and/or might be affected by the Project (USFWS 2025a). The IPaC report is provided as Appendix A, *IPaC Report*.

The IPaC report identified three federally listed species that might occur in the action areas and/or might be affected by the Project: one bird species, yellow-billed cuckoo (*Coccyzus americanus*); one fish species, June sucker (*Chasmistes liorus*); and one plant species, Ute ladies'-tresses. The IPaC report also identified two insect species that are proposed to be listed under the ESA: monarch butterfly (*Danaus*

plexippus) and Suckley's cuckoo bumble bee (*Bombus suckleyi*). The action areas do not include designated or proposed critical habitat for any of these species.

Table 1 describes the preferred habitat for each species. Biologists conducted field surveys for wildlife; vegetation; rare, threatened, and endangered species; and aquatic resources on May 19 and August 9, 2024, and May 23, 2025. There is no suitable habitat in the action area for yellow-billed cuckoo. Potentially suitable habitat exists in the action area for Ute ladies'-tresses, June sucker, monarch butterfly, and Suckley's cuckoo bumble bee.

Species Dismissed from Further Consideration

Yellow-billed cuckoo was eliminated from further evaluation because habitat surveys found no suitable habitat for this species in the action area for birds. Consequently, the Project would have **no effect** on yellow-billed cuckoo.

Potentially suitable habitat for June sucker was identified in the American Fork River in the action area for fish. However, UTA and UDOT do not anticipate that the American Fork River would be disturbed during work to be performed on the American Fork River bridge that carries UTA's commuter rail over the American Fork River. The north and south bridge abutments located west of the existing bridge over the American Fork River were constructed to accommodate a future rail line. The bridge and abutments were inspected on June 23, 2024, and were found to have minor defects that do not diminish the capacity of the structures. Work that would be performed on these structures is not anticipated to disturb the American Fork River and potential June sucker habitat. The minor defect repair work can be accessed without entering the American Fork River, and equipment access for work on the bridge would be from above the river. See Appendix B, *UTA FrontRunner American Fork River Bridge Inspection Memo*.

Additionally, construction near the American Fork River would occur outside the June sucker spawning period from May to June, and stormwater from the construction site would be managed to control sediment discharges to the stream to protect water quality and minimize indirect effects. Furthermore, the proposed critical habitat for June sucker is outside this action area. Consequently, the Project would have **no effect** on June sucker.

Potentially suitable habitat for monarch butterfly was identified in the action area for insects; however, the proposed critical habitat for this species is outside this action area. For this reason, the Project would not jeopardize the continued existence of monarch butterflies.

Potentially suitable nesting and foraging habitat for Suckley's cuckoo bumble bee was identified in the action area for insects. However, critical habitat has not been proposed for this species, and it has not been observed in the United States since 2016 (USFWS 2024). Given the broad nature of potentially suitable nesting and foraging habitat, the lack of observations in the United States, and the fact that critical habitat has not been proposed, the Project would not jeopardize the continued existence of Suckley's cuckoo bumble bees.

Species Carried Forward for Evaluation

Potentially suitable habitat for Ute ladies'-tresses was identified in the action area for plants. Therefore, this species has a potential to occur in or near the project area and is carried forward for evaluation in this biological assessment.

Table 1. Federally listed species that might occur in the action areas and/or might be affected by the Project

Common Name[a] (Scientific Name)	Federal Status	Preferred Habitat[b]	Critical Habitat Present?[c]	Potentially Suitable Habitat Present?
Birds				
Yellow-billed cuckoo (*Coccyzus americanus*)	Threatened	Yellow-billed cuckoos prefer to nest in tall cottonwood and willow riparian woodland with dense understory foliage. They prefer patches of at least 25 acres of dense riparian forest with a canopy cover of at least 50% in both the understory and overstory. USFWS's suitable habitat guidelines for this species for Utah require patches of multilayered vegetation that are at least 12 acres in extent and at least 100 meters (328 feet) wide by 100 meters long (USFWS 2017b).	Final critical habitat has been designated for this species. The action area for birds is outside the critical habitat.	There is no suitable habitat in the action area for birds. The existing riparian vegetation does not meet habitat size requirements.
Fish				
June sucker (*Chasmistes liorus*)	Threatened	June suckers are endemic to Utah Lake and its tributaries, which are the primary spawning habitat for the species (primarily the Provo River, but also Hobble Creek and, to a lesser extent, the Spanish Fork River and the American Fork River). A refuge population was established in Red Butte Reservoir in Salt Lake County, Utah.	Final critical habitat has been designated for this species. The action area for fish is outside the critical habitat.	Potentially suitable habitat exists in the action area for fish in the American Fork River. Suitable habitat is also available downstream in Utah Lake.
Insects				
Monarch butterfly (*Danaus plexippus*)	Proposed[d] Threatened	In the spring, summer, and early fall, monarch butterflies can be found wherever there are milkweeds in fields, meadows, and parks. They overwinter in the cool, high mountains of central Mexico and woodlands in central and southern California. Milkweed (*Asclepias* spp.) is an essential feature of quality monarch habitat. Female monarch butterflies lay their eggs on the underside of young leaves or flower buds of milkweed. Common places milkweed occurs include short- and tall-grass prairies, livestock pastures, agricultural margins, roadsides, wetland and riparian areas, sandy areas, and gardens. In addition to milkweed, other nectar sources, trees for roosting, and close proximity to water are key components of monarch habitat (Western Association of Fish and Wildlife Agencies 2019).	There is proposed critical habitat for this species. The action area for insects is outside the critical habitat.	Potentially suitable habitat exists in the action area for insects. Milkweed plants were observed growing in the action area for insects.

