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)

July 24, 2024

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 Approval for the **FrontRunner Forward Program – South of Draper Double Track Project**

Dear Mr. Braceras:

Thank you for providing the environmental documentation for the **FrontRunner Forward Program – South of Draper Double Track** project. The project is planning to utilize Federal Transit Administration (FTA) Capital Investment Grants (CIG) Program funding to add 2.8 miles of new double track to the existing FrontRunner commuter rail system between Vista Station Boulevard bridge and 1300 West in the Cities of Bluffdale and Draper, Salt Lake County, Utah.

FTA funding is requested to design and construct new double track along the existing commuter rail system. The existing double track section at Draper Station is about 1.0 mile long, and its primary use is allowing trains traveling in opposite directions to pass each other. The Project would lengthen the existing double track section by approximately 2.8 miles, moving the southern terminus of the section from the Vista Station Boulevard bridge to 1300 West. North of Bangerter Highway, the anticipated track work consists of constructing a new FrontRunner mainline (ML) track east of the existing mainline track, shifting the existing FrontRunner ML track where necessary, removing one existing turnout, constructing one new turnout, constructing a new bridge over Bangerter Highway and 14600 South, demolishing an existing retaining wall and constructing new retaining walls on the west side of the corridor on the north and south approaches to the Bangerter Highway bridge as well as in other sections to minimize property impacts and right-of-way (ROW) acquisition, extending the Jordan and Salt Lake City Canal culvert under the Bangerter Highway bridge's south approach, modifying an existing private access road at-grade crossing, relocating utilities, and widening the existing trackbed. South of Bangerter Highway, the existing UTA ML would remain in its current location, and a new track would be constructed west of the existing mainline.

Based on the findings of the Categorical Exclusion (CE) for the project, FTA understands the following mitigation measures will be implemented:

- All acquisition and construction easements will be conducted in accordance with the provisions in the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 USC §61 and the implementing regulation 49 CFR 24).
- [redacted]

- [redacted]
- To minimize impacts to the Galena–Soónkahni Preserve during construction, the contractor will control fugitive dust and stormwater runoff, and follow all local noise ordinances. The contractor will develop a plan to minimize the spread of invasive species, revegetate areas on the preserve disturbed by the project, and monitor that area for one year to ensure the area meets a 70% desirable species threshold. A temporary construction fence will be installed to mark the approved work area in and near the preserve, and construction personnel will be trained to understand that no work or equipment movement is allowed beyond the fencing. Locations outside the preserve will be used for construction equipment staging and personnel parking. All areas where temporary construction easements are needed will be restored to their original condition.
- A Phase I Environmental Site Assessment will be conducted in accordance with ASTM standards for any property acquisitions, and any recommended Phase II Environmental Site Assessments will be conducted, as necessary.
- Hazardous materials handling and disposal plans will be developed which will include coordination with state and federal agencies with jurisdiction.
- A soil and groundwater management plan will be developed prior to construction.
- A floodplain development permit will be obtained from Draper City for impacts to the Zone AE floodplain (which includes a floodway).
- A flood-control permit will be obtained from Salt Lake County for actions inside or within 20 feet of the Corner Canyon Creek channel and the Jordan and Salt Lake City Canal.
- If existing stormwater infrastructure elements need to be relocated, they will be replaced in kind following the applicable drainage design criteria as stated in UTA's Commuter Rail Design Criteria (2015).
- Coverage under Utah's Construction General Permit UTRC00000 (CGP) will be applied for as required for the project. In compliance with this permit, a stormwater pollution prevention plan (SWPPP) will be developed for the construction phase of the project.
- Coverage for construction dewatering under Utah's General Permit for Construction Dewatering or Hydrostatic Testing (UTG070000) or a Ground Water Discharge Permit pursuant to state groundwater protection rules (Utah Administrative Code R317-6) will be obtained as required.
- Compliance with US Army Corps of Engineers Nationwide Permit 14 for Linear Transportation Projects (effective date February 25, 2022).
- Any unavoidable grubbing or tree removal will occur outside of migratory bird nesting season, April 15 through July 31, in order to avoid impacts to migratory birds. If clearing and grubbing does need to occur during nesting season, a pre-construction survey will be conducted by a qualified biologist to determine if there are any occupied nests in the area of disturbance. Construction activities will avoid disturbance to any occupied nests.
- All utility relocations will be coordinated with the utility owner during the final design of the project to ensure the safety and continuity of utility service during construction.
- Local noise ordinances will be complied with during construction.
- Work will be scheduled to minimize impacts to the passengers and roadway traffic (nights, weekends, holidays). If necessary, bus bridges will be provided for continuation of service.
- Work will be scheduled to minimize impacts to freight through construction phasing and shutdowns in coordination with UP (nights, weekends, and/or holidays).
- Traffic control plans will be developed to obtain proper permitting from the local roadway jurisdiction for temporary lane closures, roadway closures, and detours.
- Mitigation to control fugitive dust and stormwater runoff will be implementation during construction.
- A public communication plan will be developed to coordinate construction activities with local residents, stakeholders, and businesses that could be affected by construction. Any changes to transit service due to construction will be communicated to riders.
- Where private grade crossings would be relocated or new grade crossings installed, the gravel base roadway will be regraded to provide a smooth, safe profile over the track.
- Any required state and local permitting and compliance requirements for the project will be adhered to and/or obtained.

Based on the documentation provided by your office, FTA concurs with the finding that the proposed project meets the definition of a CE pursuant to 23 CFR §771.118(c)(8). 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,

CINDY ELISE TERWILLIGER

Digitally signed by CINDY ELISE TERWILLIGER
Date: 2024.07.24 17:16:56 -06'00'

Cindy Terwilliger
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

FTA REGION 8
CATEGORICAL EXCLUSION WORKSHEET

FTA Region 8 provides this Categorical Exclusion (CE) worksheet to help project sponsors (recipients) comply with the National Environmental Policy Act (NEPA). The information collected will help to better define the project scope for environmental analysis, identify potential impacts, and determine if other environmental laws and permits apply. If sufficiently completed, it can enable FTA to determine that the project does not result in significant environmental impacts and meets the criteria for a CE. All activities and projects to be supported with federal funds require a NEPA environmental finding as a prerequisite to award of funds.

This CE Worksheet should be completed for C-List projects involving construction and *all* D-List projects. **If a C-List project does not involve construction, you do not need to complete this worksheet.** All parts below must be completed prior to FTA review. Compliance with other environmental requirements must also be completed before FTA will issue a determination that the project meets the criteria for a CE. Certain project activities may not begin until this process is complete. For guidance on completing this worksheet, please refer to the CE Worksheet Instructions.

Prior to transmitting a grant application, complete and submit this CE Worksheet using the CE Worksheet Instructions allowing sufficient time for FTA review, especially if other environmental laws or permits apply. For assistance, please contact your assigned FTA Region 8 Pre-Award Manager, or you may call the office at 303-362-2400. To "check" a box, double-click on the box and select "checked" under default value.

PART A: PROJECT INFORMATION

Project Sponsor *Utah Transit Authority*	FTA Application No/FAIN *CIG*
Project Contact (include mailing address, email address and phone number) *Janelle Robertson, Project Manager* *Utah Transit Authority* *669 West 200 South* *Salt Lake City, UT 84101* *jarobertson@rideuta.com* *801.237.1951*	
Project Title *South of Draper Double Track Project – FrontRunner Forward Program*	

Project Description

The Utah Transit Authority (UTA) in coordination with the Utah Department of Transportation (UDOT) is proposing to lengthen and shift the existing Draper Station area double track section of its FrontRunner commuter rail system in the cities of Bluffdale and Draper in southern Salt Lake County, Utah, to create a true double track alignment through this area. See the Vicinity Map in Attachment A.1, Vicinity Map for the South of Draper Double Track Project.

The Project is one of nine double track projects being proposed as part of long-term improvements under the FrontRunner Forward program; however, it has independent utility and can be constructed with or without the other projects. Further detail 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) (May 2023). The Project is located between 0.75 and 1 mile west of Interstate 15 (I-15) in Bluffdale and Draper in the southern portion of Salt Lake County. The Project extends from UTA milepost S 20.5 north to UTA milepost S 17.2, a distance of about 3.3 miles to encompass 2.8 miles of new double track and track tie-in.

The existing double track section at Draper Station is about 1.0 mile long, and its primary use is allowing trains traveling in opposite directions to pass each other. The Project would lengthen the existing double track section by approximately 2.8 miles, moving the southern terminus of the section from the Vista Station Boulevard bridge to 1300 West. North of Bangerter Highway, the anticipated track work consists of constructing a new FrontRunner mainline (ML) track east of the existing mainline track, shifting the existing FrontRunner ML track where necessary, removing one existing turnout, constructing one new turnout, constructing a new bridge over Bangerter Highway and 14600 South, demolishing an existing retaining wall and constructing new retaining walls on the west side of the corridor on the north and south approaches to the Bangerter Highway bridge as well as in other sections to minimize property impacts and right-of-way (ROW) acquisition, extending the Jordan and Salt Lake City Canal culvert under the Bangerter Highway bridge's south approach, modifying an existing private access road at-grade crossing, relocating utilities, and widening the existing trackbed. South of Bangerter Highway, the existing UTA ML would remain in its current location, and a new track would be constructed west of the existing mainline. Preliminary track design modeling shows that the estimated depth of excavation from the top of the existing ground to the bottom of the proposed subballast or track ditch for proposed trackwork construction ranges from 2 to 5 feet. The estimated depth of excavation for walls, utilities, and the bridge over Bangerter Highway ranges from 3 to 10 feet.

UTA ML Number (No.) 2 would be constructed with 15-foot track spacing from UTA ML No. 1. Generally, south of the Bangerter Highway grade-separated crossing, a new UTA ML No. 2 would be constructed west of the existing UTA ML No. 1 within the existing UTA ROW except for a small ROW acquisition required just south of the existing 14600 South grade-separated crossing. North of the Bangerter Highway grade-separated crossing, a new UTA ML No. 1 would be constructed east of the existing track, and the existing UTA ML No. 1 would become UTA ML No. 2. Currently, the existing UTA ML No. 1 is designed for 79 miles per hour (mph) through the entire project extent. The curves and spirals for this section would also be designed for a 79-mph design speed except for the turnout curve at the southern terminus of the section.

The existing private access road crossing just south of Bangerter Highway would be modified to accommodate the proposed UTA track, and the Jordan and Salt Lake City Canal culvert under the Bangerter Highway bridge's south approach would be extended. New retaining walls would be constructed at the proposed west UTA ROW line on the north and south approaches to the Bangerter Highway bridge as well as in other sections to minimize property impacts and ROW acquisition.

The existing turnout at the south end of the existing double track section at Draper Station would be removed, and a new turnout would be installed at the proposed southern terminus of the section. Required utility relocations would include relocating the existing UTA communications and signal duct bank from the proposed southern terminus to the Bangerter Highway bridge, relocating approximately 1,200 feet of overhead electric distribution line, and extending the casing for a water line undercrossing. See the conceptual design plans in Attachment A.2, Conceptual Design Plans for the South of Draper Double Track Project.

Throughout this worksheet and associated technical reports, the term "project extent" is used to describe the general study location and limits of the Project. The term "evaluation area" is used to describe the area within which a specific resource was evaluated for potential impacts due to operation and construction of the Project. In all cases, the evaluation area is defined under each applicable resource discussion. In the case of cultural, historic, and archaeological resources, the "area of potential effects" serves as the evaluation area. The term "design footprint" is used to describe the current preliminary 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 any anticipated ROW and temporary easement acquisition.

Project Location (Include physical address)

The Project is a linear project along the existing FrontRunner corridor from UTA milepost S 20.5 north to UTA milepost S 17.2 in Bluffdale and Draper in southern Salt Lake County, Utah. See the Vicinity Map in Attachment A.1, Vicinity Map for the South of Draper Double Track Project.

Is this project included in the current approved TIP and/or STIP?

☒ YES – TIP/STIP ID/Page No.: ☐ NO – When will it be added?

The FrontRunner Strategic Double Track program, which includes this project, is in the 2024–2029 STIP, PIN 20253.

Is this a re-evaluation of a project previously evaluated/approved or currently under construction?

☒ NO

☐ YES

PART B: PROPOSED CATEGORICAL EXCLUSION DETERMINATION

Select the CE category under 23 CFR 771.118(c) or (d) that best describes the proposed project (select only one). FHWA and FRA CEs also may be used, if applicable. CE descriptions are included in the CE Worksheet Instructions.

CE (e.g., C-9 or D-6): *FTA C-8: Maintenance, rehabilitation, and reconstruction of facilities that occupy substantially the same geographic footprint and do not result in a change in functional use, such as: improvements to bridges, tunnels, storage yards, buildings, stations, and terminals; construction of platform extensions, passing track, and retaining walls; and improvements to tracks and railbeds.*

PART C: ENVIRONMENTAL EVALUATION

For each of the following resources, identify, evaluate and describe any adverse impacts to the built (including social and economic) and natural environment resulting from the proposed project. Select NO, if a resource is not present on or near the proposed project area, or if there are no adverse impacts. Select YES, if a resource is present and will be impacted; and succinctly describe the impacts, any mitigation necessary to minimize impacts, and any permits required. Please explain your answer. The level of detail you provide should be commensurate with the complexity of the project. For guidance on how to evaluate each resource for impacts, see the CE Worksheet Instructions. If, through your evaluation, you believe the project *will* result in significant environmental impacts or you aren't sure, and/or it is likely to generate substantial controversy on environmental grounds, contact FTA Region 8.

1. Land Use and Zoning

Is the proposed project incompatible or inconsistent with existing or future land use and/or zoning in the project area? Describe the surrounding land use and zoning. Provide a map with project location and surrounding land uses.

☒ NO

☐ YES

The Project is located in Draper and Bluffdale in Salt Lake County in a developed area with a transit station district, commercial land uses, a local road network and residential development, light industry and manufacturing uses, other mixed uses, and a 250-acre nature preserve in the immediate vicinity of the project extent.

The Project would be compatible with existing land use and zoning because the proposed facilities (track and related infrastructure) would be constructed largely in or immediately adjacent to the existing commuter rail corridor. The Project would require about 17.10 acres of ROW that consists of properties mostly in the track areas already owned by either the Union Pacific Railroad (UP) or UTA. Permanent property acquisition for the Project in the UP/UTA rail corridor would not convert land to a different use because this land is already used for transportation.

A small amount of additional ROW would be required from commercial areas that back to the tracks and from open space in the Galena–Soónkahni Preserve, which is immediately adjacent to the FrontRunner corridor. Based on a review of aerial maps, all of the buildings in the commercial areas have access via FrontRunner Boulevard, and no commercial access would be affected. The project team anticipates that the rear areas of the commercial buildings are used primarily for parking and storage and that the access to and functionality of the buildings would not be affected by these small strip takes of property that would be converted from commercial to transportation use (see Section 2, Land/Property Acquisition, Relocation, Leases and Easements, for more information).

The small strip (0.23 acre) of permanent ROW acquisition would be from the Galena–Soónkahni Preserve. The preserve is owned and managed by the Utah Department of Forestry, Fire and State Lands (FFSL) with a conservation easement held by Utah Open Lands (see Section 6, Park and Recreation Resources).

See the Land Use and Zoning Memorandum in Attachment B.1, Land Use and Zoning.

2. Land/Property Acquisition, Relocation, Leases and Easements

Does the proposed project require any land/property acquisition, easement or permit? Note: for acquisitions over $1 million, FTA concurrence with the property's valuation is also required (see Circular 5010.E). Explain.

☐ NO

☒ YES

Permanent property acquisition would be needed for the Project, and temporary construction easements would be required for grading and access. Constructing the new track north of Bangerter Highway would require property acquisition from Union Pacific Railroad (UP) within the UP/UTA corridor and property from the Utah Division of Forestry, Fire and State Lands (FFSL) west of the rail corridor. The Project would require about 17.10 acres of ROW from 23 nonresidential parcels consisting of properties within the track areas owned by either UP or UTA, commercial areas that back to the tracks, and open space. Based on a review of aerial maps, all of the buildings in the commercial areas are provided access via FrontRunner Boulevard, and no commercial access would be affected. The project team anticipates that the rear areas of the commercial buildings are used primarily for parking and storage and that the access to and functionality of the buildings would not be affected by these small strip takes of property. The Project would also require a small strip of ROW acquisition from the Galena–Soónkahni Preserve, which is owned and managed by FFSL with a conservation easement held by Utah Open Lands (UOL). [redacted]

At this preliminary level of design, the project team does not yet know exactly where temporary construction easements would be needed. However, the design footprint used to assess impacts to resources includes the anticipated limits of physical disturbance, including space for potential temporary construction workspaces and the limits of any anticipated ROW and temporary easement acquisition. The actual locations of temporary construction easements would be determined during final design. UDOT will compensate the property owners for the temporary use of the property, and the restored property will be returned to the owner when the use of the property is no longer needed.

UDOT will conduct acquisitions in accordance with the provisions in the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 United States Code [USC] Section 61 and the implementing regulation 49 Code of Federal Regulations [CFR] Part 24). This process will ensure just compensation for all properties and will minimize any impacts on the current owners. ROW acquisition from the Galena–Soónkahni Preserve would follow the provisions of the conservation easement.

See Attachment B.2, Land/Property Acquisition, Relocation, Leases, and Easements.

3. Environmental Justice

Is the proposed project located in a neighborhood containing minority or low-income residents or businesses? If yes, will it result in disproportionately high and adverse impacts? Explain.

☐ NO

☒ YES

Although there are low-income and minority populations in the environmental justice evaluation area, the Project would not directly affect these populations, and the project team does not expect the Project to result in a disproportionately high and adverse effect on environmental justice populations. The Project would benefit the population of surrounding neighborhoods, including low-income and minority populations, by improving FrontRunner transit service capacity and reliability.

See the Environmental Justice Evaluation Memorandum in Attachment B.3, Environmental Justice.

In addition, a corridor-wide environmental justice analysis has been conducted to evaluate potential impacts of the future anticipated service increase along the FrontRunner corridor. The corridor-wide environmental justice analysis is documented in a separate report, the FrontRunner Forward Corridor-level Environmental Justice Technical Memorandum (May 2023), and summarized in the PEL (May 2023).

4. Cultural, Historic and Archaeological Resources

Are there any cultural, historic or archaeological resources on or near the proposed project site? If yes and the proposed project has the potential to affect such resources, the Section 106 process must be followed and a Section 4(f) evaluation may be required. Explain, including what steps were taken to make the determination.

☐ NO

☒ YES

An archaeological inventory and selective reconnaissance-level historical buildings inventory was conducted within the Project's area of potential effects (APE) in the spring of 2022. Four archaeological sites and one historical structure were identified in the APE. [redacted] *42SL214 (the Jordan and Salt Lake City Canal), 42SL293 (the Denver & Rio Grande Western Railroad [D&RGW]), and 42SL640 (a historical utility line). Sites 42SL186, 42SL214, and 42SL293 all have been determined eligible for the National Register of Historic Places as a result of prior undertakings. The remaining site, 42SL640, was determined ineligible for the National Register as a result of several prior undertakings. FTA has made the same determination of eligibility for this site as part of the present undertaking. The historical structure, a steel stringer/multibeam or girder bridge located at 1000 West 14600 South, was determined to be ineligible in the Utah Historic Bridge Inventory and is not further discussed in this section.*

If YES resources are present, does Section 106 apply? Explain.

☐ NO

☒ YES – Provide Section 106 Consultation Documentation

*The Project would result in **no adverse effect** under Section 106 for all three resources determined eligible for the National Register (sites 42SL186, 42SL214, and 42SL293).*

For site 42SL214, the Jordan and Salt Lake City Canal, the culvert would be extended along a previously realigned (noncontributing) segment of the canal. There would be approximately 0.03 acre of impact within the site boundary. Fill and ballast would be placed over the extended culvert, and a retaining wall would be placed between the canal channel and the adjacent railroad ROW. Fill and other disturbance would occur along 22 feet of the abandoned main canal channel west of the railroad ROW where the channel has already been disturbed by other activities.

For site 42SL293, the D&RGW Railroad, the Project would have a minor impact to the surface ballast of the existing rail in order to tie in to the new UTA track ballast, resulting in no adverse effect to the resource.

The finding of effects was determined by FTA after multiple coordination meetings with the consulting parties conducted between May 2022 and August 2023, parties including the Utah State Historic Preservation Office (SHPO), FFSL (owner and manager of the property), UOL (holder of the Galena–Soónkahni conservation easement), and all eight Native American Tribes federally recognized in Utah.

The SHPO concurred with the findings of eligibility and effects for the historic properties under Section 106 on September 29, 2023. The findings of effect were provided to the Tribes for review, and one comment was received within the 30-day review period. The cultural resource manager for the Paiute Indian Tribe of Utah requested that a prayer be given to bless the area as the site is disturbed. FTA agreed that a Tribal representative would be invited to give a prayer at the site prior to construction of the Project.

If YES resources are present, does Section 4(f) apply? Explain.

☐ NO

☒ YES – Provide Section 4(f) Evaluation

*Based on the determination of no adverse effect for the historic properties under Section 106, corresponding findings of use have been made under Section 4(f). Specifically, FTA finds that the Project would result in a **use with** **de minimis** **impact** under Section 4(f) for sites 42SL186, 42SL214, and 42SL293, for which FTA made a finding of **no adverse effect** under Section 106.*

The Section 106 consultation documentation is included in Attachment B.4, Cultural, Historic, and Archaeological Resources.

In addition, a corridor-wide cultural resources survey has been conducted to evaluate potential cumulative impacts along the FrontRunner corridor. The corridor-wide survey is documented in a separate report, A Cultural Resources Survey for the Utah Transit Authority's FrontRunner Forward Double Track and Rail Realignment Project; Davis, Salt Lake, and Utah Counties, Utah (July 2022), and summarized in the PEL (May 2023).

5. Visual/Aesthetics

Will the proposed project degrade the existing visual/aesthetic character or quality of the site, its surroundings, and/or recognized view sheds? Explain.

☒ NO

☐ YES

Most of the project improvements would be made within an existing transportation facility, and the Project would not result in substantive changes to the landscape or viewshed proximate to the project extent. Views to and from the project extent are not anticipated to change as a result of the Project.

6. Park and Recreation Resources

Are there any public parks and/or recreation resources on or near the proposed project area that would be impacted? If the proposed project has the potential to impact publicly-owned parks or recreation areas, a Section 4(f) evaluation may be required. If a park is funded with LWCF funds, Section 6(f) may apply. Explain.

☐ NO

☒ YES

A portion of the Galena–Soónkahni Preserve is adjacent to the project extent. The Galena–Soónkahni Preserve, which is owned and managed by FFSL, comprises about 250 acres adjacent to the Jordan River between 12300 South and 14600 South in Draper. The preserve includes about 100 acres of riparian and wetland habitat on the east side of the Jordan River and about 150 acres of uplands. [redacted]

If YES, does Section 4(f) apply? Explain.

☐ NO

☒ YES – Provide Section 4(f) Evaluation

The Galena–Soónkahni Preserve is owned and managed by FFSL, with a conservation easement held by UOL. The preserve comprises about 250 acres adjacent to the Jordan River between 12300 South and 14600 South in Draper, Salt Lake County. A portion of the eastern edge of the preserve is adjacent to the existing FrontRunner rail corridor. The preserve meets the qualifications for a Section 4(f) resource as defined in 23 CFR Part 774. The preserve is publicly owned, is open to the public as a recreation area, and has multiple significant conservation purposes, including preserving and protecting the wetland and wildlife in the area and conserving its cultural heritage. [redacted]

The Project would permanently acquire an approximately 0.23-acre strip of land along the southeast corner of the Galena–Soónkahni Preserve just north of Bangerter Highway and immediately adjacent to the existing railroad ROW corridor. This area would be permanently converted to rail ROW. The Project would require approximately 0.39-acre strip of the preserve in this same area for a temporary construction easement (TCE), which would be used during construction only. [redacted] *On the northeast corner of the preserve, the Project would require another 0.03 acre of land for a TCE, about 600 feet south of Vista Station Boulevard, again immediately adjacent to the existing railroad corridor.* [redacted] *These impacts are summarized in Table 1.*

Table 1. Permanent and temporary construction impacts

Type of Impact	Galena-Soónkahni Preserve / FFSL Property UOL Conservation Easement (acres)
Permanent impact	0 (north) 0.23 (south) 0.23 total
Temporary construction impact	0.03 (north) 0.39 (south) 0.42 (total)

FFSL = Utah Division of Forestry, Fire and State Lands; UOL = Utah Open Lands

Both the permanent and TCE impacts to the preserve would occur immediately adjacent to the UP/UTA rail corridor, and neither the permanent conversion of preserve land to transportation use nor the TCE impacts would have a notable impact on the use of the preserve as a park and recreation resource. No active recreation features or resources of the Galena–Soónkahni Preserve (for example, trails or benches) have been identified in the areas of permanent acquisition or temporary easement.

Similarly, no wildlife and waterfowl refuge features or resources of the Galena–Soónkahni Preserve have been identified in the areas of permanent acquisition or temporary easement. Both the permanent and TCE impacts to the preserve would be immediately adjacent to the UP/UTA rail corridor, and neither the permanent nor temporary conversion of preserve land to transportation use would impact the wildlife and waterfowl features of the preserve.

The Utah SHPO is the Section 4(f) Official with Jurisdiction for the Soónkahni Village site (eligible historic resource). Although the Project would traverse the Soónkahni Village site, no archaeological features or artifacts were identified in the project area within the Soónkahni Village site. FTA made a finding of no adverse effect for the Soónkahni Village site under Section 106 and a Section 4(f) use with de minimis *finding.*

Between May 2022 and August 2023, UTA and FTA conducted multiple coordination meetings with the consulting parties including the SHPO, FFSL (owner and manager of the property), UOL (holder of the Galena–Soónkahni conservation easement), and the eight Native American Tribes federally recognized in Utah.

A public comment period was provided from October 25, 2023, to November 27, 2023, for the public to review the project impacts to the Galena–Soónkahni Preserve. The notice of the public comment period was posted on the Utah.gov website as well as the UDOT FrontRunner project website (https://udotinput.utah.gov/FrontRunnerProject); printed in The Salt Lake Tribune and the Draper Journal; and posted along the Jordan River Parkway through the preserve. During the public comment period, FTA, UTA, and UDOT received two individual comment submissions from the public and none from an agency or Tribe. The comments were in general support of the Project.

To minimize impacts to the Galena–Soónkahni Preserve during construction, the contractor would be required to control fugitive dust and stormwater runoff, and follow all local noise ordinances. The contractor will be required to develop a plan to minimize the spread of invasive species, revegetate areas on the preserve disturbed by the project, and monitor that area for one year to ensure the area meets a 70% desirable species threshold. In addition, a temporary construction fence would be installed to mark the approved work area in and near the preserve, and construction personnel would be trained to understand that no work or equipment movement is allowed beyond the fencing. Locations outside the preserve would be used for construction equipment staging and personnel parking. All areas where temporary construction easements are needed would be restored to their original condition. Additional measures to minimize impacts to the Soónkahni Village site are described in Section 4, Cultural, Historic,

and Archaeological Resources.

Based on the information presented above, FTA has determined that the Section (f) use of the Galena–Soónkahni Preserve by the Project is considered a de minimis *impact, and the requirements of 23 CFR Part 774 have been satisfied. FFSL concurred with this determination on June 20, 2024 in a letter from FTA to FFSL dated June 12, 2024. The Section 4(f) consultation documentation and the public comment report are included in Attachment B.6, Park and Recreation Resources.*

If YES, does Section 6(f) apply? Explain.

☒ NO

☐ YES – Provide documentation

The Galena–Soónkahni Preserve was not funded with LWCF funds.

https://stateparks.utah.gov/resources/grants/land-and-water-conservation-fund/

7. Noise and Vibration

Are there any noise and/or vibration sensitive receptors located near the proposed project that would be impacted? Explain.

☒ NO

☐ YES

Noise

Based on aerial images of the project extent, preliminary project design schematics, and site visits, the project team identified five Category 2 residential land use areas in the noise evaluation area.

Because most residences are near each other and run parallel to the FrontRunner and UP alignments, the residential areas were grouped as described below and as shown in the figures in Appendix A, Residential Clusters, and Attachment B.7, Noise and Vibration.

- *Cluster No. 1: Draper Station to Vista Station Boulevard (Figure A-2): Single-family residences on Green Clover Road (about 153 feet to 277 feet east of the FrontRunner centerline)*
- *Cluster No. 2: Vista Station Boulevard to the Bangerter Highway Interchange (Figure A-3): Veranda Apartments (under construction south of Vista Station Boulevard (about 269 feet to 668 feet east of the FrontRunner centerline)*
- *Cluster No. 3: Bangerter Highway to Phillip Gates Memorial Park (Figure A-4): Residences on Royal Coachman Drive (about 128 feet to 213 feet west of the FrontRunner centerline)*
- *Cluster No. 4: State Route 140 to Coyote Gulch Way (Figure A-5): Residences on Chimney Park Drive east of the FrontRunner alignment (about 215 feet to 226 feet east of the centerline)*
- *Cluster No. 5: Harmon Day Drive to W. Cinch Way (Figure A-6): Residences on Wild Horse Way east of the FrontRunner alignment (about 128 feet to 132 feet east of the centerline)*

Because noise-sensitive receivers were identified in the noise evaluation area (that is, within the 622-foot project-level screening distance), a General Noise Assessment was conducted for the Project to evaluate potential noise impacts resulting from train passby events (trains travelling through the FrontRunner corridor at authorized speeds) and crossover events (trains leaving the mainline at a slower speed [60 mph for one #24 crossover in the noise evaluation area]).

The potential for noise impacts was determined by using the FTA spreadsheet model to estimate the existing noise level at the nearest noise-sensitive receiver in each of five residential clusters in the project corridor resulting from train traffic on the existing FrontRunner alignment with trains traveling at 60 mph. An exception is Cluster No. 1 (Draper Station to Vista Station Boulevard), which is already double-tracked

under existing conditions. For Cluster No. 1, 50% of the existing train traffic was assigned to each track at 60 mph.

The potential for project-related noise impacts was determined by using the FTA spreadsheet model and assigning 50% of the train traffic to the existing alignment and 50% of the train traffic to the new track which would be constructed east or west of the existing alignment depending on the location in the corridor. The operating speed was increased to 79 mph (from 60 mph) under this scenario.

The increase in noise resulting from double-tracking the alignment and increasing the train speed to 79 mph over the existing noise level at 60 mph is the potential for noise impact due to the Project.

Project-related passby and crossover events are anticipated to increase noise levels by 0 to 1 A-weighted decibels (dBA) over existing noise levels at the nearest Category 2 (residential) and Category 3 (institutional) noise-sensitive receivers in the project corridor.

The project-related passby and crossover events are anticipated to increase noise levels by 0 to 1 dBA over existing noise levels, which is not distinguishable to the human ear and is below the threshold for a moderate impact. For this reason, there would be no project-related passby or crossover noise impacts from the Project.

Vibration

The vibration screening distance for conventional commuter rail lines is 200 feet from the ROW or property line for Category 2 land uses and 120 feet for Category 3 land uses (Table 6-8, Screening Distances for Vibration Assessments, of the FTA guidance). The nearest residential clusters in the vibration evaluation area range from about 120 feet to more than 270 feet from the FrontRunner property line, and the nearest church is approximately 175 feet from the crossover.

A General Vibration Assessment using the FTA guidance was conducted to evaluate vibration impacts at Category 2 and Category 3 land uses. Source adjustments for distance, speed, and track treatments were applied as discussed in the FTA guidance.

The adjusted velocity level (VdB) for train passby events was 67.3 VdB, which is less than the ground-borne vibration impact criterion of 75 VdB for Category 2 land uses (occasional events). The adjusted velocity level for crossover events at 60 mph was 58.2 VdB, which is less than the ground-borne vibration impact criterion for Category 3 land uses (infrequent events) of 83 VdB.

There would be no project-related passby or crossover vibration impacts from the Project.

See the Noise and Vibration Assessment in Attachment B.7, Noise and Vibration.

In addition, a corridor-wide noise and vibration analysis has been conducted to evaluate potential impacts of the future anticipated service increase along the FrontRunner corridor. The corridor-wide noise and vibration analysis is documented in a separate report, FrontRunner Forward Corridor-level Noise and Vibration Technical Memorandum (May 2023), and summarized in the PEL (May 2023).

8. Air Quality

Is the proposed project located in an Environmental Protection Agency (EPA)-designated non-attainment or maintenance area?

☐ NO

☒ YES - indicate the criteria pollutant and contact FTA to determine if a hot spot analysis is necessary.

- ☐ Carbon Monoxide (CO)
- ☒ Sulfur Dioxide (SO_2)
- ☐ Lead (Pb)
- ☐ Nitrogen Dioxide (NO_2)
- ☒ Ozone (O_3)
- ☒ Particulate Matter (PM_{10})
- ☒ Particulate Matter ($PM_{2.5}$)

Does the proposed project require a conformity analysis or regional analysis under 40 CFR Part 93?

☐ NO

☒ YES

If the non-attainment area is also in a metropolitan area, is the proposed project required to be and included in the MPO's air quality conformity analysis for the Transportation Improvement Program (TIP)?

☐ NO

☒ YES - Date of FHWA/FTA conformity finding

The Project is located in Salt Lake County. Salt Lake County is an attainment area for CO, NO_2, and Pb; a nonattainment area for $PM_{2.5}$, O_3, and SO_2; and a maintenance area for PM_{10}.

Because the Project is located in a nonattainment area and is not exempt from a conformity analysis under 40 CFR Section 93.126, a General Conformity applicability assessment is needed, and the Project must be listed on a conforming Metropolitan Transportation Plan and Transportation Improvement Plan. The Wasatch Front Regional Council (WFRC) considers air quality as part of its RTP. The 2023–2050 WFRC RTP and Air Quality Conformity Memorandum #41 were adopted in May 2023 and include the full length of the proposed double track projects. In addition, a corridor-wide air quality analysis has been conducted to evaluate the potential impacts of the future anticipated service increase along the FrontRunner corridor. The corridor-wide air quality analysis is documented in a separate report, FrontRunner Forward Corridor-level Air Quality Technical Memorandum (June 2023), and summarized in the PEL (May 2023).

A PM hot-spot analysis is required only for specific types of projects, which are described in the Air Quality Review in Attachment B.8, Air Quality, and are listed in the transportation conformity regulations at 40 CFR Section 93.123(b)(1). Because the Project does not meet any of the criteria to be considered a project of air quality concern, hot-spot analyses are not required for particulate matter. Similarly, the transportation conformity regulations at 40 CFR Section 93.123(a)(1) define projects that require quantitative analysis for CO. Because the Project does not meet any of the criteria to be considered a project of air quality concern, hot-spot analyses are not required for CO. The Air Quality Review in Attachment B.8, Air Quality, describes the types of projects that require quantitative analyses for both types of pollutants.

The Project would allow opposing train traffic to pass, thereby decreasing the number of idling trains, increasing service reliability, and allowing more efficient operation of the rail line. Air quality would be improved with the Project because train flow would be improved, and trains would spend less time idling compared to existing conditions.

The Project is not a project of air quality concern, and the project team does not expect the Project to adversely affect local compliance with the National Ambient Air Quality Standards (NAAQS). Although

atmospheric CO_2 emissions are projected to increase in 2050 due to the greater number of vehicles and increased vehicle-miles traveled, this increase would occur with or without the Project. The amounts of all other pollutants are projected to decrease in future years due to more stringent emissions standards for diesel locomotives and improved emissions control technology.

See the Air Quality Review in Attachment B.8, Air Quality.

In addition, a corridor-wide air quality analysis has been conducted to evaluate the potential impacts of the future anticipated service increase along the FrontRunner corridor. The corridor-wide air quality analysis is documented in a separate report, FrontRunner Forward Corridor-level Air Quality Technical Memorandum (June 2023), and summarized in the PEL (May 2023).

9. Hazardous Materials

Is there any known or potential contamination at the proposed project site that would be impacted? Describe the steps taken to make the determination (Phase I ESA, etc.) and results. Note the mitigation and clean-up measures that will be taken to remove hazardous materials from the project site, if applicable.

☐ NO

☒ YES

A review of the Utah Geospatial Resource Center's Land-Related Contaminant and Cleanup database, the Utah Department of Environmental Quality's (UDEQ) online database, and an Environmental Data Resources, Inc. (EDR), report identified a number of sites with known or suspected contamination that are within the hazardous materials evaluation area and/or close to the project extent. The evaluation area for identifying hazardous materials in and near the project extent is a 0.5-mile radius around the project extent.

The screening process identified five sites that were evaluated for their potential risk to construction: one leaking underground storage tanks (LUST) site, two underground storage tanks (UST) sites, one solid waste facility, and one environmental incident. No groundwater contamination was indicated at any of these sites. None of these sites would be directly impacted by the Project, and all of the sites represent a low to no risk to construction.

A review of well logs from the Utah Division of Water Rights' website (https://maps.waterrights.utah.gov/esrimap/map.asp) indicates that groundwater depths in the project extent are highly variable. The project extent is situated on the boundary between a secondary groundwater recharge zone and a discharge zone that is generally surrounding the Jordan River floodplain. Shallow groundwater (5 to 10 feet deep) could be encountered in some areas. The project team, or construction contractor, will obtain coverage for construction dewatering under Utah's General Permit for Construction Dewatering or Hydrostatic Testing (UTG070000) or, if contamination is anticipated after additional investigation, a Ground Water Discharge Permit, pursuant to state groundwater protection rules (Utah Administrative Code R317-6).

In accordance with FTA Standard Operating Procedures and applicable regulatory requirements, the project team would conduct due diligence during final design by identifying whether hazardous materials are present prior to property acquisitions and construction. As part of this due diligence, the project team will conduct a Phase I Environmental Site Assessment (ESA) in accordance with ASTM standards for any property acquisitions and will conduct any recommended Phase II ESA investigations. Plans for hazardous materials handling and disposal will be developed for the Project, and this development would include coordination with state and federal agencies with jurisdiction over the properties.

The project team will prepare a soil and groundwater management plan before construction. This plan will describe the necessary soil and groundwater investigations needed to characterize pollutant concentrations in soil and groundwater in the project extent, if any; describe, based on the results of the investigations, the protection measures that will be used to prevent the spread of contamination; communicate the health risks to construction workers; define appropriate handling and disposal or treatment methods for contaminated media; and help the project team better identify construction-related impacts.

See the Hazardous Materials Evaluation in Attachment B.9, Hazardous Materials, for details regarding hazardous materials analysis.

10. Farmland

Are there any prime or unique farmlands located at the proposed project site that would be impacted? Explain.

☒ NO

☐ YES

The project extent is located in areas defined as "urbanized areas" by the U.S. Census Bureau Map (https://www.census.gov/geographies/reference-maps/2010/geo/2010-census-urban-areas.html). Per 7 CFR Section 658.2, farmland does not include land already in or committed to urban development. Farmland already in urban development includes lands identified as "urbanized area" on the Census Bureau Map.

11. Floodplains

Is the proposed project located within the Federal Emergency Management Agency (FEMA) 100-year floodplain or within the floodway? If yes, this project may require further evaluation under EO 11988. Explain.

☐ NO

☒ YES

A review of FEMA's National Flood Hazard Layer shows that the Project would impact <0.01 acre of Zone AE (areas that would be flooded by a 100-year flood, have base flood elevations defined, and which might also include a floodway). Floodplain connectivity would be maintained through the existing Jordan and Salt Lake City Canal culvert that would be extended for this project. A floodplain development permit will be obtained from the local floodplain administrator for Draper City prior to construction. Although not anticipated, a flood-control permit will be obtained from Salt Lake County for actions inside or within 20 feet of the Jordan and Salt Lake City Canal, which is a Salt Lake County–controlled waterway. Corner Canyon Creek (also a Salt Lake County–controlled waterway) might also need to be included in the flood-control permit if the existing culvert is considered during further coordination with Salt Lake County Flood Control to be a part of the channel. This coordination will take place during final design as required.

The project team does not anticipate that FEMA Conditional Letter of Map Revision (CLOMR) and Letter of Map Revision (LOMR) processes will be required in compliance with 44 CFR Sections 60.3 and 65.12 due to the nature of the anticipated encroachment, which is not anticipated to impact water surface elevations in Corner Canyon Creek. However, an evaluation would be completed to determine whether the final design would require revision to the flood map. This process would be coordinated with Draper City, the floodplain administrator for this area. If necessary, a preconstruction CLOMR would be submitted to FEMA. After construction, a LOMR would be submitted to FEMA. This process would be coordinated with Draper City.

See the Floodplains Evaluation Memorandum in Attachment B.11, Floodplains.

12. Water Resources and Water Quality

Are there any surface or ground water resources present, including an EPA-designated sole source aquifer (SSA), near the proposed project that would be impacted? Explain.

☐ NO

☒ YES

Corner Canyon Creek and the Jordan and Salt Lake City Canal are the only named surface waters in the water resources and water quality evaluation area. The Project would require the Jordan and Salt Lake City Canal culvert under the UP and FrontRunner tracks just south of Bangerter Highway to be extended to accommodate the new track. If the Jordan and Salt Lake City Canal is determined jurisdictional by U.S. Army Corps of Engineers (USACE), construction would be authorized under a Clean Water Act Section 404 Nationwide Permit 14 (which includes Section 401 Water Quality Certification) from USACE (see Section 13 below and Attachment B.13 for more information about project impacts to aquatic resources). There would be no impacts to Corner Canyon Creek or its bank. The Project would not come within 30 feet of Corner Canyon Creek or either end of the culvert through which Corner Canyon Creek crosses beneath the UP and UTA tracks, and the Corner Canyon Creek culvert would not need to be extended. For these reasons, a stream alteration permit would likely not be required; however, further coordination is needed during final design to verify this conclusion.

There are nine water right points of diversion in the water resources and water quality evaluation area. These nine points of diversion are underground water wells, unnamed springs, springs and drain, and effluent from the Utah State Prison. Six of these points currently have a terminated status, and the other three have an unapproved status. Three water right points of diversion are within the impact footprint for the Project; however, no impacts are anticipated since all three have a terminated status and are not currently active.

The water resources and water quality evaluation area does not contain any drinking water source protection zones for either groundwater or surface water sources; therefore, the project team does not anticipate any impacts to drinking water from the Project.

See the Evaluation of Water Resources and Water Quality in Attachment B.12, Water Resources and Water Quality.

Is there an increase in impervious surface (e.g., roofs, driveways, streets, parking lots, etc.) or restored pervious surface greater than one acre? If YES, a NPDES/storm water permit may be needed and must be acquired prior to construction. Explain.

☒ NO

☐ YES

A long-term facility stormwater permit would not be required. One additional concrete crossing panel would be installed for the crossing at the Jordan and Salt Lake City Canal, the size of which is based on the existing panels. Therefore, about 475 square feet of additional impervious surface would be added to the crossing at the Jordan and Salt Lake City Canal.

Project elements would add a small amount of additional runoff from the project site after construction has been completed. The existing FrontRunner system already has infrastructure in place to handle any stormwater runoff from the ballasted track and embankments, and this infrastructure could be analyzed and expanded, if needed, to handle the additional runoff. If these stormwater infrastructure elements need to be relocated, they would be replaced in kind following the applicable drainage design criteria as stated in UTA's Commuter Rail Design Criteria (2015).

Construction of the Project would disturb more than 1 acre of ground surface, which would require coverage under the Utah Pollutant Discharge Elimination System (UPDES) Construction General Permit UTRC00000 (CGP). Coverage under the CGP would be obtained prior to construction through the Utah

Division of Water Quality. In compliance with this permit, a stormwater pollution prevention plan (SWPPP) would be developed for the construction phase of the Project.

13. Wetlands and Waters of the U.S.

Are there any wetlands or waters of the U.S. on or adjacent to the proposed project area that potentially would be temporarily or permanently impacted? Explain.

☐ NO

☒ YES

If YES, is a permit from the US Army Corps of Engineers required? Explain.

☐ NO

☒ YES (*see below*)

The Project would fill <0.1 acre (20 linear feet) of canal segment C-1b (the Jordan and Salt Lake City Canal) and <0.01 acre (3 linear feet) of ditch segment D-1. The Jordan and Salt Lake City Canal originates from the Jordan River and flows north through the Salt Lake Valley, eventually draining into City Creek. City Creek then flows west, draining into the Jordan River, which flows into the Great Salt Lake, a traditional navigable water. Therefore, canal segment C-1b is likely jurisdictional. Ditch segment D-1 is located in Phillip Gates Memorial Park. It flows into an open-water pond beyond the survey area which appears to drain into the Jordan and Salt Lake City Canal. Ditch segment D-1 does not carry a relatively permanent flow of water and is likely not jurisdictional. There would be no wetland impacts from the Project.

Impacts to jurisdictional aquatic resources from construction would be authorized under Nationwide Permit 14, which includes Clean Water Act Section 401 Water Quality Certification. Because the impacts would be less than 0.1 acre, a preconstruction notification might not be required. In addition, because the canal impacts would be less than 0.03 acre, compensatory mitigation would not be required.

See the Impacts to Aquatic Resources for the South of Draper Double Track Project Memorandum and the Aquatic Resources Delineation Report in Attachment B.13, Wetlands and Waters of the U.S.

14. Threatened and/or Endangered Species

Are there any listed threatened and/or endangered species (plant or animal) or critical habitat present on or near the proposed project area that would be impacted? How was this determined? If yes, Section 7 of the Endangered Species Act may apply. Explain.

☒ NO

☐ YES

The project team identified one federally listed plant species and two federally listed wildlife species that could occur or are known to occur in the threatened and/or endangered species evaluation area. Of these species, the project team identified no potentially suitable habitat or critical habitat in or near the threatened and/or endangered species evaluation area that would be impacted.

See the Biological Resources Evaluation in Attachment B.15, Natural and Biological Resources.

15. Natural and Biological Resources

Are there any natural areas, biological resources (fish, birds, wildlife and habitat) or sensitive areas present on or near the proposed project area that would be impacted? If the proposed project has the potential to impact wildlife or waterfowl refuges, a Section 4(f) evaluation may be required. Explain.

☐ NO

☒ YES

If YES, does Section 4(f) apply? Explain.

☐ NO

☒ YES – Provide Section 4(f) Evaluation

The project team identified 3 species listed under conservation agreements and 16 migratory bird species that could occur or are known to occur in the biological resources evaluation area. Of these species, the project team identified potentially suitable habitat for Columbia spotted frogs. The Project would also impact part of the Galena–Soónkahni Preserve.

Columbia Spotted Frogs. Columbia spotted frogs are highly aquatic and require permanent quiet water. They usually live at the grassy/sedgy margins of streams, lakes, ponds, springs, and marshes and use stream-side small mammal burrows as shelter. Breeding typically occurs in small pools or ponds with little or no current surrounded by dense aquatic vegetation. The Jordan and Salt Lake City Canal provides potentially suitable habitat for Columbia spotted frogs. However, this canal is highly degraded—it is surrounded by invasive vegetation species (common reed); commercial, highway, and road development; and railroad tracks. Given the degradation of these resources, the habitat is low-quality and is unlikely to support Columbia spotted frog populations.

Galena–Soónkahni Preserve. A portion of the Galena–Soónkahni Preserve is located in the biological resources evaluation area. The Galena–Soónkahni Preserve, which is owned and managed by FFSL, comprises about 250 acres adjacent to the Jordan River between 12300 South and 14600 South in Draper. The preserve includes about 100 acres of riparian and wetland habitat on the east side of the Jordan River and about 150 acres of uplands. The Project would permanently acquire an approximately 0.23-acre strip of land along the southeast corner of the Galena–Soónkahni Preserve just north of Bangerter Highway and immediately adjacent to the existing railroad ROW corridor. This area would be permanently converted to rail ROW. The Project would require an additional 0.39-acre strip of the preserve in this same area for a TCE, which would be used during construction only. On the northeast corner of the preserve, the Project would require another 0.03 acre of land for a TCE, about 600 feet south of Vista Station Boulevard, again immediately adjacent to the existing railroad corridor. No wildlife and waterfowl refuge features or resources of the Galena–Soónkahni Preserve have been identified in the areas of permanent or temporary acquisition. Both the permanent and TCE impacts to the preserve would be immediately adjacent to the UP/UTA rail corridor, and neither the permanent nor temporary conversion of preserve land to transportation use would impact the wildlife and waterfowl features of the preserve. Section 4(f) de minimis *impacts to the preserve, as well as mitigation to minimize impacts to the preserve during construction, are addressed in Item 6, Park and Recreation Resources, of this Categorical Exclusion worksheet.*

See the Biological Resources Evaluation in Attachment B.15, Natural and Biological Resources.