(*Continued on next page*)

Table 1. Federally listed species that might occur in the action areas and/or might be affected by the Project

Common Name[a] (Scientific Name)	Federal Status	Preferred Habitat[b]	Critical Habitat Present?[c]	Potentially Suitable Habitat Present?
Suckley's cuckoo bumble bee (*Bombus suckleyi*)	Proposed[d] Endangered	Suckley's cuckoo bumble bee is an obligate parasitic species that is entirely dependent on the workers of host colonies to raise their young. Suckley's cuckoo bumble bee has two confirmed hosts, the western bumble bee (*Bombus occidentalis*) and the Nevada bumble bee (*Bombus nevadensis*); the western bumble bee is the most widely known host. Western bumble bees are known to nest primarily in underground cavities and abandoned animal burrows more often than they do in aboveground structures. Suckley's cuckoo bumble bee has a broad distribution across North America, primarily in the western half of the United States and the Yukon of Canada. It has been found between 6 and 10,500 feet in elevation in various habitat types including prairies, grasslands, meadows, woodlands, forests, croplands, and urban areas from 6 to 10,500 feet in elevation. Suckley's cuckoo bumble bees require a diversity of native floral resources (pollen and nectar) for nutrition (USFWS 2024).	Critical habitat has not been designated for this species.	Potentially suitable habitat exists in the action area for insects. The area offers potential nesting sites and diverse native floral resources for foraging.
Plants				
Ute ladies'-tresses (*Spiranthes diluvialis*)	Threatened	This white-flowered orchid is found below 7,000 feet in elevation in moist to very wet meadows, along streams, in abandoned stream meanders, and near springs, seeps, and lake shores where competition for light, space, water, and other resources is normally kept low by periodic or recent disturbance. Ute ladies'-tresses are also known to occur in seasonally flooded river terraces, subirrigated or spring-fed abandoned stream channels and valleys, and lake shores. Populations have also been observed along irrigation canals, berms, levees, irrigated meadows, excavated gravel pits, roadside barrow pits, reservoirs, and other human-modified wetlands (Fertig and others 2005).	Critical habitat has not been designated for this species.	A total of 5.29 acres of potentially suitable habitat were identified in a pasture in the center of the action area for plants and in wetlands at the south end of the action area for plants.

[a] Source: Species list from USFWS 2025a

[b] Sources: Audubon, no date; Cornell Lab of Ornithology 2019; NatureServe, no date; UDWR, no date; Utah Native Plant Society, no date; and recovery plans found in the USFWS Environmental Conservation Online System (USFWS 2025b)

[c] "Critical habitat" is a term defined in the ESA (ESA Section 3(5)(A)); it refers to specific areas that contain physical or biological features that are essential to the conservation of a species and that might need special management or protection.

[d] A "proposed" species is any species that USFWS has determined is likely to become endangered within the foreseeable future throughout all or a significant portion of its range or is in danger of extinction throughout all or a significant portion of its range, and USFWS has proposed a draft rule to list the species as threatened or endangered. Proposed species are not protected by the take prohibitions of Section 9 of the ESA until the rule to list is finalized. Under Section 7(a)(4) of the ESA, "Federal agencies must confer with the [USFWS] if their action will jeopardize the continued existence of a proposed species" (USFWS 2025c).

Environmental Baseline

Ute Ladies'-tresses Biology

Description

Ute ladies'-tresses are a perennial, terrestrial orchid with erect stems that are 4 to 23 inches tall and arise from tuberous, thickened roots. Basal leaves are narrow, linear, and about 11 inches long, with leaves that become progressively smaller up the stem (Fertig and others 2005; USFWS 1992). Flowers consist of 3 to 15 small, white or ivory-colored flowers clustered into a 1-to-6-inch spike at the top of the stem. The plants typically bloom from early July through late October (Fertig and others 2005). Ute ladies'-tresses are thought to reproduce exclusively by seed. The life cycle of Ute ladies'-tresses consists of four stages: seedling, dormant, vegetative, and reproductive (flowering or fruiting) (Fertig and others 2005).

Status and Trends

Ute ladies'-tresses were listed as threatened under the ESA on January 17, 1992 (57 *Federal Register* 2048). At the time of listing, the species was reported from 10 existing populations and 7 historic locations known in Colorado, Nevada, and Utah. The species was considered vulnerable to extinction from habitat loss and modification, small population size, and low reproductive rate. Since 1992, the known range has expanded to include Idaho, Montana, Nebraska, Washington, and Wyoming and includes nearly 100 different locations (Fertig and others 2005).

At the time of listing, existing populations of Ute ladies'-tresses in Utah were found in Daggett, Duchesne, Garfield, Uintah, Utah, and Wayne Counties, and historical occurrences were known from Salt Lake, Tooele, and Weber Counties (Fertig and others 2005). These populations were dispersed across 10 different watersheds (Duchesne, Escalante, Fremont, Jordan, Lower Green, Lower Weber, Southern Great Salt Lake Desert, Spanish Fork, Upper Green–Flaming Gorge Reservoir, and Utah Lake). Since 1992, a dozen new sites have been documented for this species along the Wasatch Front and in the Uinta Basin. These sites extend the known range of Ute ladies'-tresses into Wasatch County and the Ashley-Brush, Provo, and Strawberry watersheds (Fertig and others 2005).

A draft recovery plan was written for this species in 1995 but has not been finalized (USFWS 1995). USFWS has recommended Ute ladies'-tresses be delisted as of August 2023 (USFWS 2023a).

Habitat

The *Species Status Assessment Report for Ute Ladies'-tresses (Spiranthes diluvialis)* (USFWS 2023b) describes adequate soil moisture, direct sunlight, pollinators, and mycorrhizae as critical needs for Ute ladies'-tresses. Adequate soil moisture can come from surface or subsurface water, but it needs to provide a year-round hydrologic regime that supplies consistent soil moisture without prolonged inundation. Direct sunlight is also a critical need for Ute ladies'-tresses in aboveground life stages. An open canopy, characteristic of early to mid-seral stage successional habitats, is needed to provide direct sunlight. Habitat maintained in an early to mid-seral successional stage is typically achieved by some sort of disturbance such as flooding, livestock grazing, and/or agricultural mowing; however, overly frequent disturbance is detrimental to Ute ladies'-tresses.