Any shrub, tree, or tree limb removal should occur outside a general bird nesting season from April 15 to July 31. If removal must occur during this period, preconstruction nesting surveys of affected trees will be performed by a qualified biologist. If active nests are found, the nests cannot be removed until young have been confirmed to have fledged. If these measures are followed, the Project would not result in direct or incidental take under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

16. Traffic and Parking

Does the proposed project have the potential to permanently impact traffic and/or parking (on and off street) in the project area? Explain.

☒ NO

☐ YES

The Project would require modifying one private at-grade crossing located south of Bangerter Highway. The private at-grade crossing is used to access the Jordan and Salt Lake City Canal service road. Modifications would include adding one new at-grade crossing panel similar in size to the existing panels for UTA ML No. 2. No additional work would be needed at this crossing since it does not have lights and gates and currently operates under passive sign control.

There are no parking facilities in or near the project extent. The Project would not permanently impact either traffic or parking and does not include major changes to an existing road. Neither traffic patterns nor traffic operations in the area would be altered.

In addition, a corridor-wide traffic and safety analysis has been conducted to evaluate potential 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 (May 2023), and summarized in the PEL (May 2023).

17. Utilities

Are there any utilities that could be impacted by the proposed project? Explain.

☐ NO

☒ YES

Several utilities would be impacted by project construction. The project team would further determine the effects on these utilities and appropriate utility treatments by working with local jurisdictions and utility owners during final design of the Project.

- *UTA Communications Duct Bank: An existing UTA underground communications duct bank is located parallel to and west of the existing track UTA ML No. 1 from the southern end of the project extent to the existing signal and communications cabinet south of the 14600 South grade-separated crossing. All 4,800 feet of the duct bank would conflict with construction of the new UTA ML No. 2 and would need to be relocated west of the proposed UTA ML No. 2. The affected signal and communications houses at the beginning and end of the relocation length would also be relocated, and the relocated line would run parallel to the proposed UTA ML No. 2.*
- *Jordan Valley Water Line: A 10-inch-diameter diameter ductile iron water line crosses under both railroads' ROW about 300 feet south of the existing 14600 South grade-separated crossing. The casing for the water line would need to be extended approximately 25 feet to the west to protect the water line from the railroad loads of the proposed UTA ML No. 2 and interface with the proposed retaining wall extension.*
- *Rocky Mountain Power 345-kV and 138-kV Overhead Power Distribution Lines: Overhead electric lines run parallel to and west of the existing UTA ML No. 1 north of Bangerter Highway. The existing line is approximately 20 feet from the centerline of UTA ML No. 1. Approximately 1,200 linear feet of this line, including an estimated five existing poles, would need to be relocated 15 feet to the west to accommodate constructing the proposed UTA ML No. 2.*

All utility relocations will be coordinated with the utility owner during the final design of the Project to ensure the safety and continuity of utility service during construction.

18. Construction Impacts

Will the proposed project result in impacts (e.g., noise, air, water, staging, parking, traffic detours, etc.) during construction? Explain.

☐ NO

☒ YES – Provide mitigation commitments

As with most construction projects, there would be some minor impacts during construction. Construction equipment such as trucks, bulldozers, graders, and rollers would add a minor amount of noise to an already very loud, active freight and commuter rail corridor. Work will comply with local noise ordinances.

If temporary construction access is needed from a private property owner, it will be obtained through the proper federal ROW acquisition process. Minor temporary utility disruptions could occur for utility relocations or new service installations. These outages will be coordinated with the utility provider and any customers that could be affected.

Installing switches would require UTA to temporarily shut down the track, which could disrupt FrontRunner service. Work will be scheduled to minimize impacts to passengers (nights, weekends, and/or holidays). If necessary, bus bridges (bus service) would be provided for the continuation of service. Similarly, installing switches and turnouts for UP could potentially disrupt freight loading services and movements in the yard, which could potentially disrupt service. Work will be scheduled to minimize impacts to freight through construction phasing and shutdowns in coordination with UP (nights, weekends, and/or holidays).

The contractor is required and will control fugitive dust and stormwater runoff (see additional details in Section 21, State and Local Permits, Policies and Ordinances). The contractor will follow all applicable local noise ordinances.

A public communication plan will be developed to coordinate construction activities with local residents, stakeholders, and businesses that could be affected by the work. Any changes to transit service due to construction will be communicated to riders.

Where private grade crossings would be relocated or new grade crossings installed, the gravel base roadway will be regraded to provide a smooth, safe profile over the track.

19. Public Outreach and Agency Coordination

Was any public outreach and/or agency coordination conducted? Explain.

☐ NO

☒ YES

UTA, in partnership with UDOT, is committed to involving state and local agencies, area stakeholders, and the public throughout project design, construction, and operation. The project team has coordinated with the metropolitan planning organizations including the Mountainland Association of Governments, WFRC, and the surrounding Cities. The project team has developed an engagement plan to steer involvement activities throughout the project evolution. Engagement will be tailored based on the needs and potential impacts of the Project and could include a combination of corridor-level communication and project-specific one-on-one meetings.

A public comment period was provided from October 25, 2023, to November 27, 2023, for the public to review the project impacts to the Galena–Soónkahni Preserve. The notice of the public comment period was posted on the Utah.gov website as well as the UDOT FrontRunner project website (https://udotinput.utah.gov/FrontRunnerProject); printed in The Salt Lake Tribune and the Draper Journal; and posted along the Jordan River Parkway through the preserve. During the public comment period, FTA, UTA, and UDOT received two individual comment submissions from the public and none from an agency or Tribe. The comments in general support the Project.

20. Safety and Security

Are any measures required for the safe and secure operation of the proposed project after its construction? Explain.

☒ NO

☐ YES

The Project would not change how employees or passengers would interact with the FrontRunner corridor and would not impact safety of those users. The Project would not impact the security of the FrontRunner facilities and would not have potential construction safety concerns on those facilities.

UTA's standard commuter rail design criteria will be followed to ensure that the Project meets safety and security requirements. UTA's activation processes will be followed, which include several safety and security reviews and a potential hazard analysis to ensure that the design includes typical and site-specific safety and security measures.

A corridor-wide traffic and safety analysis has been conducted to evaluate potential 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 (May 2023), and summarized in the PEL (May 2023).

21. State and Local Permits, Policies and Ordinances

Does the proposed project require compliance with any applicable state and local permits, policies and ordinances? Explain.

☐ NO

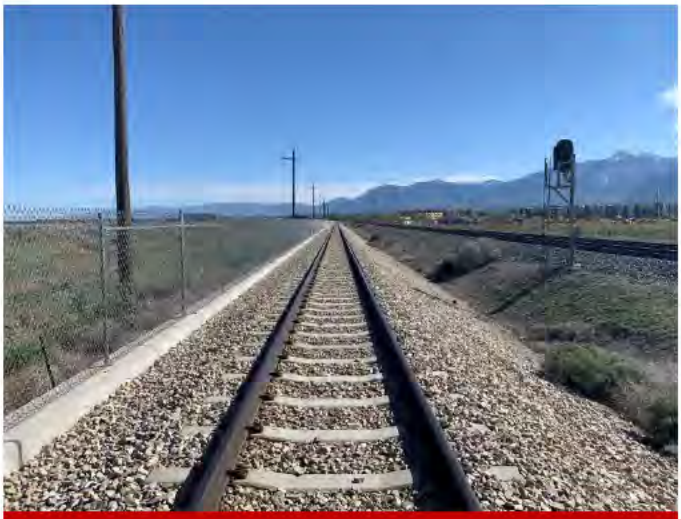
☒ YES

The Project would require the following permits:

- *UPDES CGP – Constructing the Project would disturb more than 1 acre of ground surface. The project team will apply for coverage under Utah's CGP (UTRC00000). In compliance with this permit, an SWPPP will be developed for the construction phase of the Project.*
- *Impacts to aquatic resources will be authorized under USACE Nationwide Permit 14 and an associated general Section 401 Water Quality Certification.*
- *A floodplain development permit will be obtained from Draper City for impacts to the Zone AE floodplain (which includes a floodway).*
- *A flood-control permit will be obtained from Salt Lake County for actions inside or within 20 feet of the Corner Canyon Creek channel and the Jordan and Salt Lake City Canal.*
- *The project team, or construction contractor, will obtain coverage for construction dewatering under Utah's General Permit for Construction Dewatering or Hydrostatic Testing (UTG070000) or a Ground Water Discharge Permit pursuant to state groundwater protection rules (Utah Administrative Code R317-6).*
- *Submit a fugitive dust control plan to the Utah Division of Air Quality.*
- *Follow local noise ordinances.*

WORKSHEET COMPLETED BY (RECIPIENT NAME AND TITLE):	**DATE SUBMITTED:**
Autumn Hu *NEPA Project Administrator* *Utah Transit Authority*	*5/17/2024*

Note: CE Worksheet must be signed by the Recipient of Funds



South of Draper Double Track Project

FrontRunner Forward

Categorical Exclusion Attachments

Salt Lake County, Utah

May 13, 2024

South of Draper Double Track Project
FrontRunner Forward Program

Attachments

Attachment A Vicinity Map and Conceptual Design Plans

Attachment A.1 Vicinity Map for the South of Draper Double Track Project

Attachment A.2 Conceptual Design Plans for the South of Draper Double Track Project

Attachment B Resource Reports and Memos

Attachment B.1 Land Use and Zoning

Attachment B.2 Land/Property Acquisition, Relocation, Leases, and Easements

Attachment B.3 Environmental Justice

Attachment B.4 Cultural, Historic, and Archaeological Resources

Attachment B.6 Park and Recreation Resources

Attachment B.7 Noise and Vibration

Attachment B.8 Air Quality

Attachment B.9 Hazardous Materials

Attachment B.11 Floodplains

Attachment B.12 Water Resources and Water Quality

Attachment B.13 Wetlands and Waters of the U.S.

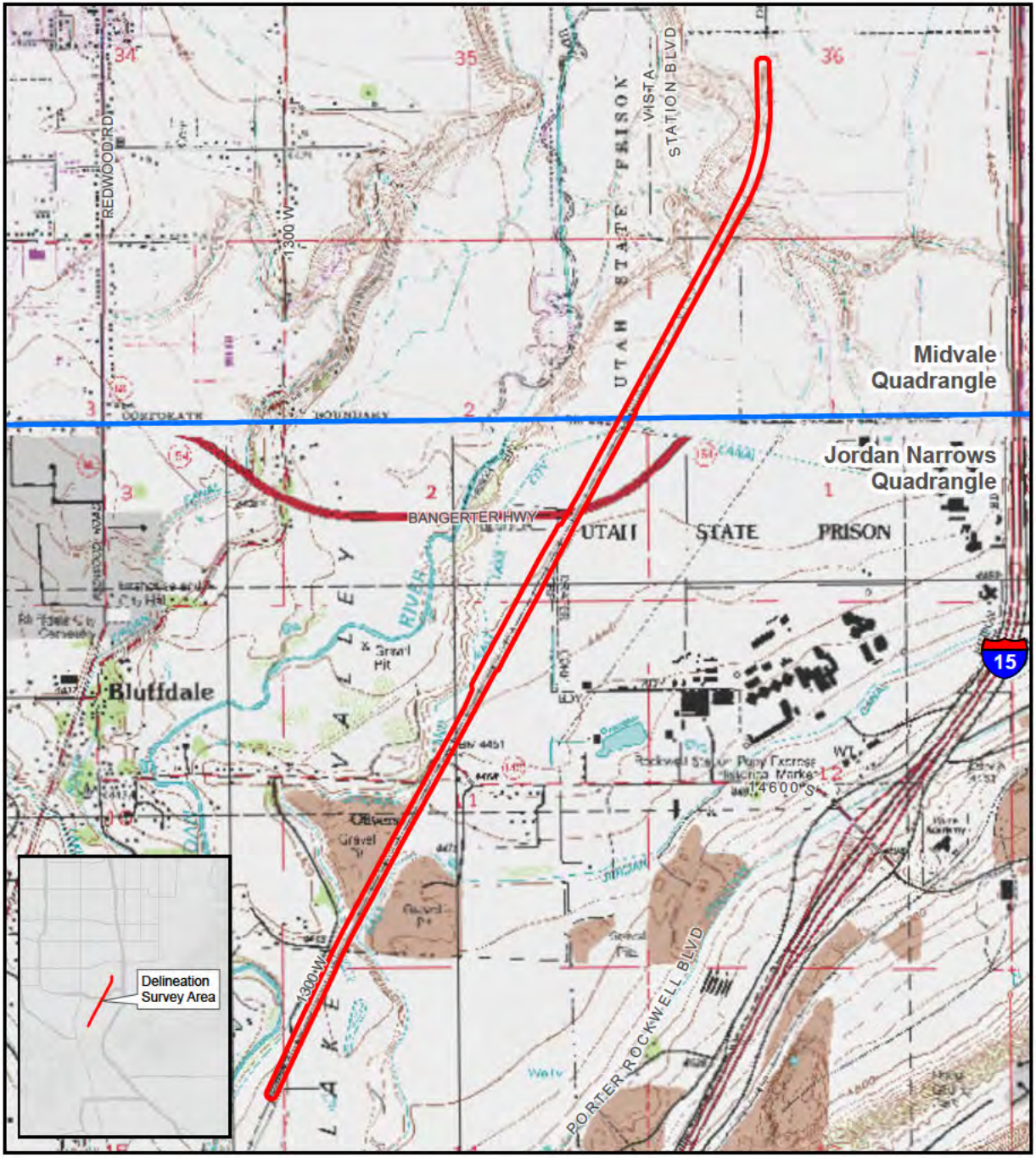
Attachment B.14 Threatened and/or Endangered Species

Attachment B.15 Natural and Biological Resources

The numbering in Attachment B refers to the resource number in Part C, Environmental Evaluation, of the CE worksheet.

ATTACHMENT A
Vicinity Map and Conceptual Design Plans

ATTACHMENT A.1
Vicinity Map for the South of Draper Double Track Project



UTA
FrontRunner Forward

UDOT
Keeping Utah Moving

Legend

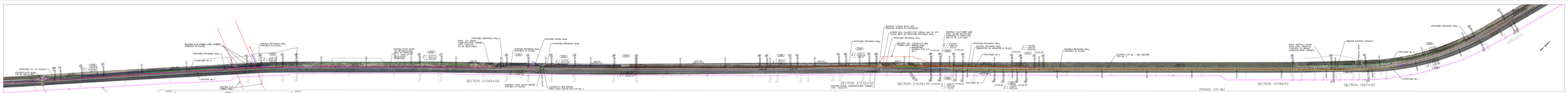
- Survey Area
- USGS 7.5 Minute Quadrangles

DATA SOURCES:
PLSS: State of Utah
PROJECTION:
Utah Stateplane Central
CARTOGRAPHER:
HDR

N

0 0.5 Miles

ATTACHMENT A.2
Conceptual Design Plans for the South of Draper Double Track Project


SECTION 21590+00
SECTION 21632+50
SECTION 21639+50
SECTION 21678+50
SECTION 21687+50
SECTION 21678+50
SECTION 21632+50
SECTION 21687+50
PROFILE: UTA WL1
PROFILE: UTA WL2
PROFILE: UTA WL2
PROPOSED RETAINING WALL
PROPOSED EXIT LINE
PROPOSED FG LINE
TRACK REMOVAL
EXISTING ROW
UTA TRACK (PROPOSED)
UTA TRACK (EXISTING)
ROW ACQUISITION (LINE)
ROW ACQUISITION (DISTURBED)
TRACK EXHIBIT
DRAPER
10/19/2022

ATTACHMENT B
Resource Reports and Memos

The numbering in Attachment B refers to the resource number in Part C, Environmental Evaluation, of the CE worksheet.

ATTACHMENT B.1
Land Use and Zoning

FrontRunner Forward Technical Memorandum

To: Project File

From: HDR

Date: May 13, 2024

Subject: Land Use and Zoning for the South of Draper Double Track Project

---

Introduction

The Utah Transit Authority (UTA) in coordination with the Utah Department of Transportation (UDOT) is proposing to lengthen and shift the existing Draper Station area double track segment of its FrontRunner commuter rail system in the cities of Draper and Bluffdale in southern Salt Lake County, Utah, to create a true double track alignment through this area. See the Vicinity Map in Attachment A.1, *Vicinity Map for the South of Draper Double Track Project*.

Project Description and Need for the Project

The Project is located between 0.75 and 1 mile west of Interstate 15 (I-15) in Bluffdale and Draper in the southern portion of Salt Lake County. The Project extends from UTA milepost S 20.5 north to UTA milepost S 17.2, a distance of about 3.3 miles to encompass 2.8 miles of new double track and track tie-in.

The existing double track section at Draper Station is about 1.0 mile long, and its primary use is allowing trains traveling in opposite directions to pass each other. The Project would lengthen the existing double track section by approximately 2.8 miles, moving the southern terminus of the section from the Vista Station Boulevard bridge to 1300 West. North of Bangerter Highway, the anticipated track work consists of constructing a new FrontRunner mainline (ML) track east of the existing mainline track, shifting the existing FrontRunner mainline track where necessary, removing one existing turnout, constructing one new turnout, constructing a new bridge over Bangerter Highway and 14600 South, demolishing an existing retaining wall and constructing new retaining walls on the west side of the corridor on the north and south approaches to the Bangerter Highway bridge as well as in other sections to minimize property impacts and ROW acquisition, extending the Jordan and Salt Lake City Canal culvert under the Bangerter Highway bridge's south approach, modifying an existing private access road at-grade crossing, relocating utilities, and widening the existing trackbed. South of Bangerter Highway, the existing UTA mainline would remain in its current location, and a new track would be constructed west of the existing mainline. Preliminary track design modeling shows that the estimated depth of excavation from the top of the existing ground to the bottom of the proposed subballast or track ditch for proposed trackwork construction ranges from 2 to 5 feet. The estimated depth of excavation for walls, utilities, and the bridge over Bangerter Highway ranges from 3 to 10 feet.

The Project would improve reliability and reduce delays of the FrontRunner service. The Project is one of nine double track projects being proposed as part of long-term improvements under the FrontRunner Forward Program; however, it has independent utility and can be constructed with or without the other projects. Further detail 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)* (May 2023).

Land Use and Zoning Evaluation Area

The project extent is located in Draper and Bluffdale in Salt Lake County in a developed area with a transit station district, commercial land uses, a local road network and residential development, light industry and manufacturing uses, and other mixed used in the immediate vicinity of the project extent. The land use and zoning evaluation area is defined by a 0.5-mile buffer around the project extent and includes portions of Draper, Bluffdale, and Riverton in Salt Lake County.

Zoning Districts in the Land Use and Zoning Evaluation Area

For the portion of the project extent in Draper, the land use and zoning evaluation area includes the following zoning districts:[1]

- *A5 (Agricultural).* Intended to preserve and protect agricultural lands and related activities, to permit activities normally and necessarily related to agricultural production, and to prohibit land uses that may undermine continued agricultural activity.
- *CBP (Commercial Business Park).* Intended to provide aesthetically attractive planned developments having a mix of office, research and development, light manufacturing, and limited retail uses.
- *CSD-DPMU (Commercial Special District – Draper Pointe Mixed Use).* Intended to permit a compatible, master-planned mix of day and evening uses consisting of office, light manufacturing, retail, residential, recreation, and open space components.
- *CSD-DRC (Commercial Special District – Dahle Retail Center).* Intended to permit a compatible, master-planned mix of day and evening uses consisting of office, light manufacturing, retail, residential, recreation, and open space components.
- *CSD-IOP (Commercial Special District – Irvine Office Park).* Intended to permit a compatible, master-planned mix of day and evening uses consisting of office, light manufacturing, retail, residential, recreation, and open space components.
- *CSD-SWF (Commercial Special District – Southwestern Furniture).* Intended to permit a compatible, master-planned mix of day and evening uses consisting of office, light manufacturing, retail, residential, recreation, and open space components.
- *CSD-WMBD (Commercial Special District – White Mountain Business District).* Intended to permit a compatible, master-planned mix of day and evening uses consisting of office, light manufacturing, retail, residential, recreation, and open space components.

[1] Draper City Zoning Map, https://draper.maps.arcgis.com/apps/MapSeries/index.html?appid=efd5084362f444e6bf543671b3203aa6, and Draper City Code of Ordinances, https://codelibrary.amlegal.com/codes/draperut/latest/overview

- *DC (Destination Commercial).* Intended to provide an area that is uniquely regional in nature, with lodging, food establishments, retail, office, service uses, and entertainment as the only allowed uses.
- *M1 (Light Manufacturing).* Intended to provide areas for uses involving processing and assembly of manufactured goods, warehousing, and material storage. Uses which generate excessive noise, vibration, odor, dust, and fumes are excluded from this zone.
- *OS (Public Open Space).* Intended to recognize on the official zoning map areas which are open and generally undevelopable due to their sensitive environmental nature and/or the unavailability of adequate public facilities, such as conservation areas and national forest land.
- *RA1 (Residential/Agricultural).* Intended to foster low-density development with little impact on its surroundings and municipal services; to generally preserve the character of the city's semirural areas; and to promote and preserve conditions favorable to large-lot family life.
- *RA2 (Residential/Agricultural).* Intended to foster low-density development with little impact on its surroundings and municipal services; to generally preserve the character of the city's semirural areas; and to promote and preserve conditions favorable to large-lot family life.
- *RM1 (Multi-Family Residential).* Intended to permit well designed apartments, townhomes, twin homes, and condominiums at relatively high densities that are appropriately buffered from and compatible with surrounding land uses.
- *RM2 (Multi-Family Residential).* Intended to permit well-designed apartments, townhomes, twin homes, and condominiums at relatively high densities that are appropriately buffered from and compatible with surrounding land uses.
- *R3 (Residential).* Intended to permit medium-density residential development without special mitigation requirements. This zone is intended to provide incentives to foster residential development with little impact on its surroundings and on municipal services, and to generally preserve the semirural character called for in the density element of the general plan.
- *TSD (Transit Station District).* Intended to promote transit-oriented and transit-supportive development in areas that are generally located near a commuter rail transit or rapid transit station and to maximize the flexibility of the development approval process so as to permit such development in a manner that is responsive to market demands and consistent with the purposes and objectives of the TSD.

For the portion of the project extent in Bluffdale, the land use and zoning evaluation area includes the following zoning districts:[2]

- *I-1 (Light Industry).* Intended to provide areas within the city for manufacturing, processing, and warehousing of goods and materials.
- *I-O (Infill Overlay).* Intended to encourage infill development that is compatible and consistent with existing uses, provided that adequate infrastructure is in place to service any proposed development.

[2] Bluffdale City Zoning Map, https://bluffdale.maps.arcgis.com/apps/webappviewer/index.html?id=5198866c0ebf47228a8a33dafb4a4a35, and Bluffdale City Municipal Code, https://bluffdale.municipalcodeonline.com/book?type=ordinances#name=PREFACE_AND_INFORMATION

- *HC (Heavy Commercial).* Intended to provide areas within the city for various uses that under the right circumstances are compatible with each other.
- *MU (Mixed Use).* Intended to provide a land use pattern that provides for a complementary and compatible mix of uses and a diversity of dwelling unit types.
- *R-1-43 (Residential).* Intended to provide areas within the city for single-family dwellings on relatively large lots.
- *R-1-87 (Residential).* Intended to provide areas within the city for single-family dwellings on large lots and to provide areas within the city where agricultural pursuits can be encouraged and supported.
- *RC (Regional Commercial).* Intended to allow for the establishment of a variety of retail and service commercial uses not only required to meet the needs of the city, but also meet the needs of a larger regional area.
- *SD-R (Independence Village).* Intended to develop Independence Village, a residential neighborhood consisting of 181 single-family detached lots on public streets, an HOA (homeowners' association)-owned and -maintained park and trail, and the dedication of a city fire station, all on approximately 34.6 acres located east of Noell Nelson Drive (1000 West) at approximately 14900 South.
- *SG-1 (Sand and Gravel).* Intended to provide areas within the city for the extraction of sand, gravel, and other similar materials.

For the portion of the project extent in Riverton, the land use and zoning evaluation area includes the following zoning districts:[3]

- *A-5 (Agriculture).* Intended to promote and preserve, in appropriate areas, conditions favorable to agriculture and greenbelt open spaces.
- *R-1 (Residential).* Intended to provide a rural residential environment within Riverton that is characterized by large single-family houses, a minimum of vehicular traffic, and quiet neighborhoods favorable for rural family life.
- *RR-22 (Residential).* Intended to provide a residential environment within Riverton that is characterized by low-density single-family housing, a minimum of vehicular traffic, and quiet neighborhoods favorable for family life.

Effects of the Project on Land Use and Zoning

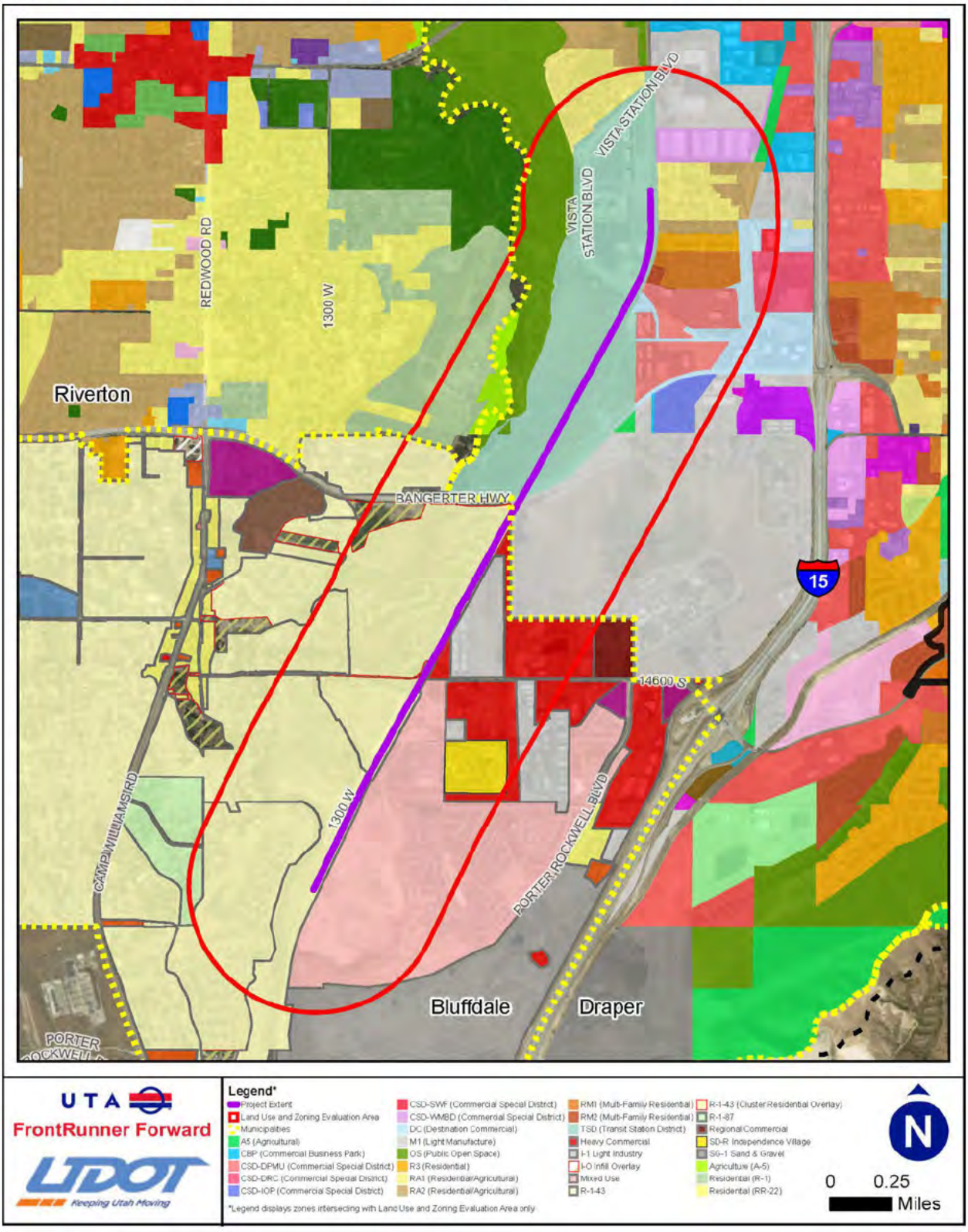
The Project would be compatible with existing land use and zoning because the proposed facilities (track and related infrastructure) would be constructed largely in or immediately adjacent to the existing commuter rail corridor. The project would require about 17.10 acres of ROW that consists of properties mostly in the track areas already owned by either the Union Pacific Railroad (UP) or UTA. Permanent property acquisition for the Project in the UP/UTA rail corridor would not convert lands to a different use because this land is already used for transportation.

[3] Riverton City Zoning Map, https://www.rivertonutah.gov/publicworks/gis/zoning-map.php, and Riverton City Code of Ordinances, https://www.codepublishing.com/UT/Riverton/

A small amount of additional ROW would be required from commercial areas that back to the tracks and from open space within the Galena – Soónkahni Preserve that is immediately adjacent to the FrontRunner corridor. Based on a review of aerial maps, all of the buildings in the commercial areas are provided access via FrontRunner Boulevard, and no commercial access would be affected. The project team anticipates that the rear areas of the commercial buildings are used primarily for parking and storage and that the access to and functionality of the buildings would not be affected by these small strip takes of property that would be converted from commercial to transportation use (see Section 2, Land/Property Acquisition, Relocation, Leases and Easements for more information).

The small strip (0.23 acre) of permanent ROW acquisition would be from the Galena–Soónkahni Preserve. The preserve is owned and managed by the Utah Department of Forestry, Fire and State Land (FFSL) with a conservation easement held by Utah Open Lands (see Section 6, Park and Recreation Resources). [redacted]

Figure 1. Zoning districts for the South of Draper Double Track Project



ATTACHMENT B.2
Land/Property Acquisition, Relocation, Leases, and Easements

FrontRunner Forward Technical Memorandum

To: Project File

From: HDR

Date: December 14, 2023

Subject: Land/Property Acquisition, Relocation, Leases, and Easements for the South of Draper Double Track Project

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Methodology

This memorandum describes the property acquisition, relocation, lease, and easement requirements to build and operate the South of Draper Double Track Project (the Project). The acquisition of property by the Utah Transit Authority (UTA) as necessary to construct the Project is subject to specific legal requirements and obligations. When such acquisitions are necessary, UTA's guidelines and policies are consistent with the federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 United States Code [USC] Section 4601 and subsequent sections, amended 1989) and the State of Utah Relocation Program (part of the Utah Relocation Assistance Act, Utah Code, Title 57, Chapter 12). These laws provide for uniform and equitable treatment of all persons displaced from their homes, businesses, and farms without discrimination on any basis.

Project Description and Need for Project

The Project is located between 0.75 and 1 mile west of Interstate 15 (I-15) in Bluffdale and Draper in the southern portion of Salt Lake County. The Project extends from UTA milepost S 20.5 north to UTA milepost S 17.2, a distance of about 3.3 miles to encompass 2.8 miles of new double track and track tie-in.

The existing double track section at Draper Station is about 1.0 mile long, and its primary use is allowing trains traveling in opposite directions to pass each other. The Project would lengthen the existing double track section by approximately 2.8 miles, moving the southern terminus of the section from the Vista Station Boulevard bridge to 1300 West. North of Bangerter Highway, the anticipated track work consists of constructing a new FrontRunner mainline (ML) track east of the existing mainline track, shifting the existing FrontRunner mainline track where necessary, removing one existing turnout, constructing one new turnout, constructing a new bridge over Bangerter Highway and 14600 South, demolishing an existing retaining wall and constructing new retaining walls on the west side of the corridor on the north and south approaches to the Bangerter Highway bridge as well as in other sections to minimize property impacts and ROW acquisition, extending the Jordan and Salt Lake City Canal culvert under the Bangerter Highway bridge's south approach, modifying an existing private access road at-grade crossing, relocating utilities, and widening the existing trackbed. South of Bangerter Highway, the existing UTA mainline would remain in its current location, and a new track would be constructed west of the existing mainline. Preliminary track design modeling shows that the estimated depth of excavation from the top of the existing ground to the bottom of the proposed subballast or track ditch for proposed trackwork

construction ranges from 2 to 5 feet. The estimated depth of excavation for walls, utilities, and the bridge over Bangerter Highway ranges from 3 to 10 feet.

The Project would improve reliability and reduce delays of the FrontRunner service. The Project is one of nine double track projects being proposed as part of long-term improvements under the FrontRunner Forward Program; however, it has independent utility and can be constructed with or without the other projects. Further detail 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)* (May 2023).

Property Acquisitions Evaluation Area

The evaluation area for the ROW acquisition analysis is the Project's proposed ROW limits.

Expected Property Acquisitions

Permanent property acquisition would be needed for the Project, and temporary construction easements would be required for grading and access. Constructing the new track north of Bangerter Highway would require property acquisition from Union Pacific Railroad (UP) within the UP/UTA corridor and property from the Utah Division of Forestry, Fire and State Lands (FFSL) west of the rail corridor.

As shown in Table 1 and Figures 1 to 12, the Project would require about 17.10 acres of ROW consisting of properties within the track areas owned by either the Union Pacific Railroad (UP) or UTA, commercial areas that back to the tracks, and open space. Based on a review of aerial maps, all of the buildings in the commercial areas are provided access via FrontRunner Boulevard, and no commercial access would be affected. The project team anticipates that the rear areas of the commercial buildings are used primarily for parking and storage and that the access to and functionality of the buildings would not be affected by these small strip takes of property.

The Project would also require a small strip of ROW acquisition from the Galena–Soónkahni Preserve, which is owned and managed by FFSL with a conservation easement held by Utah Open Lands. [redacted]

Because property impacts are based on preliminary engineering and because the locations of temporary construction easements are not yet known, the acquisitions could change and would be verified during the final design of the Project and during the property-acquisition process. For this analysis, the numbers of relocations, potential relocations, and partial acquisitions were calculated from Salt Lake County records of property data as of October 24, 2022.

Construction Easements

At this preliminary level of design, UTA and UDOT do not yet know exactly where temporary construction easements would be needed. However, the design footprint used to assess impacts to resources includes the anticipated limits of physical disturbance, including space for potential temporary construction workspaces and the limits of any anticipated ROW and temporary easement acquisition. The actual locations of temporary construction easements would be determined during final design. UDOT would compensate the property owners for the temporary use of the property, and the restored property would be returned to the owner when the use of the property is no longer needed. Mitigation

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 Code of Federal Regulations Part 24). This process will ensure just compensation for all properties and will minimize any impacts on the current owners. ROW acquisition from the Galena–Soónkahni Preserve would follow the provisions of the conservation easement.

Table 1. ROW parcel impacts

Parcel ID	Owner	Parcel Address[a]	Acres Impacted[b]	Relocation?	Acquisition Status	Figure Number(s)
27363530040000	EMC CORPORATION	13045 S FRONTRUNNER BLVD	<0.01	No	Partial	1
27363530050000	EMC CORPORATION	13087 S FRONTRUNNER BLVD	0.02	No	Partial	1
27363530060000	EMC CORPORATION	13131 S FRONTRUNNER BLVD	0.03	No	Partial	2
27363530070000	EMC CORPORATION	13173 S FRONTRUNNER BLVD	<0.01	No	Partial	2
27365010020000	Within track area/UP or UTA		3.69	No	Partial	2
33015010010000	Within track area/UP or UTA		1.80	No	Partial	3
33022000100000	STATE OF UTAH DEPT OF NATURAL RESOURCES DIV OF FORESTRY	840 W BANGERTER HWY	0.71[c]	No	Partial	3, 5
33025010020000	Within track area/UP or UTA		0.53	No	Partial	4
33024000250000	UTAH DEPARTMENT OF TRANSPORTATION	940 W BANGERTER HWY	0.03	No	Partial	5
33025010010000	Within track area/UP or UTA		1.70	No	Partial	5, 6
33024000200000	SALT LAKE CITY CORP	845 W BANGERTER HWY	0.15	No	Partial	6
33112000320000	SALT LAKE CITY CORP	14287 S ROYAL COACHMAN DR	0.90	No	Partial	6
33115010030000	DENVER & RIO GRANDE RAILROAD	1030 W 14600 S	1.18	No	Partial	7
33111820030000	BLUFFDALE CITY	14359 S ROYAL COACHMAN DR	0.03	No	Partial	8
33111820050000	BLUFFDALE CITY	14359 S ROYAL COACHMAN DR	0.05	No	Partial	8
33111760010000	Within track area/UP or UTA		0.05	No	Partial	9

(*continued on next page*)

Parcel ID	Owner	Parcel Address[a]	Acres Impacted[b]	Relocation?	Acquisition Status	Figure Number(s)
33113000270000	SALT LAKE CITY COPORATION	1159 W 14600 S	0.06	No	Partial	9
33115010020000	Within track area/UP or UTA		0.56	No	Partial	9
33115010050000	D & R G W RAILROAD	1141 W 14600 S	0.02	No	Partial	10
33115010070000	D & R G W RAILROAD	1141 W 14600 S	3.38	No	Partial	10
33145010010000	Within track area/UP or UTA		1.47	No	Partial	11
33141000110000	BLUFFDALE CITY	15010 S 1300 W	0.04[d]	No	Partial	11, 12
33155010010000	Within track area/UP or UTA		0.70	No	Partial	12
Total acres impacted			**17.10**			

[a] Parcels with no address are within the track area and owned by either UTA or UP. Impacted parcels in railroad ROW are based on the most recent county property records, which show single parcels covering both UTA and UP tracks. During original construction of the UTA FrontRunner line, UTA acquired property from UP in these parcels that appears to have not been recorded with the County. During final design development, UTA will confirm ROW ownership between the two railroads within these joint parcels to finalize which specific railroad's property would be affected in any given parcel.

[b] Some impacted parcels are spread over multiple pages.

[c] Impacts to parcel 33022000100000 are divided between two figures and total 0.71 acres.

[d] Impacts to parcel 33141000110000 are divided between two figures and total 0.04 acres.

Figure 1. ROW parcel impacts (1 of 12)

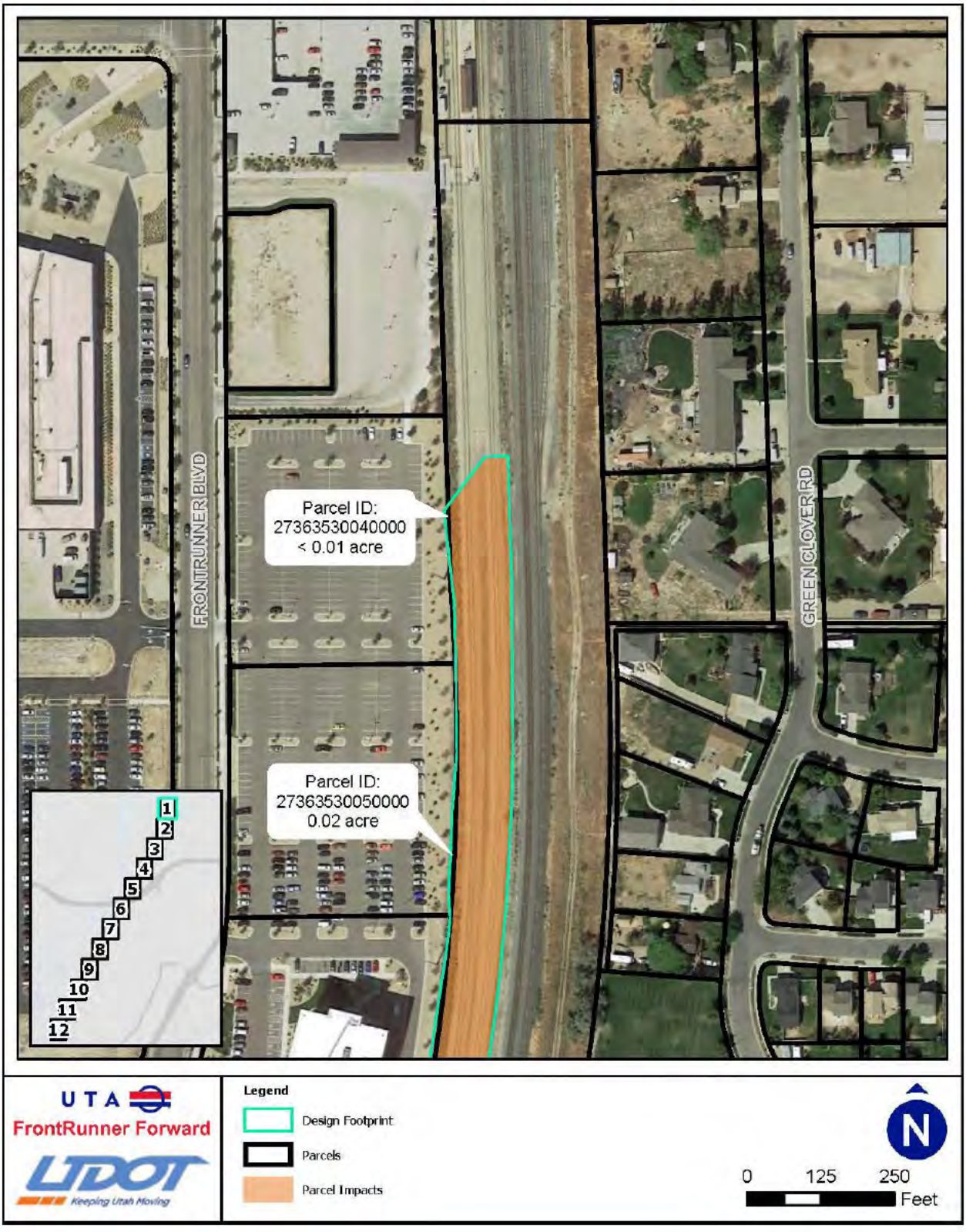


Figure 2. ROW parcel impacts (2 of 12)

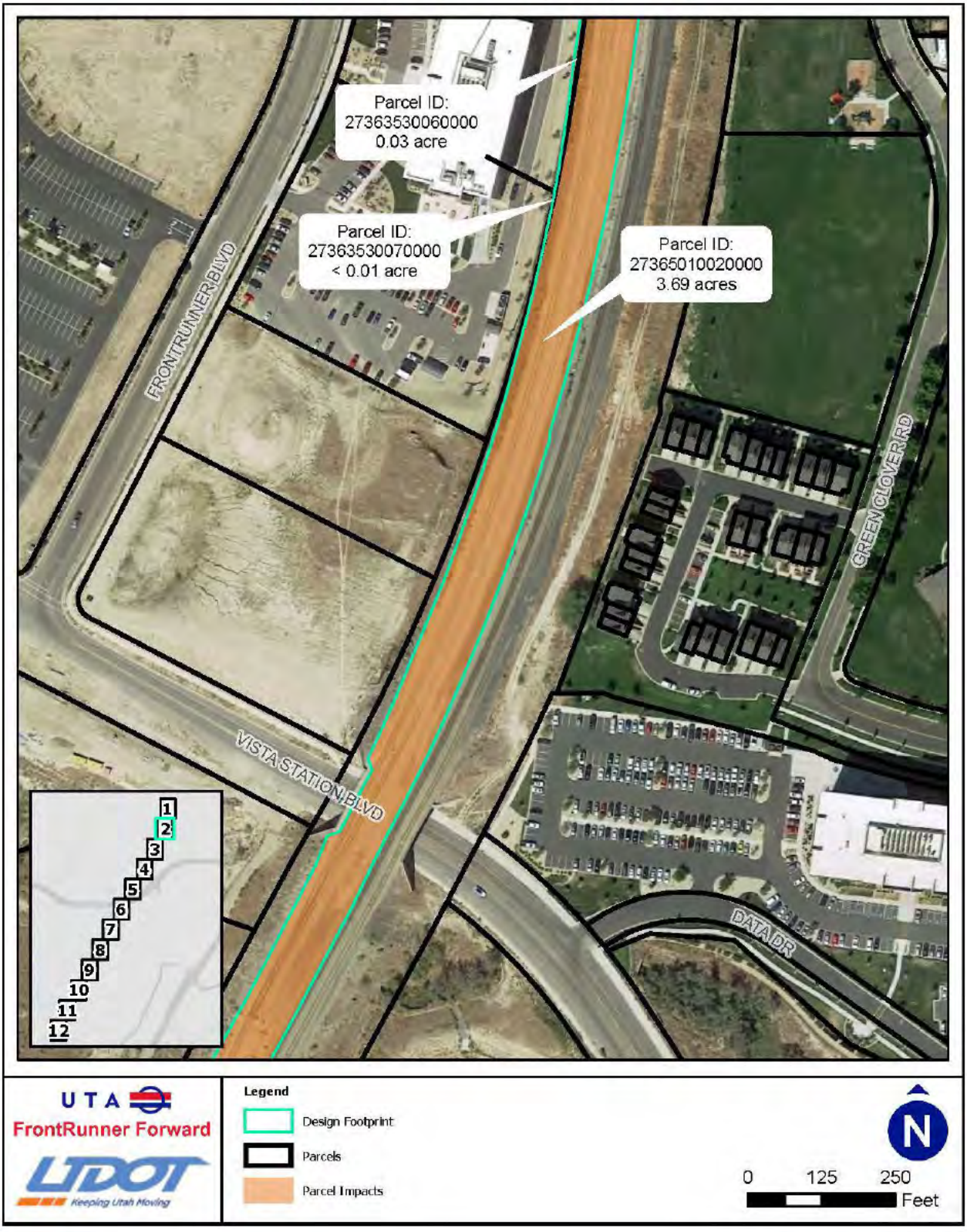


Figure 3. ROW parcel impacts (3 of 12)

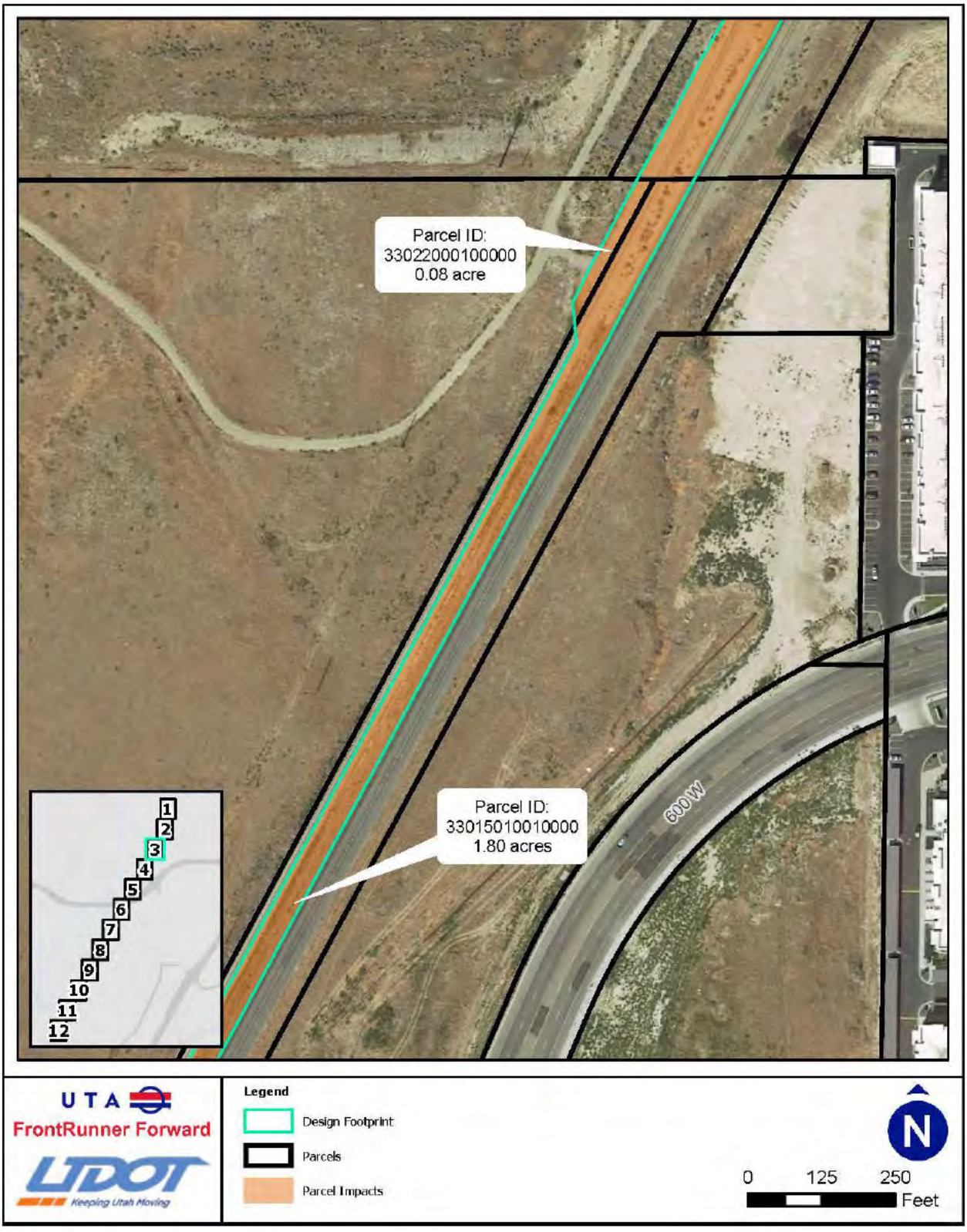


Figure 4. ROW parcel impacts (4 of 12)

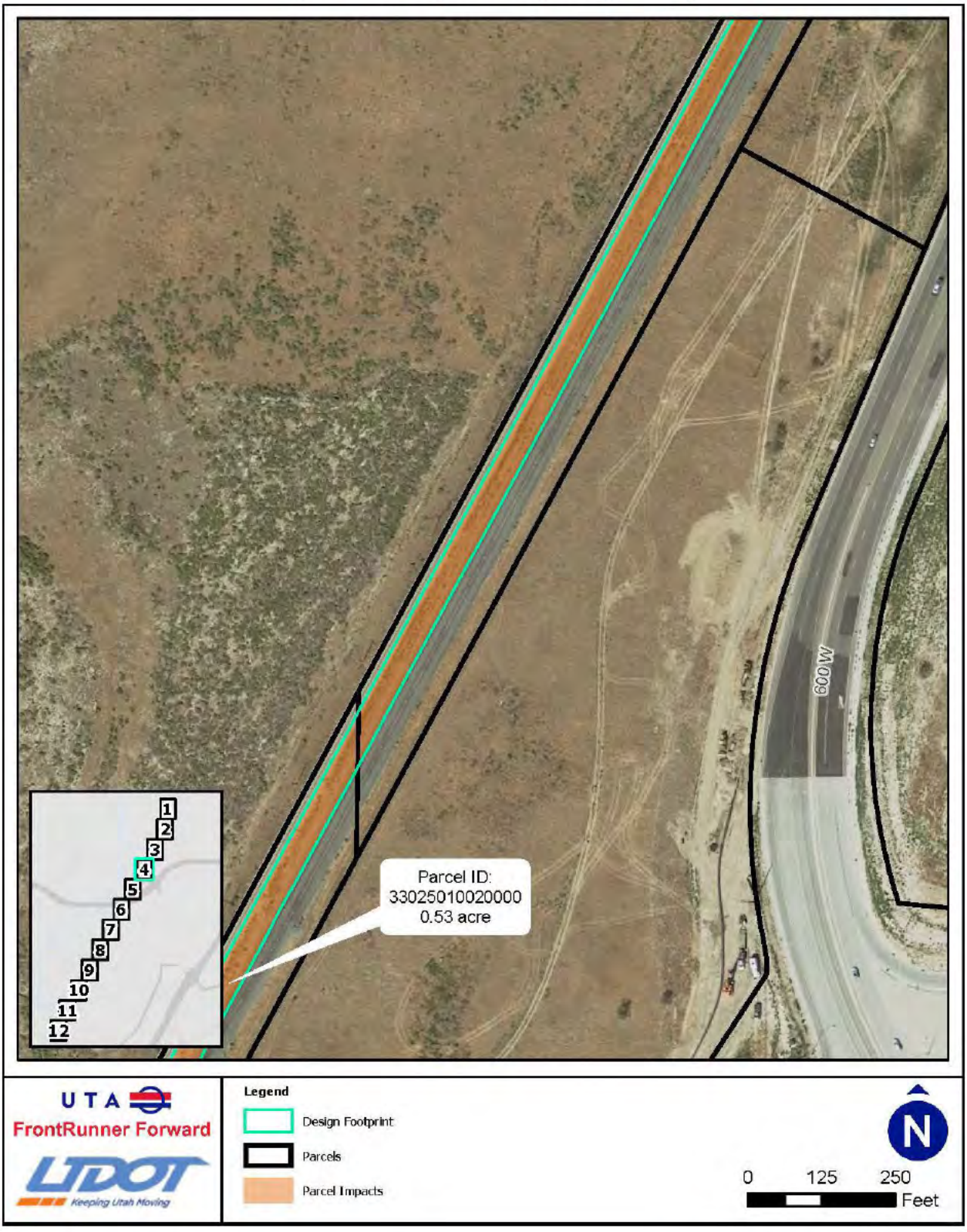


Figure 5. ROW parcel impacts (5 of 12)

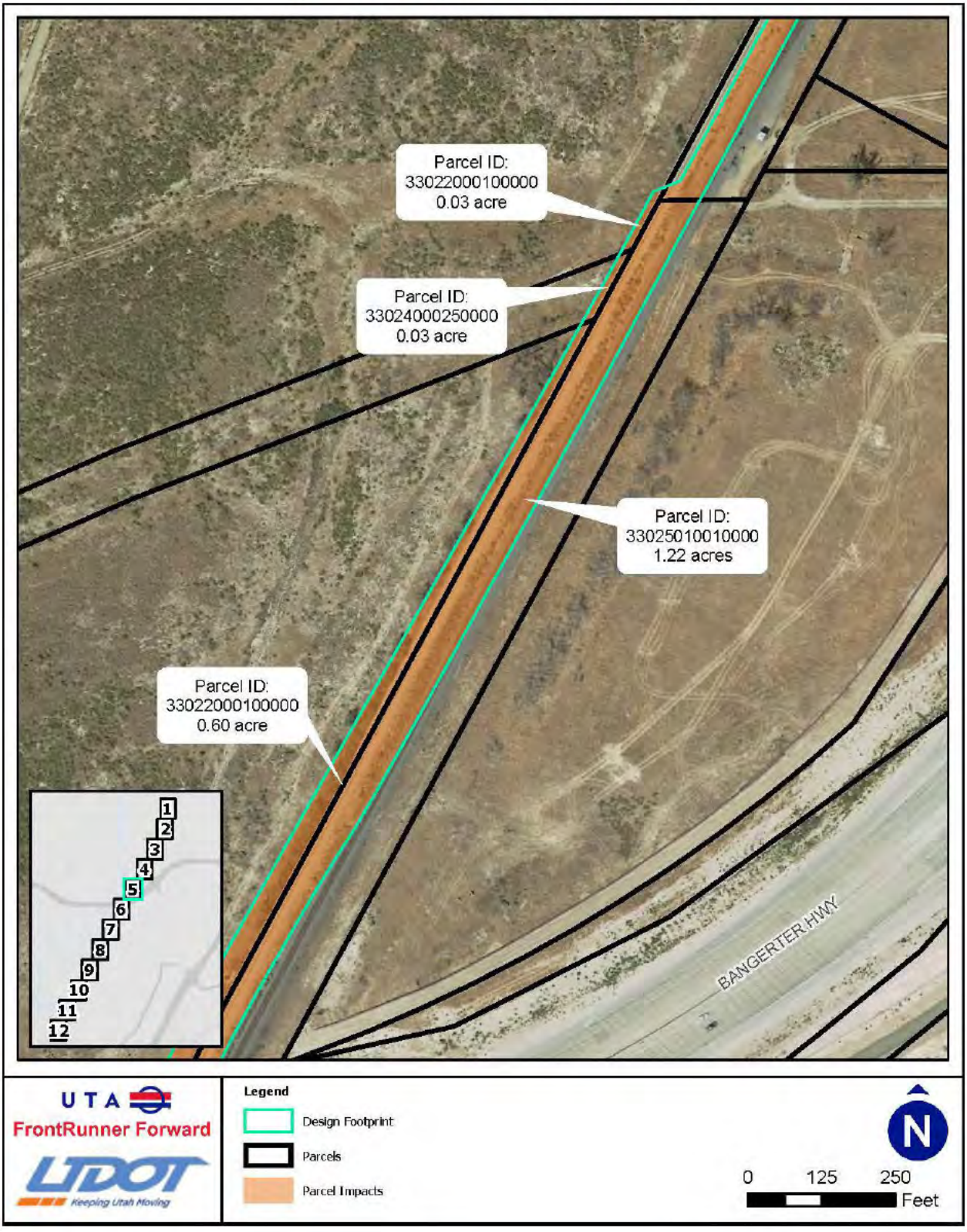


Figure 6. ROW parcel impacts (6 of 12)

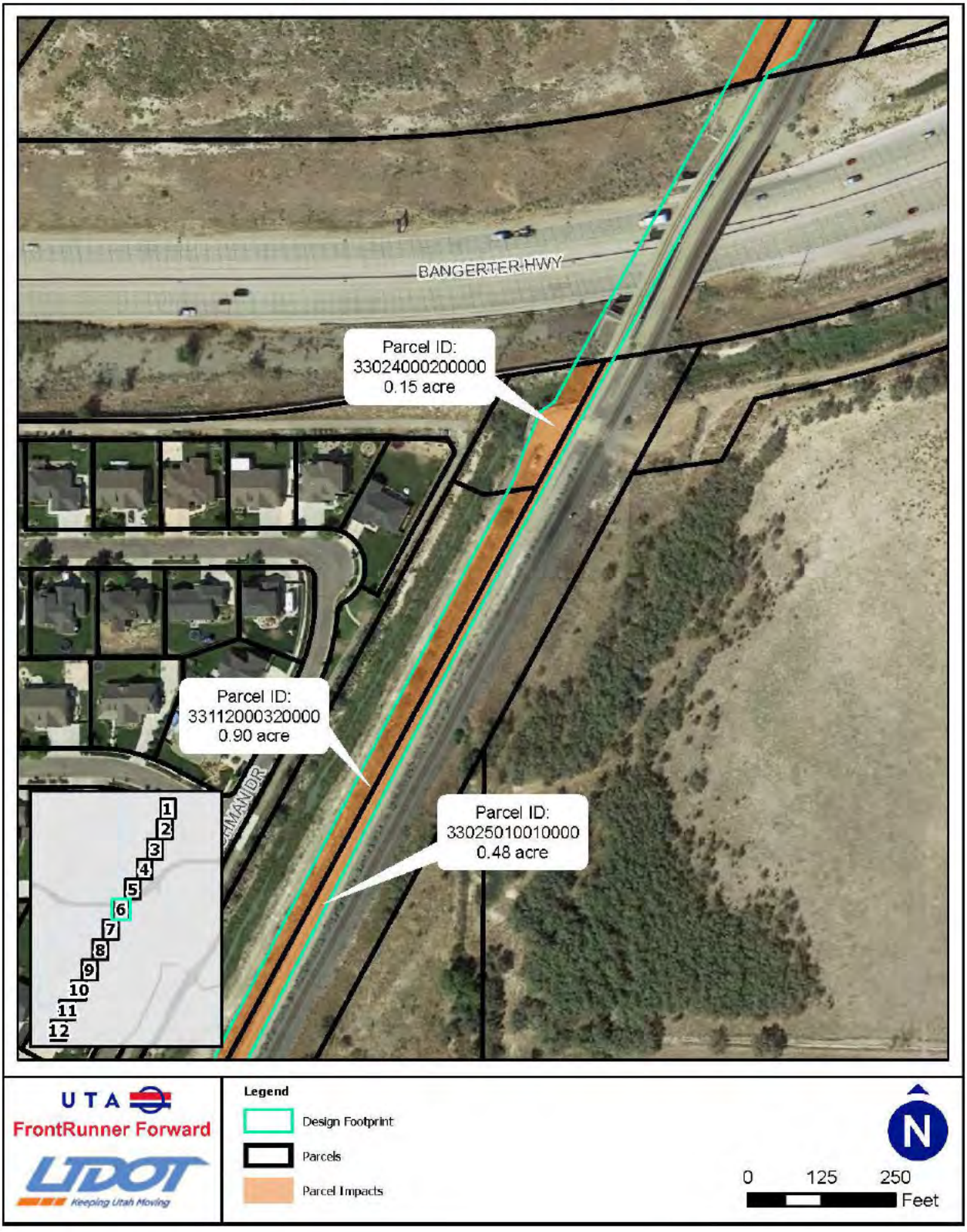


Figure 7. ROW parcel impacts (7 of 12)

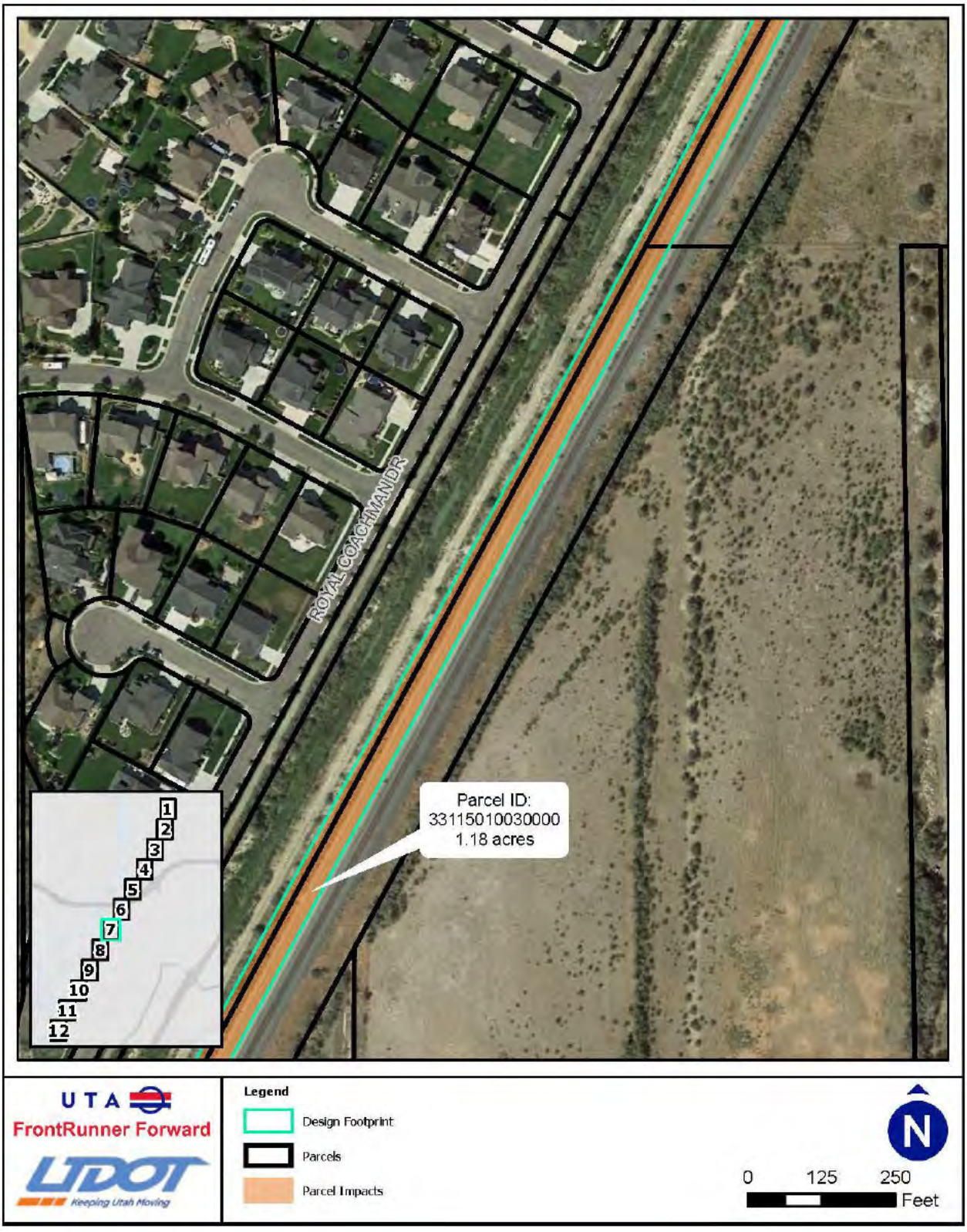


Figure 8. ROW parcel impacts (8 of 12)

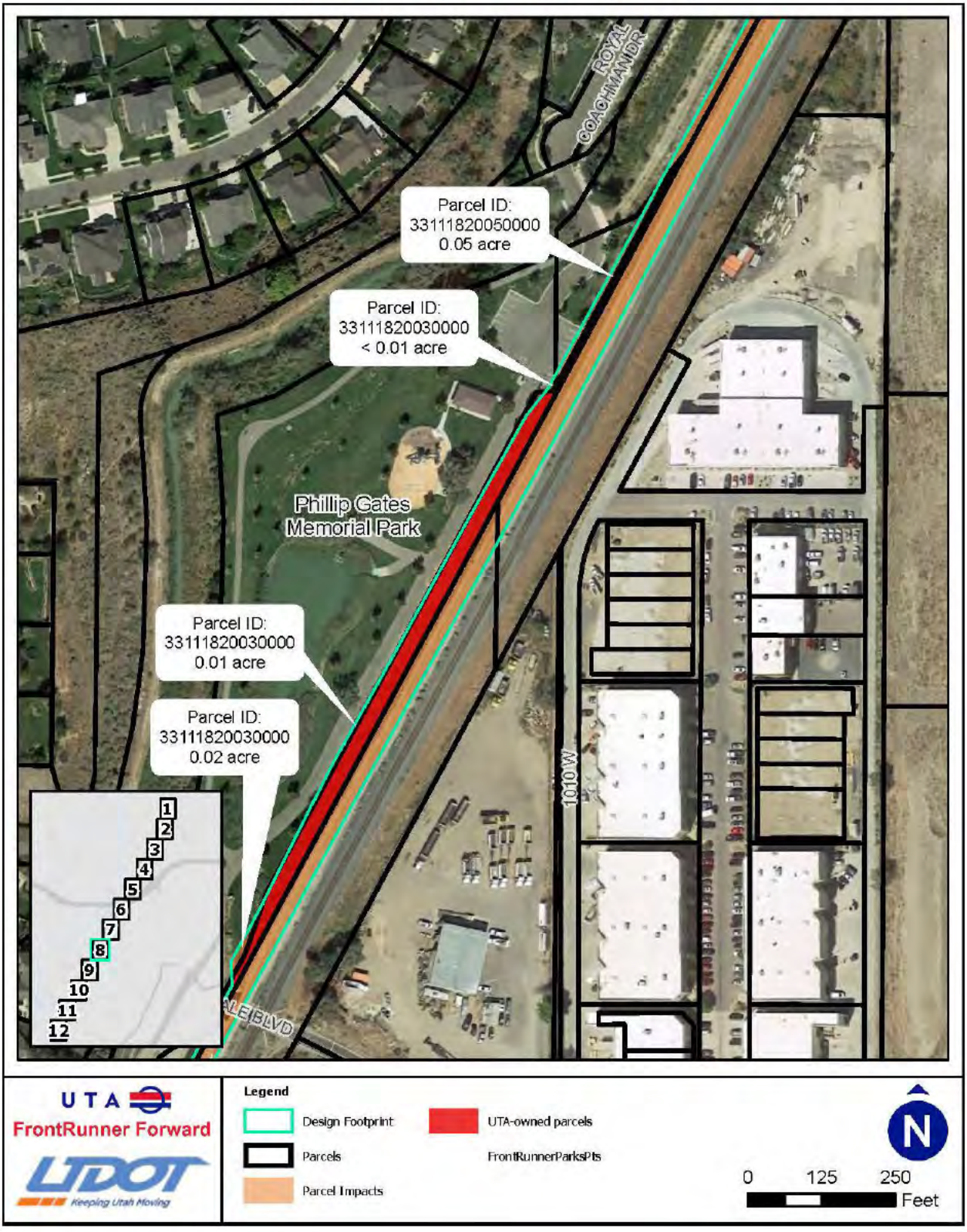


Figure 9. ROW parcel impacts (9 of 12)

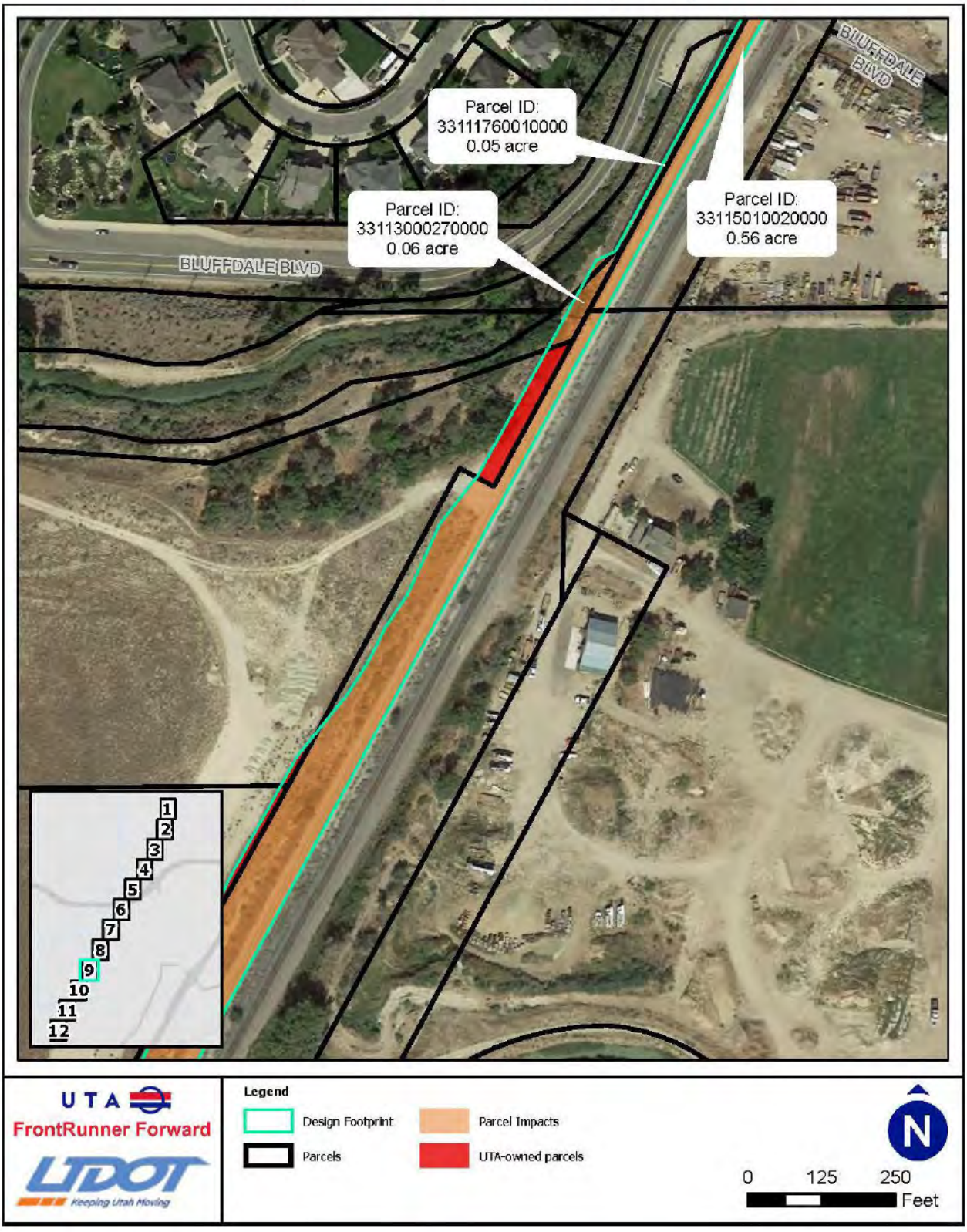


Figure 10. ROW parcel impacts (10 of 12)

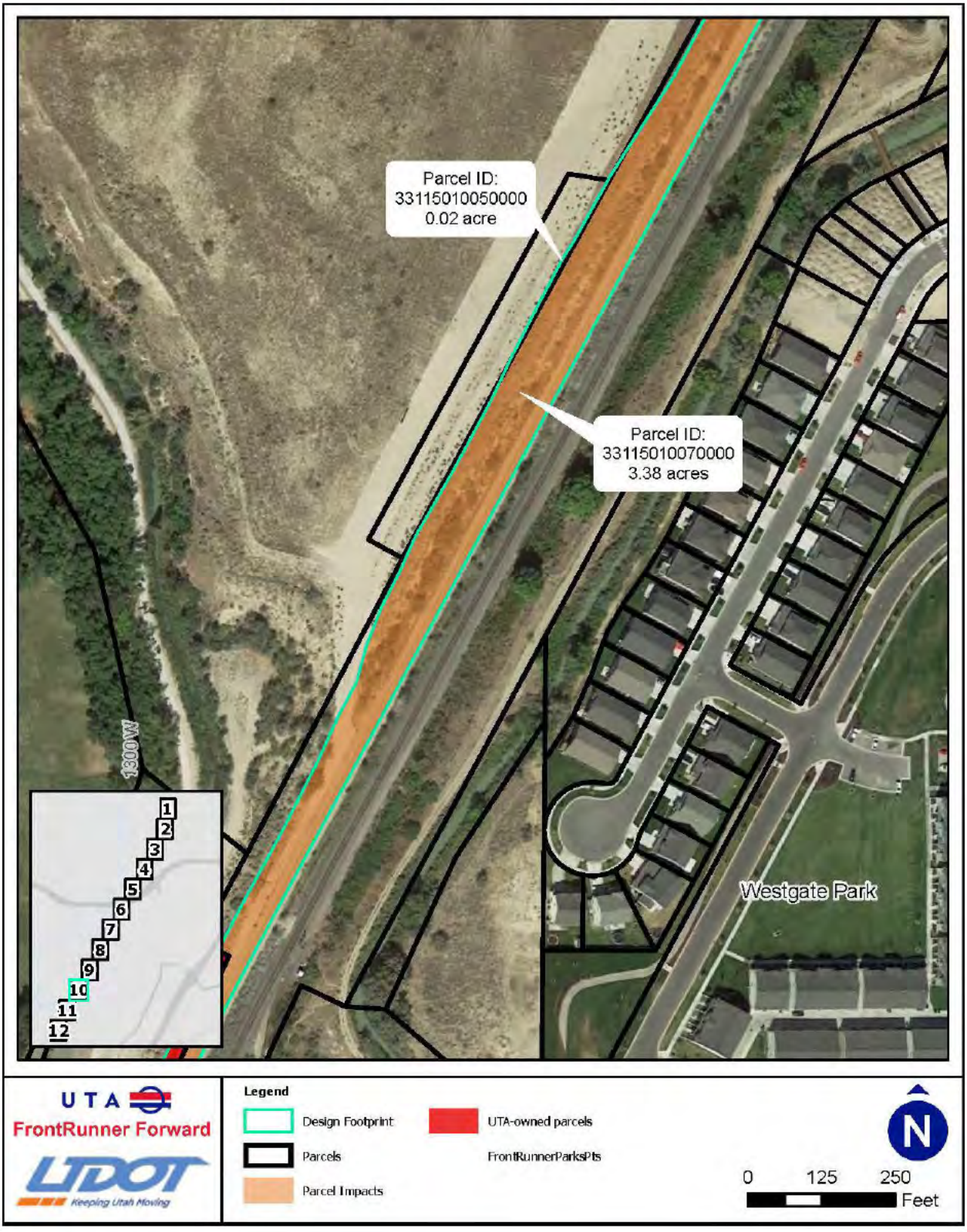


Figure 11. ROW parcel impacts (11 of 12)

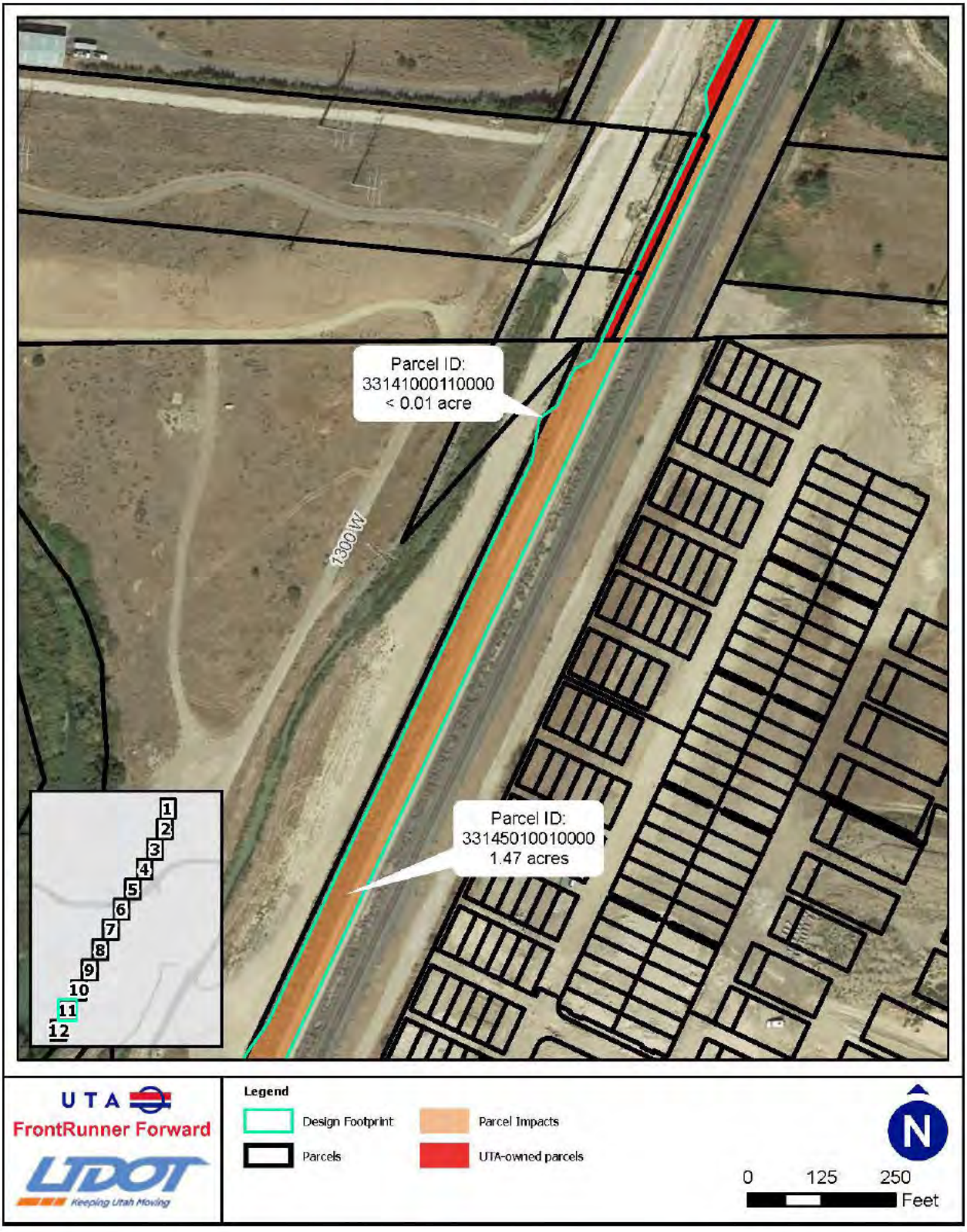
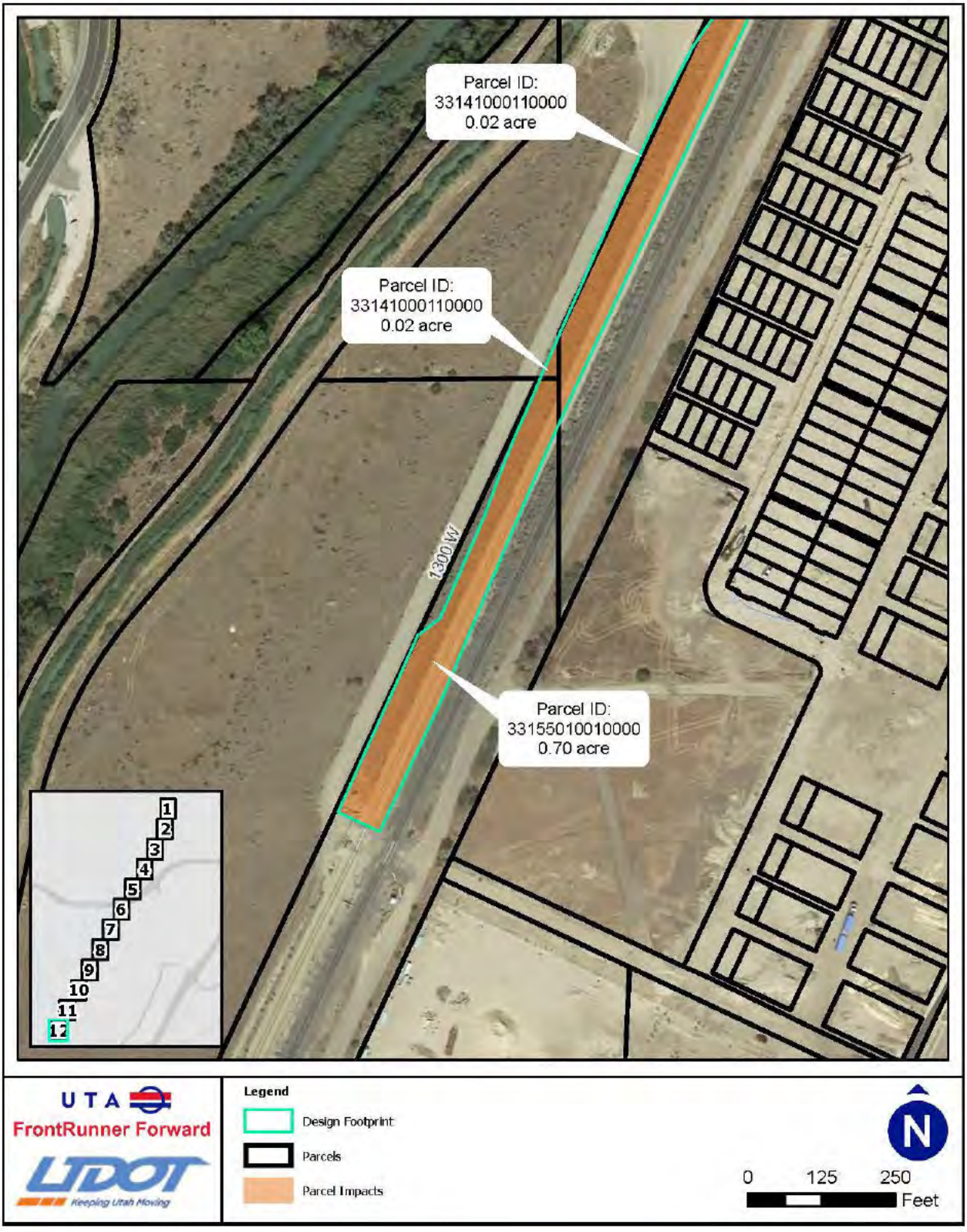


Figure 12. ROW parcel impacts (12 of 12)



ATTACHMENT B.3
Environmental Justice

FrontRunner Forward Technical Memorandum

To: Project File

From: HDR

Date: December 14, 2023

Subject: Evaluation of Environmental Justice for the South of Draper Double Track Project

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Methodology

The purpose of this memorandum is to evaluate expected impacts to low-income and minority populations in the environmental justice evaluation area for the proposed South of Draper Double Track Project (the Project).

The need to identify low-income and minority populations and incorporate their input in a project's decision-making process comes from Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority and Low-income Populations* (February 11, 1994). This order directs all federal agencies to determine whether a proposed action would have a disproportionately high and adverse impact on minority and/or low-income populations.

FTA provides guidance on evaluating social and economic impacts, including effects on minority and low-income populations. According to this guidance, transit projects often result in both positive and negative social and economic impacts and can influence community character and development trends. The assessment of effects presented in this memorandum is intended to help ensure that the Project addresses concerns and minimizes effects on communities where possible.

This memorandum summarizes the existing environmental justice populations in the environmental justice evaluation area and considers whether the community, noise, air quality, safety, and construction impacts of the Project would disproportionately affect environmental justice populations. A disproportionately high and adverse effect on an environmental justice population would occur in the following situations:

- The adverse effect associated with the transportation project would be predominantly borne by the environmental justice population.
- The adverse effect on the environmental justice population would be substantially more severe or greater in magnitude than the adverse effect on the non–environmental justice population.

Project Description and Need for Project

The Project is located between 0.75 and 1 mile west of Interstate 15 (I-15) in Bluffdale and Draper in the southern portion of Salt Lake County. The Project extends from UTA milepost S 20.5 north to UTA milepost S 17.2, a distance of about 3.3 miles to encompass 2.8 miles of new double track and track tie-in.

The existing double track section at Draper Station is about 1.0 mile long, and its primary use is allowing trains traveling in opposite directions to pass each other. The Project would lengthen the existing double track section by approximately 2.8 miles, moving the southern terminus of the section from the Vista Station Boulevard bridge to 1300 West. North of Bangerter Highway, the anticipated track work consists of constructing a new FrontRunner mainline (ML) track east of the existing mainline track, shifting the existing FrontRunner mainline track where necessary, removing one existing turnout, constructing one new turnout, constructing a new bridge over Bangerter Highway and 14600 South, demolishing an existing retaining wall and constructing new retaining walls on the west side of the corridor on the north and south approaches to the Bangerter Highway bridge as well as in other sections to minimize property impacts and ROW acquisition, extending the Jordan and Salt Lake City Canal culvert under the Bangerter Highway bridge's south approach, modifying an existing private access road at-grade crossing, relocating utilities, and widening the existing trackbed. South of Bangerter Highway, the existing UTA mainline would remain in its current location, and a new track would be constructed west of the existing mainline. Preliminary track design modeling shows that the estimated depth of excavation from the top of the existing ground to the bottom of the proposed subballast or track ditch for proposed trackwork construction ranges from 2 to 5 feet. The estimated depth of excavation for walls, utilities, and the bridge over Bangerter Highway ranges from 3 to 10 feet.

The Project would improve reliability and reduce delays of the FrontRunner service. The Project is one of nine double track projects being proposed as part of long-term improvements under the FrontRunner Forward Program; however, it has independent utility and can be constructed with or without the other projects. Further detail 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)* (May 2023).

Environmental Justice Evaluation Area

The evaluation area for identifying low-income and minority populations in and near the project extent is a 0.5-mile radius around the project extent. The environmental justice evaluation area includes each census tract or block group that intersects the 0.5-mile area or is completely within the 0.5-mile area.

Methodology

Low-income and minority population data were derived from Census 2020 data at the tract and block group level, respectively. The first step in the methodology involved determining whether census tracts and census block groups (CBGs) in the Project's environmental justice evaluation area had a low-income and/or minority populations.

Low-income population. The poverty-level American Community Survey (ACS) data are available at the tract level. Low-income persons were defined as individuals whose median household income for the tract was below the U.S. Department of Health and Human Services' poverty threshold, which was $26,200 for a family of four in 2020. Populations were identified as low-income if the percentage of low-income persons in the tract equaled or exceeded the percentage of low-income persons for Draper or Bluffdale as a whole.

Minority population. The total number of minority persons within each CBG was divided by each CBG's total population. Minority populations were identified as minority if the percentage of minority persons in the CBG equaled or exceeded 50% of the CBG's total population. Minority populations used to determine the percentage were African American or Black; American Indian or Alaskan Native; Asian; Hawaiian or other Pacific Islander; some other race; two or more races; and those who consider themselves belonging to the Hispanic or Latino cultures.

Low-income Populations in the Environmental Justice Evaluation Area

As shown in Table 1 and on Figure 1, four census tracts are within the environmental justice evaluation area. Based on Census 2020 data, two low-income populations were identified in the census tracts in the environmental justice evaluation area. Census tracts 1128.25 and 1128.27 both have a percentage of population below poverty level (10% and 5%, respectively) that is higher than the percentage of population below poverty level of Draper as a whole (4.7%) or Bluffdale as a whole (3.4%).

Table 1. Low-income populations in the environmental justice evaluation area by census tract

Community or Census Tract	Total Population	Population below Poverty Level	Percentage of Population below Poverty Level
Draper	46,133	2,171	4.7%
Bluffdale	14,747	508	3.4%
1128.18	0	0	0%
1128.25	4,496	450	10%
1128.27	8,296	411	5%
1146.02	2,065	29	1.4%

Source: U.S. Census Bureau, 2016–2020 American Community Survey 5-year Estimates, *S1701 Poverty Status in the Past 12 Months*, 2020

Gray-shaded cells indicate a tract with a percentage of low-income population equal to or exceeding the percentage of low-income population for Draper or Bluffdale as a whole.

Minority Populations in the Environmental Justice Evaluation Area

As shown in Appendix A and on Figure 2, 72 CBGs are within the environmental justice evaluation area. Based on Census 2020 data and the methodology used to identify minority populations, minority populations were identified in 4 of the 72 CBGs in the environmental justice evaluation area. The percentages of minority populations of these 4 CBGs range from just over 50% to 75%.

Figure 1. Census tracts within 0.5 mile of the project extent

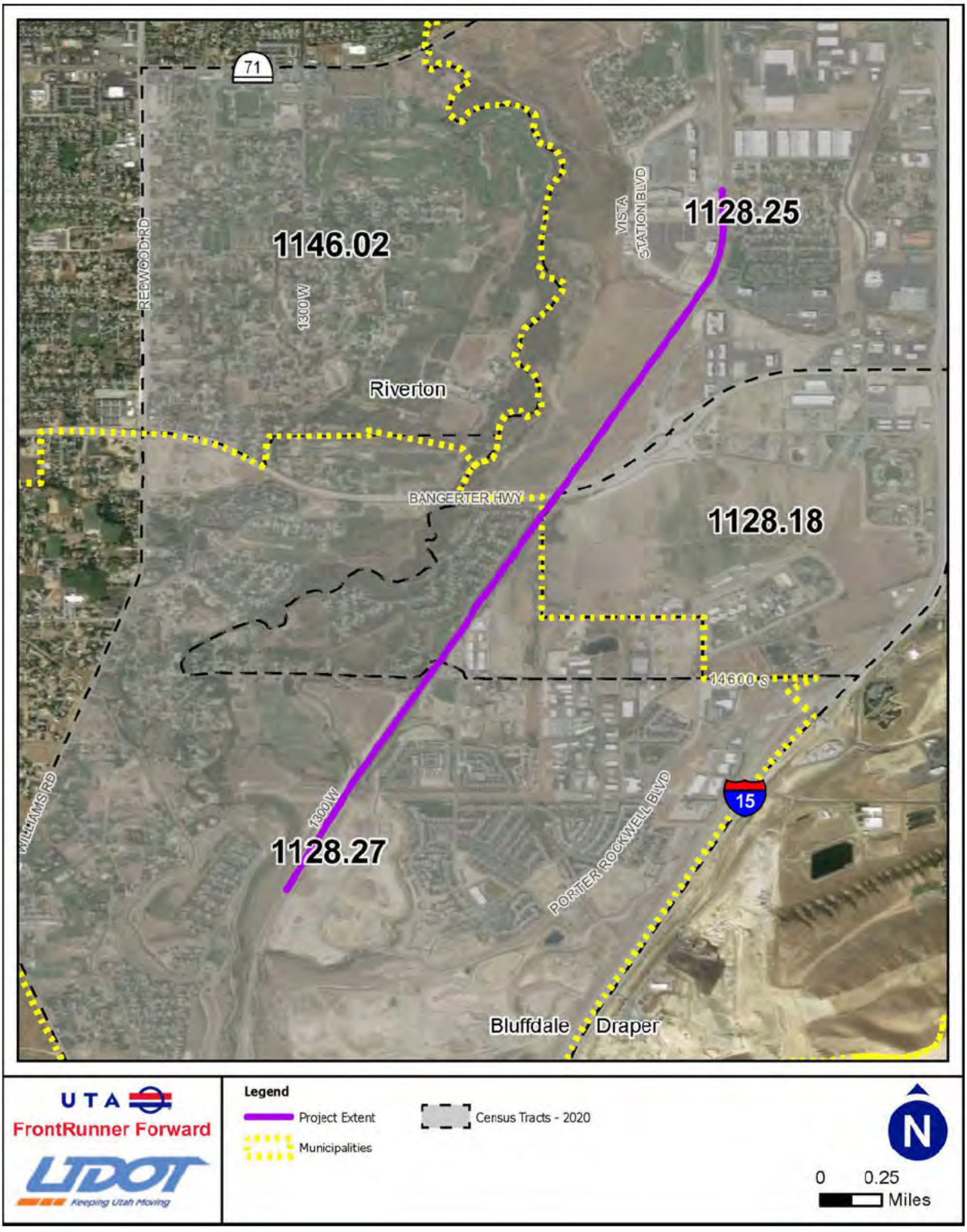
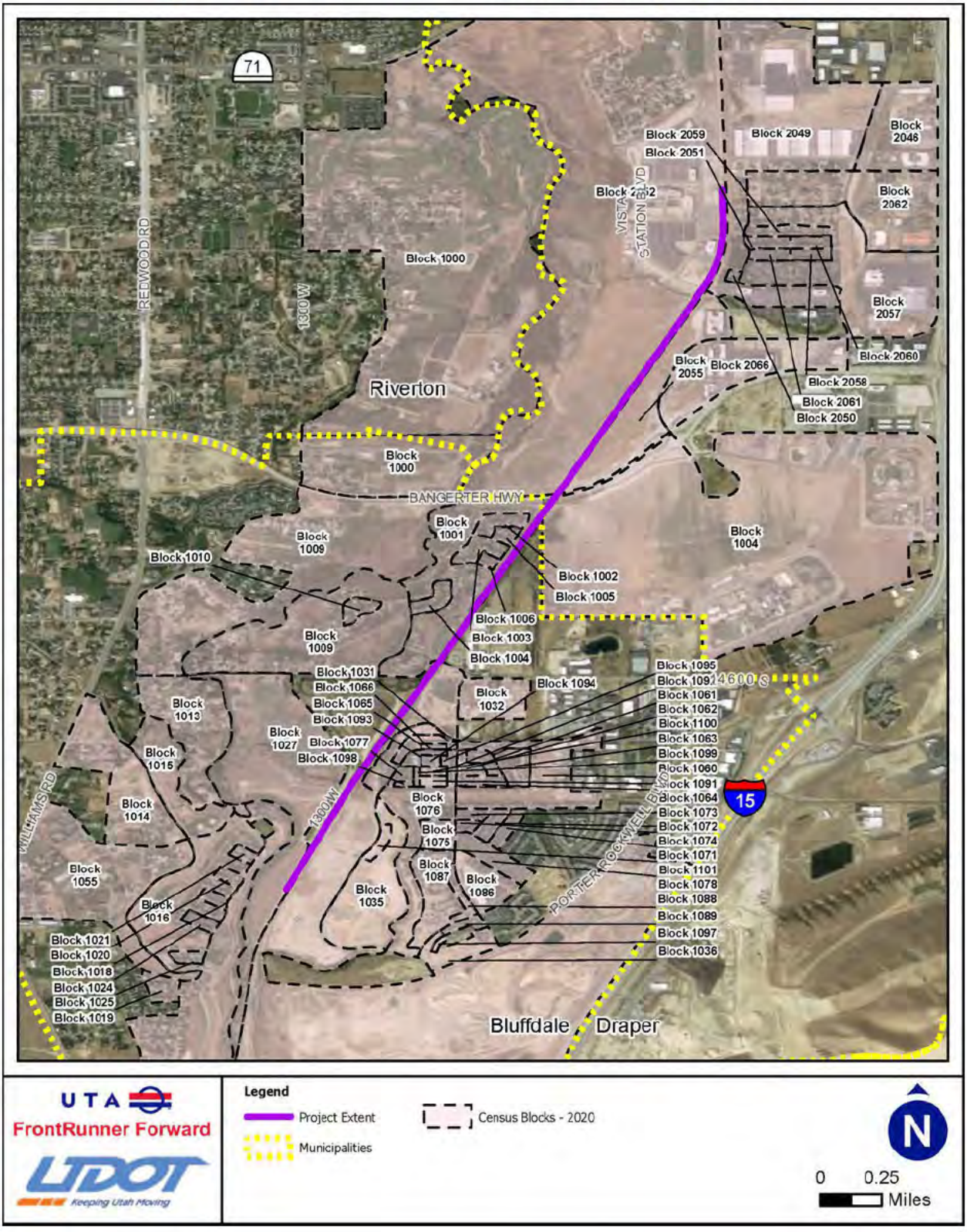


Figure 2. Census blocks within 0.5 mile of the project extent



Effects of the Project on Environmental Justice Populations

Although there are low-income and minority populations in the environmental justice evaluation area, the Project would not directly affect these populations, and the project team does not expect the Project to result in a disproportionately high and adverse effect on environmental justice populations. Because the FrontRunner commuter rail system is already in place and operating, the addition of a double track would not significantly change the area's character for any population (environmental justice population or otherwise). The project team anticipates that the Project would have no adverse effects on neighborhoods (none of which are close by) or communities since the communities were built around the historic Union Pacific Railroad that still operates freight service today adjacent to the FrontRunner rail line. The Project would not isolate any portion of a neighborhood, nor would it affect the community cohesion of the existing neighborhoods and communities, because these neighborhoods and communities were built adjacent to the rail line and the project team does not anticipate any right-of-way impacts to residential areas or community services.