Additionally, because Ute ladies'-tresses flower for only a short time and in unpredictable numbers each year, the species needs to be part of a larger flowering plant community to maintain pollination needs. Finally, the presence of soil mycorrhizae is a critical need for Ute ladies'-tresses. Little is known about the appropriate species of fungi needed to form mycorrhizal associations with Ute ladies'-tresses, but they likely depend on specific soil types, soil moisture, and the surrounding plant community.

Ute ladies'-tresses are known to grow in moist meadows associated with perennial stream terraces, alluvial banks, floodplains, and oxbows where vegetation cover is relatively open and not overly dense, overgrown, or overgrazed (Fertig and others 2005; USFWS 1992). A few populations are found in riparian woodlands, but the orchid seems generally intolerant of shade and prefers open, grass- and forb-dominated sites (USFWS 1995). Associated vegetation typically falls into the facultative wetland vegetation classification category (USFWS 2017a). Facultative wetland plants usually grow in wetlands but can grow in non-wetlands (Lichvar and others 2012). Ute ladies'-tresses populations can be found at elevations up to 7,000 feet in Utah (Fertig and others 2005; USFWS 2017a).

Over one-third of all known Ute ladies'-tresses populations are found on perennial stream features including alluvial banks, point bars, floodplains, or oxbows. These sites are subject to periodic floods that rework stream features and create early successional conditions that are beneficial to the establishment and persistence of Ute ladies'-tresses. Most streamside populations are dominated by perennial graminoids and forbs, particularly creeping bentgrass (*Agrostis stolonifera*), quackgrass (*Elymus repens*), mountain rush, and smooth horsetail (*Equisetum laevigatum*) (Fertig and others 2005).

Ute ladies'-tresses are also known to grow on seasonally flooded river terraces, in subirrigated or spring-fed abandoned stream channels and valleys, and on lake shores. Populations have also been observed along irrigation canals, berms, levees, irrigated meadows, excavated gravel pits, roadside barrow pits, reservoirs, and other human-modified wetlands (Fertig and others 2005).

Ute Ladies'-tresses Survey Methodology

Habitat Suitability Surveys

Habitat Evaluation

Geographic information systems (GIS) software was used to develop potentially suitable habitat polygons for Ute ladies'-tresses in the action area for plants. Biologists used tablets equipped with the ESRI data-collection application ArcGIS Field Maps for both field navigation and data entry. ArcGIS Field Maps included data layers for aerial images, the action area for plants, and the USFWS Ute ladies'-tresses range map. All areas where the USFWS range map and the action area for plants overlap were visually inspected to confirm whether these areas displayed characteristics consistent with the Ute ladies'-tresses suitable habitat criteria described above in the section *Habitat* and with the revised version of the 1992 *Interim Survey Requirements for Ute Ladies'-tresses Orchid (Spiranthes diluvialis)* (USFWS 2017a). The following habitat types do not qualify as Ute ladies'-tresses habitat (USFWS 2017a):

- Sites above 7,000 feet in elevation
- Sites that are highly disturbed or modified, such as highway rights-of-way built on compacted soils or rock fill, rock or soil fills with steep back slopes, active construction sites, or landscaped bluegrass lawns
- Upland sites
- Sites entirely inundated by standing water
- Sites composed entirely of heavy clay soils
- Very saline sites such as dense monospecific stands of saltgrass (*Distichlis spicata*)
- Sites composed entirely of dense stands of reed canarygrass (*Phalaris arundinacea*), tamarisk (*Tamarix* species), greasewood (*Sarcobatus vermiculatus*), teasel (*Dipsacus sylvestris*), or common reed (*Phragmites australis*)

Polygons were mapped around areas that met the criteria for potentially suitable habitat for Ute ladies'-tresses. The habitat evaluation was conducted in May and June 2024 and May 2025.

Clearance Surveys

After identifying and mapping the potentially suitable habitat, biologists performed clearance surveys on August 9, 2024, in the habitat that was identified in May and June 2024 to determine whether Ute ladies'-tresses were present or absent in the potentially suitable habitat polygons in the action area for plants.[1] The clearance surveys were conducted according to the *U.S. Fish and Wildlife Service (USFWS) Utah Field Office Guidelines for Conducting and Reporting Botanical Inventories and Monitoring of Federally Listed, Proposed and Candidate Plants* (USFWS 2011) and the revised version of the 1992 *Interim Survey Requirements for Ute Ladies'-tresses Orchid (Spiranthes diluvialis)* (USFWS 2017a).

Botanical surveys must be conducted in a manner that will maximize the likelihood of finding the target species. Many target species are difficult to see except when they are flowering because the flowers make a target species stand out from the surrounding plants. The flowering period for Ute ladies'-

[1] A clearance survey has not been conducted in the habitat that was identified in May 2025.

tresses across its range is early July through late October, but most plants bloom between July 20 and August 31 (USFWS 2017a). Before proceeding with clearance surveys, biologists coordinated with USFWS to confirm that reference populations of Ute ladies'-tresses were flowering or otherwise identifiable.

Systematic belt transects were established every 5 feet to cover 100% of the potentially suitable habitat mapped in the action area for plants.[2] To achieve a 100% visual inspection of the ground surface, biologists conducted the surveys by walking the transects to determine whether Ute ladies'-tresses were present. Field data were collected according to the *U.S. Fish and Wildlife Service (USFWS) Utah Field Office Guidelines for Conducting and Reporting Botanical Inventories and Monitoring of Federally Listed, Proposed and Candidate Plants* (USFWS 2011).

In addition, Ute ladies'-tresses might not flower every year. Therefore, in drainages where Ute ladies'-tresses are known to occur, USFWS recommends that surveys be conducted annually for 3 consecutive years (USFWS 2017a). The survey results presented in this biological assessment are for the first-year survey. Additional surveys are planned for 2025 and 2026.