The Project would not require acquiring homes or businesses, would not isolate any portion of a neighborhood or ethnic group, and would not separate residences from community facilities near the project area. No particular social group would especially benefit from or be harmed by the double tracking, since the Project would not permanently disrupt existing developments or communities. The double track project does not include any features that would alter the existing demographic or socioeconomic makeup of the surrounding communities. The Project does not include any features that would result in disproportionately high and adverse impacts—such as impacts to air quality, hazardous waste and hazardous materials, noise, parks and recreation, public health and safety, or relocations—to minority or low-income populations with respect to human health and the environment.

The project team expects that the Project would benefit the population of surrounding neighborhoods, including low-income and minority populations, by improving FrontRunner transit service capacity and reliability. The Project would improve operational reliability and rail capacity, which would provide regional transportation benefits to the surrounding communities.

Finally, in the short term, temporary construction-related noise, air quality, and community impacts from the Project would affect all communities in the environmental justice evaluation area. Since all residents would experience impacts equally, construction-related impacts would not disproportionately affect minority or low-income people. The temporary impacts of the double track construction activities would be mitigated as described in Section 18, *Construction Impacts*, of the Categorical Exclusion worksheet for the Project.

In addition, a corridor-wide environmental justice analysis has been conducted to evaluate potential impacts of the future anticipated service increase along the FrontRunner corridor. The corridor-wide environmental justice analysis is documented in a separate report, *FrontRunner Forward Corridor-level Environmental Justice Technical Memorandum* (May 2023), and summarized in the PEL (May 2023).

Appendix A. Minority Populations in the Environmental Justice Evaluation Area by Census Block Group

CBG	Total Population	Population Identifying as White Alone	Percentage of Total Minority Population
1077	75	60	20.00%
1076	315	237	24.76%
1097	17	9	47.06%
1014	117	109	6.84%
2051	87	56	35.63%
1013	258	253	1.94%
1100	65	46	29.23%
2058	95	78	17.89%
1032	21	15	28.57%
1015	20	5	75.00%
1027	39	28	28.21%
1018	59	42	28.81%
1062	73	30	58.90%
1004	94	77	18.09%
1095	30	25	16.67%
1065	145	107	26.21%
1029	340	308	9.41%
1009	188	166	11.70%
1066	43	34	20.93%
1075	68	56	17.65%
1020	27	26	3.70%
1099	43	32	25.58%
1098	27	18	33.33%
1019	87	56	35.63%
1061	86	73	15.12%
1004	3,159	2,010	36.37%
1078	290	252	13.10%
1009	496	462	6.85%
1025	49	26	46.94%
2066	426	300	29.58%
1074	69	53	23.19%
1055	213	196	7.98%

(continued on next page)

CBG	Total Population	Population Identifying as White Alone	Percentage of Total Minority Population
2049	132	107	18.94%
1086	119	92	22.69%
2055	562	346	38.43%
1035	69	63	8.70%
2046	30	20	33.33%
1016	270	259	4.07%
2057	653	424	35.07%
2052	227	188	17.18%
1001	325	300	7.69%
1072	107	76	28.97%
1091	71	56	21.13%
2061	105	75	28.57%
1000	122	107	12.30%
1101	49	29	40.82%
1010	43	29	32.56%
1088	77	70	9.09%
1003	94	88	6.38%
1017	256	239	6.64%
1089	70	60	14.29%
1093	89	55	38.20%
1000	326	307	5.83%
1021	28	21	25.00%
1036	248	182	26.61%
1031	116	102	12.07%
2050	31	15	51.61%
1002	102	88	13.73%
1071	122	107	12.30%
2059	108	85	21.30%
1063	135	101	25.19%
2062	236	181	23.31%
1094	76	68	10.53%
1060	310	278	10.32%
1024	58	53	8.62%
1073	86	55	36.05%
1006	33	21	36.36%
1087	412	320	22.33%

(*continued on next page*)

CBG	Total Population	Population Identifying as White Alone	Percentage of Total Minority Population
1064	101	75	25.74%
1092	49	32	34.69%
1005	41	35	14.63%
2060	103	51	50.49%

Source: Utah Geospatial Reference Center, *Demographic Data*, https://gis.utah.gov/data/demographic/census/, 2020

Gray-shaded cells indicate a CBG with a minority population equal to or exceeding 50% of the CBG's total population.

ATTACHMENT B.4
Cultural, Historic, and Archaeological Resources

Per the Archaeological Resources Protection Act (ARPA) and guidance from the Utah State Historic Preservation Office (SHPO), archaeological site information has been redacted to protect sensitive cultural resources.

ATTACHMENT B.6
Park and Recreation Resources

FrontRunner Forward

South of Draper Double Track Project

Galena–Soónkahni Preserve Section 4(f) *De Minimis* Impact Public Comment Summary

December 2023

Table of Contents

Introduction

The Federal Transit Administration (FTA), the Utah Transit Authority (UTA), and the Utah Department of Transportation (UDOT) are preparing a Categorical Exclusion under the National Environmental Policy Act (NEPA) for a project that is proposing to add double track south of the existing Draper Station of UTA's FrontRunner commuter rail system in the cities of Bluffdale and Draper in southern Salt Lake County, Utah. The project is intended to improve reliability and reduce delays of the FrontRunner Service.

As the lead agency for the project, FTA, in compliance with Section 4(f) of the Department of Transportation Act of 1966, 23 United States Code (USC) Section 138 (as amended), and 49 USC Section 303 (as amended), provided public notification of the intent to make a *de minimis* impact finding for project impacts to the Galena–Soónkahni Preserve, a Section 4(f) resource within the project area. Information regarding Section 4(f) *de minimis* impacts was provided to the public via the project website, https://udotinput.utah.gov/frontrunnerproject#2.

The Galena–Soónkahni Preserve is owned and managed by the Utah Division of Forestry, Fire and State Lands (FFSL), and a conservation easement is held by Utah Open Lands. The preserve comprises about 250 acres adjacent to the Jordan River between 12300 South and 14600 South in Draper. A portion of the eastern edge of the preserve is adjacent to the existing FrontRunner rail corridor. The preserve meets the qualifications for a Section 4(f) resource as defined in 23 Code of Federal Regulations Part 774.

Public Comment Period

FTA, UTA, and UDOT conducted a 34-day public comment period from October 25 through November 27, 2023, to gather comments regarding the use of the Galena–Soónkahni Preserve as a result of the project and FTA's intent to make a *de minimis* impact finding under Section 4(f). The public comment period for the Galena–Soónkahni Preserve Section 4(f) *de minimis* impact for this Categorical Exclusion was conducted from October 25 through November 27, 2023. During this time, the public could submit comments through the project website, project hotline, or project email or by mailed letter. All comments received during the comment period are included in this report and will be considered by the project team. A range of methods were used to ensure that the public was adequately notified about and invited to participate in the process.

Notifications

The following methods were used to notify the public of the public comment period, the materials available for review, and how to comment.

- Notifications were published on the FrontRunner project website: https://udotinput.utah.gov/frontrunnerproject#2
- A legal notice was placed in the following publication:
  - *The Salt Lake Tribune*, Wednesday, October 25, 2023
- A notification was placed in the following publication:
  - *Draper Journal*, November 2023
- Notifications and reminders were posted on the Draper City social media sites:
  - Facebook on October 25, 2023
  - X (formerly Twitter) on October 25, 2023
- Signs were placed along the Jordan River Trail within the Galena–Soónkahni Preserve and near one of the publicly accessible impacted areas.

Copies of the notification materials listed above are included in Appendix A, *Galena-Soónkahni Preserve Section 4(f) De Minimis Impact Public Comment Notifications*.

Galena–Soónkahni Preserve Section 4(f) *De Minimis* Impact Comments

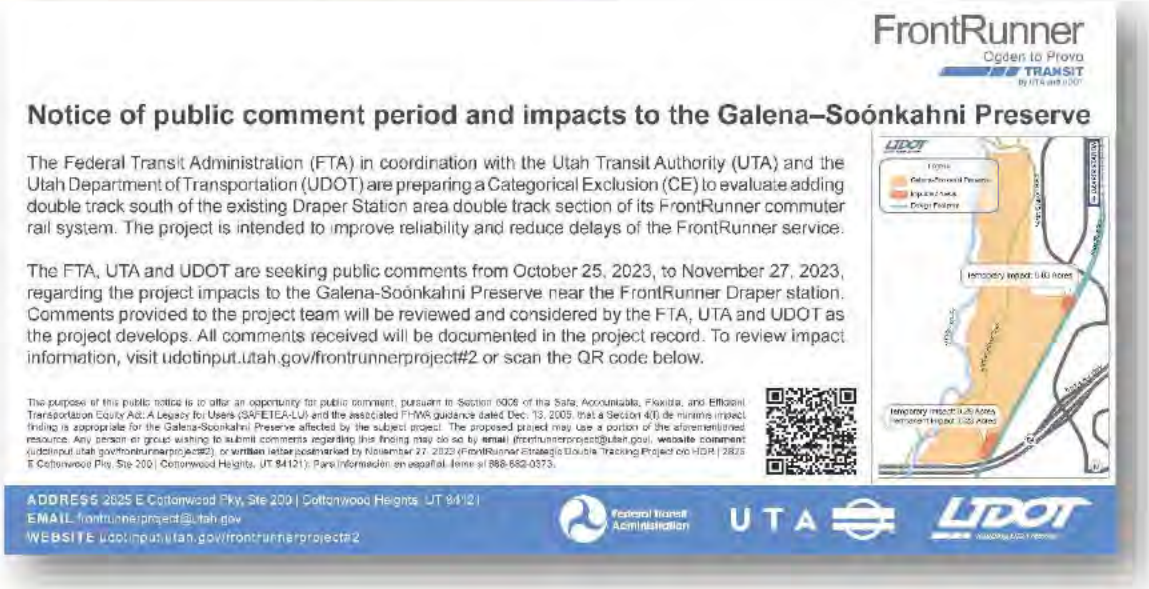
During the public comment period, FTA, UTA, and UDOT received two individual comment submissions from the public and none from an agency or Tribe. The two comments received were submitted through the project website. The comments were in general support of the project. As FTA, UTA, and UDOT received each comment, it was reviewed and assigned a number. All comments received between October 25 and November 27, 2023, are included in Appendix B, *Galena-Soónkahni Preserve Section 4(f) De Minimis Impact Public Comments*, in a table with an identifying comment number. Comments are organized chronologically, and a single comment might include several issues.

Appendix A

Galena–Soónkahni Preserve Section 4(f) *De Minimis* Impact Public Comment Notifications

Sign Content and Placement
Legal Notice
Draper Journal Notice
Draper City Social
Project Website Content

Sign content and placement



FrontRunner
Ogden to Provo
TRANSIT

Notice of public comment period and impacts to the Galena–Soónkahni Preserve

The Federal Transit Administration (FTA) in coordination with the Utah Transit Authority (UTA) and the Utah Department of Transportation (UDOT) are preparing a Categorical Exclusion (CE) to evaluate adding double track south of the existing Draper Station area double track section of its FrontRunner commuter rail system. The project is intended to improve reliability and reduce delays of the FrontRunner service.

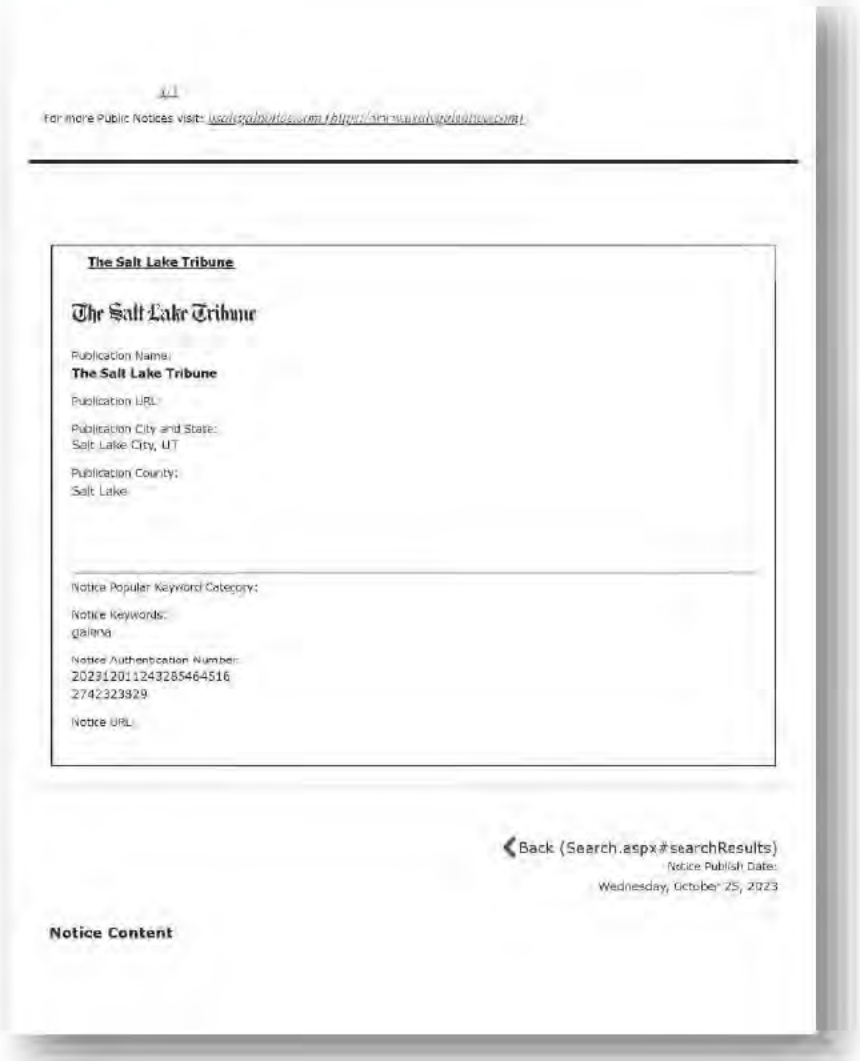
The FTA, UTA and UDOT are seeking public comments from October 25, 2023, to November 27, 2023, regarding the project impacts to the Galena-Soónkahni Preserve near the FrontRunner Draper station. Comments provided to the project team will be reviewed and considered by the FTA, UTA and UDOT as the project develops. All comments received will be documented in the project record. To review impact information, visit udotinput.utah.gov/frontrunnerproject#2 or scan the QR code below.

The purpose of this public notice is to offer an opportunity for public comment, pursuant to Section 6009 of the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) and the associated FHWA guidance dated Dec. 13, 2005, that a Section 4(f) de minimis impact finding is appropriate for the Galena-Soónkahni Preserve affected by the subject project. The proposed project may use a portion of the aforementioned resource. Any person or group wishing to submit comments regarding this finding may do so by email (frontrunnerproject@utah.gov), website comment (udotinput.utah.gov/frontrunnerproject2), or written letter postmarked by November 27, 2023 (FrontRunner Strategic Double Tracking Project c/o HDR | 2825 E Cottonwood Pky, Ste 200 | Cottonwood Heights, UT 84121). Para información en español, llame al 888-882-0373.

ADDRESS 2825 E Cottonwood Pky, Ste 200 | Cottonwood Heights UT 84121
EMAIL frontrunnerproject@utah.gov
WEBSITE udotinput.utah.gov/frontrunnerproject#2

Federal Transit Administration UTA UDOT

Legal Notice



For more Public Notices visit: utahpublicnotices.com / https://www.utahpublicnotices.com/

The Salt Lake Tribune

The Salt Lake Tribune

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galena

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20231201124328546451 6
2742323829

Notice URL:

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Notice Publish Date:
Wednesday, October 25, 2023

Notice Content

NOTICE FOR PUBLIC COMMENT Galena -Soonkahni Preserve Impacts as part of the South of Draper FrontRunner Strategic Double Tracking Project in Salt Lake County, UT The Federal Transit Administration (FTA) in coordination with the Utah Transit Authority (UTA) and the Utah Department of Transportation (UDOT) is proposing to add double track south of the existing Draper Station of the FrontRunner commuter rail system in the cities of Bluffdale and Draper in southern Salt Lake County, Utah. As the lead agency for the project, FTA, in compliance with Section 4(f) of the Department of Transportation Act of 1966, 23 United States Code (USC) Section 138 (as amended) and 49 USC Section 303 (as amended), is providing public notification of the intent to make a de minimis impact finding of the Galena -Soonkahni Preserve, a Section 4(f) resource within the project area. The project would improve reliability and reduce delays of the FrontRunner service. The project would permanently acquire an approximately 0.23-acre strip of land along the southeast corner of the Galena -Soônkahni Preserve just north of Bangerter Highway and immediately adjacent to the existing railroad corridor. This area would be permanently converted to railroad ROW. The project would require an additional 0.39-acre strip of the preserve in this same area for a temporary construction easement (TCE), which would be used during construction only. On the northeast corner of the preserve, the project would require another 0.03 acre of land for a TCE, about 600 feet south of Vista Station Boulevard, immediately adjacent to the existing railroad corridor. In total, the project would need to temporarily acquire 0.42 acre during construction. The permanent acquisition of a 0.23-acre strip of land on the preserve's southeast edge would be a conversion of preserve property to transportation purposes. However FTA has determined that the project's impacts to the preserve would not permanently or temporarily adversely affect the activities, features, or attributes that qualify the Galena –Soônkahni Preserve as a resource for protection under Section 4(f) which include publicly-owned parks, recreational areas, wildlife or waterfowl refuges, and historic sites. Access to the preserve would not be impacted and the preserve would remain open during construction. The FTA, UTA, and UDOT are seeking public comments regarding the project's impacts to the Galena - Soônkahni Preserve near the FrontRunner Draper station. Comments provided to the project team will be reviewed and considered by the FTA, UTA, and UDOT as the project develops. All comments received will be documented in the project record. To review impact information, visit https://udotinput.utah.gov/frontrunnerproject#2. Any person or group wishing to submit comments regarding the use of the Galena -Soonkahni Preserve as a result of the project and FTA's intent to make a de minimis impact finding under Section 4(f) may do so in writing. The public comment period starts October 25, 2023, and ends November 27, 2023. Comments should be sent to the FrontRunner Project by email to frontrunnerproject@utah.gov; via web at https://udotinput.utah.gov/frontrunnerproject#2; or by postal mail to FrontRunner Project, c/o HDR, 825 E. Cottonwood Parkway, Suite 200, Salt Lake City, UT 84121. Para información en español, llame al 888-882-0373. SLT0024918

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Draper Journal Notice

FrontRunner
Ogden to Provo
TRANSIT
by UTA and UDOT

PUBLIC NOTICE

Notification of Public Comment Period and Impacts to the Galena-Soónkahni Preserve

The Federal Transportation Adminstration (FTA), Utah Transit Authority (UTA), and Utah Department of Transportation (UDOT) and are preparing a Categorical Exclusion (CE) to evaluate adding double track south of the existing Draper Station of the FrontRunner commuter rail system. The project is intended to improve reliability and reduce delays of the FrontRunner service.

A public comment period will be held from October 25, 2023, to November 27, 2023, for the public to review the project impacts to the Galena-Soónkahni Preserve. Comments provided to the project team will be reviewed and considered by FTA, UTA, and UDOT as the project develops. All comments received will be documented in the project record. To review the information about the impacts, visit udotinput.utah.gov/frontrunnerproject#2 or scan the QR code.

FrontRunner Strategic Double Tracking
Galena-Soónkahni Preserve Impacts

To leave a public comment:
Email: frontrunnerproject@utah.gov
Web: udotinput.utah.gov/frontrunnerproject#2
Mail: FrontRunner SDT c/o HDR
2825 E Cottonwood Pky, Ste 200
Cottonwood Heights, UT 84121

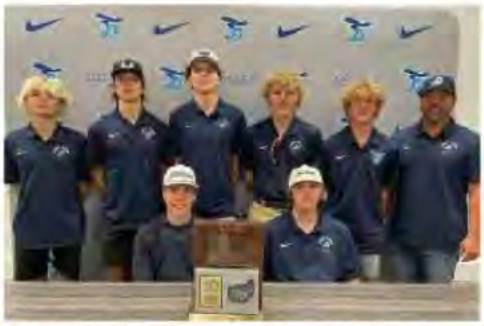
Learn more: udotinput.utah.gov/frontrunnerproject
Para información en español, llame al 888-882-0373.

EMAIL: frontrunnerproject@utah.gov
WEB: udotinput.utah.gov/frontrunnerproject#2
UTA UDOT

Juan Diego Catholic High School's Cash Mattingly tied for 26th at the 3A state golf tournament at Meadowbrook Golf Course Oct. 11-12. The senior had rounds of 82 and 77—including a birdie on the final hole of his high school career—during the two-day tournament. Junior Bryson Newport also made the cut, finishing 64th, scoring an 83 and 91. Others participating at state were senior Dean Siegel and juniors Will Conley, Eamonn Dolan and Charlie Gleason. (Photo courtesy Charity Ryan)

JD boys golf wins region title

By Catherine Garrett | c.garrett@mycityjournals.com



The Juan Diego Catholic High School boys golf team won the Region 14 title with a 335.9 stroke average, edging out Judge Memorial who had 351. The Soaring Eagle squad was led by senior Cash Mattingly and junior Eamonn Dolan who were co-medalists with a 75 at Meadowbrook Golf Course Sept. 25. Senior Dean Siegel shot an 84 for eighth place with junior Bryson Newport's 85 tying him for ninth. Making the All-Region team for the season were Dolan (in second with a 79.9 scoring average), Mattingly (third, 80.5), Charlie Gleason (eighth, 84.1), Jayden Due (10th, 86.3) and Siegel (12th, 89.1). (Photo courtesy Charity Ryan)

Draper City Social Media Notice

Draper City Facebook Post 10/25/2023

Draper City X Post 10/25/2023

Project Website Content

Translate

Notice of Public Comment

Oct. 25 – Nov. 27

UTA FrontRunner South of Draper Strategic Double Track Project

Impacts to the Galena–Soónkahni Preserve

Submit your comment or question about the 4(f) impact to the Galena-Soonkahni Preserve here. Comments provided to the project teawm will be reviewed and considered by FTA, UTA, and UDOT. All comments received will be documented in the project record. The project team will contact you if any additional information is need. Read about the FrontRunner impacts to the Galena-Soonkahni Preserve below.

Give Feedback

Submit your comment or question about the document here.

Your name *

Name

Comment

Allow admin to make my comment public

Project Overview

The Utah Transit Authority (UTA) in coordination with the Utah Department of Transportation (UDOT) is proposing to add double track south of the existing Draper Station of the FrontRunner commuter rail system in the cities of Bluffdale and Draper in southern Salt Lake County, Utah. As the lead agency for the project, the Federal Transit Administration (FTA), in compliance with Section 4(f) of the Department of Transportation Act of 1966, 23 United States Code (USC) Section 138 (as amended) and 49 USC Section 303 (as amended), is providing public notification of the intent to make a *de minimis* impact finding of the Galena-Soonkahni Preserve, a Section 4(f) resource within the project area.

The Galena-Soónkahni Preserve is owned and managed by the Utah Division of Forestry, Fire and State Lands (FFSL), with a conservation easement held by Utah Open Lands. The preserve comprises about 250 acres adjacent to the Jordan River between 12300 South and 14600 South in Draper. A portion of the eastern edge of the preserve is adjacent to the existing FrontRunner rail corridor. The preserve meets the qualifications for a Section 4(f) resource as defined in 23 Code of Federal Regulations Part 774.

Give Feedback

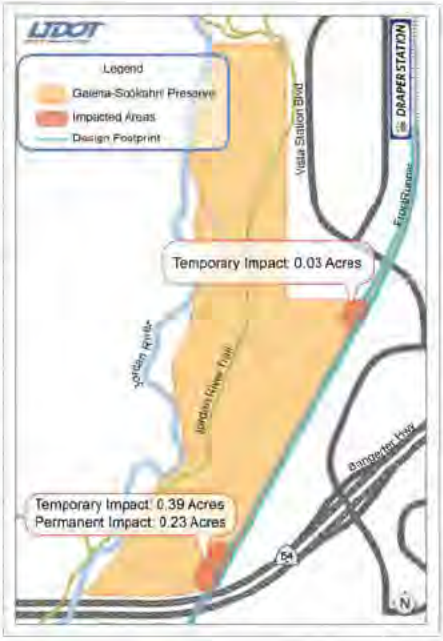
Project Impacts

(/img/nxkxuvsai7mgl5mxjcos_825_1200.PNG)The project would require grading to lay ballast and tracks between the existing FrontRunner tracks and the Union Pacific (UP) tracks. The work would occur mainly within the existing UP/UTA railroad corridor that abuts the Galena-Soónkahni Preserve though some permanent features and temporary work elements that would occur west of the rail corridor inside the preserve. The impacts to The Preserve would consist of permanently converting slivers of vegetated open space and disturbed shoulder directly adjacent to the existing railroad right-of-way (ROW) to accommodate permanent project features, including a new track and a retaining wall to support the track and to temporarily accommodate construction activities, such as grading and site access to move equipment and material.

The project would need to permanently acquire an approximately 0.23-acre strip of land along the southeast corner of the Galena-Soónkahni Preserve just north of Bangerter Highway and immediately adjacent to the existing railroad corridor. This area would be permanently converted to railroad ROW.

The project would require an additional 0.39-acre strip of the preserve in this same area for a temporary construction easement (TCE), which would be used during construction only. On the

northeast corner of the preserve, the project would require another 0.03 acre of land for a TCE, about 600 feet south of Vista Station Boulevard, immediately adjacent to the existing railroad corridor. In total, the project would need to temporarily acquire 0.42 acre during construction.



Both the permanent and TCE impacts to the Galena-Soónkahni Preserve would occur immediately adjacent to the UP/UTA rail corridor, and neither the permanent conversion of preserve land to transportation use nor the TCE impacts would have a notable impact on the use of the preserve as a park and recreation resource. No active recreation features or resources of the Galena-Soónkahni Preserve (for example, trails or benches) have been identified in the areas of permanent or temporary acquisition. The areas subject to use consist of open space and disturbed slope areas immediately adjacent to the existing UP/UTA-owned railroad ROW that offer no recreation amenities or activities. No wildlife and waterfowl refuge features or resources of the preserve have been identified in the areas of permanent or temporary acquisition. Both the permanent and TCE impacts to the preserve would be immediately adjacent to the UP/UTA rail corridor, and neither the permanent nor temporary conversion of preserve land to transportation use would impact the wildlife and waterfowl features of the preserve. The areas that would be used are not riparian or wetland habitat. The Galena-Soónkahni Preserve also includes an archaeological site of tremendous importance historically: dwellings and artifacts that rank among the oldest known in Utah and that are valued very highly by many people, including Native American people whose ancestral lands included this area. No archaeological features or artifacts were identified in the project area. FTA had coordinated with Utah Tribal Leaders regarding the project's impacts to the archaeological site.

Construction of the project along the Galena-Soónkahni Preserve is expected to take about 18 to 24 months and would occur in 2025. During this time, the active construction area along the eastern edge of the preserve would be temporarily inaccessible to the public; however, the preserve and trails could remain open to the public. As described above, no trails or other public facilities in this area of the preserve are adjacent to the rail corridor, and it is reasonable to assume that no recreation activities occur in this area and that people rarely, if ever, access this part of the preserve. There are no wetlands near this area of the preserve, and the Jordan River is more than 1,000 feet away.

Give Feedback

Impact Avoidance, Minimization and Mitigation

To minimize impacts to the archaeological site during construction, UTA together with UDOT will develop a cultural resources plan that will list the commitments that UTA and UDOT will implement during construction. This plan will include protocols for inadvertent discovery, cultural sensitivity training for construction personnel, and the requirement for a cultural monitor to be on site or on call during excavation activities. In addition, a temporary construction fence would be installed to mark the approved work area in and near the preserve, and construction personnel would be trained to understand that no work or equipment movement is allowed beyond the fencing.

Efforts to avoid and minimize the use of the Galena-Soónkahni Preserve are incorporated into the project design, and construction documents would stipulate specific measures—such as temporary construction fencing to mark the approved work area in and near the preserve—to minimize or avoid construction impacts. Further stipulations would be made to minimize the spread of invasive species and to use locations outside the preserve for construction equipment staging and personnel parking. All areas where temporary construction easements are needed would be restored to their original condition.

Conclusion

In summary, the permanent acquisition of a 0.23-acre strip of land on the preserve's southeast edge would be a conversion of preserve property to transportation purposes. However, FTA has determined that the project's impacts to the preserve would not permanently or temporarily adversely affect the significant activities, features, or attributes described above that qualify the Galena-Soónkahni Preserve as a resource for protection under Section 4(f). *Section 4(f) uses with de minimis* impacts on publicly owned parks, recreation areas, and wildlife and waterfowl refuges are defined as those that do not adversely affect the activities, features, or attributes of the Section 4(f) resource.

For more information about the FrontRunner Project, visit project website: udotinput.utah.gov/ (https://nam11.safelinks.protection.outlook.com/?url=https%3A%2F%2Fudotinput.utah.gov%2Ffrontrunnerproject&data=05%7C01%7CAmalia.Andrews%4horn.com%7C542d0359c9894aa565cf08dae3749fa3%7C7e220d300b5947e58a81a4a9d9afbdc4%7C0%7 (https://nam11.safelinks.protection.outlook.com/?url=https%3A%2F%2Fudotinput.utah.gov%2Ffrontrunnerproject&data=05%7C01%7CAmalia.Andrews%4horn.com%7C542d0359c9894aa565cf08dae3749fa3%7C7e220d300b5947e58a81a4a9d9afbdc4%7C0%7

Public Comment

Any person or group wishing to submit comments regarding the use of the Galena-Soonkahni Preserve as a result of the project and FTA's intent to make a *de minimis* impact finding under Section 4(f) may do so in writing. **The public comment period starts October 25, 2023, and ends November 27, 2023.** Comments should be sent to the FrontRunner Project by email to frontrunnerproject@utah.gov (mailto:frontrunnerproject@utah.gov); by web at udotinput.utah.gov/frontrunnerproject#2; or by postal mail to FrontRunner Project, c/o HDR, 825 E. Cottonwood Parkway, Suite 200, Salt Lake City, UT 84121. Para información en español, llame al 888-882-0373.

Contact Us

Phone: 888-882-0373

Email: frontrunnerproject@utah.gov (mailto:frontrunnerproject@utah.gov)

Give Feedback

Appendix B

Galena–Soónkahni Preserve
Section 4(f) *De Minimis* Impact
Public Comments

Galena-Soónkahni Preserve Section 4(f) *De Minimis* Impact Public Comments

#	Name	Date	Comment
1	Eric VanDerEems	10/27/2023 11:03 PM	This project offers maximum value with minimum disruption to the environment. The proposed land is already between two sets of train tracks and is not useful for anything. It's about time the front runner got fully double tracked.
2	Nathan Strain	11/13/2023 8:25 PM	I support this project. The environmental benefit of more frequent trains outweighs this impact.

ATTACHMENT B.7
Noise and Vibration

FrontRunner Forward

South of Draper Double Track Project

General Noise and Vibration Assessment

May 2024

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Introduction

The Utah Transit Authority (UTA) in coordination with the Utah Department of Transportation (UDOT) is proposing to lengthen and shift the existing Draper Station area double track segment of its FrontRunner commuter rail system in the cities of Draper and Bluffdale in southern Salt Lake County, Utah, to create a true double track alignment through this area. See the Vicinity Map in Attachment A.1, *Vicinity Map for the South of Draper Double Track Project*.

This report describes the expected noise and vibration impacts in the noise and vibration evaluation areas for the Project. The evaluation follows procedures and guidelines in the Federal Transit Administration's (FTA) *Transit Noise and Vibration Impact Assessment Manual* (FTA 2018). The purposes of the evaluation are to:

- Conduct a screening-level assessment to identify and inventory noise- and vibration-sensitive receivers in the project evaluation areas and determine the need for a General Noise Assessment or a General Vibration Assessment.
- Use the FTA modeling and assessment guidelines to estimate noise and vibration levels at noise- and vibration-sensitive receivers in the project evaluation areas and compare those results to project impact criteria established by FTA to determine the severity of impact.
- Evaluate reasonable and feasible mitigation measures to eliminate or minimize noise and vibration impacts, if necessary.

In addition, a corridor-wide noise and vibration analysis has been conducted to evaluate the potential impacts of the future anticipated service increase along the FrontRunner corridor. The corridor-wide noise and vibration analysis is documented in a separate report, *FrontRunner Forward Corridor-level Noise and Vibration Technical Memorandum* (May 2023), and summarized in a separate report, *FrontRunner Forward Strategic Double Track Recommended Service Alternative Overview – A Planning and Environmental Linkage Study (PEL)* (May 2023).

Project Description and Need for the Project

The Project is located between 0.75 and 1 mile west of Interstate 15 (I-15) in Bluffdale and Draper in the southern portion of Salt Lake County. The Project extends from UTA milepost S 20.5 north to UTA milepost S 17.2, a distance of about 3.3 miles to encompass 2.8 miles of new double track and track tie-in.

The existing double track section at Draper Station is about 1.0 mile long, and its primary use is allowing trains traveling in opposite directions to pass each other. The Project would lengthen the existing double track section by approximately 2.8 miles, moving the southern terminus of the section from the Vista Station Boulevard bridge to 1300 West. North of Bangerter Highway, the anticipated track work consists of constructing a new FrontRunner mainline (ML) track east of the existing mainline track, shifting the existing FrontRunner mainline track where necessary, removing one existing turnout, constructing one new turnout, constructing a new bridge over Bangerter Highway and 14600 South, demolishing an existing retaining wall and constructing new retaining walls on the west side of the corridor on the north and south approaches to the Bangerter Highway bridge as well as in other sections to minimize property impacts and ROW acquisition, extending the Jordan and Salt Lake City Canal culvert under the Bangerter Highway bridge's south approach, modifying an existing private access road at-grade crossing, relocating utilities, and widening the existing trackbed. South of Bangerter Highway, the existing UTA mainline

would remain in its current location, and a new track would be constructed west of the existing mainline. Preliminary track design modeling shows that the estimated depth of excavation from the top of the existing ground to the bottom of the proposed subballast or track ditch for proposed trackwork construction ranges from 2 to 5 feet. The estimated depth of excavation for walls, utilities, and the bridge over Bangerter Highway ranges from 3 to 10 feet.

The Project would improve reliability and reduce delays of the FrontRunner service. The Project is one of nine double track projects being proposed as part of long-term improvements under the FrontRunner Forward Program; however, it has independent utility and can be constructed with or without the other projects. Further detail 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)* (May 2023).

Noise Assessment

FTA Transit Noise Assessment Procedures

Under the FTA guidance, noise impact analyses are a multistep process ranging from relatively uncomplicated, screening-level evaluations to detailed impact assessments based on the severity of the noise impact and potentially requiring consideration of mitigation measures. The level of impact analysis required for a particular project depends on several factors including, but not limited to, the land uses that would be affected by the transit project, the type of transit project being considered (for example, transit only or multimodal), and the proximity of the project area to other noise sources (for example, near highways with large volumes of traffic where traffic noise dominates the noise environment or existing rail lines).

For the purpose of impact evaluation, the Project is considered a transit-only project in that project-related noise would be caused by transit sources only (moving commuter trains, wheel-track noise, and idling locomotives, for example). The FrontRunner commuter rail operates in a quiet zone corridor; therefore, horns are not sounded at street crossings. Train horns are not included as a transit noise source in this analysis.

Land Use Categories for Transit Noise Impact Criteria

Noise is defined as unwanted sound. FTA uses two common environmental noise metrics. The equivalent-average sound level (L_{eq}) represents a constant sound level that is an equivalent exposure level to the actual time-varying sound level over the period (typically 1 hour). The L_{eq} metric applies to Category 1 and Category 3 land uses, as described below. The day-night average sound level (L_{dn}) represents the 24-hour L_{eq} with a 10-dBA (A-weighted decibels) penalty applied to nighttime hours when noise is more likely to interfere with sleep (10 PM to 7 AM). The L_{dn} metric applies to Category 2 land uses. FTA's noise assessment criteria are based on the land use category of the building or receptor, existing noise levels, and the change in noise exposure due to a project, such as double-tracking an existing alignment or increasing train speeds through an area.

FTA considers noise impacts for three categories of land use depending on the noise sensitivity of the land use.

- *Category 1 (High Sensitivity).* Land where quiet is an essential element of its intended purpose. Example land uses include preserved land for serenity and quiet, outdoor amphitheaters and concert pavilions, and national historic landmarks with considerable outdoor use. Recording studios and concert halls are also included in this category.
- *Category 2 (Residential).* This category is applicable to all residential land uses and buildings where people normally sleep, such as hotels and hospitals.
- *Category 3 (Institutional).* This category is applicable to institutional land uses with primarily daytime and evening use. Example land uses include schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for meditation or study associated with cemeteries, monuments, museums, campgrounds, and recreational facilities are also included in this category.

FTA Noise Analysis Levels

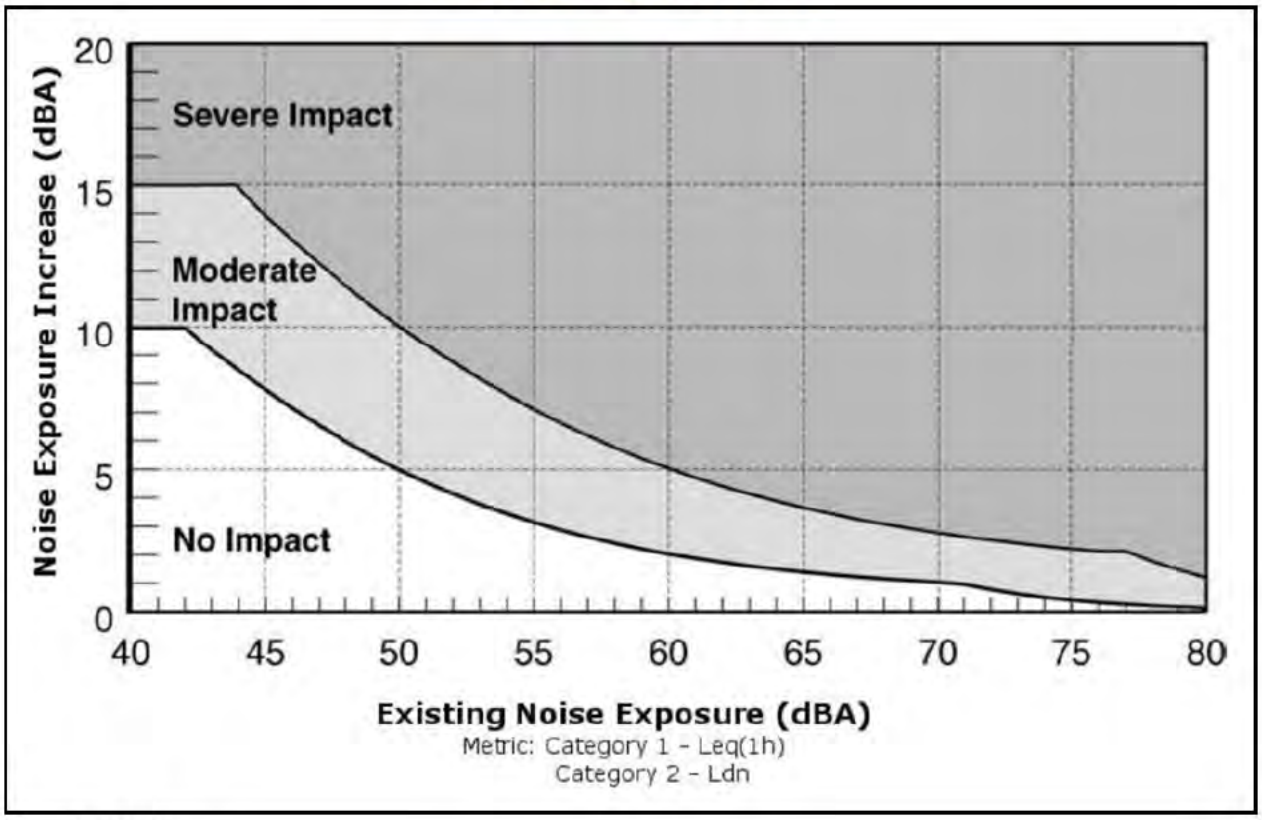
The FTA methodology categorizes noise impacts in terms of severity: no impact, moderate impact, or severe impact. A moderate noise impact is considered to cause measurable annoyance to the affected community. A severe noise impact is likely to cause a high level of community annoyance.

The FTA guidance discusses two options for evaluating the potential for noise impacts.

- *Option A (Project Noise Impact Criteria Presentation)* is used to evaluate impacts if the project noise source is a new source of noise in an area currently without transit.
- *Option B (Cumulative Noise Impact Criteria Presentation)* is used to evaluate impacts if the project noise adds to or changes existing transit noise in the community. As stated in the FTA guidance, projects for which Option B could be considered include operations of a new type of vehicle, modifications of track alignments in existing transit corridors, or changes in facilities that dominate existing noise.

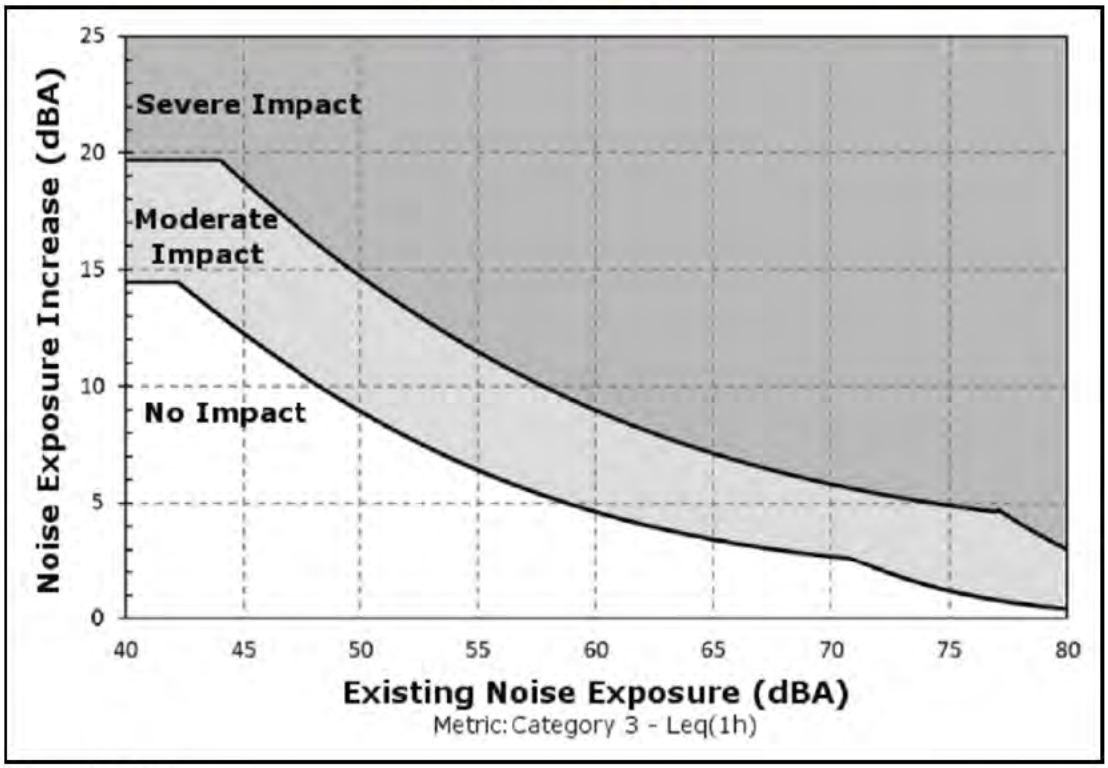
Option B is appropriate for the Project because the Project would change the existing transit noise in the noise evaluation area by double-tracking the alignment (where only one track currently exists) and increasing train speed through the FrontRunner corridor to 79 miles per hour (mph) from 60 mph. For those types of projects, the expected increase above existing noise levels is used to evaluate the noise impact. Figure 1 and Figure 2 illustrate the FTA assessment curves used to determine noise impacts from modified existing transit noise sources for Category 1, 2, and 3 land uses.

Figure 1. Noise impact criteria for a modified existing source at land use Categories 1 and 2



Source: FTA 2018

Figure 2. Noise impact criteria for a modified existing source at land use Category 3



Source: FTA 2018

FTA uses three levels of analysis to evaluate noise impacts for transit projects depending on the type of transit project under evaluation, the scale of the project, and the environmental setting in which the project is taking place.

The **Noise Screening Procedure** is a simplified means of identifying locations where a project could cause noise impacts and evaluates the land use categories in the study area to determine the need for additional analysis. If there are no noise-sensitive land uses in the study area, no further assessment is necessary. Using procedures in the FTA guidance, the noise analyst selects the project type and applies the corresponding screening distances for unobstructed line of sight or the presence of intervening buildings.

If there are noise-sensitive land uses within the screening distances, a general noise assessment is conducted. If there are no noise-sensitive land uses in the study area (that is, Category 1, 2, or 3 land uses as described above), no further assessment is necessary.

If there is the potential for noise impacts, the **General Noise Assessment** and **Detailed Noise Analysis** procedures are used to determine the extent and severity of impacts and to assess the need for noise-abatement measures.

Noise Screening-level Procedure for the South of Draper Double Track Project

Project Type

Using Table 4-8, *Assumptions for Screening Distances for Noise Assessments*, of the FTA guidance, the Project is a Commuter Rail Mainline. With the exception of one crossover at the southern terminus of the noise evaluation area near Cinch Way, there are no additional noise sources that require consideration as noise sources (for example, commuter rail stations, at-grade crossings with horns and bells, or other ancillary facilities).

Noise Screening Distances and Noise Evaluation Area

From Table 4-7, *Screening Distance for Noise Assessments*, of the FTA guidance, the default screening distances for Commuter Rail Mainlines are 750 feet (in areas with unobstructed views from the mainline) and 350 feet (in areas with intervening buildings).

Default assumptions used in determining the screening distances in Table 4-8 include the following:

- 66 daytime trips and 12 nighttime trips
- 1 locomotive per train
- 6 rail cars per train
- 55-mph train speed

If the default operational assumptions in Table 4-8 are not appropriate for the project, project-level screening distances are determined by calculating the distance from the alignment at which project-related noise is projected to reach 50 dBA, using FTA's General Noise Assessment equations or the FTA spreadsheet model.

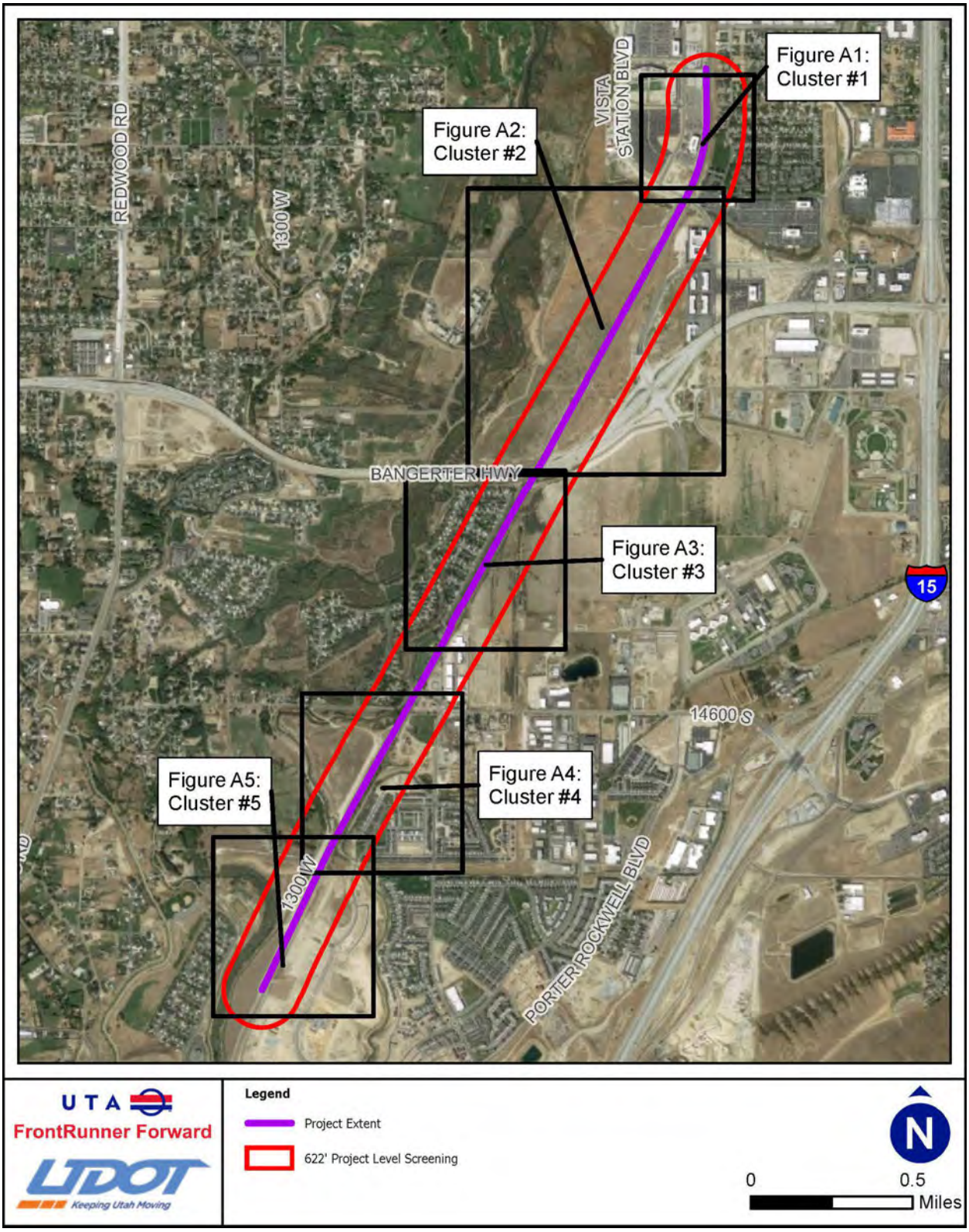
For the South of Draper Double Track Project, operational characteristics include the following:

- 46 daytime trips and 12 nighttime trips (FrontRunner operating schedule effective on April 17, 2022; UTA 2022)
- 4 rail cars and 1 locomotive per train (typical FrontRunner trainset configuration; Crowther 2022)
- 79-mph train speed (note that the maximum speed on Class 4 track per the FRA regulation at 49 Code of Federal Regulations [CFR] Section 213.9 is 80 mph)

Because the default operational assumptions are not appropriate for the Project, a project-level screening distance was calculated with the FTA spreadsheet model using the operational characteristics noted above.

The project-related noise level (L_{dn}) is projected to reach 50 dBA at 622 feet from the FrontRunner alignment as shown in Figure 3. The project-level screening distance defines the evaluation area within which noise-sensitive land uses are identified. (For more information about the residential clusters shown in Figure 3, refer to the section *Noise-sensitive Land Uses* after the figure.)

Figure 3. Project-level noise screening distance, noise evaluation area, and residential clusters



Noise-sensitive Land Uses

Based on aerial images of the project extent, preliminary project design schematics, and site visits, the project team identified five Category 2 residential land use areas in the noise evaluation area.

Because most residences are near each other and parallel to the FrontRunner and Union Pacific Railroad (UP) alignments, the residential areas were grouped together as described below and as shown in the figures in Appendix A, *Residential Clusters*.

- *Cluster No. 1: Draper Station to Vista Station Boulevard (Figure A-2):* Single-family residences on Green Clover Road (about 153 feet to 277 feet east of the FrontRunner centerline)
- *Cluster No. 2: Vista Station Boulevard to the Bangerter Highway Interchange (Figure A-3):* Veranda Apartments (under construction south of Vista Station Boulevard (about 269 feet to 668 feet east of the FrontRunner centerline)
- *Cluster No. 3: Bangerter Highway to Phillip Gates Memorial Park* (*Figure A-4*): Residences on Royal Coachman Drive (about 128 feet to 213 feet west of the FrontRunner centerline)
- *Cluster No. 4: State Route 140 to Coyote Gulch Way* (*Figure A-5*)*:* Residences on Chimney Park Drive east of the FrontRunner alignment (about 215 feet to 226 feet east of the centerline)
- *Cluster No. 5: Harmon Day Drive to W. Cinch Way* (*Figure A-6*)*:* Residences on Wild Horse Way east of the FrontRunner alignment (about 128 feet to 132 feet east of the centerline)

Because Category 2 noise-sensitive receivers were identified in the noise evaluation area (that is, within the 622-foot project-level screening distance), a **General Noise Assessment** was conducted for the Project.

General Noise Assessment for Noise Impacts

The noise assessment for the Project was conducted using the FTA General Noise Assessment spreadsheet model, as well as procedures and assumptions discussed in the FTA guidance for Option B (Cumulative Noise Impact Criteria Presentation). Inputs to the spreadsheet model are discussed below.

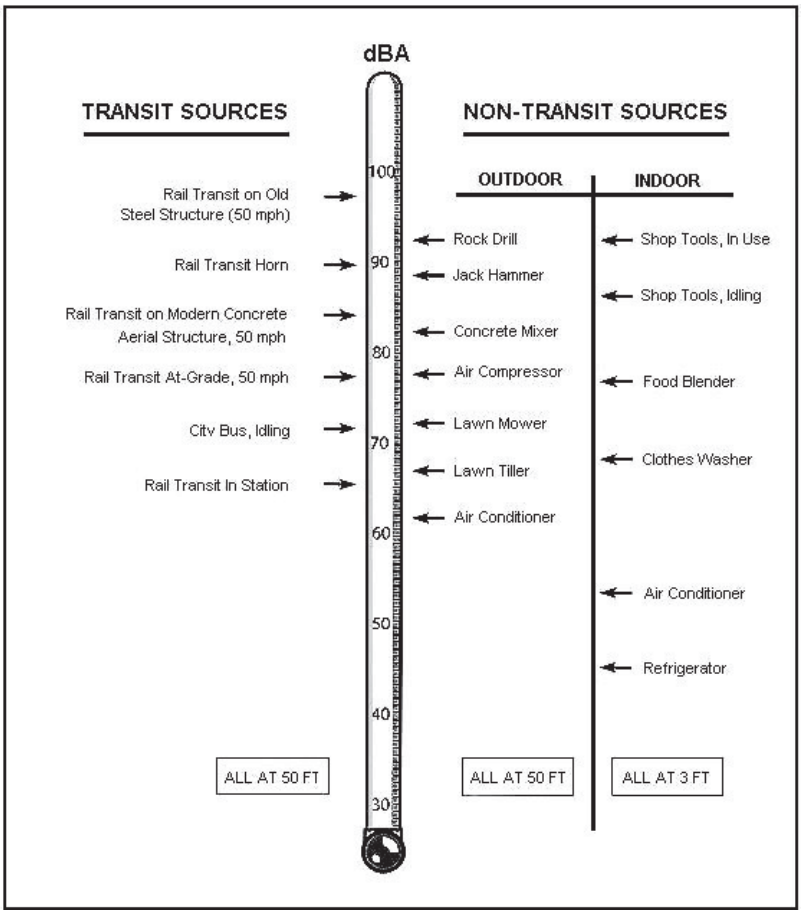
Human Perception of Noise

Noise is defined as unwanted sound. Several factors affect the level and quality of sound (or noise) as perceived by the human ear: loudness, pitch (or frequency), and time variation.

The *loudness*, or magnitude, of noise determines its intensity and is measured in decibels (dB) that can range from below 40 dB (the rustling of leaves) to over 100 dB (a rock concert). *Pitch* describes the character and frequency content of noise, such as the very low "rumbling" noise of stereo subwoofers or the very high-pitched noise of a piercing whistle. Finally, the *time variation* of noise sources can be characterized as continuous, such as with a building ventilation fan; intermittent, such as for trains passing by; or impulsive, such as pile-driving activities during construction.

Various sound levels are used to quantify noise from transit sources, including a sound's loudness, duration, and tonal character. For example, the A-weighted decibel (dBA) is commonly used to describe the overall noise level because it more closely matches the human ear's response to audible frequencies. Because the A-weighted decibel scale is logarithmic, a 10-dBA increase in a noise level is generally perceived as a doubling of loudness, while a 3-dBA increase in a noise level is barely perceptible to the human ear. Typical A-weighted sound levels from transit and other common sources are shown in Figure 4.

Figure 4. A-weighted sound levels



Source: FTA 2018

Several A-weighted noise descriptors are used to determine the effects of transit-related noise sources. Two of these are the L_{eq}, which represents a level of constant noise with the same acoustical energy as the fluctuating noise levels observed during a given interval (such as 1 hour, written as $L_{eq(h)}$), and the L_{dn}, or the 24-hour day-night noise level, which includes a 10-dBA penalty for all nighttime activity between 10 PM and 7 AM (that is, 10 dBA is added to each $L_{eq(h)}$ during each nighttime hour).

Methods Used to Determine Existing Noise Levels

The FTA guidance discusses the basic concepts, methods, and procedures for evaluating the extent and severity of noise impacts from transit projects. Transit noise impacts are based on land use categories in the noise evaluation area that could be affected by noise from the Project and the sensitivity to noise from transit sources.

FTA Noise Model Inputs

Two noise sources were evaluated for the Project, as discussed below.

FrontRunner Passby Model Inputs

The first noise source includes diesel locomotives and rail cars travelling through the FrontRunner corridor at the authorized speed. This noise source has sound event levels (SEL) of 92 dBA (diesel locomotives) and 82 dBA (rail cars), as shown in Table 4-9, *Reference SELs 50 feet from Track and at 50 mph, One Vehicle*, of the FTA guidance.

Train passby events (headways) during the day (7 AM to 10 PM) and night (10 PM to 7 AM) were derived from the FrontRunner operating schedule (UTA 2022), resulting in 46 daytime events and 12 nighttime events being used in the FTA spreadsheet model.

The FrontRunner train configurations included 1 locomotive (MP36PH-3C, 3,600 horsepower) and 4 cars per train (Crowther 2022). Operating speeds of 60 mph (estimated existing FrontRunner speed at southern end of the South of Draper segment) and 79 mph (note that the maximum speed on Class 4 track per the FTA regulation at 49 CFR Section 213.9 is 80 mph).

For Category 2 (residential) noise-sensitive receivers, the day-night sound level (L_{dn}) is the noise metric for impact assessment. The L_{dn} describes a receiver's cumulative noise exposure from all events over 24 hours. Events between 10 PM and 7 AM are increased by 10 dB to account for people's greater nighttime sensitivity to noise.

Building-induced shielding from first-row residences throughout the alignment would reduce project-related noise levels at residences behind the first row, and noise impacts are not projected to occur at residences in the second row and beyond.

FrontRunner Crossover Model Inputs

The second noise source is associated with potential noise impacts at crossovers or turnouts where the train leaves the mainline at a slower speed. At crossovers and turnouts, the train wheels encounter a discontinuity in the running surface when switching from one track to another, thereby increasing noise in the vicinity of the crossover or turnout. The noise level depends on the distance of the receiver from the crossover or turnout, as well as the speed at which the train goes through the crossover.

The potential for noise impact at crossovers and turnouts also depends on the type of crossover, as shown in Table 1.

Table 1. Crossover types and authorized speeds

Crossover Number	Crossover Type	Authorized Speed (mph)	Crossovers in the Noise Evaluation Area
#9	Yard tracks	10	0
#11	Yard leads	15	0
#15	Exit from mainline, low-speed turnovers	30	0
#20	Siding turnouts and universal crossovers	45	0
#24	High-speed turnouts	60	1
#30	Very-high-speed crossovers; end of two main tracks	70	0

As shown above in Table 1, there is one high-speed crossover (#24, 60 mph) that will be added as part of the project, which is located at the southern terminus of the noise evaluation area where the double track segment ends (Appendix A, Figure A-6).

A church is located about 175 feet east of the crossover at the west end of Cinch Way. Under the FTA guidelines, the church would be considered a Category 3 (institutional) land use. The church has primarily daytime and evening uses, and it is important to avoid interference with speech or meditation during church services or other activities such as weddings, funerals, or other activities throughout the week. There are no Category 2 (residential) land uses near this crossover.

For Category 3 (institutional) land uses, the equivalent sound level (Leq) metric is appropriate for non-residential land uses. The equivalent-average sound level (L_{eq}) represents a constant sound level that is an equivalent exposure level to the actual time-varying sound level over the period (typically 1 hour).

For crossovers and turnouts at the end of double track segments (specifically, the #24 crossover), generally 50% of the train traffic would go straight through the crossover at the design speed of 79 mph and 50% of the train traffic would diverge at a slower speed of 60 mph before accelerating after the crossover. As a result, the crossover would be a noise source only when trains are going through the crossover.

Noise Model Results for the South of Draper Double Track Project

Noise Model Results for Passby Events

The parameters discussed above were used as inputs to the spreadsheet model to estimate project-related noise levels near the Category 2 residential clusters in the noise evaluation area.

The project team determined the potential for noise impacts by using the FTA spreadsheet model to estimate the existing noise level at the nearest noise-sensitive receiver in each residential cluster resulting from train traffic on the existing alignment (UTA mainline [ML] No. 1) with trains traveling at 60 mph. An exception is Cluster No. 1 (Draper Station to Vista Station Boulevard), which is already double-tracked. For Cluster No. 1, 50% of the existing train traffic was assigned to each track at 60 mph.

The project team determined the potential for project-related noise impacts by using the FTA spreadsheet model and assigning 50% of the train traffic to the existing track (UTA ML No. 1) and 50% of the train traffic to the new track (UTA ML No. 2), which would be constructed 15 feet east of UTA ML No. 1 north of Bangerter Highway or west of UTA ML No. 1 in locations south of Bangerter Highway (UTA ML No. 1 would not be relocated as part of the project in these areas). The operating speed was increased to 79 mph under this scenario.

The increase in noise resulting from double-tracking the alignment and increasing the train speed to 79 mph over the existing noise level at 60 mph is the potential for noise impacts due to the Project.

Table 2 shows the noise model results for passby events. As shown in Table 2, project-related passby events are anticipated to increase noise levels by 0 to 1 dBA over existing noise levels at the nearest Category 2 residential clusters.

The project-related passby events are anticipated to increase noise levels by 0 to 1 dBA over existing noise levels, which is not distinguishable to the human ear and is below the threshold for a moderate impact. For this reason, there would be no project-related passby noise impacts from the Project.

Table 2. Project-related noise impacts at the nearest Category 2 residential clusters from passby events

Residential Cluster[a]	Distance to Residences from Existing ML No. 1 (feet)	Distance to Residences from New ML No. 2 (feet)	Existing L_{dn}[b]	Project L_{dn}[c]	Increase over Existing (dBA)	Increase in Cumulative Noise Levels Allowed (dBA)[d]	Comments	Impact[e]
No. 1 – Draper Station to Vista Station Boulevard	153	168	59	59	0	2.2	Nearest receivers are east of ML No. 1	No impact
No. 2 – Vista Station Boulevard to Bangerter Highway interchange	269	284	55	56	1	3.2	Nearest receivers are east of ML No. 1	No impact
No. 3 – Bangerter Highway to Phillip Gates Memorial Park	143	128	59	60	1	2.2	Nearest receivers are west of ML No. 2	No impact
No. 4 – State Route 140 to Coyote Gulch Way	215	230	57	57	0	2.6	Nearest receivers are east of ML No. 1	No impact
No. 5 – Harmon Day Drive to W. Cinch Way	121	136	61	61	0	1.9	Nearest receivers are east of ML No. 1	No impact

[a] See Appendix A, *Residential Clusters*, for residential cluster Figures A-2 to A-6.

[b] Existing noise level due to noise sources on existing FrontRunner mainline (UTA ML No. 1) at an estimated existing speed of 60 mph.

[c] Noise level due to double-tracking of noise sources; 50% of daily operations on UTA ML No. 1 (existing FrontRunner mainline) and 50% of daily operations on UTA ML No. 2 (new track) at 79 mph.

[d] From Figure 4-3, *Increase in Cumulative Noise Levels Allowed by Criteria (Land Use Cat. 1 & 2)*, in the FTA guidance (FTA 2018).

[e] FTA model results and impact plots for passby events are included in Appendix B, *FTA Noise Model Plots*.

Noise Model Results for Crossover Events

The church located at the southern terminus of the noise evaluation area is a Category 3 (institutional) land use and is not considered to have nightttime noise sensitivity (that is, the addition of a 10-dBA "penalty" for noise interfering with sleep is not warranted). For Category 3 land uses, the outdoor L_{eq} is used to evaluate the potential for noise impacts.

Although FrontRunner does not currently operate on Sunday when church services would take place, the church can be used for other activities during the week such as weddings, funerals, holiday celebrations, or other meetings. The 24-hour measured L_{eq} in the noise evaluation area is 60 dBA, and this value was used as the existing L_{eq} noise level in the spreadsheet model. The project team assumed that there would be two crossover events per hour (over the #24 crossover at 60 mph).

Table 3 shows the noise model results for crossover events.

Table 3. Project noise impacts at the nearest Category 3 land uses from crossover events

Noise Source	Existing L_{eq}	Total Project L_{eq}[a]	Total Noise Exposure L_{eq}[b]	Increase over Existing (dBA)	Impact
Diesel locomotive and 4-car train (at 60 mph)[c]	60	55	61	1	No impact

[a] Noise level due to noise sources only (1 locomotive and 4 rail cars) travelling at 60 mph through the crossover; 2 crossover events during hours of noise sensitivity.

[b] Noise levels due to noise sources and existing noise level.

[c] FTA model results and impact plots for crossover events are included in Appendix B, *FTA Noise Model Plots*.

As shown above in Table 3, crossover events are anticipated to increase noise levels by about 1 dBA over existing noise levels at the church property. Project-related crossover events would increase total noise exposure to 61 dBA (an increase of 1 dBA over the existing noise levels) and would be less than the noise level that would result in a moderate impact under the FTA guidelines.

There would be no project-related crossover noise impacts from the Project.

Vibration Assessment

FTA Transit Vibration Assessment Procedures

FTA's transit vibration assessment procedures follow a similar multistep process as for noise-assessment procedures—ranging from uncomplicated, screening-level evaluations to detailed impact assessments based on the severity of the vibration impact. As with the noise-assessment procedures, the degree of vibration impact assessment depends on the type of project being considered and the presence or absence of vibration-sensitive land uses within screening distances that have been developed for each land use category.

As with transit noise, if no vibration-sensitive land uses are present within the defined screening distances, no further vibration assessment is required.

Land Use Categories for Transit Vibration Impact Criteria

FTA considers vibration impacts for three categories (not including Special Buildings) of land use depending on the vibration sensitivity of the land use.

Special Buildings. This category includes special-use facilities that are very sensitive to vibration and noise that are not included in the categories below and require special consideration. However, if the building will rarely be occupied when the source of the vibration (for example, the train) is operating, there is no need to evaluate for impacts. Examples of these facilities include concert halls, television and recording studios, and theatres.

Category 1 (High Sensitivity). This category includes buildings where vibration levels, including those below the threshold of human annoyance, would interfere with operations within the building. Examples include buildings where vibration-sensitive research and manufacturing is conducted, hospitals with vibration-sensitive equipment, and universities conducting physical research operations. The building's degree of sensitivity to vibration depends on the specific equipment that will be affected by the vibration. Equipment moderately sensitive to vibration, such as high-resolution lithographic equipment, optical microscopes, and electron microscopes with vibration isolation systems are included in this category. For equipment that is more sensitive, a Detailed Vibration Analysis must be conducted.

Category 2 (Residential). This category includes all residential land use and buildings where people normally sleep, such as hotels and hospitals. Transit-generated ground-borne vibration and noise from subways or surface running trains are considered to have a similar effect on receivers.

Category 3 (Institutional). This category includes institutions and offices that have vibration-sensitive equipment and have the potential for activity interference such as schools, churches, and doctors' offices. Commercial or industrial locations including office buildings are not included in this category unless there is vibration-sensitive activity or equipment within the building. As with noise, the use of the building determines the vibration sensitivity.

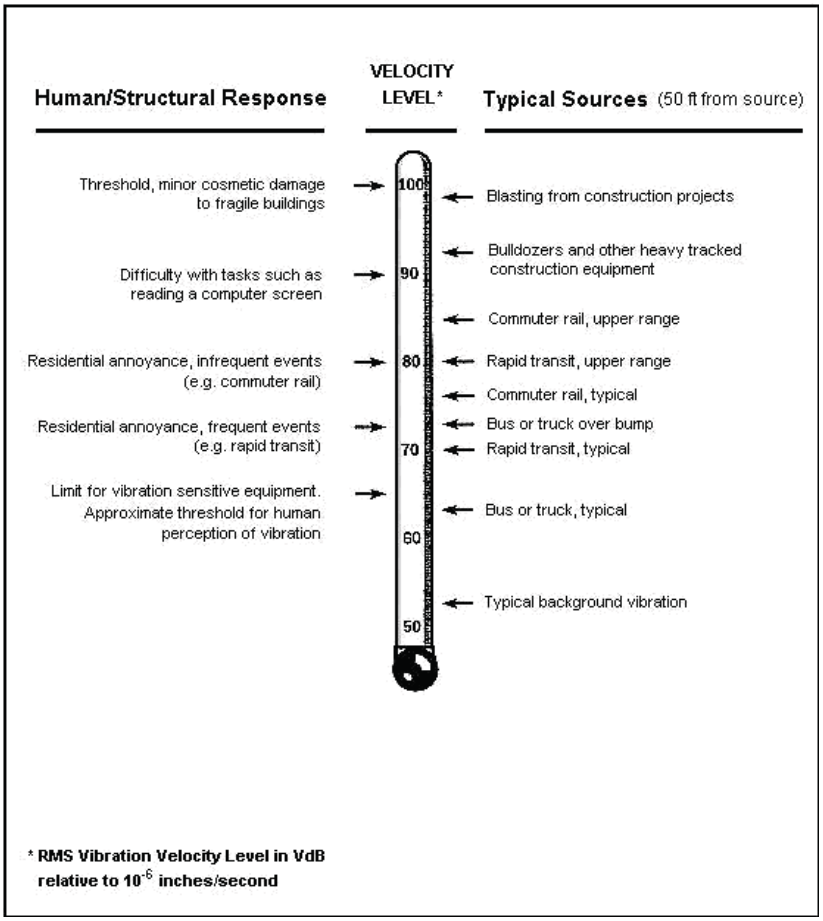
Human Perception of Vibration

Ground-borne vibration associated with commuter rail systems is usually the result of uneven interactions between wheels and the rail surfaces. Examples of such interactions that cause ground-borne vibration include train wheels over a jointed rail, or untrue rail car wheels with "flats."

Unlike noise, which travels in air, transit vibration typically travels along the surface of the ground. Depending on the geological properties of the surrounding terrain and the type of building structure exposed to transit vibration, vibration propagation can be more or less efficient. Buildings with a solid foundation set in bedrock are "coupled" more efficiently to the surrounding ground and experience higher vibration levels than buildings in sandier soil. Alternatively, heavier buildings (such as masonry structures) are less susceptible to ground-borne vibration than wood-frame buildings because they absorb more of the vibration.

To describe the human response to vibration, the average vibration amplitude (called the root mean square, or RMS, amplitude) is used to assess vibration impacts. The RMS velocity level is expressed in inches per second or vibration decibels (VdB). All VdB vibration levels are referenced to 1 micro-inch per second. Typical ground-borne vibration levels from transit and other common sources are shown in Figure 5**.**

Figure 5. Typical ground-borne vibration levels



Source: FTA 2018

FTA Vibration Criteria

The FTA vibration criteria for evaluating ground-borne vibration impacts are shown in Table 4. The vibration criteria are related to ground-borne vibration levels that are expected to result in human annoyance and are based on RMS velocity levels expressed in VdB referenced to 1 micro-inch per second.

FTA's experience with community response to ground-borne vibration suggests that, when only a few vibration-inducing events occur per day (for example, trains passing by a residential development), it takes higher vibration levels to evoke the same community annoyance response that occurs from more-frequent events. This is accounted for in the vibration criteria by distinguishing among projects with *frequent*, *occasional*, and *infrequent* vibration events. The *frequent events* category is defined as more than 70 vibration-inducing events per day, the *occasional events* category is defined as between 30 and 70 events per day, and the *infrequent events* category is defined as fewer than 30 events per day.

Based on the FrontRunner operating schedule used in the noise assessment, the vibration-inducing events associated with the Project would be considered *occasional* events (30 to 70 vibration-inducing events per day), and the residences near the project extent would be considered Category 2 land uses. Vibration-inducing events at Category 3 (institutional) land uses would be considered *infrequent*, occurring only during church services.

Table 4. FTA ground-borne RMS vibration impact criteria

Land Use Category		RMS Vibration Levels (VdB)[a]		
Category	Description	Frequent Events	Occasional Events	Infrequent Events
1	Buildings where vibration would interfere with interior operations	65	65	65
2	Residences and buildings where people normally sleep	72	75	80
3	Institutional land uses with primarily daytime use	75	78	83

Source: FTA 2018

[a] Ground-borne vibration levels (VdB) are referenced to 1 micro-inch per second.

Vibration Screening-level Assessment for the South of Draper Double Track Project

Project Type

Under the FTA vibration assessment guidelines, the Project is considered a Conventional Commuter Railroad (Project Type Number 1 as shown in Table 6-7, *Project Types for Vibration Screening Procedure*, of the FTA guidance). Both locomotives and passenger vehicles create vibration; the highest vibration levels are typically created by the locomotives.

Vibration Screening Distances and Vibration Evaluation Area

Under FTA's vibration assessment guidelines, transit projects with steel-wheeled and/or steel-rail vehicles have the potential to cause vibration-induced impacts. The highest vibration levels associated with commuter rail systems are typically created by the locomotives and then, to a lesser extent, by the passenger coaches.

According to Table 6-8, *Screening Distances for Vibration Assessments*, of the FTA guidance, vibration screening distances for commuter rail systems for Category 1, 2, and 3 vibration-sensitive land uses are 600 feet, 200 feet, and 120 feet, respectively. The screening distances define the vibration evaluation area within which vibration-sensitive land uses are identified.

Figure 6 and Figure 7 show the 600-foot, 200-foot, and 120-foot vibration screening distances from the project extent.

Vibration-sensitive Land Uses

For Category 2 land uses (residential), the vibration screening distance for conventional commuter rail lines is 200 feet from the right-of-way or property line (Table 6-8, *Screening Distances for Vibration Assessments*, of the FTA guidance). The residential clusters in the vibration evaluation area range from about 120 feet to more than 270 feet from the FrontRunner property line. A number of residential clusters would be within the vibration screening distance for residential land uses. The closest Category 3 land use (a church) is approximately 175 feet from the crossover.

The project team conducted a **General Vibration Assessment** using the FTA guidance to evaluate vibration impacts at Category 2 and Category 3 land uses in greater detail. The evaluation included identifying vibration-sensitive land uses, selecting a base curve for ground surface vibration levels, and considering the propagation characteristics available at the time of this evaluation.

Figure 6. Vibration screening distances and vibration evaluation area (1 of 2)

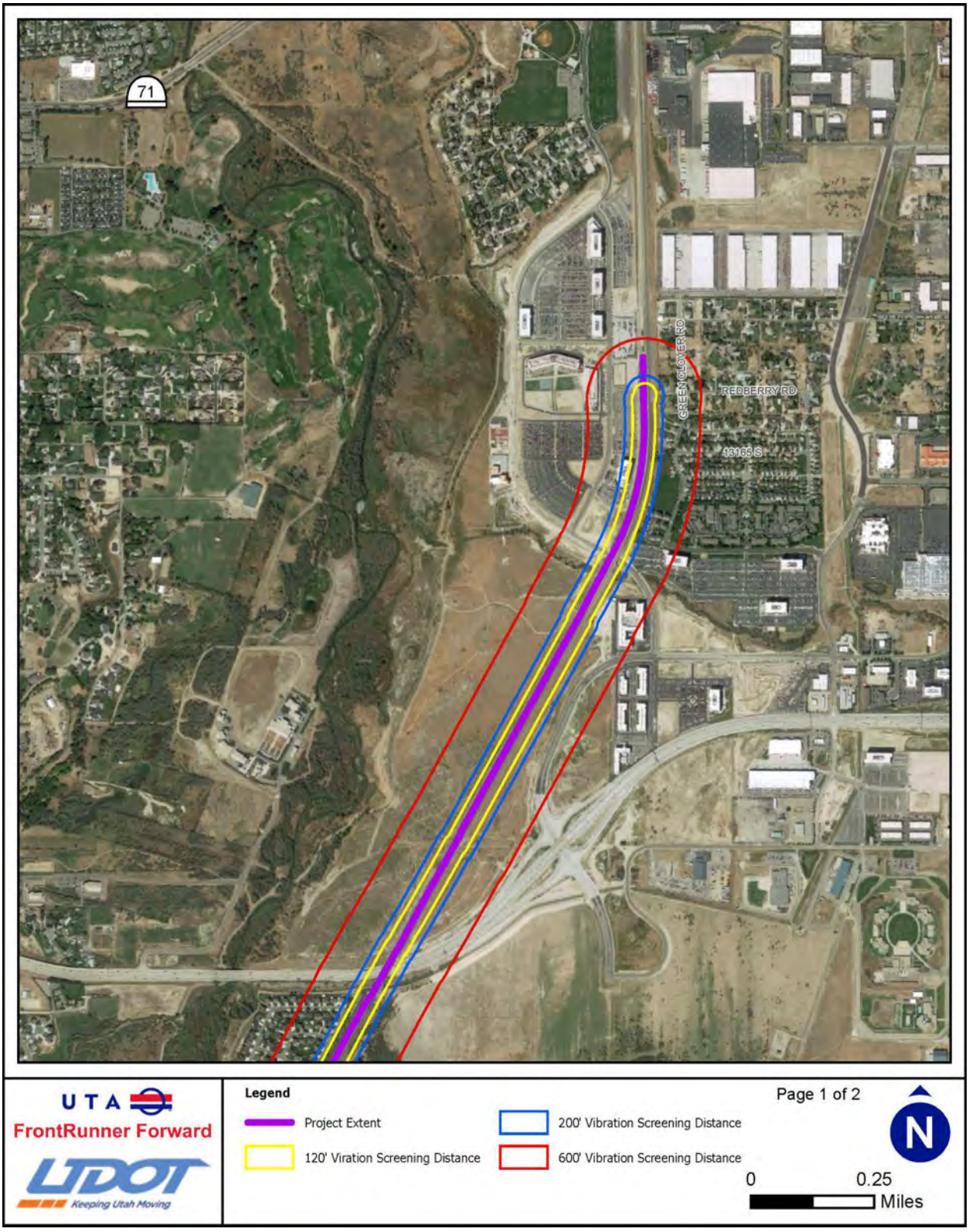
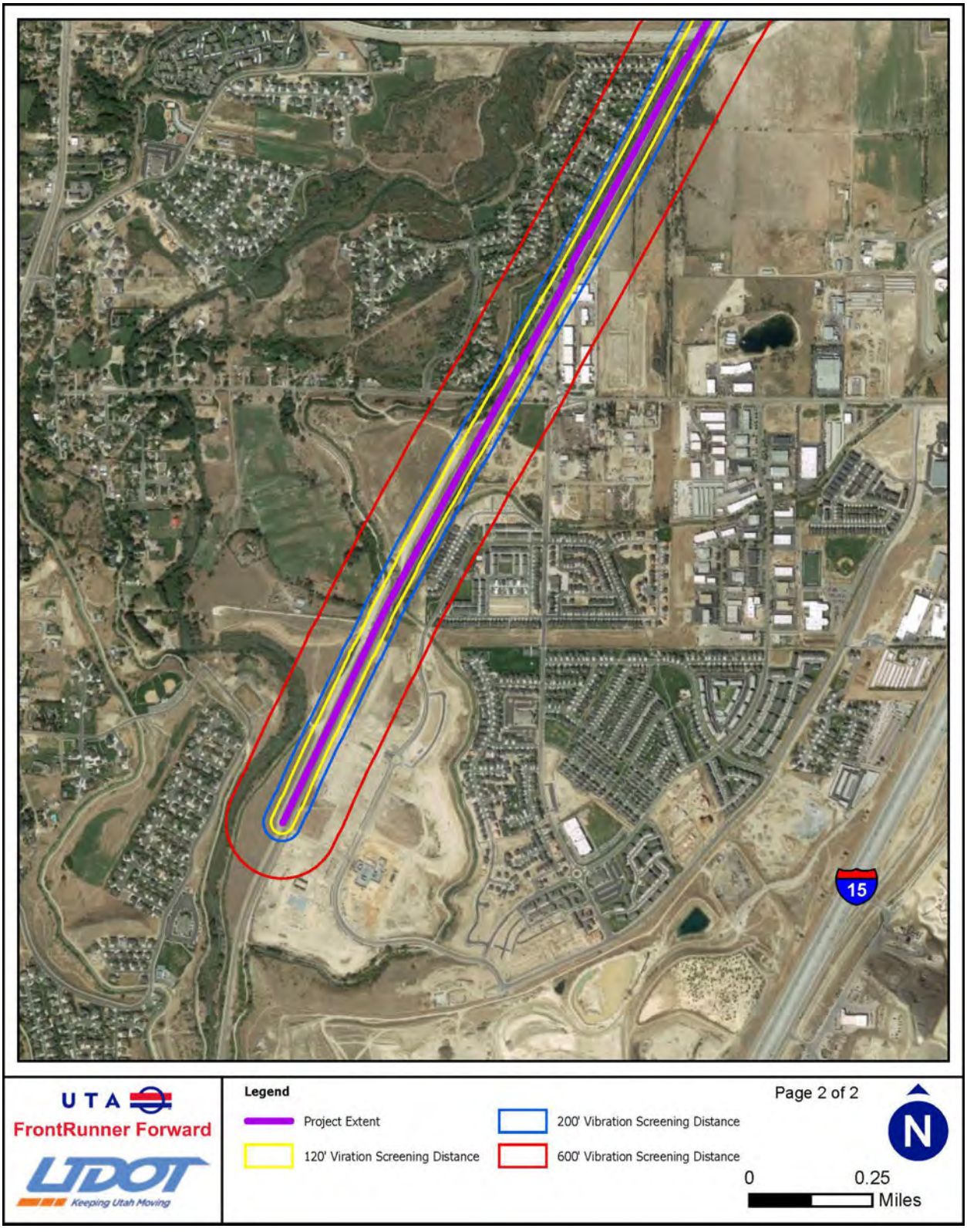


Figure 7. Vibration screening distances and vibration evaluation area (2 of 2)

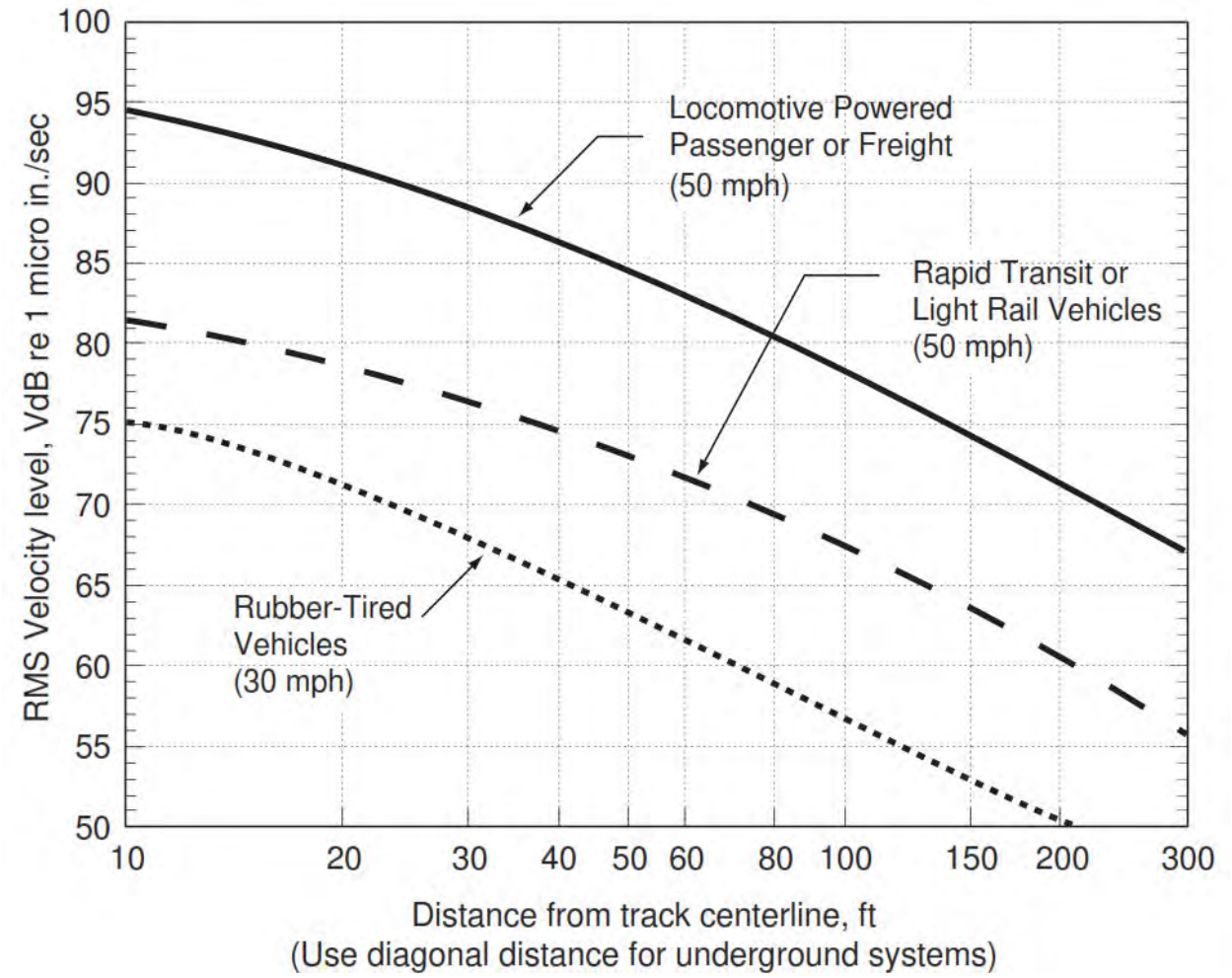


General Vibration Assessment for Vibration Impacts

Base Vibration Curve

Figure 8 illustrates the generalized ground surface vibration curves defined by FTA. The FTA generalized vibration curve for locomotive-powered passenger or freight trains was used as the base curve for the ground-borne vibration assessment and is considered appropriate for this evaluation.

Figure 8. Vibration curves



Source: FTA 2018

Vibration Impacts

The project team estimated source adjustments for distance (using the nearest distance to Category 2 land uses, which is 121 feet), speed, and track treatments as discussed in the FTA guidance.

The adjusted velocity level (VdB) was 67.3 VdB for train passby events. The ground-borne vibration impact criterion for Category 2 land uses (occasional events) as shown above in Table 4 is 75 VdB. The adjusted VdB for train passby events at the nearest Category 2 land uses in the vibration evaluation area is less than the FTA vibration impact criterion.

The adjusted velocity level (VdB) was 58.2 VdB for crossover events at a crossover speed of 60 mph. The ground-borne vibration impact criterion for Category 3 land uses (infrequent events) as shown above in

Table 4 is 83 VdB. The adjusted VdB for crossover events at the nearest Category 3 land uses in the vibration evaluation area is less than the FTA vibration impact criterion.

There would be no project-related passby or crossover vibration impacts from the Project.

Construction Noise and Vibration

Though noise from constructing the Project would be temporary, it could be a nuisance at nearby residential and institutional locations. The nearest residential clusters in the noise evaluation area range from about 120 feet to about 270 feet from the FrontRunner mainline and are unlikely to be severely affected by construction noise. The nearest institutional land use is a church located about 175 feet from the mainline.

Noise levels during construction are difficult to predict, and they vary depending on the types of construction activity and the types of equipment used for each stage of work. Heavy machinery is constantly moving in unpredictable patterns and is not usually at one location for a long time.

Project construction activities can include constructing track bed, relocating utilities, and renovating grade crossings, as necessary for the Project. No heavy-duty impulsive equipment, such as pile drivers, would be used to construct the double track.

Construction normally occurs during daylight hours when some residents are not at home, when residents who are at home are less sensitive to construction activities, and when other community noise sources contribute to higher ambient noise levels. Since construction activities would be of relatively short duration, extended disruption of normal activities is not expected. Construction noise is also intermittent and depends on the type of operation, the location, and the function of the equipment as well as the equipment usage cycle.

Typical noise levels associated with various construction activities are listed in Table 5. Construction noise levels would be less than those shown in Table 5 due to the scattering effect of intervening buildings as well as noise attenuation over distance.

Table 5. Estimated peak-hour construction noise levels

Construction Phase	Loudest Equipment	Typical Noise Levels at 50 feet (dBA)
Clearing and grubbing	Bulldozer, backhoe, haul truck	80–85
Earthwork	Scraper, bulldozer	85
Foundation	Backhoe, loader	80
Structures	Crane, loader, haul truck	80–88
Base preparation	Trucks, bulldozer	85
Paving	Paver, pump, haul truck	77–85

Source: FTA 2018

Common vibration-producing equipment used during construction activities could include jackhammers, pavement breakers, hoe rams, augur drills, bulldozers, and backhoes. Table 6 shows vibration levels for various types of construction equipment measured at a distance of 25 feet from the source during a wide variety of construction activities. Construction-related vibration impacts are unlikely at residences due to their distance from the construction activity.

Table 6. Vibration source levels for construction equipment

Equipment		PPV at 25 feet (in/sec)	Approximate Lv at 25 feet
Pile driver (impact)	upper range	1.518	112
	typical	0.644	104
Pile driver (sonic)	upper range	0.734	105
	typical	0.170	93
Clam shovel drop (slurry wall)		0.202	94
Hydromill (slurry wall)	in soil	0.008	66
	in rock	0.017	75
Large bulldozer		0.089	87
Caisson drilling		0.089	87
Loaded trucks		0.076	86
Jackhammer		0.035	79
Small bulldozer		0.003	58

Source: FTA 2018

Lv = RMS velocity in decibels (VdB) referenced to 1 micro-inch/second; PPV = peak particle velocity

References

Crowther, Brent

2022 Email correspondence from Brent Crowther, Kimley-Horn, to Heidi Spoor, HDR, Inc., regarding the typical FrontRunner trainset configuration. April 8.

[FTA] Federal Transit Administration

2018 Transit Noise and Vibration Impact Assessment Manual. FTA Report No. 0123. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/research-innovation/118131/transit-noise-and-vibration-impact-assessment-manual-fta-report-no-0123_0.pdf. September.

[UTA] Utah Transit Authority

2022 Schedule for FrontRunner Route 750. https://www.rideuta.com/Rider-Tools/Schedules-and-Maps/750-FrontRunner. Effective April 17, 2022.