Results

Habitat Suitability Surveys

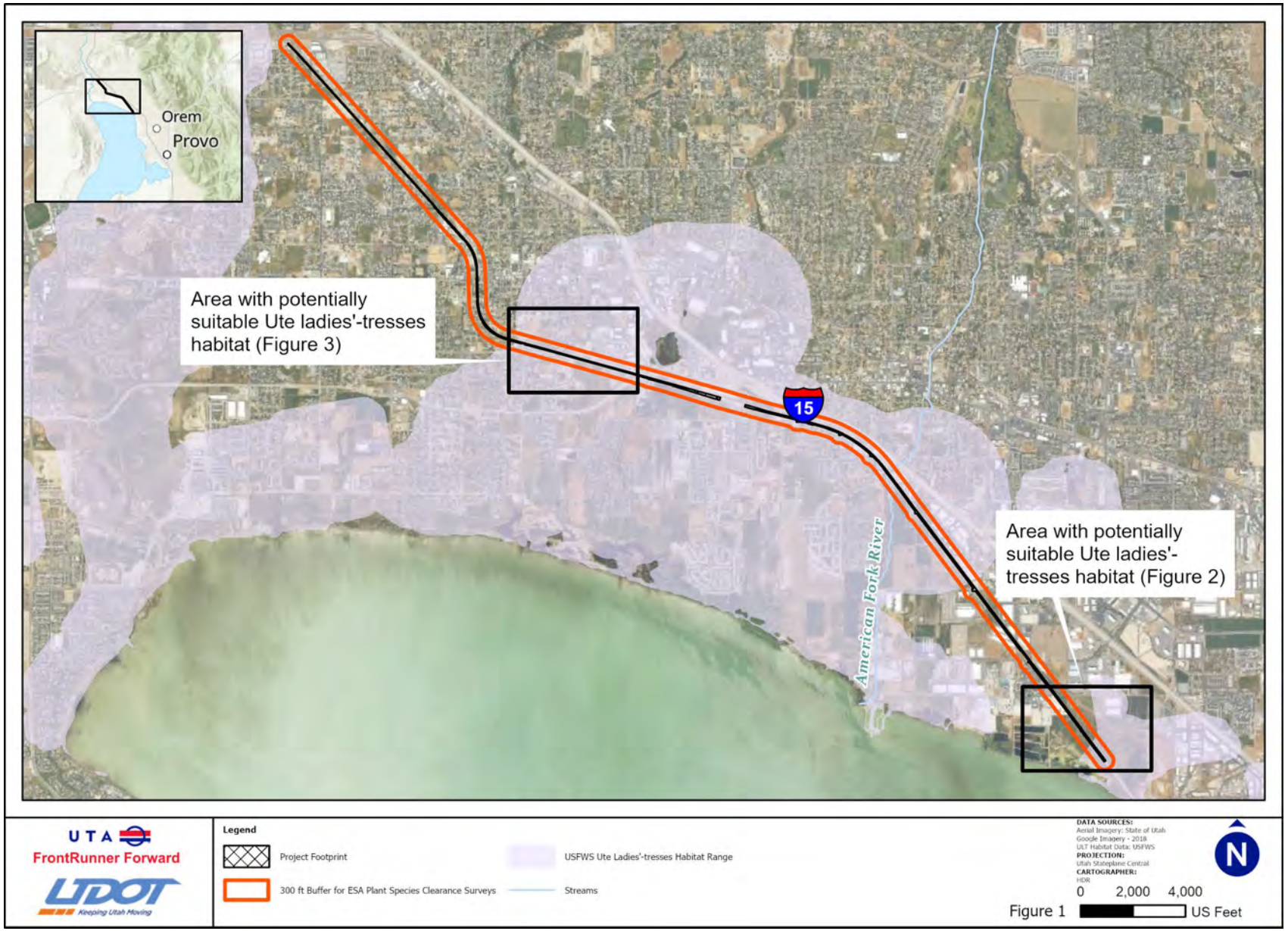
A total of 4.15 acres of potentially suitable Ute ladies'-tresses habitat were identified in May and June 2024 in wet meadow wetlands at the south end of the action area for plants, and a total of 1.14 acres of potentially suitable Ute ladies'-tresses habitat were identified in May 2025 in a pasture in the center of the action area for plants. All of the potentially suitable habitat identified is outside the project footprint. Figure 1 provides an overview map of the action area, Figure 2 provides a map of the potentially suitable Ute ladies'-tresses habitat identified in the wet meadow wetlands at the south end of the action area, and Figure 3 provides a map of the potentially suitable Ute ladies'-tresses habitat identified in the pasture in the center of the action area.

The wetlands identified with potentially suitable Ute ladies'-tresses habitat at the south end of the action area are located on both sides of the existing UTA and UP tracks. These wetlands are dominated by mountain rush and common spikerush (*Eleocharis palustris*), which are two plant species commonly associated with Ute ladies'-tresses across its range in Utah. This habitat receives adequate soil moisture through shallow groundwater, the habitat has an open canopy, and additional flowering plants are present to attract pollinators, all of which are critical needs for Ute ladies'-tresses. Figure 4 and Figure 5 provide representative photos of the mapped potentially suitable habitat identified in these wetlands.

The pasture identified with potentially suitable Ute ladies'-tresses habitat in the center of the action area for plants is located south of the existing UTA tracks and south of 8020 North in Lehi. The part of the pasture identified with potentially suitable Ute ladies'-tresses habitat was dominated by mountain rush, a plant species commonly associated with Ute ladies'-tresses across its range in Utah. This habitat receives adequate soil moisture through shallow groundwater, the habitat has an open canopy, and additional flowering plants are present to attract pollinators, all of which are critical needs for Ute ladies'-tresses. Figure 6 provides a representative photo of the mapped potentially suitable habitat identified in this pasture.

[2] Proposed survey times and transect widths are those specified by USFWS (2011).

Figure 1. Overview map of the action area for plants and the USFWS Ute Ladies'-tresses habitat range



Effects Analysis

Direct Effects

Potentially suitable Ute ladies'-tresses habitat in the action area for plants is located outside the project footprint. Construction activities would be restricted to the footprint; therefore, construction and operation of the Project would not result in clearing, excavating, filling, or altering any potentially suitable Ute ladies'-tresses habitat in this action area. There would be no direct effects on Ute ladies'-tresses plants or potentially suitable habitat.

Indirect Effects

A total of 5.29 acres of potentially suitable Ute ladies'-tresses habitat were identified in the action area for plants but outside the project footprint. Construction could affect Ute ladies'-tresses plants or potentially suitable habitat as a result of fugitive dust emissions and the introduction and/or spread of noxious and invasive weeds.

The operation of construction equipment would generate fugitive dust from loose soil. Accumulation of fugitive dust on Ute ladies'-tresses plants or potentially suitable habitat near the project footprint could restrict plant growth by inhibiting photosynthesis. However, any potential for dust-induced effects would be temporary and would be minimized by implementing fugitive-dust-control measures during construction.

Construction would remove vegetation and could introduce noxious and invasive weeds into the surrounding areas. Noxious and invasive weeds introduced or spread during construction activities would compete with native vegetation, including Ute ladies'-tresses plants, resulting in altered vegetation structure, a reduction in plant species richness, and an overall decline in potentially suitable habitat. The potential for introducing or spreading invasive species would be minimized during construction by implementing the mitigation measures specified in the section *Conservation Measures*.

Drainage work would start near the 1.14 acres of potentially suitable Ute ladies'-tresses habitat that were identified in a pasture in the center of the action area for plants in December 2026, before 3 years of clearance surveys would be completed for this area. However, the drainage work would be confined to the existing drainage area between the existing UTA tracks and 8020 North in Lehi, and the conservation measures described on pages 1 and 2 would be applied.

Interrelated and Interdependent Effects

Interrelated activities are those that are part of a proposed project and depend on the proposed action for their justification, and interdependent activities are those that have no independent utility apart from a proposed project. There are no interrelated or interdependent actions associated with this project; therefore, there would be no anticipated interrelated or interdependent effects.

Cumulative Effects

The ESA regulations define *cumulative effects* as those effects of future state or private activities, not involving federal activities, that are reasonably certain to occur within the action area of the federal action subject to consultation (50 CFR Section 402.02). No state or private activities that would contribute to cumulative effects have been identified for this project.

Determination of Effects Findings

All construction and operations activities would be restricted to the project footprint and would not result in any direct impacts to potentially suitable Ute ladies'-tresses habitat. Potentially suitable habitat adjacent to the project footprint will be flagged and protected. Construction crews will be provided information about the importance of restricting all work activities to the project footprint and existing roadway and will be instructed that no disturbance can occur outside of that, nor in areas flagged for protection.

Additionally, mitigation measures have been developed to minimize potential indirect effects to Ute ladies'-tresses plants and potentially suitable habitat. Any indirect effects from implementing the Project would be considered insignificant and discountable, and there are no reasonably foreseeable interrelated, interdependent, or cumulative effects of the Project.

Based on surveys completed to date and the evaluation of direct, indirect, interrelated, interdependent, and cumulative effects presented in this biological assessment, FTA has determined that the Project **may affect, but is not likely to adversely affect** Ute ladies'-tresses.

UTA and UDOT plan to complete additional clearance surveys for Ute ladies'-tresses during the 2025, 2026, and 2027 growing seasons. If plants are found before constructing the Project, FTA will contact USFWS to determine the next course of action for ESA Section 7 compliance.

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2024 Suckley's Cuckoo Bumble Bee (*Bombus suckleyi*) Species Status Assessment. Version 1.0. https://iris.fws.gov/APPS/ServCat/DownloadFile/263505. August.

[USFWS] U.S. Fish and Wildlife Service (*continued*)

2025a List of threatened and endangered species for the North of American Fork Double Track Reevaluation. Species list provided by the Utah Ecological Services Field Office. February 19.

2025b Environmental Conservation Online System. FWS-Listed U.S. Species by Taxonomic Group. https://ecos.fws.gov/ecp/report/species-listings-by-tax-group-totals.

2025c IPaC Information for Planning and Consultation. Listing Status. https://ipac.ecosphere.fws.gov/status/list.

[UDWR] Utah Division of Wildlife Resources

No date Utah Species Field Guide. https://fieldguide.wildlife.utah.gov.

[USGS] U.S. Geological Survey

2025 Science in Your Watershed. USGS Links for HUC 16020201 - Utah Lake. Accessed February 18, 2025.

[UTA] Utah Transit Authority

2025 FrontRunner Forward Strategic Double Track Recommended Service Alternative Overview – A Planning and Environmental Linkage Study (PEL).

Utah Native Plant Society

No date Utah Rare Plant Guide. https://www.utahrareplants.org/rpg_species.html.

Western Association of Fish and Wildlife Agencies

2019 Western Monarch Butterfly Conservation Plan, 2019–2069. Version 1.0.

Woods, A.J., D.A. Lammers, S.A. Bryce, J.M. Omernik, R.L. Denton, M. Domeier, and J.A. Comstock

2001 Ecoregions of Utah (color poster with map, descriptive text, summary tables, and photographs): Reston, Virginia, U.S. Geological Survey (map scale 1:1,175,000). https://store.usgs.gov/assets/MOD/StoreFiles/Ecoregion/112579_ut_front.pdf.

Appendix A

IPaC Report

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Utah Ecological Services Field Office
2369 West Orton Circle, Suite 50
West Valley City, UT 84119-7603
Phone: (801) 975-3330 Fax: (801) 975-3331

In Reply Refer To: 06/18/2025 18:51:06 UTC
Project Code: 2025-0111318
Project Name: UTA FrontRunner American Fork

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed, and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological

evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf

Migratory Birds: In addition to responsibilities to protect threatened and endangered species under the Endangered Species Act (ESA), there are additional responsibilities under the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA) to protect native birds from project-related impacts. Any activity resulting in take of migratory birds, including eagles, is prohibited unless otherwise permitted by the U.S. Fish and Wildlife Service (50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)). For more information regarding these Acts, see https://www.fws.gov/program/migratory-bird-permit/what-we-do.