Appendix A. Residential Clusters

Figure A-1. Residential clusters No. 1 through No. 5

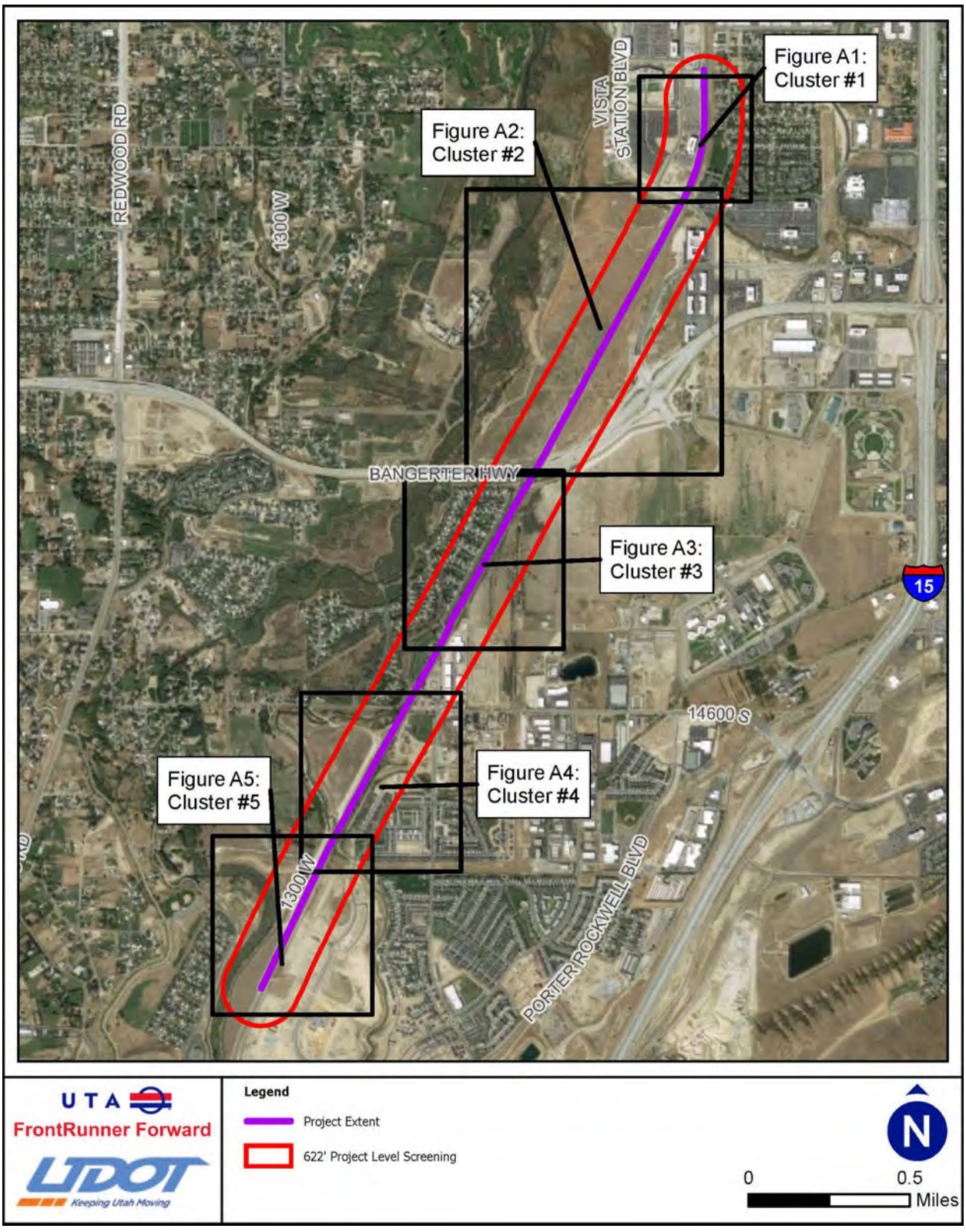


Figure A-2. Cluster No. 1: Draper Station to Vista Station Boulevard

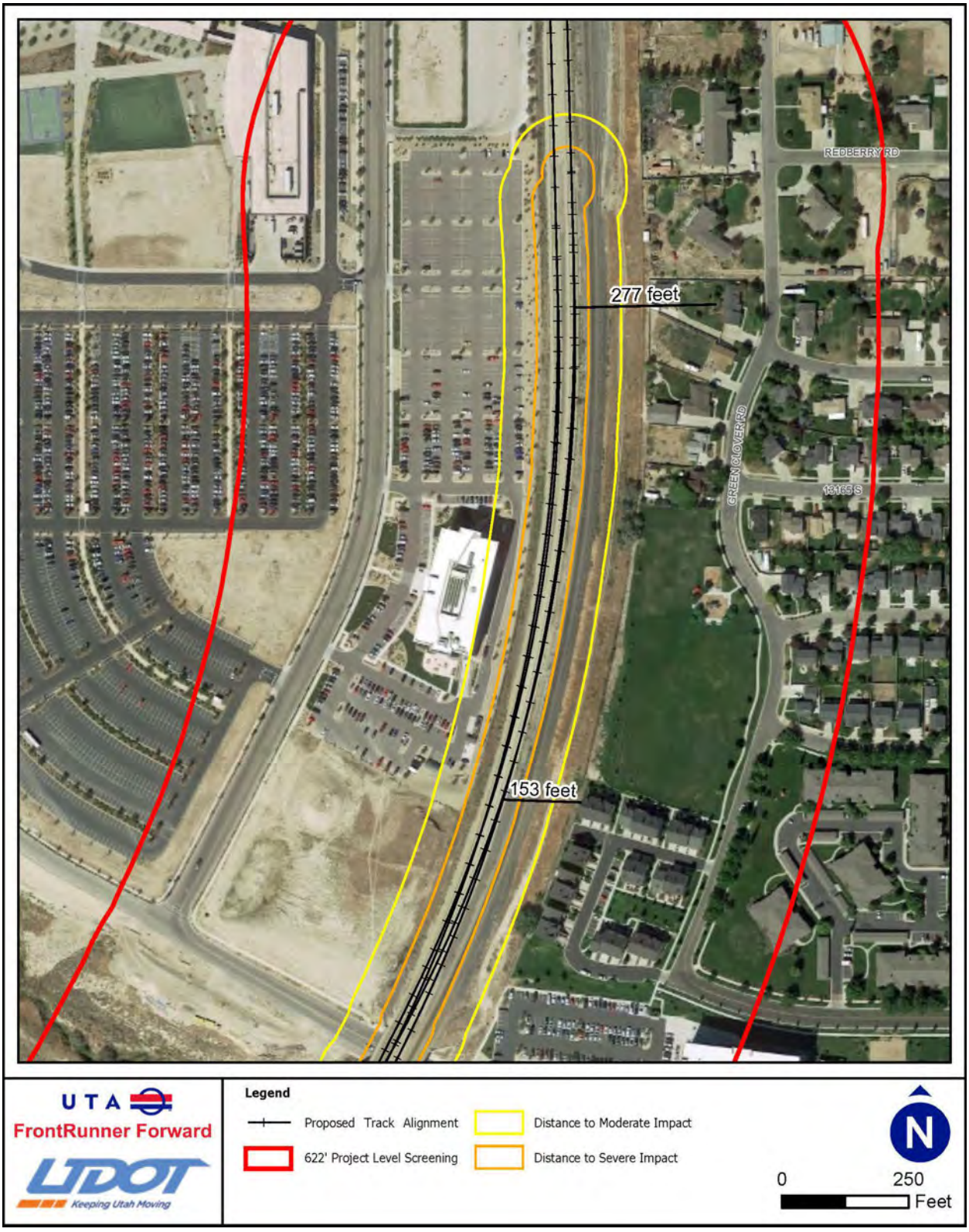


Figure A-3. Cluster No. 2: Vista Station Boulevard to the Bangerter Highway Interchange

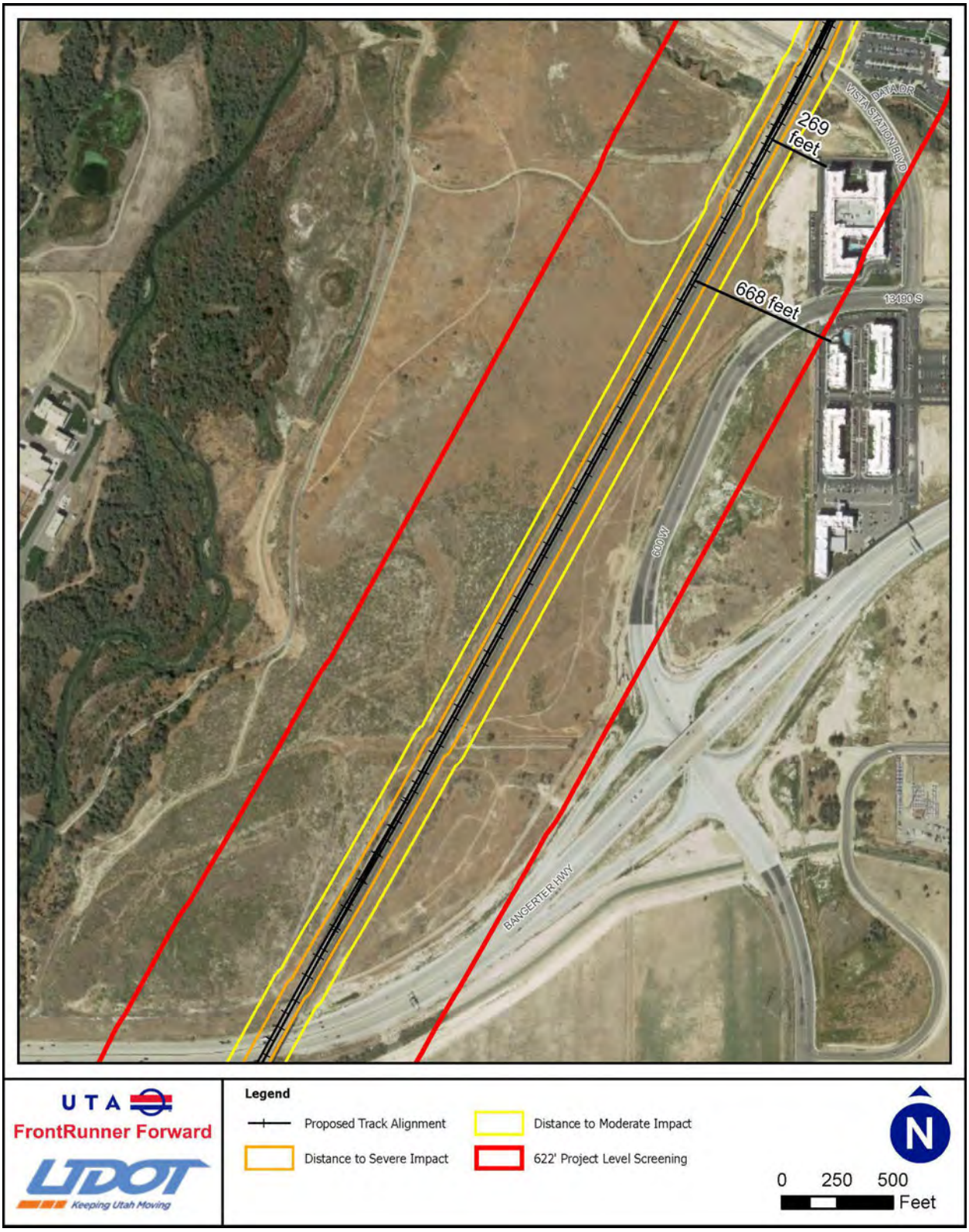


Figure A-4. Cluster No. 3: Bangerter Highway to Phillip Gates Memorial Park

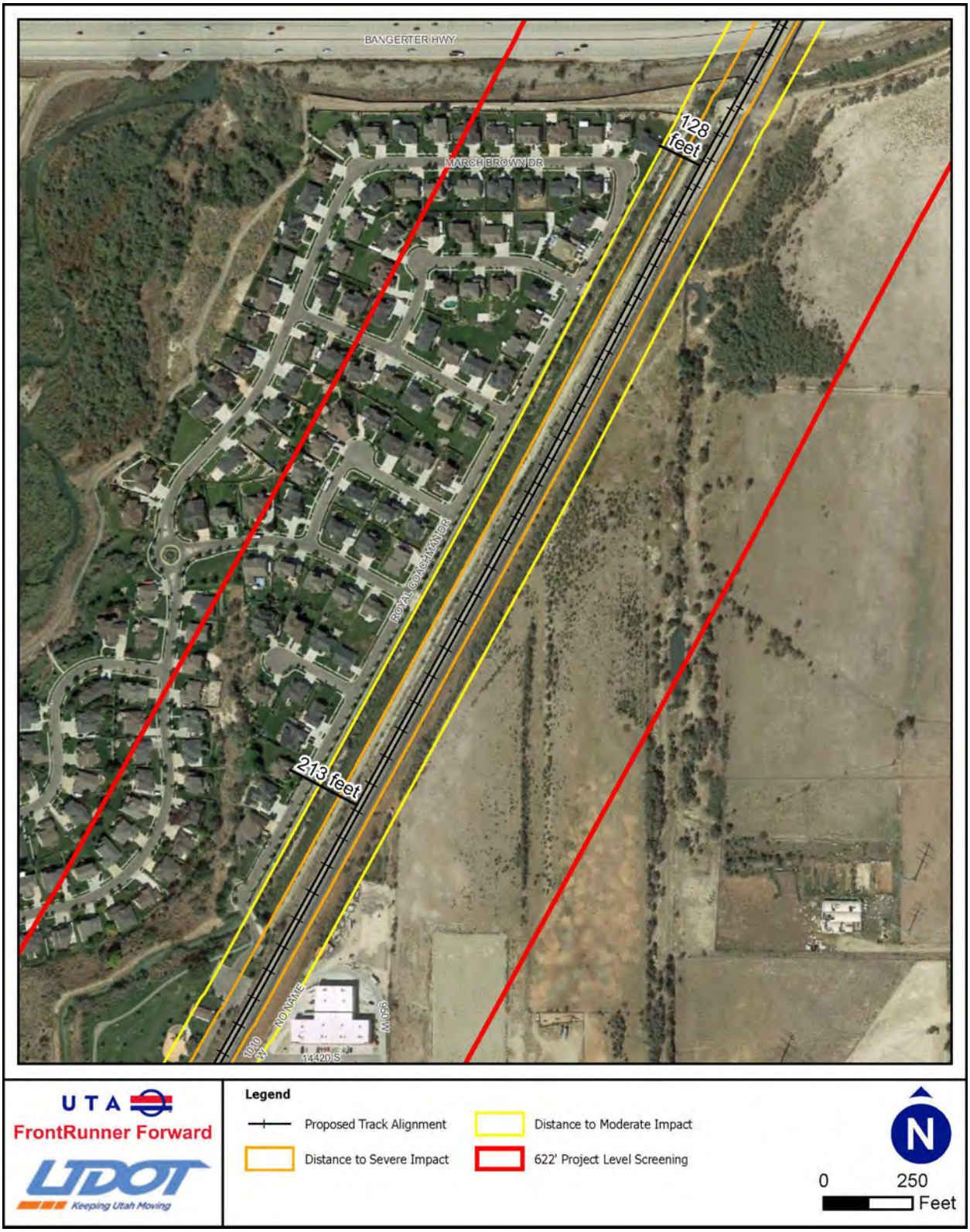


Figure A-5. Cluster No. 4: State Route 140 to Coyote Gulch Way

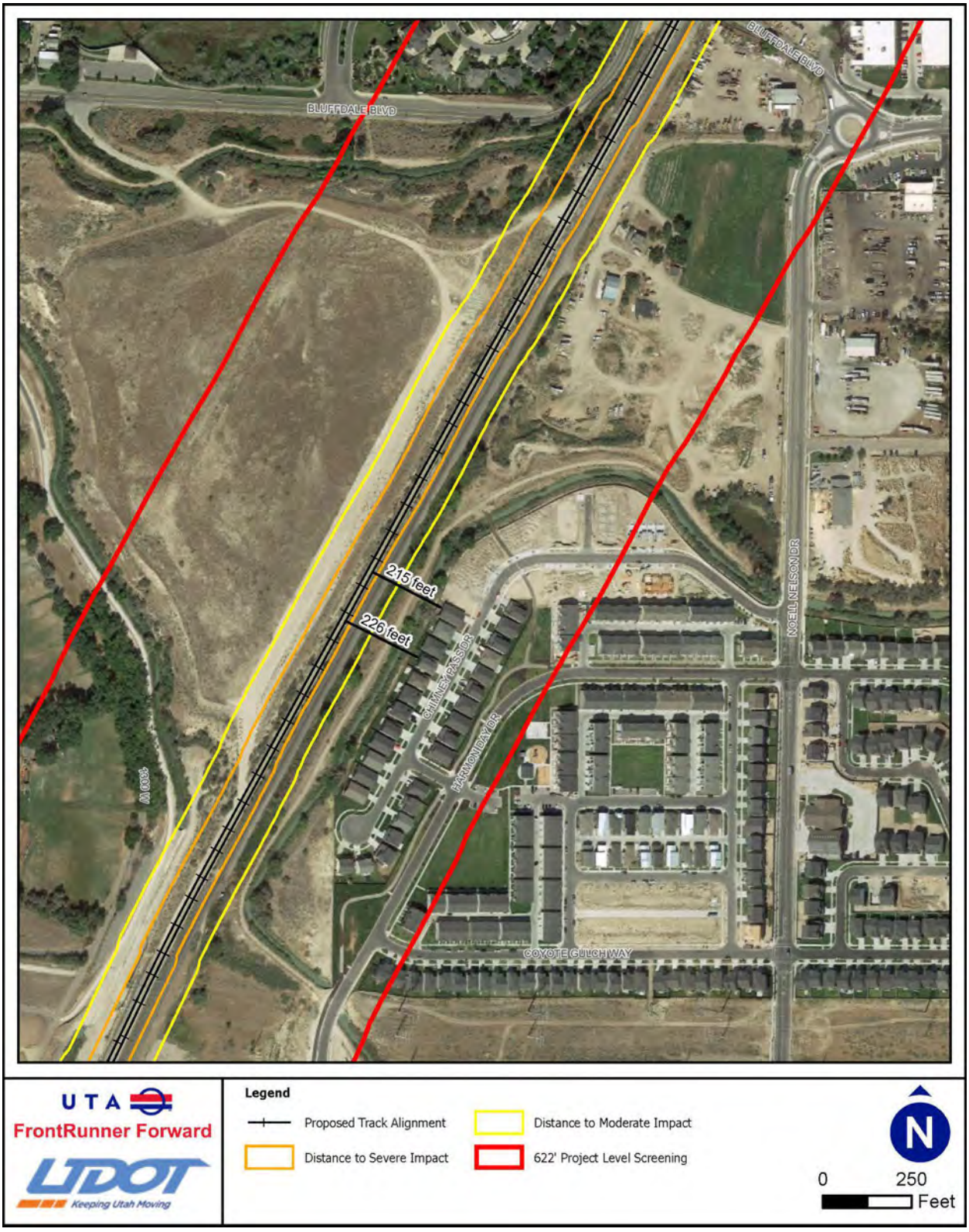
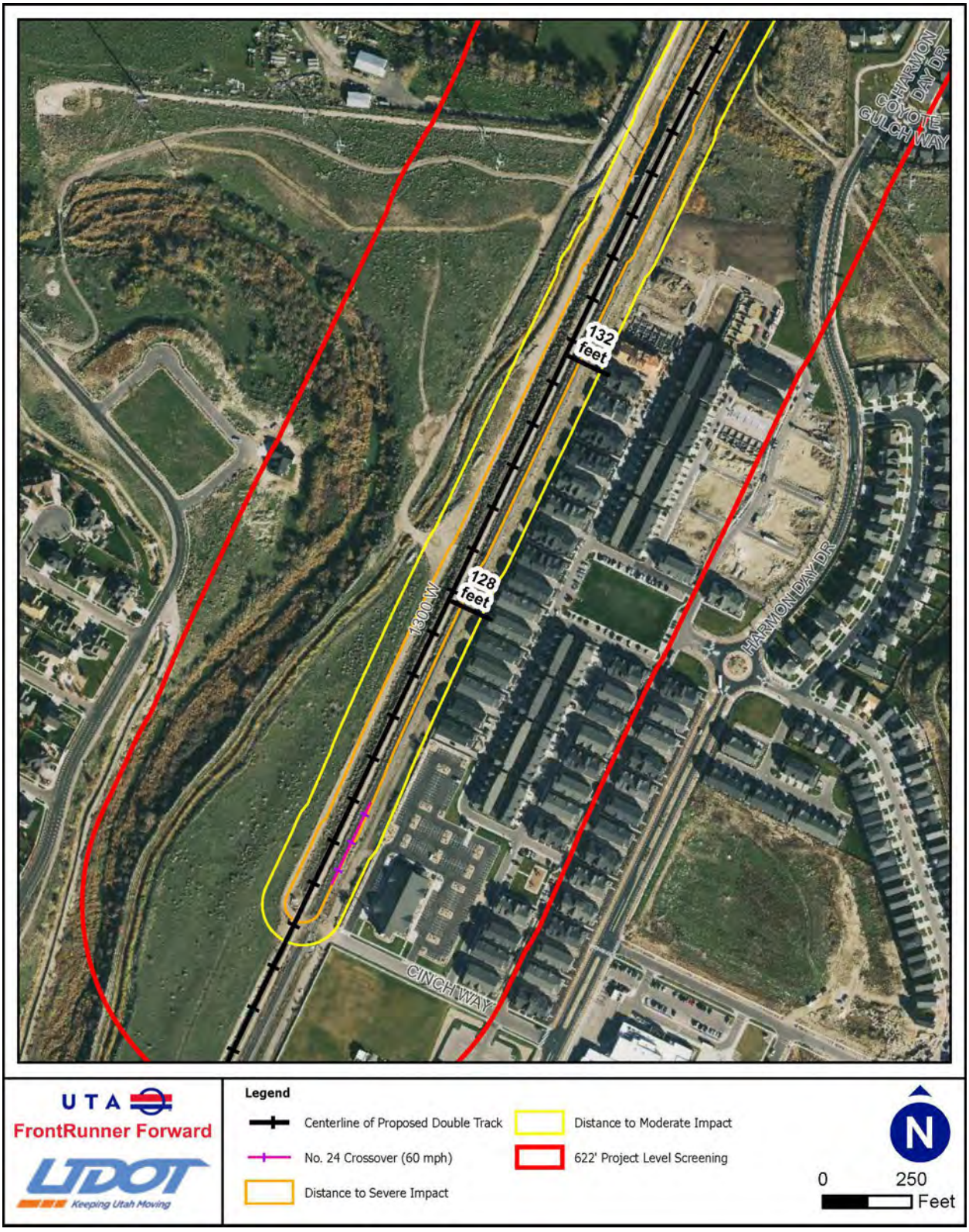


Figure A-6. Cluster No. 5: Harmon Day Drive to W. Cinch Way



Appendix B. FTA Noise Model Plots

Figure B-1. Noise Model Plot for Residential Cluster No. 1, Existing Noise Conditions

Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Cluster No. 1 - Existing (revised)

Receiver Parameters	
Receiver:	Receiver 1
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	

Noise Source Parameters	
Number of Noise Sources:	4

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	1
	Speed (mph)	60
	Avg. Number of Events/hr	1.53
Nighttime hrs	Avg. Number of Locos/train	1
	Speed (mph)	60
	Avg. Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	153
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	60
	Avg. Number of Events/hr	1.53
Nighttime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	60
	Avg. Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	153
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	1
	Speed (mph)	60
	Avg. Number of Events/hr	1.53
Nighttime hrs	Avg. Number of Locos/train	1
	Speed (mph)	60
	Avg. Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	168
	Number of Intervening Rows of Buildings	
Adjustments		

Noise Source Parameters		Source 4
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	60
	Avg. Number of Events/hr	1.53
Nighttime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	60
	Avg. Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	168
	Number of Intervening Rows of Buildings	
Adjustments	Noise Barrier?	
	Joint Track/Crossover?	
	Embedded Track?	
	Aerial Structure?	

Project Results Summary	
Existing Ldn:	dBA
Total Project Ldn:	59 dBA
Total Noise Exposure:	59 dBA
Increase:	59 dB

Distance to Impact Contours	
Contour:	---
Contour:	---

Source 1 Results	
Leq(day):	50.2 dBA
Leq(night):	46.6 dBA
Ldn:	53.7 dBA

Source 2 Results	
Leq(day):	48.6 dBA
Leq(night):	45.0 dBA
Ldn:	52.1 dBA
Incremental Ldn (Src 1-2):	56.0 dBA

Source 3 Results	
Leq(day):	49.6 dBA
Leq(night):	46.0 dBA
Ldn:	53.1 dBA
Incremental Ldn (Src 1-3):	57.8 dBA

Source 4 Results	
Leq(day):	48.0 dBA
Leq(night):	44.4 dBA
Ldn:	51.5 dBA
Incremental Ldn (Src 1-4):	58.7 dBA

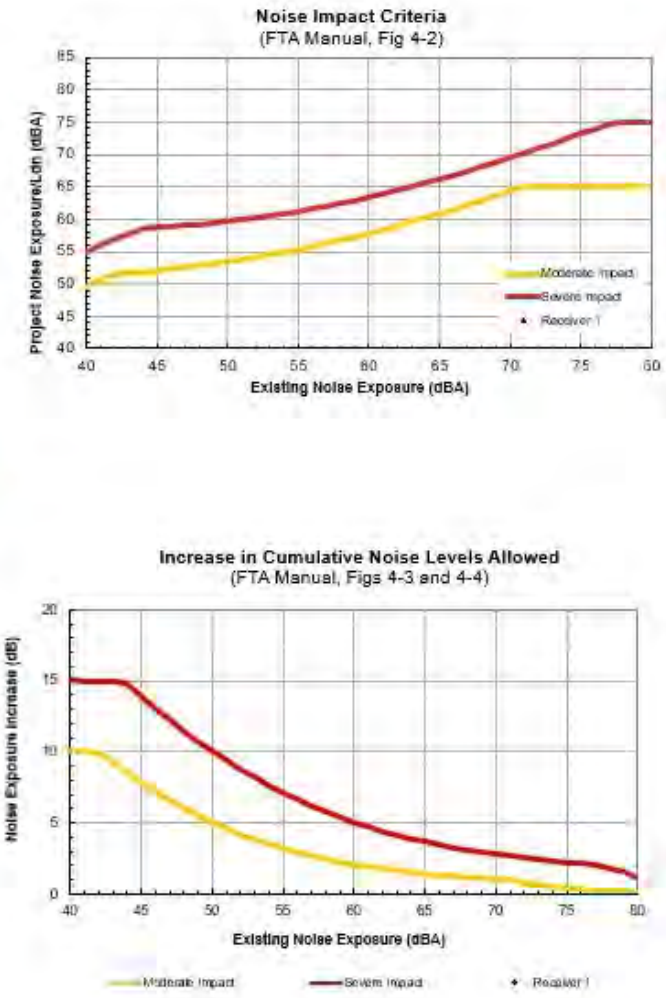


Figure B-2. Noise Model Plot for Residential Cluster No. 1, Proposed Noise Conditions

Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2018

Project:	Cluster No. 1 - Proposed

Receiver Parameters	
Receiver:	Receiver 1
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	

Noise Source Parameters	
Number of Noise Sources:	4

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	1
	Speed (mph)	79
	Avg. Number of Events/hr	1.53
Nighttime hrs	Avg. Number of Locos/train	1
	Speed (mph)	79
	Avg. Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	153
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	79
	Avg. Number of Events/hr	1.53
Nighttime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	79
	Avg. Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	153
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	1
	Speed (mph)	79
	Avg. Number of Events/hr	1.53
Nighttime hrs	Avg. Number of Locos/train	1
	Speed (mph)	79
	Avg. Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	168
	Number of Intervening Rows of Buildings	
Adjustments		

Noise Source Parameters		Source 4
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	79
	Avg. Number of Events/hr	1.53
Nighttime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	79
	Avg. Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	168
	Number of Intervening Rows of Buildings	
Adjustments	Noise Barrier?	
	Joint Track/Crossover?	
	Embedded Track?	
	Aerial Structure?	

Project Results Summary	
Existing Ldn:	dBA
Total Project Ldn:	59 dBA
Total Noise Exposure:	59 dBA
Increase:	59 dB

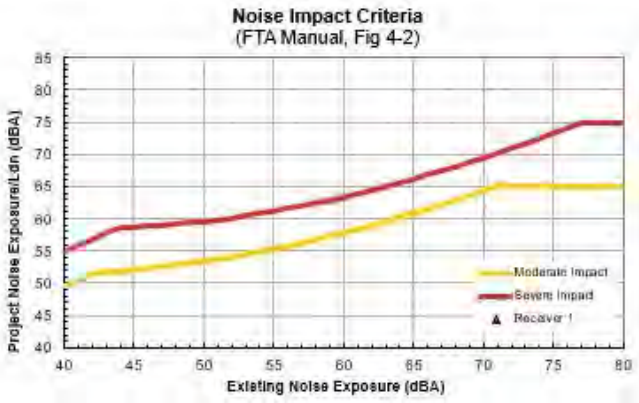
Distance to Impact Contours	
Contour:	---
Contour:	---

Source 1 Results	
Leq(day):	49.0 dBA
Leq(night):	45.4 dBA
Ldn:	52.5 dBA

Source 2 Results	
Leq(day):	51.0 dBA
Leq(night):	47.4 dBA
Ldn:	54.5 dBA
Incremental Ldn (Src 1-2):	56.6 dBA

Source 3 Results	
Leq(day):	48.4 dBA
Leq(night):	44.8 dBA
Ldn:	51.9 dBA
Incremental Ldn (Src 1-3):	57.9 dBA

Source 4 Results	
Leq(day):	50.3 dBA
Leq(night):	46.8 dBA
Ldn:	53.9 dBA
Incremental Ldn (Src 1-4):	59.4 dBA



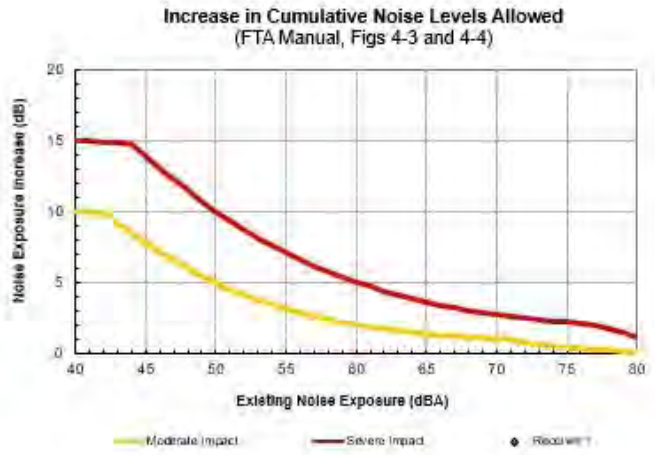


Figure B-3. Noise Model Plot for Residential Cluster No. 2, Existing Noise Conditions

Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2013

Project:	Cluster No. 2 - Existing (revised)

Receiver Parameters	
Receiver:	Receiver 1
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	

Noise Source Parameters	
Number of Noise Sources:	2

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	1
	Speed (mph)	60
	Avg. Number of Events/hr	3.07
Nighttime hrs	Avg. Number of Locos/train	1
	Speed (mph)	60
	Avg. Number of Events/hr	1.33
Distance	Distance from Source to Receiver (ft)	269
	Number of Intervening Rows of Buildings	0
Adjustments		

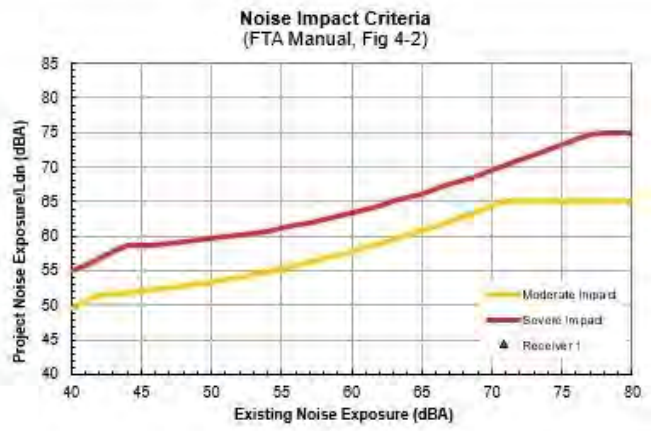
Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	60
	Avg. Number of Events/hr	3.07
Nighttime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	60
	Avg. Number of Events/hr	1.33
Distance	Distance from Source to Receiver (ft)	269
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Project Results Summary	
Existing Ldn:	dBA
Total Project Ldn:	55 dBA
Total Noise Exposure:	55 dBA
Increase:	55 dB

Distance to Impact Contours	
Dist to Mod. Impact Contour (Sources 1+2):	
Dist to Sev. Impact Contour (Sources 1+2):	

Source 1 Results	
Leq(day):	49.5 dBA
Leq(night):	45.9 dBA
Ldn:	53.0 dBA

Source 2 Results	
Leq(day):	47.9 dBA
Leq(night):	44.3 dBA
Ldn:	51.4 dBA
Incremental Ldn (Src 1-2):	55.3 dBA



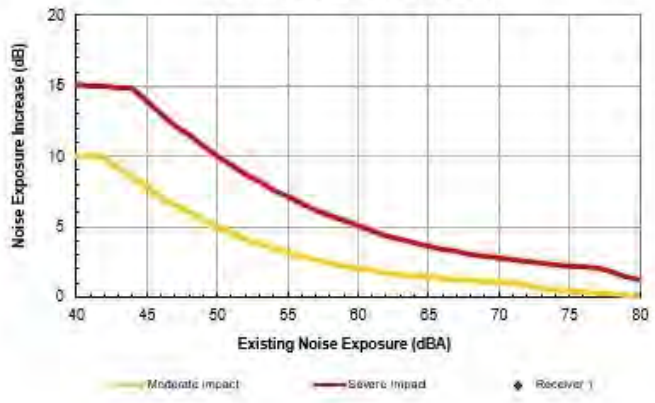


Figure B-4. Noise Model Plot for Residential Cluster No. 2, Proposed Noise Conditions

Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	**Cluster No. 2 - Proposed**

Receiver Parameters	
Receiver:	**Receiver 1**
Land Use Category:	**2. Residential**
Existing Noise (Measured or Generic Value):	

Noise Source Parameters	
Number of Noise Sources:	**4**

Noise Source Parameters		**Source 1**
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	**Avg. Number of Locos/train**	1
	Speed (mph)	79
	Avg. Number of Events/hr	1.53
Nighttime hrs	**Avg. Number of Locos/train**	1
	Speed (mph)	79
	Avg. Number of Events/hr	0.67
Distance	**Distance from Source to Receiver (ft)**	269
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		**Source 2**
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	**Avg. Number of Rail Cars/train**	4
	Speed (mph)	79
	Avg. Number of Events/hr	1.53
Nighttime hrs	**Avg. Number of Rail Cars/train**	4
	Speed (mph)	79
	Avg. Number of Events/hr	0.67
Distance	**Distance from Source to Receiver (ft)**	269
	Number of Intervening Rows of Buildings	0
Adjustments	**Noise Barrier?**	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		**Source 3**
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	**Avg. Number of Locos/train**	1
	Speed (mph)	79
	Avg. Number of Events/hr	1.53
Nighttime hrs	**Avg. Number of Locos/train**	1
	Speed (mph)	79
	Avg. Number of Events/hr	0.67
Distance	**Distance from Source to Receiver (ft)**	284
	Number of Intervening Rows of Buildings	
Adjustments		

Noise Source Parameters		**Source 4**
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	**Avg. Number of Rail Cars/train**	4
	Speed (mph)	79
	Avg. Number of Events/hr	1.53
Nighttime hrs	**Avg. Number of Rail Cars/train**	4
	Speed (mph)	79
	Avg. Number of Events/hr	0.67
Distance	**Distance from Source to Receiver (ft)**	284
	Number of Intervening Rows of Buildings	
Adjustments	**Noise Barrier?**	
	Joint Track/Crossover?	
	Embedded Track?	
	Aerial Structure?	

Project Results Summary	
Existing Ldn:	dBA
Total Project Ldn:	56 dBA
Total Noise Exposure:	56 dBA
Increase:	56 dB

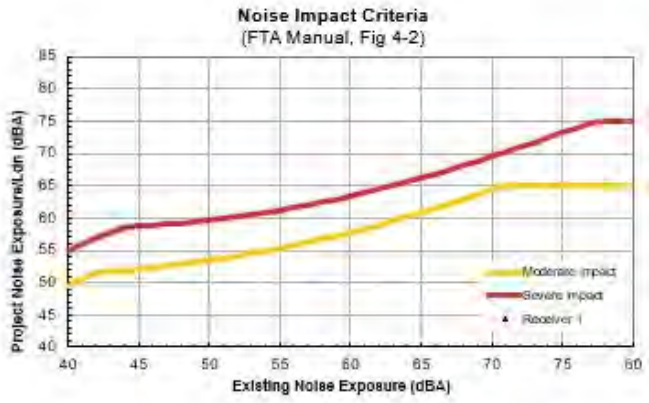
Distance to Impact Contours	
Contour:	---
Contour:	---

Source 1 Results	
Leq(day):	45.3 dBA
Leq(night):	41.7 dBA
Ldn:	48.9 dBA

Source 2 Results	
Leq(day):	47.3 dBA
Leq(night):	43.7 dBA
Ldn:	50.8 dBA
Incremental Ldn (Src 1-2):	53.0 dBA

Source 3 Results	
Leq(day):	44.9 dBA
Leq(night):	41.4 dBA
Ldn:	48.5 dBA
Incremental Ldn (Src 1-3):	54.3 dBA

Source 4 Results	
Leq(day):	46.9 dBA
Leq(night):	43.3 dBA
Ldn:	50.5 dBA
Incremental Ldn (Src 1-4):	55.8 dBA



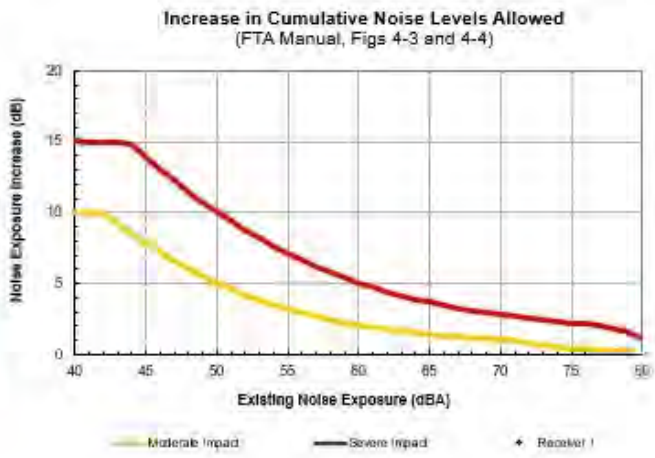


Figure B-5. Noise Model Plot for Residential Cluster No. 3, Existing Noise Conditions

Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/23/2013

Project:	Cluster No. 3 – Existing (revised)

Receiver Parameters	
Receiver:	Receiver 1
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	

Noise Source Parameters	
Number of Noise Sources:	2

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	1
	Speed (mph)	60
	Avg. Number of Events/hr	3.07
Nighttime hrs	Avg. Number of Locos/train	1
	Speed (mph)	60
	Avg. Number of Events/hr	1.33
Distance	Distance from Source to Receiver (ft)	143
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	60
	Avg. Number of Events/hr	3.07
Nighttime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	60
	Avg. Number of Events/hr	1.33
Distance	Distance from Source to Receiver (ft)	143
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Project Results Summary

Existing Ldn:	dBA
Total Project Ldn:	59 dBA
Total Noise Exposure:	59 dBA
Increase:	59 dB

Distance to Impact Contours

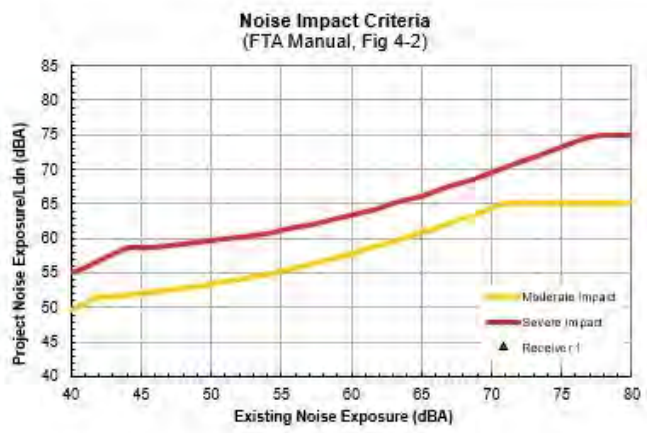
Dist to Mod. Impact Contour (Sources 1+2):	
Dist to Sev. Impact Contour (Sources 1+2):	

Source 1 Results

Leq(day):	53.6 dBA
Leq(night):	50.0 dBA
Ldn:	57.2 dBA

Source 2 Results

Leq(day):	52.0 dBA
Leq(night):	48.4 dBA
Ldn:	55.6 dBA
Incremental Ldn (Src 1-2):	59.4 dBA



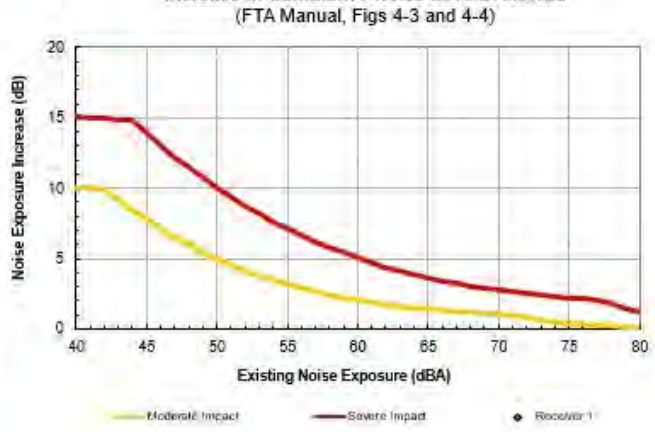


Figure B-6. Noise Model Plot for Residential Cluster No. 3, Proposed Noise Conditions

Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Cluster No. 3 - Proposed

Receiver Parameters	
Receiver:	Receiver 1
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	

Noise Source Parameters	
Number of Noise Sources:	4

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	1
	Speed (mph)	79
	Avg. Number of Events/hr	1.53
Nighttime hrs	Avg. Number of Locos/train	1
	Speed (mph)	79
	Avg. Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	143
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	79
	Avg. Number of Events/hr	1.53
Nighttime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	79
	Avg. Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	143
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	1
	Speed (mph)	79
	Avg. Number of Events/hr	1.53
Nighttime hrs	Avg. Number of Locos/train	1
	Speed (mph)	79
	Avg. Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	128
	Number of Intervening Rows of Buildings	
Adjustments		

Noise Source Parameters		Source 4
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	79
	Avg. Number of Events/hr	1.53
Nighttime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	79
	Avg. Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	128
	Number of Intervening Rows of Buildings	
Adjustments	Noise Barrier?	
	Joint Track/Crossover?	
	Embedded Track?	
	Aerial Structure?	

Project Results Summary	
Existing Ldn:	dBA
Total Project Ldn:	60 dBA
Total Noise Exposure:	60 dBA
Increase:	60 dB

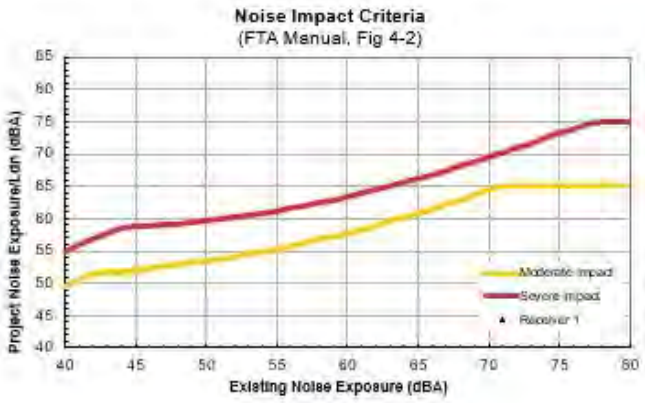
Distance to Impact Contours	
Contour:	---
Contour:	---

Source 1 Results	
Leq(day):	49.4 dBA
Leq(night):	45.8 dBA
Ldn:	53.0 dBA

Source 2 Results	
Leq(day):	51.4 dBA
Leq(night):	47.8 dBA
Ldn:	55.0 dBA
Incremental Ldn (Src 1-2):	57.1 dBA

Source 3 Results	
Leq(day):	50.1 dBA
Leq(night):	46.6 dBA
Ldn:	53.7 dBA
Incremental Ldn (Src 1-3):	58.7 dBA

Source 4 Results	
Leq(day):	52.1 dBA
Leq(night):	48.5 dBA
Ldn:	55.7 dBA
Incremental Ldn (Src 1-4):	60.5 dBA



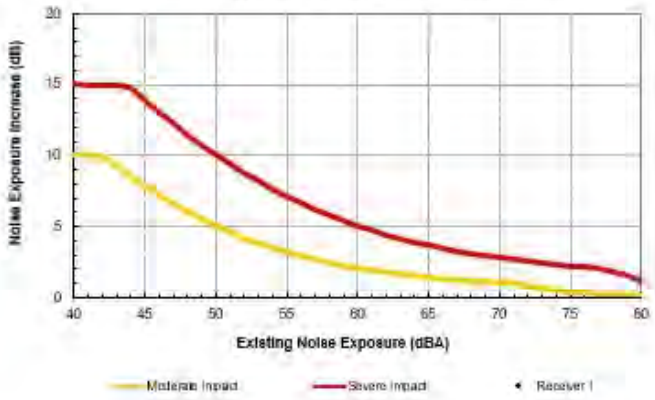


Figure B-7. Noise Model Plot for Residential Cluster No. 4, Existing Noise Conditions

Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2013

Project:	Cluster No. 4 – Existing (revised)

Receiver Parameters	
Receiver:	Receiver 1
Land Use Categorg:	2. Residential
Existing Noise (Measured or Generic Value):	

Noise Source Parameters	
Number of Noise Sources:	2

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	1
	Speed (mph)	60
	Avg. Number of Events/hr	3.07
Nighttime hrs	Avg. Number of Locos/train	1
	Speed (mph)	60
	Avg. Number of Events/hr	1.33
Distance	Distance from Source to Receiver (ft)	215
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	60
	Avg. Number of Events/hr	3.07
Nighttime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	60
	Avg. Number of Events/hr	1.33
Distance	Distance from Source to Receiver (ft)	215
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Project Results Summary

Existing Ldn:	dBA
Total Project Ldn:	57 dBA
Total Noise Exposure:	57 dBA
Increase:	57 dB

Distance to Impact Contours

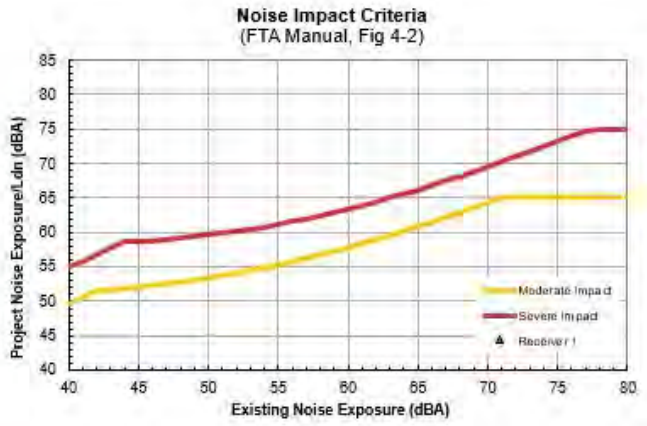
Dist to Mod. Impact Contour (Sources 1+2):	
Dist to Sev. Impact Contour (Sources 1+2):	

Source 1 Results

Leq(day):	51.0 dBA
Leq(night):	47.3 dBA
Ldn:	54.5 dBA

Source 2 Results

Leq(day):	49.4 dBA
Leq(night):	45.7 dBA
Ldn:	52.9 dBA
Incremental Ldn (Src 1-2):	56.8 dBA



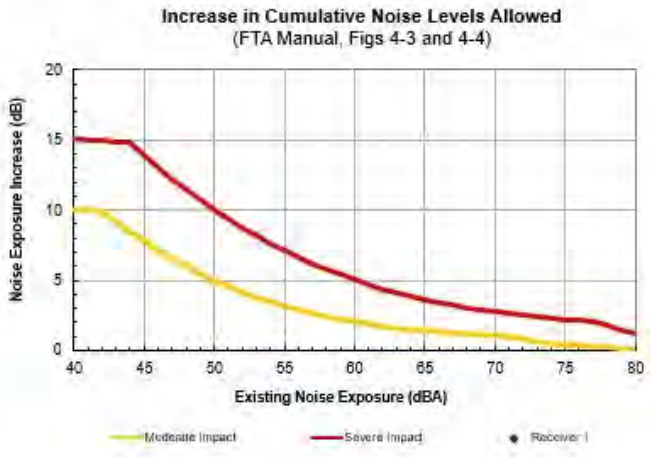


Figure B-8. Noise Model Plot for Residential Cluster No. 4, Proposed Noise Conditions

Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2013

Project:	Cluster No. 4 - Proposed

Receiver Parameters	
Receiver:	Receiver 1
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	

Noise Source Parameters	
Number of Noise Sources:	4

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	1
	Speed (mph)	79
	Avg. Number of Events/hr	1.53
Nighttime hrs	Avg. Number of Locos/train	1
	Speed (mph)	79
	Avg. Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	215
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	79
	Avg. Number of Events/hr	1.53
Nighttime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	79
	Avg. Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	215
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	1
	Speed (mph)	79
	Avg. Number of Events/hr	1.53
Nighttime hrs	Avg. Number of Locos/train	1
	Speed (mph)	79
	Avg. Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	230
	Number of Intervening Rows of Buildings	
Adjustments		

Noise Source Parameters		Source 4
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	79
	Avg. Number of Events/hr	1.53
Nighttime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	79
	Avg. Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	230
	Number of Intervening Rows of Buildings	
Adjustments	Noise Barrier?	
	Joint Track/Crossover?	
	Embedded Track?	
	Aerial Structure?	

Project Results Summary	
Existing Ldn:	dBA
Total Project Ldn:	57 dBA
Total Noise Exposure:	57 dBA
Increase:	57 dB

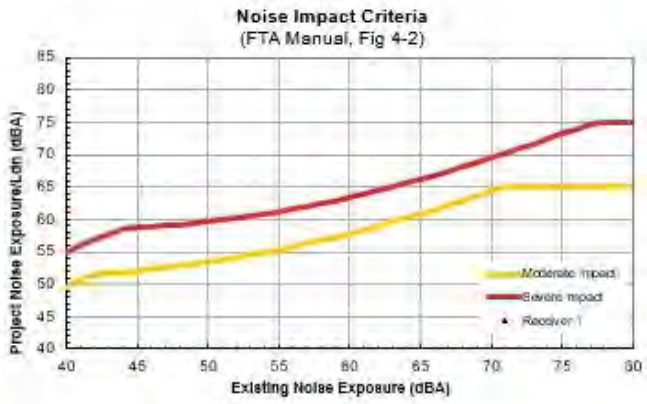
Distance to Impact Contours	
Contour:	---
Contour:	---

Source 1 Results	
Leq(day):	46.8 dBA
Leq(night):	43.2 dBA
Ldn:	50.3 dBA

Source 2 Results	
Leq(day):	48.7 dBA
Leq(night):	45.2 dBA
Ldn:	52.3 dBA
Incremental Ldn (Src 1-2):	54.4 dBA

Source 3 Results	
Leq(day):	46.3 dBA
Leq(night):	42.7 dBA
Ldn:	49.9 dBA
Incremental Ldn (Src 1-3):	55.7 dBA

Source 4 Results	
Leq(day):	48.3 dBA
Leq(night):	44.7 dBA
Ldn:	51.9 dBA
Incremental Ldn (Src 1-4):	57.2 dBA



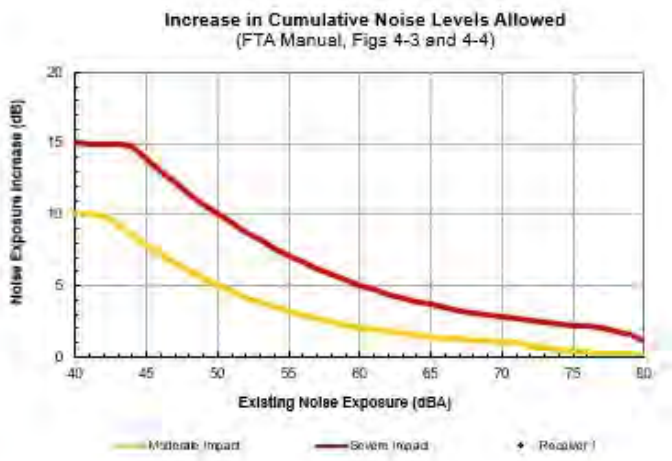


Figure B-9. Noise Model Plot for Residential Cluster No. 5, Existing Noise Conditions

Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Cluster No. 5 – Existing

Receiver Parameters	
Receiver:	Receiver 1
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	

Noise Source Parameters	
Number of Noise Sources:	2

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	1
	Speed (mph)	60
	Avg. Number of Events/hr	3.07
Nighttime hrs	Avg. Number of Locos/train	1
	Speed (mph)	60
	Avg. Number of Events/hr	1.33
Distance	Distance from Source to Receiver (ft)	120.5
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	60
	Avg. Number of Events/hr	3.07
Nighttime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	60
	Avg. Number of Events/hr	1.33
Distance	Distance from Source to Receiver (ft)	120.5
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Project Results Summary

Existing Ldn:	dBA
Total Project Ldn:	61 dBA
Total Noise Exposure:	61 dBA
Increase:	61 dB

Distance to Impact Contours

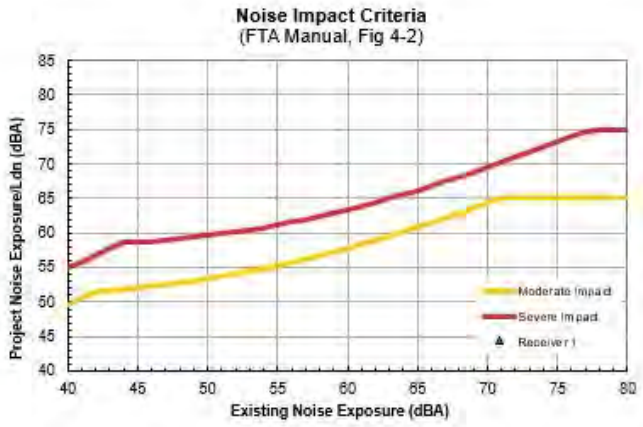
Dist to Mod. Impact Contour (Sources 1+2):	
Dist to Sev. Impact Contour (Sources 1+2):	

Source 1 Results

Leq(day):	54.7 dBA
Leq(night):	51.1 dBA
Ldn:	58.3 dBA

Source 2 Results

Leq(day):	53.1 dBA
Leq(night):	49.5 dBA
Ldn:	56.7 dBA
Incremental Ldn (Src 1-2):	60.6 dBA



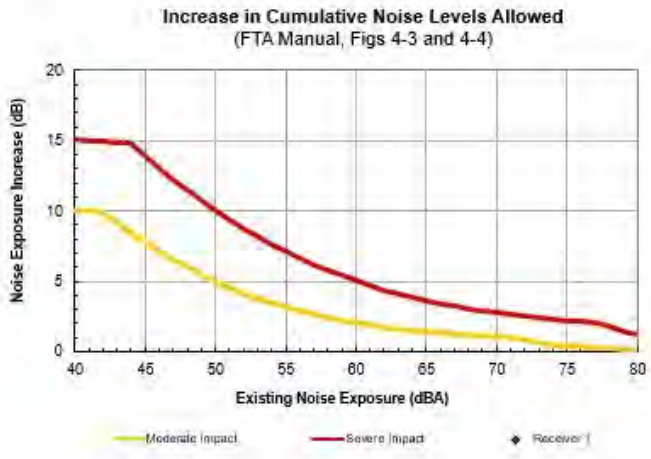


Figure B-10. Noise Model Plot for Residential Cluster No. 5, Proposed Noise Conditions

Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/29/2019

Project:	Cluster No. 5 - Proposed

Receiver Parameters	
Receiver:	Receiver 1
Land Use Category:	2. Residential
Existing Noise (Measured or Generic Value):	

Noise Source Parameters	
Number of Noise Sources:	4

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	1
	Speed (mph)	79
	Avg. Number of Events/hr	1.53
Nighttime hrs	Avg. Number of Locos/train	1
	Speed (mph)	79
	Avg. Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	120.5
	Number of Intervening Rows of Buildings	0
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	79
	Avg. Number of Events/hr	1.53
Nighttime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	79
	Avg. Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	120.5
	Number of Intervening Rows of Buildings	0
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	No
	Embedded Track?	No
	Aerial Structure?	No

Noise Source Parameters		Source 3
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Daytime hrs	Avg. Number of Locos/train	1
	Speed (mph)	79
	Avg. Number of Events/hr	1.53
Nighttime hrs	Avg. Number of Locos/train	1
	Speed (mph)	79
	Avg. Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	136
	Number of Intervening Rows of Buildings	
Adjustments		

Noise Source Parameters		Source 4
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Daytime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	79
	Avg. Number of Events/hr	1.53
Nighttime hrs	Avg. Number of Rail Cars/train	4
	Speed (mph)	79
	Avg. Number of Events/hr	0.67
Distance	Distance from Source to Receiver (ft)	136
	Number of Intervening Rows of Buildings	
Adjustments	Noise Barrier?	
	Joint Track/Crossover?	
	Embedded Track?	
	Aerial Structure?	