It is the responsibility of the project proponent to comply with these Acts by identifying potential impacts to migratory birds and eagles within applicable NEPA documents (when there is a federal nexus) or a Bird/Eagle Conservation Plan (when there is no federal nexus). Proponents should implement conservation measures to avoid or minimize the production of project-related stressors or minimize the exposure of birds and their resources to the project-related stressors. For more information on avian stressors and recommended conservation measures, see https://www.fws.gov/library/collections/threats-birds.

In addition to MBTA and BGEPA, Executive Order 13186: *Responsibilities of Federal Agencies to Protect Migratory Birds*, obligates all Federal agencies that engage in or authorize activities that might affect migratory birds, to minimize those effects and encourage conservation measures that will improve bird populations. Executive Order 13186 provides for the protection of both migratory birds and migratory bird habitat. For information regarding the implementation of Executive Order 13186, please visit https://www.fws.gov/partner/council-conservation-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Utah Ecological Services Field Office
2369 West Orton Circle, Suite 50
West Valley City, UT 84119-7603
(801) 975-3330

PROJECT SUMMARY

Project Code: 2025-0111318
Project Name: UTA FrontRunner American Fork
Project Type: Railroad - Maintenance/Modification
Project Description: UTA FrontRunner American Fork
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@40.35607495,-111.78795397440882,14z

Counties: Utah County, Utah

ENDANGERED SPECIES ACT SPECIES

There is a total of 5 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

BIRDS

NAME	STATUS
Yellow-billed Cuckoo *Coccyzus americanus* Population: Western U.S. DPS There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

FISHES

NAME	STATUS
June Sucker *Chasmistes liorus* There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/4133	Threatened

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9743	Proposed Threatened
Suckley's Cuckoo Bumble Bee *Bombus suckleyi* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10885	Proposed Endangered

FLOWERING PLANTS

NAME	STATUS
Ute Ladies'-tresses *Spiranthes diluvialis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/2159	Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

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1. The Bald and Golden Eagle Protection Act of 1940.
2. The Migratory Birds Treaty Act of 1918.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are Bald Eagles and/or Golden Eagles in your project area.

Measures for Proactively Minimizing Eagle Impacts
For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the National Bald Eagle Management Guidelines. You may employ the timing and activity-specific distance recommendations in this document when designing your project/ activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to Bald Eagle Nesting and Sensitivity to Human Activity.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

If disturbance or take of eagles cannot be avoided, an incidental take permit may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the Do I Need A Permit Tool. For assistance making this determination for golden eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

Ensure Your Eagle List is Accurate and Complete
If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information

on Migratory Birds and Eagles, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

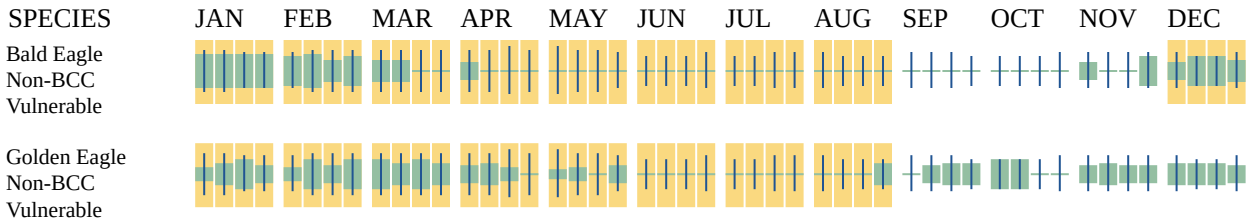
Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

■ probability of presence ■ breeding season | survey effort – no data



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

MIGRATORY BIRDS

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

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1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
American Avocet *Recurvirostra americana* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/11927	Breeds Apr 21 to Aug 10

NAME	BREEDING SEASON
American White Pelican *pelecanus erythrorhynchos* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/6886	Breeds Apr 1 to Aug 31
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31
Black Rosy-finch *Leucosticte atrata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9460	Breeds Jun 15 to Aug 31
Black Tern *Chlidonias niger surinamenisis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3093	Breeds May 15 to Aug 20
Broad-tailed Hummingbird *Selasphorus platycercus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/11935	Breeds May 25 to Aug 21
California Gull *Larus californicus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10955	Breeds Mar 1 to Jul 31
Calliope Hummingbird *Selasphorus calliope* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9526	Breeds May 1 to Aug 15
Cassin's Finch *Haemorhous cassinii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9462	Breeds May 15 to Jul 15
Clark's Grebe *Aechmophorus clarkii* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10575	Breeds Jun 1 to Aug 31
Evening Grosbeak *Coccothraustes vespertinus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9465	Breeds May 15 to Aug 10

NAME	BREEDING SEASON
Forster's Tern *Sterna forsteri* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/11953	Breeds Mar 1 to Aug 15
Franklin's Gull *Leucophaeus pipixcan* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10567	Breeds May 1 to Jul 31
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Jan 1 to Aug 31
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Lewis's Woodpecker *Melanerpes lewis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9408	Breeds Apr 20 to Sep 30
Long-eared Owl *asio otus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3631	Breeds Mar 1 to Jul 15
Marbled Godwit *Limosa fedoa* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9481	Breeds elsewhere
Northern Harrier *Circus hudsonius* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8350	Breeds Apr 1 to Sep 15
Olive-sided Flycatcher *Contopus cooperi* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3914	Breeds May 20 to Aug 31
Pectoral Sandpiper *Calidris melanotos* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9561	Breeds elsewhere