Project Results Summary

Existing Ldn:	dBA
Total Project Ldn:	61 dBA
Total Noise Exposure:	61 dBA
Increase:	61 dB

Distance to Impact Contours

Dist to Mod. Impact Contour:	---
Dist to Sev. Impact Contour:	---

Source 1 Results

Leq(day):	50.5 dBA
Leq(night):	46.9 dBA
Ldn:	54.1 dBA

Source 2 Results

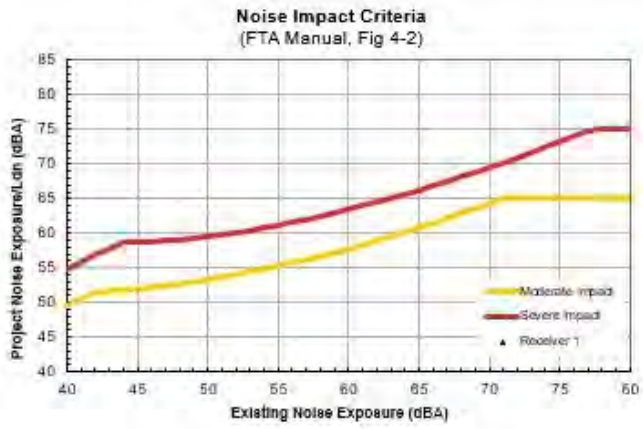
Leq(day):	52.5 dBA
Leq(night):	48.9 dBA
Ldn:	56.1 dBA
Incremental Ldn (Src 1-2):	58.2 dBA

Source 3 Results

Leq(day):	49.7 dBA
Leq(night):	46.2 dBA
Ldn:	53.3 dBA
Incremental Ldn (Src 1-3):	59.4 dBA

Source 4 Results

Leq(day):	51.7 dBA
Leq(night):	48.1 dBA
Ldn:	55.3 dBA
Incremental Ldn (Src 1-4):	60.8 dBA



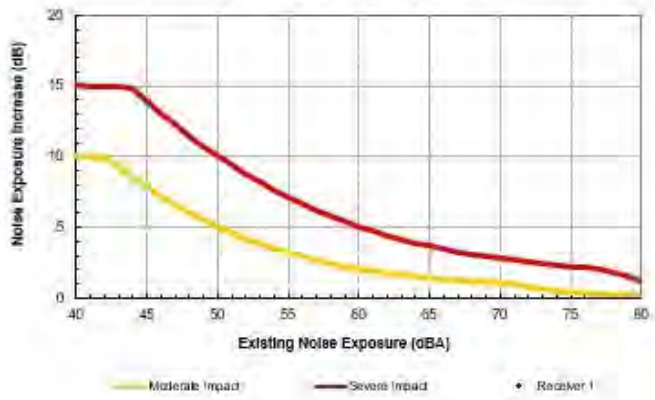


Figure B-11. Noise Model Plot for Crossover Events

Federal Transit Administration
Noise Impact Assessment Spreadsheet

version: 1/23/2013

Project:	Draper Crossover Events

Receiver Parameters	
Receiver:	Receiver 1
Land Use Category:	3. Institutional
Existing Noise (Measured or Generic Value):	60 dBA

Noise Source Parameters	
Number of Noise Sources:	2

Noise Source Parameters		Source 1
	Source Type:	Fixed Guideway
	Specific Source:	Diesel Electric Locomotive
Noisiest hr of Activity During Sensitive hrs	Number of Locos/train	1
	Speed (mph)	60
	Number of Events/hr	2
Distance	Distance from Source to Receiver (ft)	175
	Number of Intervening Rows of Buildings	
Adjustments		

Noise Source Parameters		Source 2
	Source Type:	Fixed Guideway
	Specific Source:	Rail Car
Noisiest hr of Activity During Sensitive hrs	Number of Rail Cars/train	4
	Speed (mph)	60
	Number of Events/hr	2
Distance	Distance from Source to Receiver (ft)	175
	Number of Intervening Rows of Buildings	
Adjustments	Noise Barrier?	No
	Joint Track/Crossover?	Yes
	Embedded Track?	No
	Aerial Structure?	No

Project Results Summary

Existing Leqh:	60 dBA
Total Project Leqh:	55 dBA
Total Noise Exposure:	61 dBA
Increase:	1 dB
Impact?:	None

Distance to Impact Contours

Dist to Mod. Impact Contour (Sources 1+2):	57 ft
Dist to Sev. Impact Contour (Sources 1+2):	24 ft

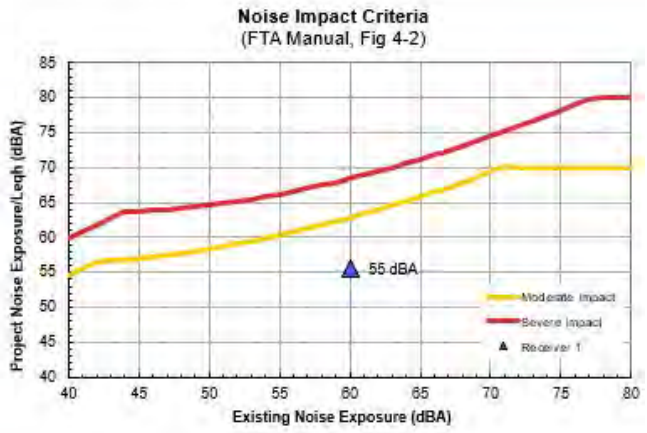
Source 1 Results

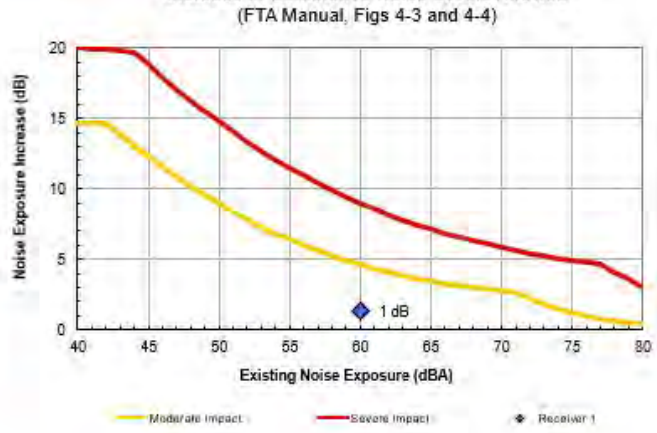
Leqh: 50.5 dBA

Source 2 Results

Leqh: 53.9 dBA

Incremental Leqh (Src 1-2): 55.5 dBA





ATTACHMENT B.8
Air Quality

fFrontRunner Forward

South of Draper Double Track Project

Air Quality Review

December 2023

UTA FrontRunner Forward Program

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Introduction

The Utah Transit Authority (UTA) in coordination with the Utah Department of Transportation (UDOT) is proposing to lengthen and shift the existing Draper Station area double track segment of its FrontRunner commuter rail system in the cities of Draper and Bluffdale in southern Salt Lake County, Utah, to create a true double track alignment through this area. See the Vicinity Map in Attachment A.1, *Vicinity Map for the South of Draper Double Track Project*.

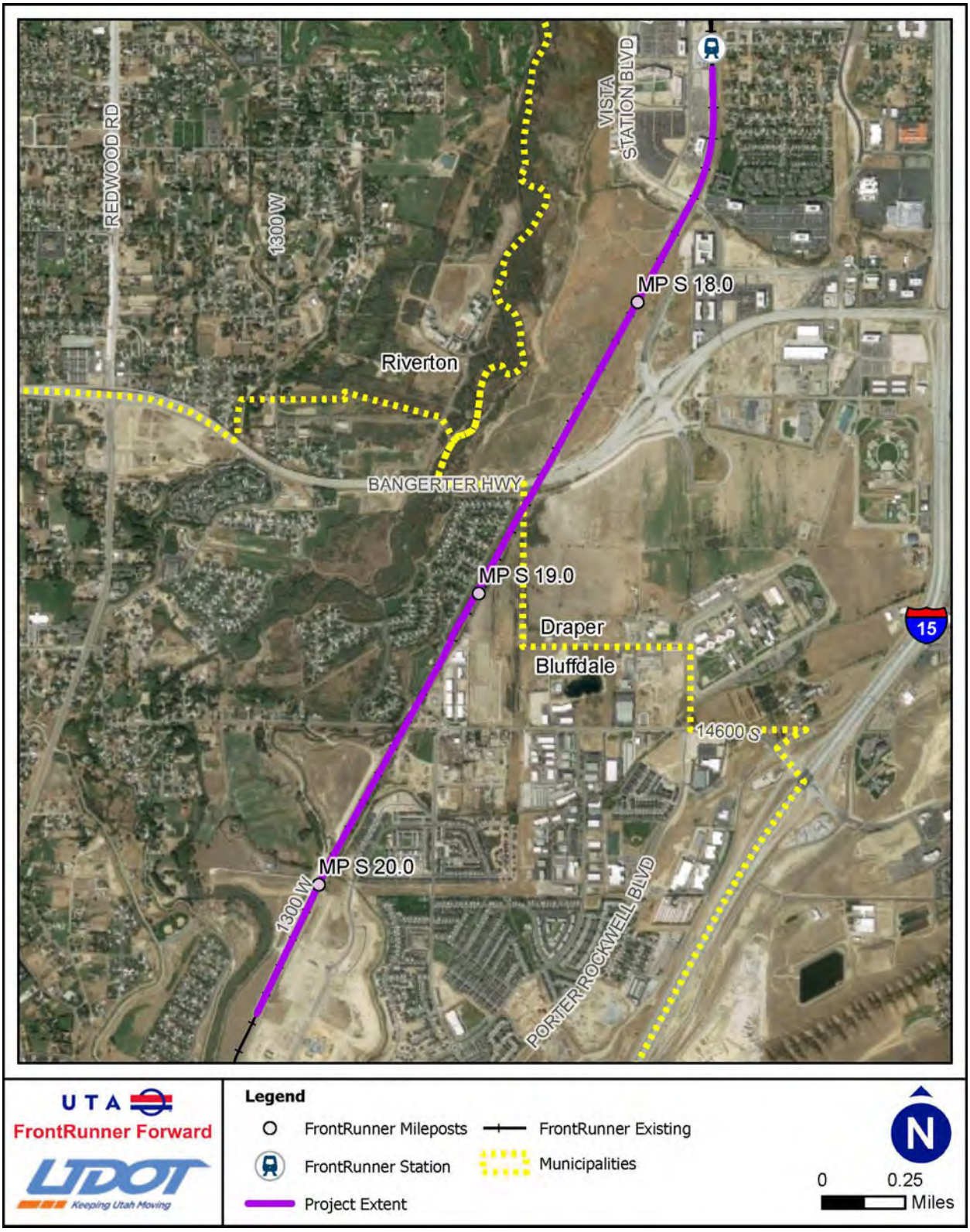
Project Description and Need for the Project

The Project is located between 0.75 and 1 mile west of Interstate 15 (I-15) in Bluffdale and Draper in the southern portion of Salt Lake County. The Project extends from UTA milepost S 20.5 north to UTA milepost S 17.2, a distance of about 3.3 miles to encompass 2.8 miles of new double track and track tie-in.

The existing double track section at Draper Station is about 1.0 mile long, and its primary use is allowing trains traveling in opposite directions to pass each other. The Project would lengthen the existing double track section by approximately 2.8 miles, moving the southern terminus of the section from the Vista Station Boulevard bridge to 1300 West. North of Bangerter Highway, the anticipated track work consists of constructing a new FrontRunner mainline (ML) track east of the existing mainline track, shifting the existing FrontRunner mainline track where necessary, removing one existing turnout, constructing one new turnout, constructing a new bridge over Bangerter Highway and 14600 South, demolishing an existing retaining wall and constructing new retaining walls on the west side of the corridor on the north and south approaches to the Bangerter Highway bridge as well as in other sections to minimize property impacts and ROW acquisition, extending the Jordan and Salt Lake City Canal culvert under the Bangerter Highway bridge's south approach, modifying an existing private access road at-grade crossing, relocating utilities, and widening the existing trackbed. South of Bangerter Highway, the existing UTA mainline would remain in its current location, and a new track would be constructed west of the existing mainline. Preliminary track design modeling shows that the estimated depth of excavation from the top of the existing ground to the bottom of the proposed subballast or track ditch for proposed trackwork construction ranges from 2 to 5 feet. The estimated depth of excavation for walls, utilities, and the bridge over Bangerter Highway ranges from 3 to 10 feet.

The Project would improve reliability and reduce delays of the FrontRunner service. The Project is one of nine double track projects being proposed as part of long-term improvements under the FrontRunner Forward Program; however, it has independent utility and can be constructed with or without the other projects. Further detail 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)* (May 2023).

Figure 1. Project extent



Regulatory Setting and Compliance

National Ambient Air Quality Standards (NAAQS)

The U.S. Environmental Protection Agency (EPA), under the authority of the Clean Air Act (42 United States Code [USC] Section 7401 and subsequent sections), established National Ambient Air Quality Standards (NAAQS) for ubiquitous pollutants considered harmful to public health and the environment (40 Code of Federal Regulations [CFR] Part 50). These standards include both primary and secondary standards. Primary standards protect public health, while secondary standards protect public welfare (such as protecting property and vegetation from the effects of air pollution). These standards have been adopted by the Utah Division of Air Quality as the official ambient air quality standards for Utah.

EPA has set NAAQS for six principal pollutants known as criteria pollutants. The current NAAQS are listed in Table 1. According to EPA, transportation sources currently contribute to four of the six criteria pollutants: carbon monoxide (CO), particulate matter (PM_{10} and $PM_{2.5}$), ozone (O_3), and nitrogen dioxide (NO_2).

If an area meets the NAAQS for a given air pollutant, the area is called an attainment area for that pollutant (because the NAAQS have been attained). If an area does not meet the NAAQS for a given air pollutant, the area is called a nonattainment area. A maintenance area is an area previously designated as a nonattainment area that has been redesignated as an attainment area and is required by Section 175A of the Clean Air Act, as amended, to have a maintenance plan for the 20 years following its redesignation to attainment or maintenance status.

National Ambient Air Quality Standards (NAAQS) Compliance

The Project is located in Salt Lake County. Salt Lake County is an attainment area for CO, NO_2, and Pb; a nonattainment area for $PM_{2.5}$, O_3, and SO_2; and a maintenance area for PM_{10}, having transitioned from a nonattainment area effective March 27, 2020. Table 1 shows the attainment status for Salt Lake County for each criteria pollutant.

Sulfur dioxide (SO_2) and lead (Pb) are not considered transportation-related criteria pollutants and are not discussed further.

Table 1. National and Utah Ambient Air Quality Standards for criteria pollutants and attainment status for Salt Lake County

Pollutant	Primary/Secondary Standard	Averaging Time	Level	Form	Attainment Status
Carbon monoxide (CO)	Primary	8 hours	9 ppm	Not be exceeded more than once per year	Attainment area
		1 hour	35 ppm	Not be exceeded more than once per year	
Ozone (O_3)	Primary and secondary	8 hours	0.070 ppm	Annual fourth-highest daily maximum 8-hour concentration, averaged over 3 years	Marginal nonattainment area
Particulate matter ($PM_{2.5}$)	Primary	1 year	12.0 µg/m³	Annual mean, averaged over 3 years	Serious nonattainment area
	Secondary	1 year	15.0 µg/m³	Annual mean, averaged over 3 years	
	Primary and secondary	24 hours	35 µg/m³	98th percentile, averaged over 3 years	
Particulate matter (PM_{10})	Primary and secondary	24 hours	150 µg/m³	Not to be exceeded more than once per year on average over 3 years	Maintenance area
Nitrogen dioxide (NO_2)	Primary	1 hour	100 ppb	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years	Attainment area
	Primary and secondary	1 year	53 ppb	Annual mean	Attainment area
Sulfur dioxide (SO_2)	Primary	1 hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years	Attainment area
	Secondary	3 hours	0.5 ppm	Not to be exceeded more than once per year	Nonattainment area
Lead (Pb)	Primary and secondary	Rolling 3-month average	0.15 µg/m³	Not to be exceeded	Attainment area

Sources: 49 CFR Part 50 (NAAQS) and 40 CFR Part 81 (attainment status)

µg/m³ = micrograms per cubic meter; ppm = parts per million; ppb = parts per billion; $PM_{2.5}$ = particulate matter 2.5 microns in diameter or less; PM_{10} = particulate matter 10 microns in diameter or less

Transportation Conformity Requirements

Transportation conformity is a process required by Clean Air Act Section 176(c), which establishes the framework for improving air quality to protect public health and the environment. All state governments are required to develop a state implementation plan (SIP) for each pollutant for which an area is in nonattainment or maintenance status. The SIP explains how the State will comply with the requirements of the Clean Air Act.

What is transportation conformity?

Transportation conformity is a process required by Clean Air Act Section 176(c), which establishes the framework for improving air quality to protect public health and the environment.

Section 176(c) of the Clean Air Act, and its related amendments, require that transportation plans, programs, and projects that are developed, funded, or approved by the Federal Highway Administration and/or Federal Transit Administration, and metropolitan planning organizations, must demonstrate that such activities conform to the SIP. Transportation conformity requirements apply to any transportation-related criteria pollutants for which the project area is designated a nonattainment or maintenance area.

Unless the project is exempt from conformity requirements, federal agencies are required to make a conformity determination before adopting, accepting, approving, or funding an activity or project located in a nonattainment or maintenance area. A conformity determination is a finding that the activity or project conforms to the SIP's purpose of "eliminating or reducing the severity and number of violations" of the NAAQS and "achieving expeditious attainment of the NAAQS" [42 USC Section 7506(c)] and that the project or activity will not:

- Cause or contribute to new air quality violations of the NAAQS,
- Worsen existing violations of the NAAQS, or
- Delay timely attainment of the NAAQS or required interim milestones.

What is a hot-spot analysis?

A hot-spot analysis is an estimation of likely future local pollutant concentrations and a comparison of those concentrations to the relevant NAAQS.

To demonstrate project-level conformity, a project must come from a conforming regional transportation plan (RTP) and transportation improvement program (TIP), the project design concept and scope must not have changed significantly from that in the RTP and TIP, and the analysis must have used the latest planning assumptions and latest emissions model. Additional analysis might be necessary in CO, PM_{10}, and $PM_{2.5}$ nonattainment or maintenance areas to determine whether a project would have local air quality impacts. This analysis is referred to as a "hot-spot" analysis. A hot-spot analysis is defined in 40 CFR Section 93.101 as an estimation of likely future local pollutant concentrations and a comparison of those concentrations to the relevant NAAQS. A hot-spot analysis assesses air quality impacts on a smaller scale than an entire nonattainment or maintenance area.

A PM hot-spot analysis is required only for specific types of projects, which are listed in the transportation conformity regulations at 40 CFR Section 93.123(b)(1). Projects that require quantitative hot-spot analyses for $PM_{2.5}$ and PM_{10} are:

i. New highway projects that have a significant number of diesel vehicles, and expanded highway projects that have a significant increase in the number of diesel vehicles

Response: The Project is not a new or expanded highway project that would significantly increase the number of diesel vehicles

ii. Projects affecting intersections that are at level of service (LOS) D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project

Response: The Project would not affect intersections that are at LOS D, E, or F with a significant number of diesel vehicles or that would change to LOS D, E, or F because of increased traffic from diesel vehicles related to the Project

iii. New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location

Response: The Project is not a new bus or rail terminal that would have a significant number of diesel vehicles congregating at a single location.

iv. Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location

Response: The Project is not an expanded bus or rail terminal that would significantly increase the number of diesel vehicles congregating at a single location.

v. Projects in or affecting locations, areas, or categories of sites that are identified in the PM_{10} or $PM_{2.5}$ applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation

Response: The Project would not affect locations, areas, or categories of sites identified as sites of possible $PM_{2.5}$ or PM_{10} violation.

Because the Project does not meet any of the criteria to be considered a project of air quality concern, hot-spot analyses are not required for particulate matter.

According to the transportation conformity regulations at 40 CFR Section 93.123(a)(1), projects that require quantitative analysis for CO are:

i. Projects in or affecting locations, areas, or categories of sites which are identified in the applicable implementation plan as sites of violation or possible violation

   Response: The Project would not affect locations, areas, or categories of sites identified as sites of possible CO violations.

ii. Projects affecting intersections that are at LOS D, E, or F, or those that will change to LOS D, E, or F because of increased traffic volumes related to the project

   Response: The Project would not affect intersections that are at LOS D, E, or F or would change to LOS D, E, or F due to increased traffic volumes related to the Project.

iii. Any project affecting one or more of the top three intersections in the nonattainment or maintenance area with highest traffic volumes, as identified in the applicable implementation plan

   Response: The Project would not affect one or more of the top three intersections with the highest traffic volumes.

iv. Any project affecting one or more of the top three intersections in the nonattainment or maintenance area with the worst level of service, as identified in the applicable implementation plan

   Response: The Project would not affect one or more of the top three intersections with the worst level of service.

Because the Project does not meet any of the criteria to be considered a project of air quality concern, hot-spot analyses are not required for CO.

Transportation Conformity Compliance

Because the Project is located in a nonattainment area and is not exempt from a conformity analysis under 40 CFR Section 93.126, a General Conformity applicability assessment is needed, and the Project must be listed on a conforming Metropolitan Transportation Plan and Transportation Improvement Plan. The Wasatch Front Regional Council (WFRC) considers air quality as part of its RTP. The 2023–2050 WFRC RTP and Air Quality Conformity Memorandum #41 were adopted in May 2023 and include the full length of the proposed double track projects. In addition, a corridor-wide air quality analysis has been conducted to evaluate the potential impacts of the future anticipated service increase along the FrontRunner corridor. The corridor-wide air quality analysis is documented in a separate report, *FrontRunner Forward Corridor-level Air Quality Technical Memorandum* (June 2023), and summarized in the PEL (May 2023).

Conformity for O_3 will be met in the updated RTP based on an interim emissions test with projected emissions compared to those of a 2017 base year, all in the context of the 2015 8-hour O_3 standard. EPA approved the maintenance plan for the Salt Lake County 1-hour O_3 nonattainment area on July 17, 1997 (62 Federal Register [FR] 38213). However, the 1-hour standard was replaced by an 8-hour standard on July 18, 1997 (62 FR 38856). EPA approved the maintenance plan for the Salt Lake County 8-hour O_3 standard on September 26, 2013 (78 FR 59242) and the SIP for PM_{10} on July 8, 1994 (59 FR 35036). The CO maintenance plan for Salt Lake City was approved by the EPA on August 1, 2005 (40 FR 44055). Salt Lake and Davis Counties do not yet have an approved SIP for $PM_{2.5}$.

Because the Project does not meet any of the criteria to be considered a project of air quality concern, hot-spot analyses are not required for particulate matter.

Air Quality Assessment

National Ambient Air Quality Standards

Except for some sporadic double-track sections and sidings to facilitate passing, none of the FrontRunner commuter rail system has been double-tracked to allow two trains traveling in opposite directions to pass, creating pinch points and system inefficiencies with idling trains waiting for one another to pass. The Project would allow opposing train traffic to pass, thereby decreasing the number of idling trains, increasing service reliability, and allowing more efficient operation of the rail line. Air quality would be improved with the Project because train flow would be improved and trains would spend less time idling compared to existing conditions.

In 1998, EPA promulgated final exhaust emission standards for newly manufactured and remanufactured locomotives and locomotive engines (FR Volume 63, Number 73, page 18978, April 16, 1998). In June 2008, EPA finalized a three-part program that when fully implemented will substantially reduce emissions from diesel locomotives of all types. The standards are based on the application of high-efficiency catalytic aftertreatment technology (EPA 2022). By requiring overall reductions in locomotive emissions, idling locomotive exhaust is also cleaner and will continue to improve in the future.

Summary

The Project is not a project of air quality concern, and the project team does not expect the Project to adversely affect local compliance with the NAAQS. In addition, atmospheric CO_2 emissions are projected to increase in 2050 due to the greater number of vehicles and increased VMT. This increase would occur with or without the Project. The amounts of all other pollutants are projected to decrease in future years due to more stringent emissions standards for diesel locomotives and improved emissions control technology.

No mitigation for air quality impacts is proposed. Best management practices should be used in all construction phases to minimize fugitive dust.

References

[EPA] U.S. Environmental Protection Agency

2022 Regulations for Emissions from Locomotives. https://www.epa.gov/regulations-emissions-vehicles-and-engines/regulations-emissions-locomotives. Accessed May 3, 2022.

[WFRC] Wasatch Front Regional Council

2023 Wasatch Front Regional Transportation Plan 2023–2050. https://wfrc.org/vision-plans/regional-transportation-plan/2023-2050-regional-transportation-plan.

ATTACHMENT B.9
Hazardous Materials

FrontRunner Forward

South of Draper Double Track Project

Hazardous Materials Evaluation

December 2023

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Introduction

The Utah Transit Authority (UTA) in coordination with the Utah Department of Transportation (UDOT) is proposing to lengthen and shift the existing Draper Station area double track segment of its FrontRunner commuter rail system in the cities of Draper and Bluffdale in southern Salt Lake County, Utah, to create a true double track alignment through this area. See the Vicinity Map in Attachment A.1, *Vicinity Map for the South of Draper Double Track Project*.

The project team has prepared this preliminary screening for potentially hazardous waste sites near the project extent. This evaluation is not a standard Phase I Environmental Site Assessment (ESA) pursuant to ASTM E1527-21. This screening was limited to a review of the Utah Geospatial Resource Center's (UGRC) Land-Related Contaminant and Cleanup database,[1] the Utah Department of Environmental Quality's (UDEQ) online database,[2] and an Environmental Data Resources, Inc. (EDR), report.[3] These resources contain information regarding the U.S. Environmental Protection Agency (EPA) and state designated hazardous materials storage sites and contamination cleanup program. Table 1 on page 4 lists the site types that are contained in the databases.

The purpose of the screening is to identify areas of primary concern. These areas of concern are, in general, sites where the Project would require that parcels containing potentially hazardous sites be acquired, either in full or partially, for the Project and/or where known hazardous sites are close to planned construction activities where contamination could potentially migrate into the project construction area.

Before acquiring any property, and depending on specific construction needs, UTA could assess areas of concern to determine whether contamination is present and to establish the exact nature and limits of the potential hazard. Pursuant to UTA's Commuter Rail Design Criteria, Section 2.2.6, *Hazardous Waste Sites*, UTA could perform a Phase I ESA or determine that more-involved environmental inquiry (soil and/or groundwater sampling) is necessary to identify and evaluate project-specific construction impacts.

Project Description and Need for the Project

The Project is located between 0.75 and 1 mile west of Interstate 15 (I-15) in Bluffdale and Draper in the southern portion of Salt Lake County. The Project extends from UTA milepost S 20.5 north to UTA milepost S 17.2, a distance of about 3.3 miles to encompass 2.8 miles of new double track and track tie-in.

The existing double track section at Draper Station is about 1.0 mile long, and its primary use is allowing trains traveling in opposite directions to pass each other. The Project would lengthen the existing double track section by approximately 2.8 miles, moving the southern terminus of the section from the Vista Station Boulevard bridge to 1300 West. North of Bangerter Highway, the anticipated track work consists of constructing a new FrontRunner mainline (ML) track east of the existing mainline track, shifting the existing FrontRunner mainline track where necessary, removing one existing turnout, constructing one new turnout, constructing a new bridge over Bangerter Highway and 14600 South, demolishing an existing retaining wall and constructing new retaining walls on the west side of the corridor on the north

[1] UGRC, DEQ Land-Related Contaminant and Cleanup Data, accessed September 2022.
[2] UDEQ, Utah Environmental Interactive Map, accessed September 2022.
[3] EDR, *Corridor Report: South of Draper*, June 17, 2022.

and south approaches to the Bangerter Highway bridge as well as in other sections to minimize property impacts and ROW acquisition, extending the Jordan and Salt Lake City Canal culvert under the Bangerter Highway bridge's south approach, modifying an existing private access road at-grade crossing, relocating utilities, and widening the existing trackbed. South of Bangerter Highway, the existing UTA mainline would remain in its current location, and a new track would be constructed west of the existing mainline. Preliminary track design modeling shows that the estimated depth of excavation from the top of the existing ground to the bottom of the proposed subballast or track ditch for proposed trackwork construction ranges from 2 to 5 feet. The estimated depth of excavation for walls, utilities, and the bridge over Bangerter Highway ranges from 3 to 10 feet.

The Project would improve reliability and reduce delays of the FrontRunner service. The Project is one of nine double track projects being proposed as part of long-term improvements under the FrontRunner Forward Program; however, it has independent utility and can be constructed with or without the other projects. Further detail 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)* (May 2023).

Regulatory Setting

Hazardous materials include any solid, liquid, or gaseous materials that, if improperly managed or disposed of, could pose substantial hazards to human health and the environment. A material is considered hazardous if it exhibits one or more of the following characteristics: ignitability, corrosivity, reactivity, and toxicity, or if is specifically listed as a hazardous substance in the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). Hazardous materials are regulated by Resource Conservation and Recovery Act (RCRA), by the CERCLA, and by Utah Administrative Code Title 19, *Environmental Quality Code*.

The following concerns are raised when a transportation project could affect sites with known or suspected hazardous materials:

- The spread of existing soil or groundwater contamination through construction activities
- The potential for increased construction costs
- The potential for construction delays
- The health and safety of construction workers and people who live near the sites with hazardous materials
- The short-term and long-term liability associated with acquiring environmentally distressed properties

Affected Environment and Hazardous Materials Evaluation Area

The evaluation area for identifying hazardous materials is a 0.5-mile radius around the project extent. The project team screened potentially hazardous sites in the hazardous materials evaluation area by reviewing records on sites obtained from UGRC (which included UDEQ and EPA databases) and a report provided by EDR (June 17, 2022).

Site Screening

All sites in the hazardous materials evaluation area were reviewed for their potential to be affected by the Project based on site types and a location or distance to the project extent. For example, Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) and leaking underground storage tanks (LUST) sites are sites where the nature and primary extent of contamination are characterized (or are being investigated), and a more-detailed review is warranted during final design to more thoroughly understand and describe construction risks. Both of these site types in the evaluation area were considered “sites of concern.”

A site’s location relative to the inferred direction of groundwater flow (east to west toward the Jordan River) was then used to define the risk to construction. For example, it is more likely that contamination from CERCLIS or LUST sites east of the project extent could migrate into the project extent. Therefore, sites east of the project extent represent a higher risk to construction than sites west of the project extent. Contamination from sites west of the project extent could also migrate into the project extent, but the general direction of groundwater flow would tend to carry contamination away. For sites to the west, sites closer to the project extent are characterized as high risk, whereas sites with known contamination but located about 0.25 mile west are characterized as medium or low risk.

Conversely, environmental incident sites are typically locations of a truck spill that was reported in a timely manner and likely cleaned up soon after the incident. These sites represent a low risk to construction, and a narrower screening distance (adjacent to and within about 0.1 mile of the project extent) was used to identify sites of concern. These site types typically represent a low risk to construction.

The general screening radius distances for different site types are shown in Table 1.

This screening process identified sites of potential concern, which are presented in the following sections. See Table 2 on page 7 for a list of hazardous sites in the hazardous materials evaluation area and Figure 1 on page 9 for each site’s location relative to the project extent.

Table 1. Description of hazardous materials site types and search radii

Site Type	General Screening Radius	Description
Brownfields	Hazardous materials evaluation area	Brownfields are former industrial areas targeted for cleanup. Site designation does not imply that contamination is present.
Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS)	Hazardous materials evaluation area	CERCLIS sites contain listed chemicals regulated under CERCLA but have not been categorized as NPL sites.
National Priorities List (NPL)	Hazardous materials evaluation area	NPL sites are those containing listed chemicals under CERCLA and that have been identified as priorities for cleanup.
Environmental Incidents	Project extent or adjacent property	Environmental incidents are locations where a spill or other incident regarding hazardous materials has been reported.
Enforceable Written Assurances (EWA)	Project extent or adjacent property	EWA sites are properties where the owner has come to an agreement with UDEQ regarding obligations associated with hazardous materials or waste on the site. Generally, these are sites with no unacceptable risks to human health or the environment.
Formerly Used Defense (FUD) Site	Hazardous materials evaluation area	Formerly used defense sites were once under the jurisdiction of the U.S. Department of Defense and could contain hazardous, toxic, or radioactive wastes in the soil, water, or containers on site.
Underground Storage Tanks (UST)	Project extent or adjacent property	USTs are sites where underground storage tanks are currently being used or have been used to store petroleum products such as gasoline or diesel fuel.
Leaking Underground Storage Tanks (LUST)	Hazardous materials evaluation area	LUSTs are UST sites where a leak has been detected.
Solid Waste Facilities	Hazardous materials evaluation area	Solid waste sites include municipal and industrial landfills and transfer stations.
Toxic Release Inventory (TRI)	Hazardous materials evaluation area	TRI sites are sites such as manufacturing or mining facilities that manufacture, process, or consume listed chemicals. The TRI tracks chemicals released to the air, water, or is land disposed.
Tier II	Project extent or adjacent property	Tier II sites are sites with documented hazardous chemicals stored on site. No contamination or chemical release is implied by the listing in the database.
Used Oil Permitted Facilities	Project extent or adjacent property	Used oil facilities are sites that store, transport, or recycle used oil.

Comprehensive Environmental Response, Compensation, and Liability Act Information System (CERCLIS) Sites

No CERCLIS sites are located in the hazardous materials evaluation area.

One CERCLIS site is located just outside the hazardous materials evaluation area (about 0.55 miles from the project extent). Bluffdale Salvage (Site ID UTD988078614) is located at 709 West 14600 South. The site covers about 54 acres and is split by the East Jordan Canal. The southern portion is about 34 acres and has been used for agricultural purposes; the salvage yard is located on the northern 20 acres of the property. According to records on UDEQ's interactive map, about 600,000 pounds of scrap and junk had been hauled to the site. This included 1,000 pounds of dynamite and 6,000 pounds of aluminum-enhanced ammonium nitrate, which were removed from the site in 1991 and 1992. Soil and canal water were sampled in 1998. UDEQ concluded that there was little evidence of contamination, and the site does not pose a threat to human health or the environment. This site represents a **low risk** to construction.

National Priorities List (NPL) Sites

No NPL sites are located in the hazardous materials evaluation area.

Leaking Underground Storage Tanks (LUST) Sites

The project team's review of the databases found one LUST incident in the hazardous materials evaluation area. Dwight W. Peterson and Sons Excavating (Site ID 4001834), located at 925 West 14600 South, had two 5,000-gallon fuel tanks removed in 1994. No contamination was noted during tank removal, and the site received a No Further Action (NFA) determination from UDEQ in 1998. This site represents a **low risk** to construction.

Underground Storage Tanks (UST) Sites

The project team's review of the databases found two UST sites in the hazardous materials evaluation area. The Jordan Basin Reclamation Facility (UST ID 4002635) located at 13826 S. Jordan Basin Lane has four aboveground storage tanks, which were registered in June 2022. UDEQ's records do not note any spills or leaks from these tanks. This site, which is about 0.445 miles west of the project extent and west of the Jordan River, represents a **low risk** to construction.

UST site 4002237, located at 15205 South 1800 West, is a bank-owned site that had one tank removed in 2000. No contamination is noted in UDEQ's records. This site is about 0.5 miles west of the project extent. This site represents a **low risk** to construction.

Solid Waste Facilities

One solid waste facility, Biozyme LCC Compost (Site ID SW345), is reported in the hazardous materials evaluation area. Biozyme submitted a permit application in 2016 to compost green waste and biosolids on a 700-acre property. The project team reviewed aerial images since 2016 and did not see any compost operations such as windrows or piles. No annual operating reports have been submitted to the Utah Division of Solid and Hazardous Waste. It appears that the facility never operated. This site does not pose a risk to construction.

Environmental Incidents

The project team's initial review of the databases found eight reported environmental incidents in the hazardous materials evaluation area. The project team then conducted more-focused research of each environmental incident to identify the incidents that pose more risk to construction. These incidents are those that are located within about 0.25 miles (about 1,300 feet) from the project extent. This refined research identified one environmental incident (ID 15772) located about 0.12 miles east of the project extent. At this location, a crane released hydraulic fluid. Crews were able to contain the spill and clean out nearby storm drains. This site poses a **low risk** to construction.

Brownfields Sites

No Brownfields sites are located in the hazardous materials evaluation area.

Enforceable Written Assurances (EWA) Sites

No EWA sites are located in the hazardous materials evaluation area.

Formerly Used Defense (FUD) Sites

No FUD sites are located in the hazardous materials evaluation area.

Toxic Release Inventory (TRI) Sites

No TRI sites are located in the hazardous materials evaluation area.

Tier II Sites

No Tier II sites are located in the hazardous materials evaluation area.

Hazardous Waste and Used Oil Facility Sites

No hazardous waste or used oil facility sites are located in the hazardous materials evaluation area.

Environmental Consequences

Phase I ESAs were not performed for this for this preliminary screening . See Table 2 for a list of hazardous sites in the hazardous materials evaluation area and Figure 1 for each site's location relative to the project extent. None of these sites would be directly impacted by the Project, and all of the sites represent no or low risk to construction.

Table 2. Hazardous sites in the hazardous materials evaluation area

Map Key[a]	Site Type	Name or Description and Address	UDEQ ID	Risk to Construction
1	CERCLIS	Bluffdale Salvage 709 W. 14600 S.	UTD988078614	Low
2	LUST	Dwight W. Peterson & Sons Excavating 925 W. 14600 S.	4001834	Low
3	UST	Jordan Basin Water Reclamation Facility 13826 S. Jordan Basin Lane	4002635	Low
4	UST	Residential non-notifier – bank owned 15205 S. 1800 W.	4002237	Low
5	Solid Waste	Biozyme LLC Compost East of prison site	SW345	Low
6	Environmental Incident	Release of hydraulic fluid 15131 S. Reins Way	15772	Low

[a] Map key letters correspond to those on Figure 1.

Recommendations and Mitigation

In accordance with FTA Standard Operating Procedures and applicable regulatory requirements, the project team would conduct due diligence during final design by identifying whether hazardous materials are present prior to property acquisitions and construction. As part of this due diligence, the project team would conduct a Phase I Environmental Site Assessment (ESA) in accordance with ASTM standards for any property acquisitions and would conduct any recommended Phase II ESA investigations. Plans for hazardous materials handling and disposal would be developed for the Project, and this development would include coordination with state and federal agencies with jurisdiction over the properties.

The project team would prepare a soil and groundwater management plan before construction. This plan would describe the necessary soil and groundwater investigations needed to characterize pollutant concentrations in soil and groundwater in the project extent, if any; describe, based on the results of the investigations, the protection measures that will be used to prevent the spread of contamination; communicate the health risks to construction workers; define appropriate handling and disposal or treatment methods for contaminated media; and help the project team better identify construction-related impacts.

A review of well logs from the Utah Division of Water Rights website (https://maps.waterrights.utah.gov/esrimap/map.asp) indicates that groundwater depths in the project extent are highly variable. The project extent is situated on the boundary between a secondary groundwater recharge zone and a discharge zone that is generally surrounding the Jordan River floodplain. Shallow groundwater (5 to 10 feet deep) could be encountered in some areas. The project team, or construction contractor, will obtain coverage for construction dewatering under Utah's General Permit for Construction Dewatering or Hydrostatic Testing (UTG070000) or, if contamination is anticipated after additional investigation, a Ground Water Discharge Permit, pursuant to state groundwater protection rules (Utah Administrative Code R317-6).

Figure 1. Hazardous sites in the hazardous materials evaluation area

ATTACHMENT B.11
Floodplains

FrontRunner Forward

South of Draper Double Track Project

Evaluation of Floodplains

May 2024

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Introduction

The Utah Transit Authority (UTA) in coordination with the Utah Department of Transportation (UDOT) is proposing to lengthen and shift the existing Draper Station area double track segment of its FrontRunner commuter rail system in the cities of Draper and Bluffdale in southern Salt Lake County, Utah, to create a true double track alignment through this area. See the Vicinity Map in Attachment A.1, *Vicinity Map for the South of Draper Double Track Project*.

This report evaluates floodplains that could be affected by the Project.

Project Description and Need for the Project

The Project is located between 0.75 and 1 mile west of Interstate 15 (I-15) in Bluffdale and Draper in the southern portion of Salt Lake County. The Project extends from UTA milepost S 20.5 north to UTA milepost S 17.2, a distance of about 3.3 miles to encompass 2.8 miles of new double track and track tie-in.

The existing double track section at Draper Station is about 1.0 mile long, and its primary use is allowing trains traveling in opposite directions to pass each other. The Project would lengthen the existing double track section by approximately 2.8 miles, moving the southern terminus of the section from the Vista Station Boulevard bridge to 1300 West. North of Bangerter Highway, the anticipated track work consists of constructing a new FrontRunner mainline (ML) track east of the existing mainline track, shifting the existing FrontRunner mainline track where necessary, removing one existing turnout, constructing one new turnout, constructing a new bridge over Bangerter Highway and 14600 South, demolishing an existing retaining wall and constructing new retaining walls on the west side of the corridor on the north and south approaches to the Bangerter Highway bridge as well as in other sections to minimize property impacts and ROW acquisition, extending the Jordan and Salt Lake City Canal culvert under the Bangerter Highway bridge's south approach, modifying an existing private access road at-grade crossing, relocating utilities, and widening the existing trackbed. South of Bangerter Highway, the existing UTA mainline would remain in its current location, and a new track would be constructed west of the existing mainline. Preliminary track design modeling shows that the estimated depth of excavation from the top of the existing ground to the bottom of the proposed subballast or track ditch for proposed trackwork construction ranges from 2 to 5 feet. The estimated depth of excavation for walls, utilities, and the bridge over Bangerter Highway ranges from 3 to 10 feet.

The Project would improve reliability and reduce delays of the FrontRunner service. The Project is one of nine double track projects being proposed as part of long-term improvements under the FrontRunner Forward Program; however, it has independent utility and can be constructed with or without the other projects. Further detail 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)* (May 2023).

Regulatory Setting

Two terms that are commonly used in floodplain regulatory guidance are *100-year floodplain* and *100-year flood*. A 100-year floodplain is the area that would be inundated by a water body during a 100-year flood. A 100-year flood (also referred to as a base flood) is a level of flood water that has a 1% chance of occurring at a given location in any given year. Note that the term *100-year flood* does not mean that such a flood will occur only once in 100 years. If such a flood were to occur one year, there would still be a 1% chance of a similar flood occurring the following year or even later in the same year.

Since floodplains can be mapped, the boundary of the 100-year flood is commonly used in floodplain management and mitigation programs to identify areas where the risk of flooding is significant. Any other statistical frequency of a flood, such as a 5-year, 20-year, 50-year, or 500-year flood, can be chosen for regulation depending on the degree of risk that an agency wants to evaluate.

Federal Emergency Management

In response to escalating taxpayer costs for flood disaster relief, Congress established the National Flood Insurance Program (NFIP). This program is a voluntary mitigation program administered by the Federal Emergency Management Agency (FEMA). Under this program, the federal government makes flood insurance available in those communities that practice sound floodplain management. This incentive encourages state and local governments to develop and implement floodplain management programs. FEMA requirements for land management and use, and for identifying and mapping special flood hazard areas, are described in 44 Code of Federal Regulations (CFR) Parts 60 and 65, respectively.

In the 1970s and 1980s, FEMA performed location hydrologic and hydraulic studies to identify and map special flood hazard areas within communities. A result of the FEMA studies was the development of flood insurance rate maps (FIRM) that show the floodplain for each river, lake, or other surface water resource that was studied.

A special flood hazard area (SFHA) is the area that has a 1% annual chance of flooding (this flood is commonly referred to as the 100-year flood or base flood). SFHAs are given a zone designation based on the level of detail of the FEMA study and the anticipated type of flooding. There are several types of zones, but only the following zones (FEMA 2022b) are present inside and/or in the immediate vicinity of the floodplain evaluation area (Figure 1):

- **Zone X (Shaded)** – Areas with a moderate risk of flooding (usually between the limits of the 100-year and 500-year floods) from the principal source of flooding in the area.
- **Zone AE** – Areas that would be flooded by a 100-year flood and where the base flood elevations have been determined. A Zone AE floodplain might also include a floodway.
- **Zone X** – Areas of minimal flood hazard. This zone is present in the floodplain evaluation area, but it is not pertinent to the impact analysis and is therefore not shown on Figure 1.

The 100-year floodplain for streams is the area in and around the stream that would be inundated by a 100-year flood. A Zone AE floodplain might include a designated floodway, which is defined as the stream channel and the adjacent areas (floodway fringe) that must be kept free of encroachment to pass the 100-year flood without increasing the water surface elevation by more than a designated height (FEMA 2011). FEMA limits the permissible increase in water surface elevation to 1 foot; however, local communities may set a more stringent limit. Figure 2 shows a floodway schematic, including the floodway, floodway fringe, and the change in flood elevation.