NAME	BREEDING SEASON
Pinyon Jay *Gymnorhinus cyanocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9420	Breeds Feb 15 to Jul 15
Red Knot *Calidris canutus roselaari* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8880	Breeds elsewhere
Rufous Hummingbird *Selasphorus rufus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/8002	Breeds Apr 15 to Jul 15
Sage Thrasher *Oreoscoptes montanus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/9433	Breeds Apr 15 to Aug 10
Virginia's Warbler *Leiothlypis virginiae* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9441	Breeds May 1 to Jul 31
Western Grebe *aechmophorus occidentalis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/6743	Breeds Jun 1 to Aug 31
Willet *Tringa semipalmata* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10669	Breeds Apr 20 to Aug 5

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

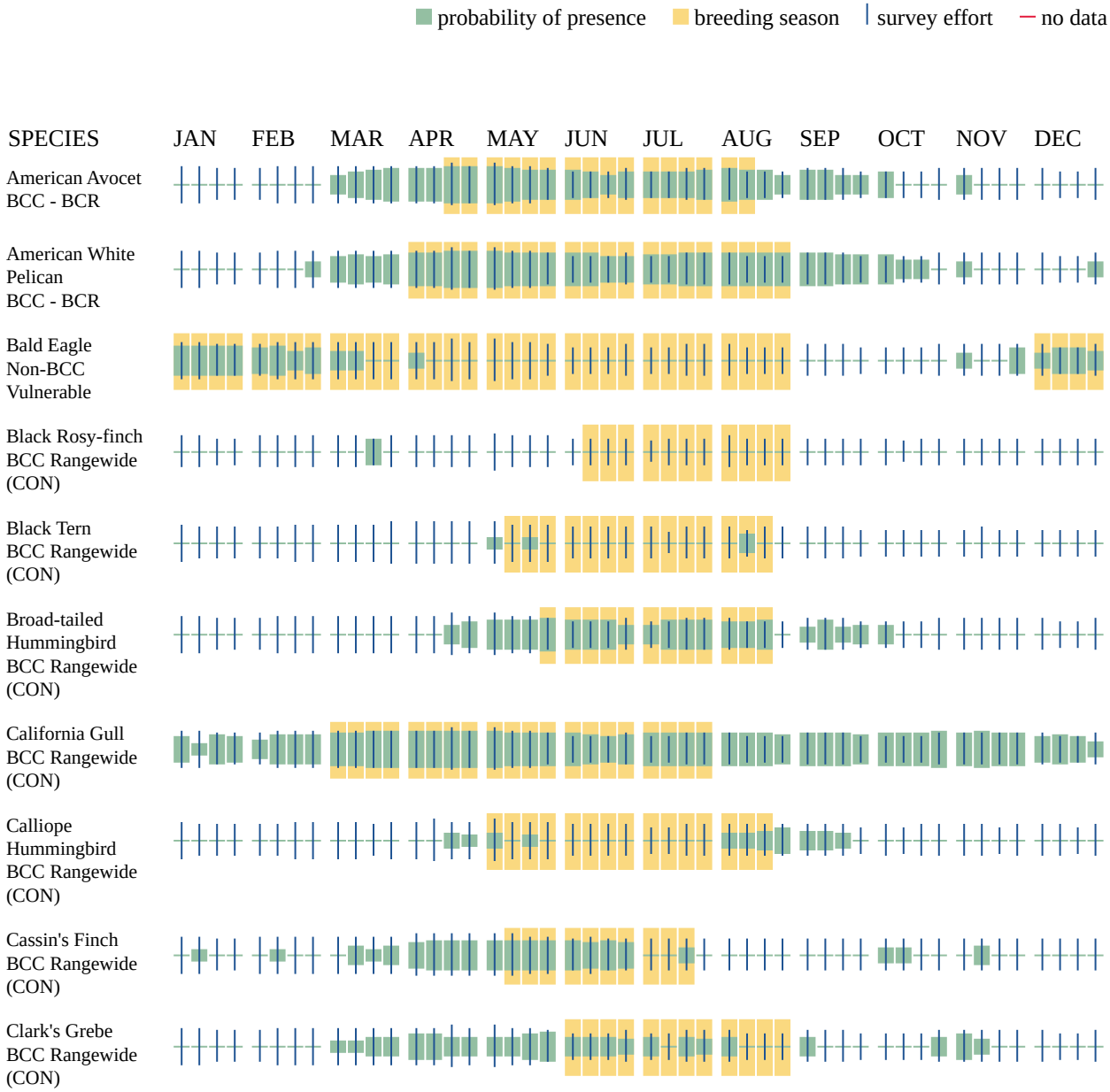
Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

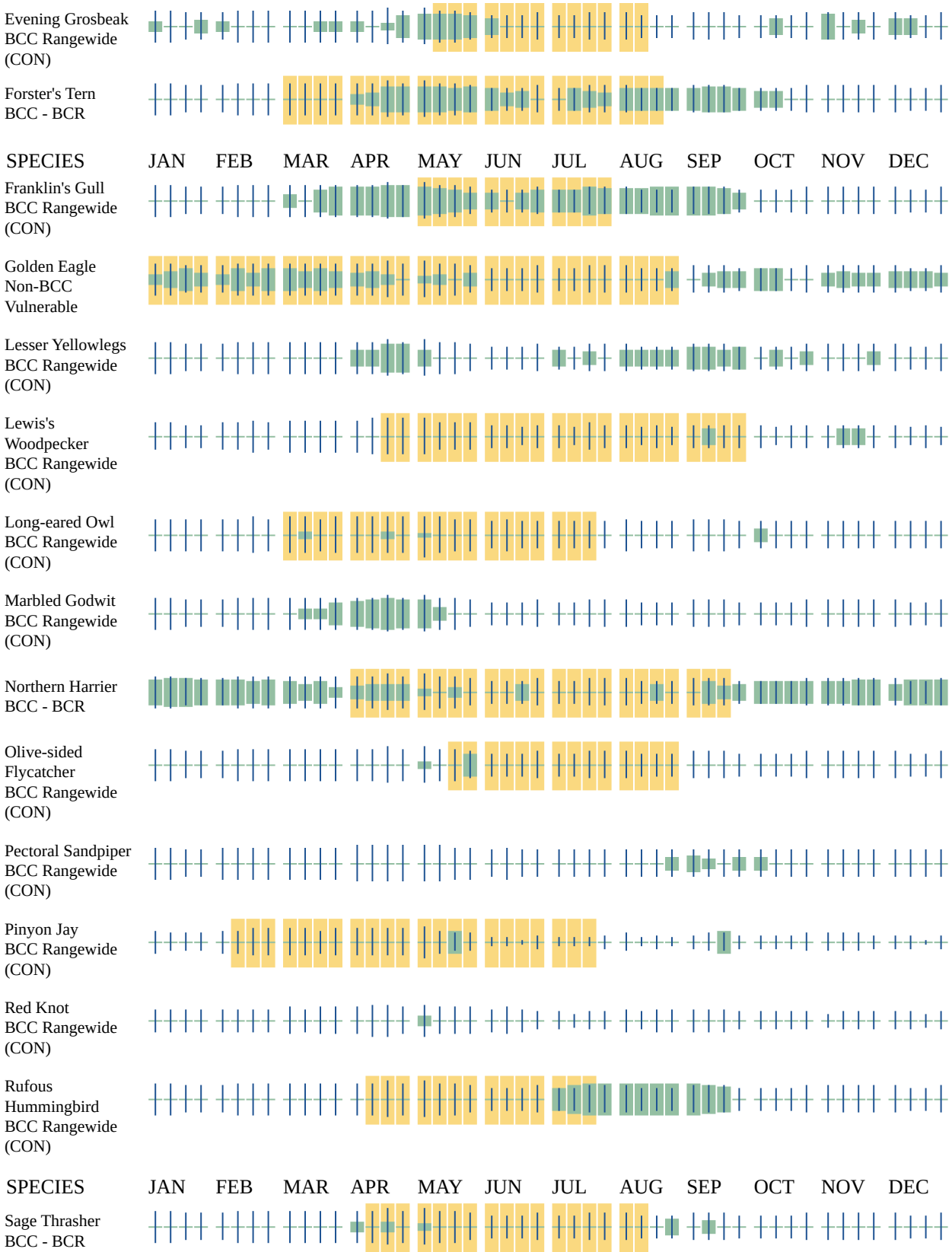
Breeding Season (■)

Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.




Evening Grosbeak
BCC Rangewide
(CON)
Forster's Tern
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SPECIES
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Franklin's Gull
BCC Rangewide
(CON)
Golden Eagle
Non-BCC
Vulnerable
Lesser Yellowlegs
BCC Rangewide
(CON)
Lewis's
Woodpecker
BCC Rangewide
(CON)
Long-eared Owl
BCC Rangewide
(CON)
Marbled Godwit
BCC Rangewide
(CON)
Northern Harrier
BCC - BCR
Olive-sided
Flycatcher
BCC Rangewide
(CON)
Pectoral Sandpiper
BCC Rangewide
(CON)
Pinyon Jay
BCC Rangewide
(CON)
Red Knot
BCC Rangewide
(CON)
Rufous
Hummingbird
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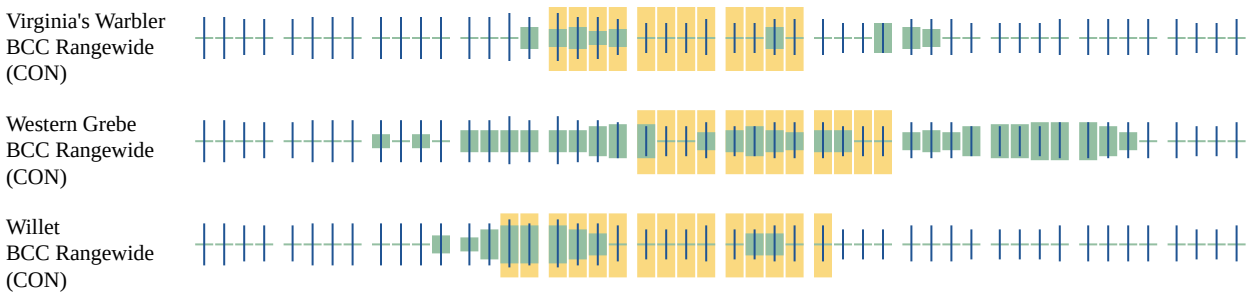
BCC - BCR



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

IPAC USER CONTACT INFORMATION

Agency: Utah Department of Transportation
Name: Amy Croft
Address: 2825 E Cottonwood Parkway, Suite 200
City: Cottonwood Heights
State: UT
Zip: 84121
Email amy.croft@hdrinc.com
Phone: 8017437832

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Federal Transit Administration

Appendix B

UTA FrontRunner American Fork River Bridge Inspection Memo

Memo

Date:	Tuesday, November 12, 2024
Project:	FrontRunner Point Improvements
To:	UTA/UDOT
From:	Nash G. Wilson, P.E. (HDR)
Subject:	American Fork River Bridge (MP S31.57)

On June 23, 2024, HDR performed a routine bridge inspection on the American Fork River Bridge on the FrontRunner South line located at milepost 31.57. This bridge carries UTA's commuter rail over the American Fork River near 10 West 450 South in American Fork.

Figure 1 – North Abutment

The existing north and south abutments located west of the structure were constructed to accommodate a future rail line (Figure 1). These were inspected in addition to the in-service structure and the following defects were noted:

- Vertical cracking up to 0.01" wide (Figure 2)
- 9" Tall x 13" Wide shallow spall in Northwest Wingwall (Figure 3)

Figure 2 – Narrow Vertical Cracking in North Abutment

Figure 3 – Shallow Spall in Northwest Wingwall

These defects are considered minor and do not diminish the as-built capacity of the substructure. Work to be performed on this bridge is not anticipated to disturb the American Fork River and potential June Sucker habitat. The minor defect repair work can be accessed without entering the American Fork River and equipment access for superstructure work will be from above the river. See Figures 4 and 5 for potential site access.

Figure 4 - Potential Crane and Girder Staging Area

Figure 5 - Potential Equipment Access