Figure 1. Special flood hazard areas in and near the floodplain evaluation area

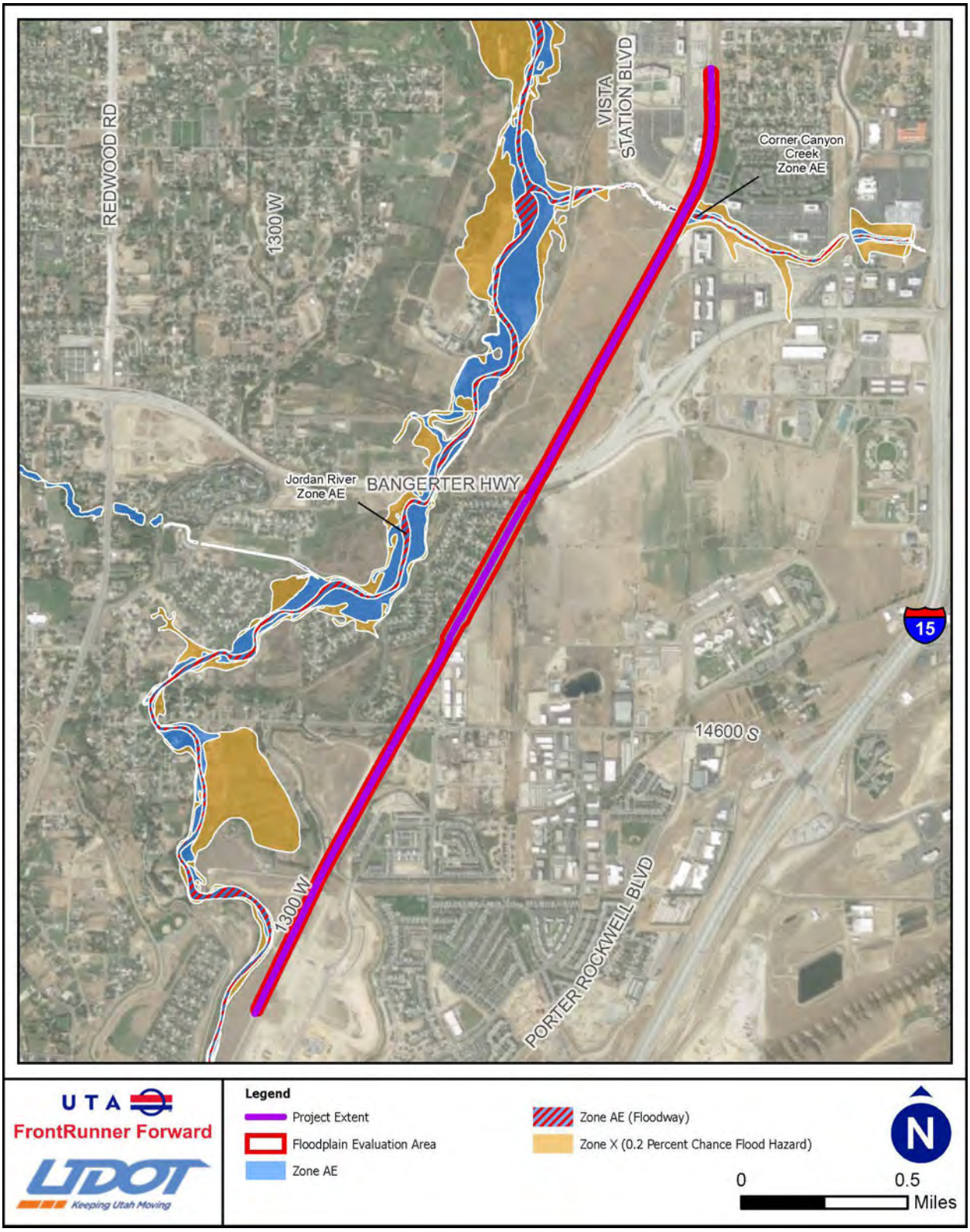
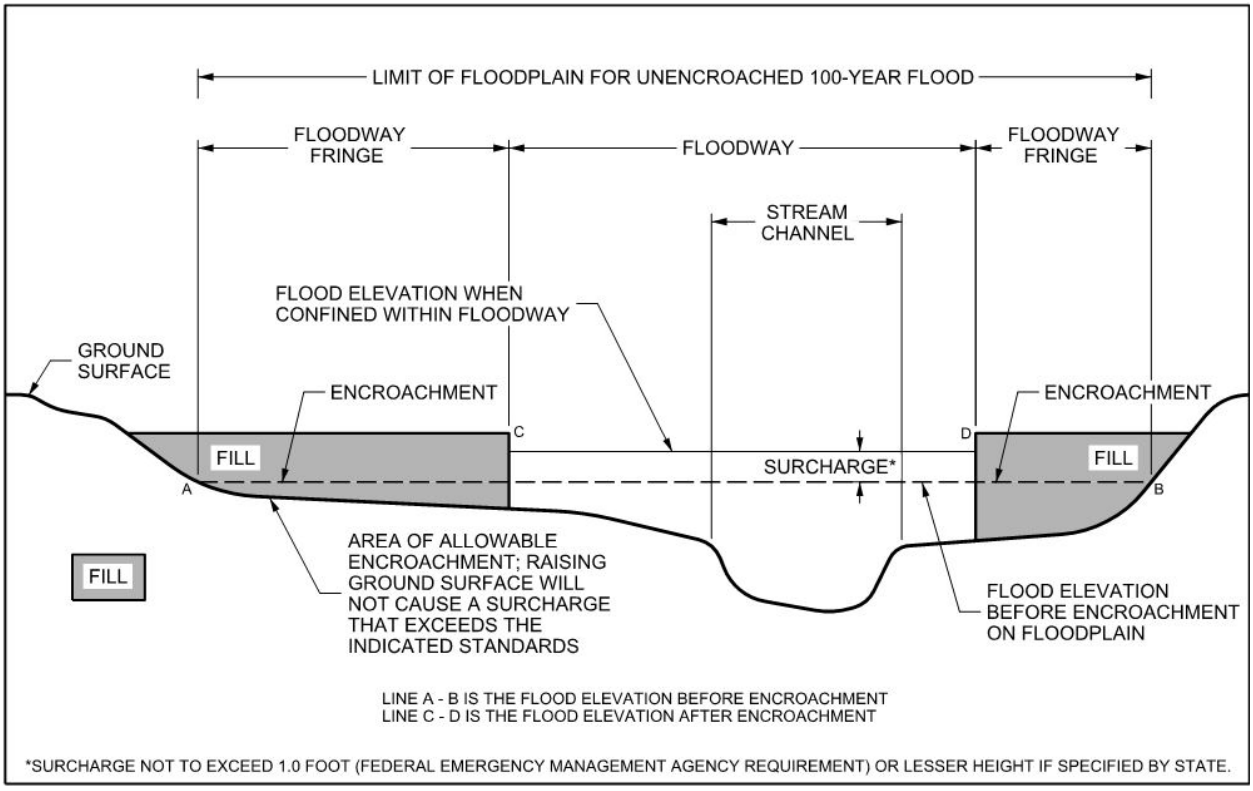


Figure 2. Floodway schematic



Source: FEMA 2011

Executive Order 11988, Floodplain Management

Executive Order 11988, *Floodplain Management* (May 24, 1977), established federal policy "to avoid to the extent possible the long- and short-term adverse impacts associated with the occupancy and modification of floodplains and to avoid direct or indirect support of floodplain development wherever there is a practicable alternative."

Accordingly, this evaluation relies on the Federal Transit Administration's (FTA) floodplains compliance process based on Executive Order 11988. This process requires that projects avoid a "significant encroachment" on a floodplain unless FTA finds that the proposed action is the "only practicable alternative" (FTA 2015). In addition, if the proposed action involves significant encroachment, FTA requires consideration of alternatives that avoid or minimize adverse impacts.

Under FTA's regulations, a "significant encroachment" would involve one or more of the following impacts:

- A considerable probability of loss of human life
- Likely future damage associated with the encroachment that could be substantial in cost or extent, including interruption of service on or loss of a vital transportation facility
- A notable adverse impact on natural and beneficial floodplain values (FTA 2015)

Natural and beneficial floodplain values include, but are not limited to, natural flood conveyance, storage, and control; water quality maintenance; groundwater recharge; water quality function; open space; outdoor recreation; and wildlife habitat and diversity (USDOT 1979).

Affected Environment

Methodology

The floodplain evaluation area is located on both sides of the UTA FrontRunner tracks between UTA milepost S 20.5 and UTA milepost S 17.2, a distance of about 3.5 miles. It covers about 65 acres and extends about 75 feet on both sides of the track centerline. Figure 1 provides an overview of the floodplain evaluation area. The evaluation area is located in both Draper and Bluffdale. Both Draper City and Bluffdale City participate in the NFIP, and these entities are identified by community numbers 490244 and 490247, respectively. The most recent Flood Insurance Study (for Salt Lake County) was revised by FEMA on November 19, 2021.

Corner Canyon Creek, which crosses the floodplain evaluation area, originates in the Wasatch Mountains to the east. It flows through unincorporated Salt Lake County in Corner Canyon, through Draper, and flows into the Jordan River just downstream of the floodplain evaluation area.

The primary sources of data used to develop the floodplain inventory in and near the floodplain evaluation area were FEMA FIRMs, ArcGIS World imagery, geographic information systems (GIS) files of SHFAs (FEMA 2022a), the U.S. Geological Survey's (USGS) Midvale 7.5-minute topographical quadrangle (USGS 2020a), and the USGS Jordan Narrows 7.5-minute topographical quadrangle (USGS 2020b).

Floodplains in the Floodplain Evaluation Area

Table 1 lists the FEMA-defined SFHAs in the floodplain evaluation area, the potential flooding source for each SFHA, and the acreage of each SFHA in the floodplain evaluation area. Figure 1 shows the locations of these SFHAs and provides labels for water bodies associated with the Zone AE SFHA.

Table 1. Flooding sources and acreage of special flood hazard areas in the floodplain evaluation area

SFHA	Potential Flooding Source	Acreage of SFHA in Floodplain Evaluation Area
Zone AE Floodway	Corner Canyon Creek	0.03
Zone X (Shaded)	Corner Canyon Creek	< 0.01

Environmental Consequences

Floodplain impacts were calculated using a GIS approach. The project team compared the FEMA National Flood Hazard Layer (NFHL) data (FEMA 2022a) to the project impact footprint to identify the locations of regulatory floodplain crossings and to quantify the floodplain impact area (the area where the impact boundary and a floodplain intersect). Floodplain crossings along the impact footprint are perpendicular or nearly perpendicular to the direction of stream flow; these crossings are also known as transverse crossings.

Table 2 lists the acreage of the SFHAs in the project impact area, as well as the type of floodplain encroachment that would occur if the Project were completed.

Table 2. Acreage of special flood hazard area impacts

SFHA	Type of Floodplain Encroachment	Acres of Impact
Zone AE Floodway	Transverse	< 0.01
Zone X (Shaded)	Transverse	0.00

Table 2 shows that there would be no impacts to Shaded Zone X and minimal impact (<0.01 acre) to Zone AE (areas that would be flooded by a 100-year flood, have base flood elevations defined, and which might also include a floodway). Floodplain connectivity would be maintained through the existing Jordan and Salt Lake City Canal culvert that would be extended for this project. Note that the piece of the Zone AE floodway that intersects with the project impact footprint is located on the existing FrontRunner and Union Pacific Railroad embankment above the previously extended Corner Canyon Creek culvert. The project team reviewed aerial photographs and determined that this culvert was extended to its current length sometime between August 2009 and June 2010, most likely as a part of the original FrontRunner construction.

The effective FIRM for this area was last revised on September 25, 2009, and states that the 0.2%-annual-chance (500-year) flood discharge is contained in this culvert. A letter of map revision (LOMR 15-08-1373P) was completed for the area immediately downstream of the project extent and became effective on September 7, 2016. The LOMR documentation also states that the 0.2%-annual-chance flood discharge is contained in the culvert, but LOMR 15-08-1373P did not remove the part of the Zone AE floodway that overlaps with the existing FrontRunner and Union Pacific Railroad embankment above the culvert.

Given that the Project would not impact Corner Canyon Creek or require the Corner Canyon Creek culvert to be extended, it is reasonable to assume that the water surface elevations in Corner Canyon Creek would not change as a result of the Project. Therefore, the project team assumes that there would be no impacts to floodplains as a result of the Project; however, UTA will obtain a floodplain development permit from Draper City since the project impact footprint is located with the Zone AE floodway area. There would be no floodplain impacts in Bluffdale.

Mitigation Measures

UTA and/or its construction contractor will take measures to reduce floodplain impacts and to ensure that the Project complies with all applicable regulations. These mitigation measures will include the following:

- The Project will not require extending the existing culvert that conveys Corner Canyon Creek to accommodate the new track and will allow for continued floodplain connectivity.
- A stream alteration permit from the Utah Division of Water Rights will not be required since there would be no impacts to Corner Canyon Creek as a result of the Project.
- A floodplain development permit must be obtained from the local floodplain administrator for Draper City prior to construction. Note that there would be no floodplain impacts in Bluffdale. The project team does not anticipate that FEMA Conditional Letter of Map Revision (CLOMR) and Letter of Map Revision (LOMR) processes will be required in compliance with 44 CFR Sections 60.3 and 65.12 due to the nature of the anticipated encroachment, which is not anticipated to impact water surface elevations in Corner Canyon Creek. However, an evaluation would be completed to determine whether the final design would require revision to the flood map. This process would be coordinated with Draper City, the floodplain administrator for this area. If necessary, a preconstruction CLOMR would be submitted to FEMA. After construction, a LOMR would be submitted to FEMA. This process would be coordinated with Draper City.
- A flood-control permit would be required from Salt Lake County for actions inside or within 20 feet of the Jordan and Salt Lake City Canal, which is a Salt Lake County–controlled waterway. Corner Canyon Creek (also a Salt Lake County–controlled waterway) might also need to be included in the flood-control permit if the existing culvert is considered during further coordination with Salt Lake County Flood Control to be a part of the channel. This coordination should take place during final design. Rail elevations will be placed above adjacent floodplain elevations, where those elevations are defined, so that flooding will not interfere with a transportation facility needed for emergency vehicles or evacuation.
- Walls and embankments will be designed and constructed to minimize longitudinal floodplain impacts.

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2022a Geographic information systems (GIS) file of Special Flood Hazard Areas. Accessed March 24, 2022.

2022b Glossary. Terms frequently used by FEMA. https://www.fema.gov/about/glossary. Accessed July 8, 2022.

[FTA] Federal Transit Administration

2015 Floodplains. https://www.transit.dot.gov/regulations-and-guidance/environmental-programs/floodplains. December 15. Accessed May 16, 2022.

[USDOT] U.S. Department of Transportation

1979 Order 5650.2: Floodplain Management and Protection. https://www.transit.dot.gov/sites/fta.dot.gov/files/docs/Floodplain.pdf. April 23. Accessed May 16, 2022.

[USGS] U.S. Geological Survey

2020a Midvale, 7.5-minute topographical quadrangle, scale 1:24,000.

2020b Jordan Narrows, 7.5-minute topographical quadrangle, scale 1:24,000.

ATTACHMENT B.12
Water Resources and Water Quality

FrontRunner Forward

South of Draper Double Track Project

Evaluation of Water Resources and Water Quality

December 2023

UTA FrontRunner Forward Program

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Introduction

The Utah Transit Authority (UTA) in coordination with the Utah Department of Transportation (UDOT) is proposing to lengthen and shift the existing Draper Station area double track segment of its FrontRunner commuter rail system in the cities of Draper and Bluffdale in southern Salt Lake County, Utah, to create a true double track alignment through this area. See the Vicinity Map in Attachment A.1, *Vicinity Map for the South of Draper Double Track Project*.

This report evaluates water resources and water quality that could be affected by the Project.

Project Description and Need for the Project

The Project is located between 0.75 and 1 mile west of Interstate 15 (I-15) in Bluffdale and Draper in the southern portion of Salt Lake County. The Project extends from UTA milepost S 20.5 north to UTA milepost S 17.2, a distance of about 3.3 miles to encompass 2.8 miles of new double track and track tie-in.

The existing double track section at Draper Station is about 1.0 mile long, and its primary use is allowing trains traveling in opposite directions to pass each other. The Project would lengthen the existing double track section by approximately 2.8 miles, moving the southern terminus of the section from the Vista Station Boulevard bridge to 1300 West. North of Bangerter Highway, the anticipated track work consists of constructing a new FrontRunner mainline (ML) track east of the existing mainline track, shifting the existing FrontRunner mainline track where necessary, removing one existing turnout, constructing one new turnout, constructing a new bridge over Bangerter Highway and 14600 South, demolishing an existing retaining wall and constructing new retaining walls on the west side of the corridor on the north and south approaches to the Bangerter Highway bridge as well as in other sections to minimize property impacts and ROW acquisition, extending the Jordan and Salt Lake City Canal culvert under the Bangerter Highway bridge's south approach, modifying an existing private access road at-grade crossing, relocating utilities, and widening the existing trackbed. South of Bangerter Highway, the existing UTA mainline would remain in its current location, and a new track would be constructed west of the existing mainline. Preliminary track design modeling shows that the estimated depth of excavation from the top of the existing ground to the bottom of the proposed subballast or track ditch for proposed trackwork construction ranges from 2 to 5 feet. The estimated depth of excavation for walls, utilities, and the bridge over Bangerter Highway ranges from 3 to 10 feet.

The Project would improve reliability and reduce delays of the FrontRunner service. The Project is one of nine double track projects being proposed as part of long-term improvements under the FrontRunner Forward Program; however, it has independent utility and can be constructed with or without the other projects. Further detail 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)* (May 2023).

Water Resources and Water Quality Evaluation Area

The water resources and water quality evaluation area is located on both sides of the UTA FrontRunner tracks between UTA milepost S 20.5 and UTA milepost S 17.2, a distance of about 3.3 miles. It covers about 65 acres and extends about 75 feet on both sides of the track centerline.

Surface Water

Regulatory Setting

The Utah Administrative Code (UAC) designates beneficial uses for each water body in the state. The Utah Division of Water Quality then monitors, assesses, and regulates Utah's water bodies to determine whether their beneficial uses are met. Streams for which the State has designated beneficial uses are listed in UAC R-317-2-13, *Classification of Waters of the State*, and are subject to review as part of the State's water quality assessment and reporting process. The beneficial uses of the water bodies in the water resources and water quality evaluation area are listed below in the affected environment section. Waters not meeting water quality criteria are placed on the 303(d) list of impaired waters, and the State, through a total maximum daily load (TMDL) study, would determine the sources of contaminants and allocate waste loads to different entities to control discharges with the goal to attain a listed stream's beneficial uses.

Utah's antidegradation policy states that waters whose existing quality is better than the established standards will be maintained at high quality, and no degradation that would interfere with existing instream uses is allowed without a permit.

Waters of the United States are also subject to regulation under Sections 401 and 404 of the Clean Water Act (CWA). If fill is discharged into a water of the United States by the Project, UTA would need to demonstrate compliance with Sections 401 and 404.

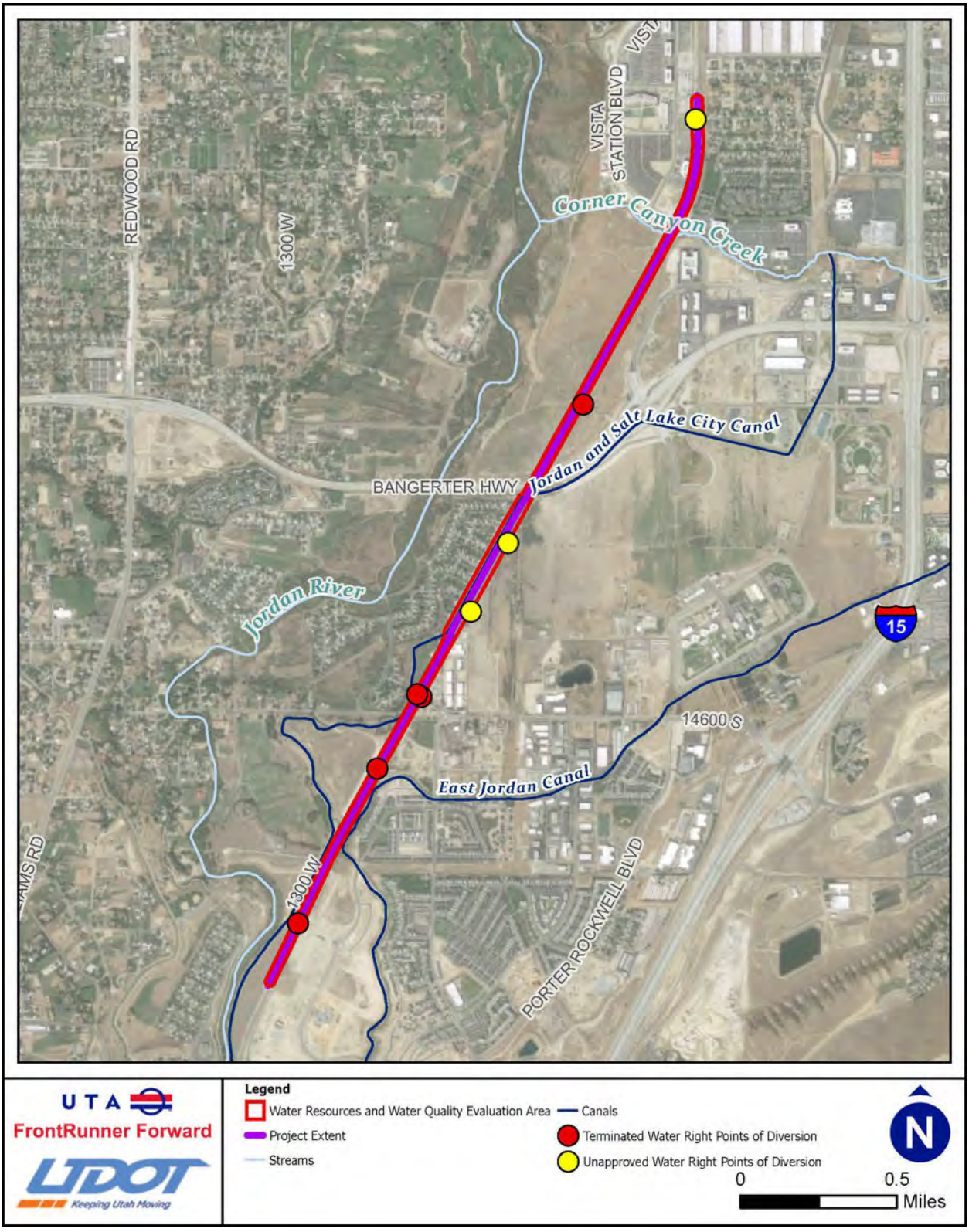
Affected Environment

Corner Canyon Creek is the only natural surface water in the water resources and water quality evaluation area (Figure 1). Corner Canyon Creek is an ephemeral stream and does not have any beneficial uses listed in UAC R-317-2-13. There is an existing culvert underneath the Union Pacific Railroad (UP) and FrontRunner tracks just south of Vista Station Boulevard that conveys Corner Canyon Creek through the evaluation area. In addition, the Jordan and Salt Lake City Canal is partly located within the evaluation area and is conveyed under the UP and FrontRunner tracks through a culvert just south of Bangerter Highway. The Jordan and Salt Lake City Canal has default beneficial-use classifications of 2B (infrequent primary contact recreation), 3E (severely habitat-limited waters), and 4 (agricultural uses).

Environmental Consequences

The Project would require the Jordan and Salt Lake City Canal culvert under the UP and FrontRunner tracks just south of Bangerter Highway to be extended to accommodate the new track. If the Jordan and Salt Lake City Canal is determined jurisdictional by U.S. Army Corps of Engineers (USACE), construction would be authorized under a Clean Water Act Section 404 Nationwide Permit 14 (which includes Section 401 Water Quality Certification) from USACE (see Attachment B.13, *Wetlands and Waters of the U.S.*, for more information about project impacts to aquatic resources). There would be no impacts to Corner Canyon Creek or its bank. The Project would not come within 30 feet of Corner Canyon Creek or either end of the culvert through which Corner Canyon Creek crosses beneath the UP and UTA tracks, and the Corner Canyon Creek culvert would not need to be extended. For these reasons, a stream alteration permit would likely not be required; however, further coordination is needed during final design to verify this conclusion.

Figure 1. Surface water and points of diversion near the water resources and water quality evaluation area



Stormwater

Regulatory Setting

Stormwater is also regulated through the CWA. Pursuant to Section 402 of the Act and the Utah Pollutant Discharge Elimination System (UPDES), if construction would disturb 1 acre of land or more, then the project proponent would need to demonstrate compliance with the State's general permit for construction-related stormwater discharges. In Utah, Section 402 stormwater permits are issued through the Utah Division of Water Quality. To comply, UTA or its contractor would submit a notice of intent seeking coverage under the State of Utah's construction general permit (CGP) and would prepare a stormwater pollution prevention plan (SWPPP) for the Project.

Under Utah state law, stormwater discharges to waters of the United States from designated sources must meet the requirements of a municipal separate storm sewer system (MS4) permit. The permit consists of six control measures:

1. Public education and outreach
2. Public participation and involvement
3. Illicit discharge detection and elimination
4. Construction site runoff control
5. Postconstruction runoff control
6. Pollution prevention and good housekeeping

UTA does not have its own MS4 permit but instead relies on the stormwater permits of the municipalities and counties in which it operates. Any project-related changes that would affect the stormwater system would need to be consistent with the MS4 permit and stormwater management plan of the applicable municipality (or County) that holds a permit.

The UPDES also has a multisector general permit (UTR000000) for stormwater discharges associated with industrial activity. Specifically, this permit covers vehicle maintenance or equipment cleaning areas at passenger transportation facilities. No vehicle-maintenance or equipment-cleaning activities take place in the water resources and water quality evaluation area; therefore, the multisector general permit does not apply for the Project.

Affected Environment

The water resources and water quality evaluation area for the Project is about 65 acres. The project team anticipates that any construction activities would disturb more than 1 acre of land. The UTA design criteria for commuter rail state that the construction contractor must obtain a UPDES permit, which requires an SWPPP to be developed for the construction phase of the project (UTA 2015). This requirement fulfills the UPDES and MS4 requirements.

Adding a double-track section in the water resources and water quality evaluation area would add a small amount of additional impervious area and runoff from the project site after construction has been completed. The existing FrontRunner system already has infrastructure in place to handle any stormwater runoff from the ballasted track and embankments, and the project team anticipates that this infrastructure could be analyzed and expanded, if needed, to handle the additional runoff. If these stormwater infrastructure elements need to be relocated, they should be replaced in kind following the applicable drainage design criteria as stated in UTA's commuter rail design criteria (UTA 2015).

Since UTA does not have its own stormwater permit for stormwater discharges, UTA must comply with the conditions of the local stormwater authority. The local stormwater authorities for the water resources and water quality evaluation area are Draper City and Bluffdale City, which both operate under UPDES permit number UTS000001. These permits have requirements to develop both construction-phase and operation-phase stormwater controls to meet the stormwater runoff requirements.

- **Construction-phase stormwater controls** include requiring the contractor to prepare and follow an enforceable SWPPP that addresses sediment and erosion control, pollutant discharge reduction, and waste control in addition to obtaining coverage under the UPDES stormwater general permit for the duration of the project.
- **Operation-phase stormwater controls** include implementing permanent best management practices (BMPs) for new impervious areas, where feasible, to minimize erosion, soil disturbance, and impacts to areas that provide important natural water quality benefits, as well as to reduce the increase in stormwater runoff volume as a result of any increased impervious areas.

Environmental Consequences

Constructing additional track would not add a substantial amount of new impervious area. Track ballast is highly permeable and would not change the overall stormwater runoff characteristics of the water resources and water quality evaluation area. Therefore, there would be no environmental impacts from stormwater runoff as a result of the South of Draper Double Track Project.

The project team further evaluated the need to implement, during final design, permanent stormwater BMPs pursuant to the requirements of applicable MS4 permits. The stormwater runoff controls that are required during both the construction phase and the operational phase of the Project would be designed to adequately protect water quality that might otherwise be impacted.

Construction of the Project would disturb more than 1 acre of ground surface, which would require coverage under the Utah Pollutant Discharge Elimination System (UPDES) Construction General Permit UTRC00000 (CGP). Coverage under the CGP would be obtained prior to construction through the Utah Division of Water Quality. In compliance with this permit, a stormwater pollution prevention plan (SWPPP) would be developed for the construction phase of the Project.

Drinking Water

Regulatory Setting

Owners of public water systems are responsible for protecting sources of drinking water from contamination and for submitting a drinking water source protection plan to the Utah Division of Drinking Water. Such plans must identify drinking water source protection zones around each drinking water source (such as a lake, river, spring, or groundwater well), identify existing and potential sources of contamination, and propose methods to control sources of pollution within each zone.

For groundwater sources, the Utah Division of Drinking Water requires the drinking water source protection plan to identify four distinct drinking water source protection zones for each well. The zone definitions are as follows:

- **Zone 1** is the area within a 100-foot radius of the wellhead.
- **Zone 2** is the area within a 250-day groundwater time of travel to the wellhead.
- **Zone 3** is the area within a 3-year groundwater time of travel to the wellhead.
- **Zone 4** is the area within a 15-year groundwater time of travel to the wellhead.

For surface water sources, the Utah Division of Drinking Water requires the drinking water source protection plan to identify distinct drinking water source protection zones for each surface water source. The zone descriptions for streams and rivers are generally as follows:

- **Zone 1** is the area from 100 feet downstream of the system intake to 15 miles above the intake and a half-mile on each side of the drainage.
- **Zone 2** is the area between 15 and 65 miles upstream from the intake and 1,000 feet on each side of the drainage.
- **Zone 3** is the area between 65 miles upstream from the intake and the edge of the watershed and 500 feet on each side of the drainage.
- **Zone 4** is the rest of the contributing watershed area outside Zones 1 through 3.

In addition to the surface water source protection zones, watershed management plans, antidegradation reviews, and standards for surface water, beneficial uses provide many drinking water source protection mechanisms. Land managers are responsible for protecting drinking water sources from contamination in coordination with the public water system owners. Cities, through zoning and land use, control which forms of development are allowable within each of the various drinking water source protection zones. In general, if transportation development within source protection Zone 1 is determined by the owner to harm the function of the well or surface water intake, methods to reduce and/or eliminate the harm may be proposed.

Affected Environment

The water resources and water quality evaluation area does not contain any drinking water source protection zones for either groundwater or surface water sources (UDDW 2022).

Environmental Consequences

No impacts to drinking water would occur as a result of the Project.

Water Right Points of Diversion

Regulatory Setting

All waters in Utah are public property. A "water right" is a right to divert (remove from its natural source) and beneficially use water (UDWR 2011). The defining elements of a typical water right include:

- A defined nature and extent of beneficial use
- A priority date
- A defined quantity of water allowed for diversion by flow rate (cubic feet per second) and/or volume (acre-feet)
- A specified point of diversion and source of water
- A specified place of beneficial use

Water right points of diversion are locations from which a water right owner can legally divert water from a source and beneficially use it. Water right points of diversion are overseen by the Utah Division of Water Rights, which regulates the appropriation and distribution of water in Utah. Knowing the location of and protecting existing points of diversion is important from the perspective of ensuring that a project does not affect the physical point of diversion, the water quality, or the beneficial use of the existing points of diversion.

Affected Environment

The water resources and water quality evaluation area contains nine water right points of diversion (UDWR 2022). These nine points of diversion are underground water wells, unnamed springs, springs and drain, and effluent from the Utah State Prison. Six of these points currently have a terminated status, and the other three have an unapproved status. These points of diversion are shown on Figure 1.

Environmental Consequences

Three water right points of diversion are within the impact footprint for the Project; however, no impacts are anticipated since all three have a terminated status and are not currently active.

References

[UDDW] Utah Division of Drinking Water

2022 Geographic information systems (GIS) file of drinking water source protection zones. Accessed March 30, 2022.

[UDWR] Utah Division of Water Rights

2011 Water Right Information. https://waterrights.utah.giv/wrinfo/default.asp. July 19.

2022 Geographic information systems (GIS) file of water rights points of diversion. Accessed March 30, 2022.

[UTA] Utah Transit Authority

2015 Utah Transit Authority Commuter Rail Design Criteria. March.

ATTACHMENT B.13
Wetlands and Waters of the U.S.

FrontRunner Forward Technical Memorandum

To: Project File

From: HDR

Date: May 13, 2024

Subject: Impacts to Aquatic Resources for the South of Draper Double Track Project

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Introduction

The Utah Transit Authority (UTA) in coordination with the Utah Department of Transportation (UDOT) is proposing to lengthen and shift the existing Draper Station area double track segment of its FrontRunner commuter rail system in the cities of Draper and Bluffdale in southern Salt Lake County, Utah, to create a true double track alignment through this area. See the Vicinity Map in Attachment A.1, *Vicinity Map for the South of Draper Double Track Project*.

This memorandum summarizes the expected impacts to aquatic resources in the aquatic resources survey area for the Project.

Project Description and Need for Project

The Project is located between 0.75 and 1 mile west of Interstate 15 (I-15) in Bluffdale and Draper in the southern portion of Salt Lake County. The Project extends from UTA milepost S 20.5 north to UTA milepost S 17.2, a distance of about 3.3 miles to encompass 2.8 miles of new double track and track tie-in.

The existing double track section at Draper Station is about 1.0 mile long, and its primary use is allowing trains traveling in opposite directions to pass each other. The Project would lengthen the existing double track section by approximately 2.8 miles, moving the southern terminus of the section from the Vista Station Boulevard bridge to 1300 West. North of Bangerter Highway, the anticipated track work consists of constructing a new FrontRunner mainline (ML) track east of the existing mainline track, shifting the existing FrontRunner mainline track where necessary, removing one existing turnout, constructing one new turnout, constructing a new bridge over Bangerter Highway and 14600 South, demolishing an existing retaining wall and constructing new retaining walls on the west side of the corridor on the north and south approaches to the Bangerter Highway bridge as well as in other sections to minimize property impacts and ROW acquisition, extending the Jordan and Salt Lake City Canal culvert under the Bangerter Highway bridge's south approach, modifying an existing private access road at-grade crossing, relocating utilities, and widening the existing trackbed. South of Bangerter Highway, the existing UTA mainline would remain in its current location, and a new track would be constructed west of the existing mainline. Preliminary track design modeling shows that the estimated depth of excavation from the top of the existing ground to the bottom of the proposed subballast or track ditch for proposed trackwork

construction ranges from 2 to 5 feet. The estimated depth of excavation for walls, utilities, and the bridge over Bangerter Highway ranges from 3 to 10 feet.

The Project would improve reliability and reduce delays of the FrontRunner service. The Project is one of nine double track projects being proposed as part of long-term improvements under the FrontRunner Forward Program; however, it has independent utility and can be constructed with or without the other projects. Further detail 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)* (May 2023).

Aquatic Resources Survey Area

The aquatic resources survey area is located on both sides of the UTA FrontRunner tracks from approximately UTA milepost S 20.5 north to UTA milepost S 17.2, a distance of about 3.3 miles. It covers about 65 acres and extends about 75 feet on each side of the track centerline.

Effects of the Project on Aquatic Resources

The Project would fill about 0.0069 acres (20 linear feet) of canal segment C-1b (the Jordan and Salt Lake City Canal) and about 0.0002 acres (3 linear feet) of ditch segment D-1. The figures in Appendix A show the locations of these features relative to the design footprint (area of disturbance), and Table 1 provides a description of each impacted feature and the area and length of impact.

Canal segment C-1b (the Jordan and Salt Lake City Canal) is a diversion of the Jordan River. It flows north through the Salt Lake Valley, eventually draining into City Creek. City Creek then flows west, draining into the Jordan River, which flows into the Great Salt Lake, a TNW. Therefore, canal segment C-1b is likely jurisdictional.

Ditch segment D-1 is located in Phillip Gates Memorial Park. It flows into an open-water pond beyond the survey area which appears to drain into the Jordan and Salt Lake City Canal. Ditch segment D-1 does not carry a relatively permanent flow of water and is likely not jurisdictional.

More information about the aquatic resource delineation process is provided in the *South of Draper Double Track Project Aquatic Resources Delineation Report* included as Attachment B.13, *Wetlands and Waters of the U.S.*, of the Categorical Exclusion document.

Table 1. Aquatic resources impact summary

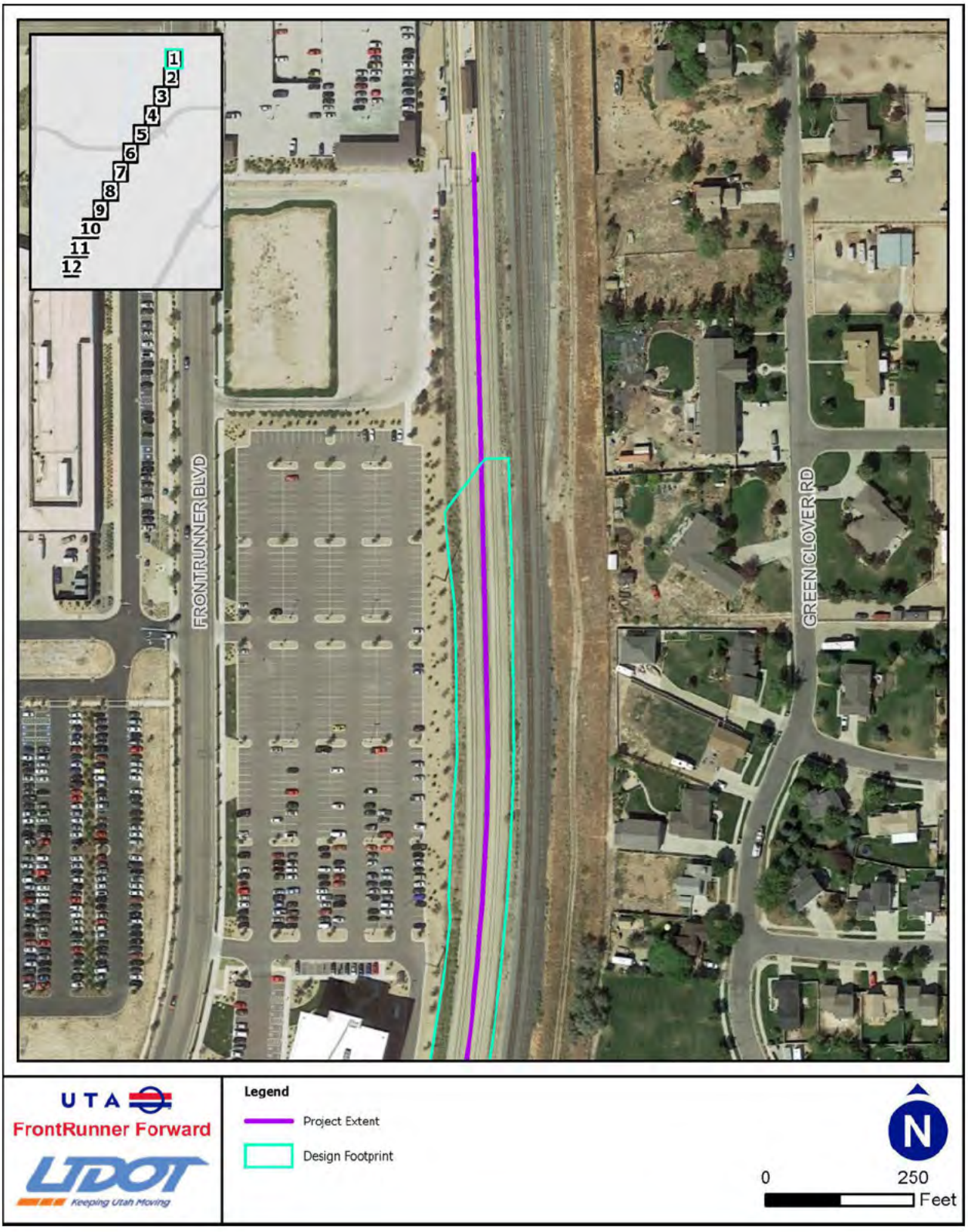
Aquatic Resource Feature Name	Impact Size (acres)	Impact Length (feet)	Map Sheet Number[a]	Aquatic Resource Feature Description
Canals				
Segment C-1b (Jordan and Salt Lake City Canal)	0.0069	20	6	Canal segment C-1b (Jordan and Salt Lake City Canal) runs flows through the southern half of the survey area. The lateral extent of the ordinary high water mark (OHWM) averaged approximately 13 feet. Canal segment C-1b is moderately degraded with high invasive species cover (common reed [*Phragmites australis*]). The Jordan and Salt Lake City Canal originates from the Jordan River and flows north through the Salt Lake Valley, eventually draining into City Creek. City Creek then flows west, draining into the Jordan River, which flows into the Great Salt Lake, a traditionally navigable water (TNW).
Ditches				
Segment D-1	0.0002	3	8	Ditch segment D-1 is located in Phillip Gates Memorial Park. The lateral extent of the OHWM measured approximately 3 feet. Ditch segment D-1 is located in a landscaped setting and appeared to have had artificial cobble added as a substrate. Ditch segment D-1 flows into an open-water pond beyond the survey area which appears to drain into the Jordan and Salt Lake City Canal.

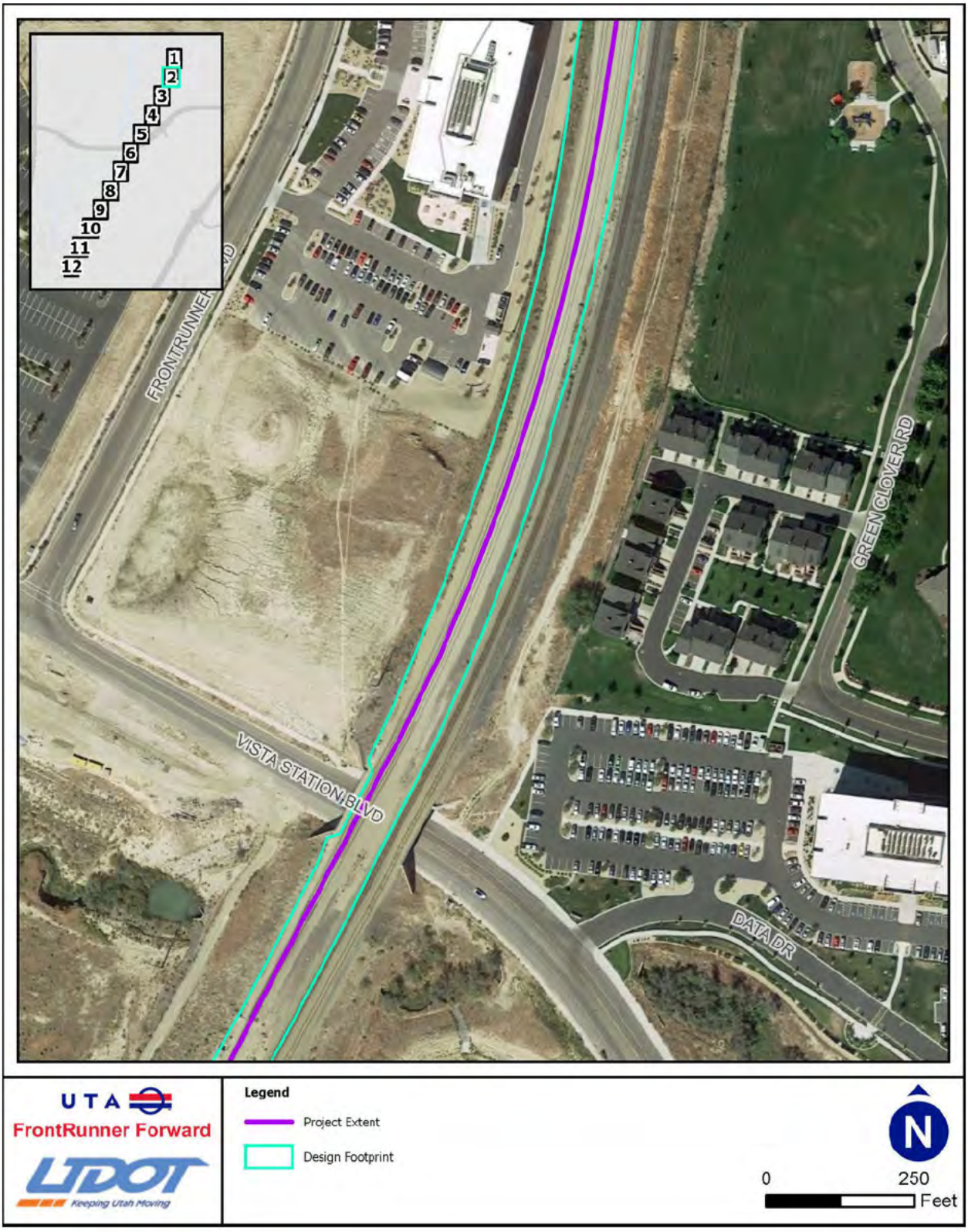
[a] See Appendix A, *Aquatic Resources Impact Map Series*.

Next Steps

Impacts to jurisdictional aquatic resources from construction would be authorized under Nationwide Permit 14, which includes Clean Water Act Section 401 Water Quality Certification. Because the impacts would be less than 0.1 acre, a preconstruction notification might not be required. In addition, because the canal impacts would be less than 0.03 acre, compensatory mitigation would not be required. .

Appendix A. Aquatic Resources Impact Map Series

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DATA DR
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FrontRunner Forward
UDOT
Keeping Utah Moving
Legend
Project Extent
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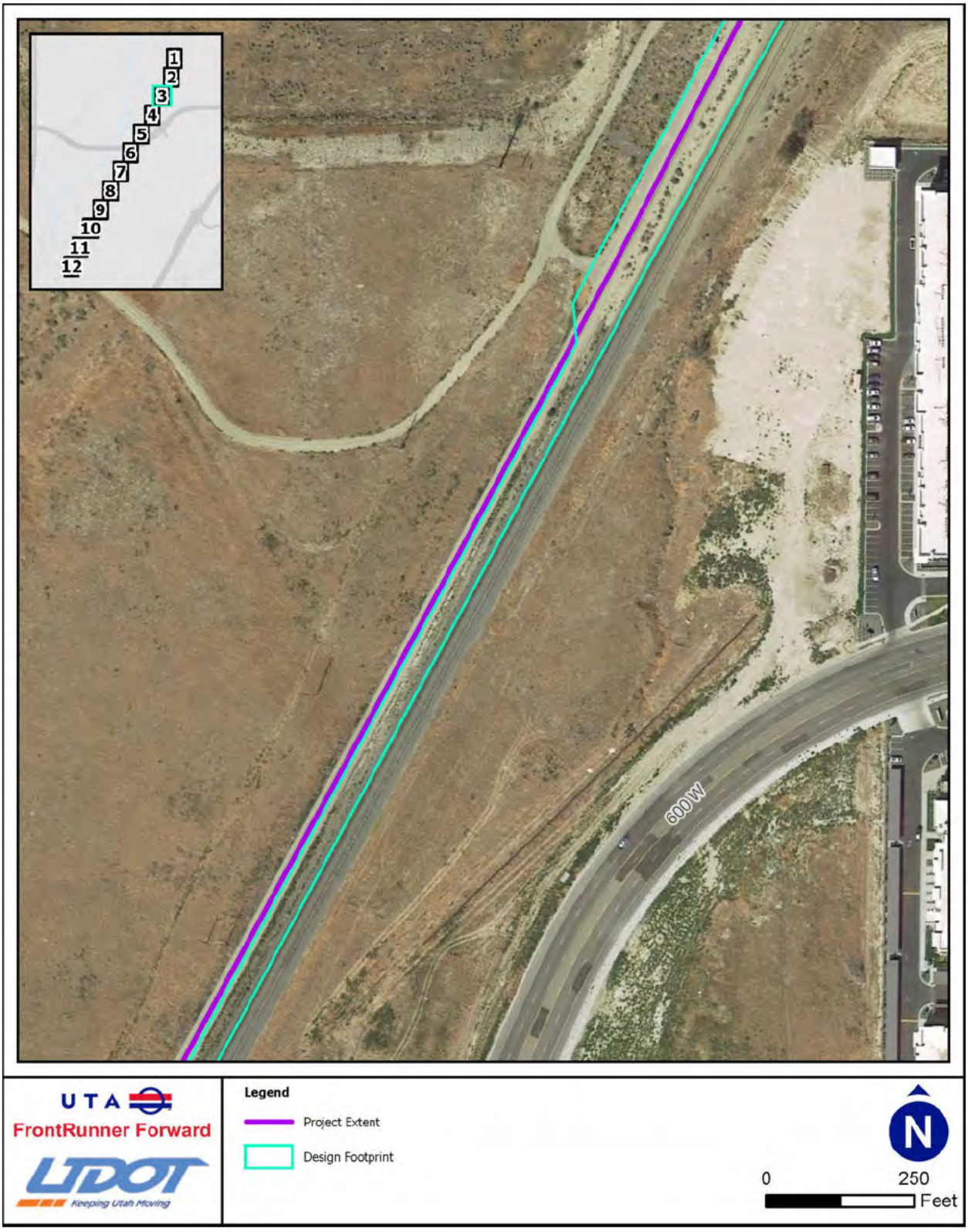
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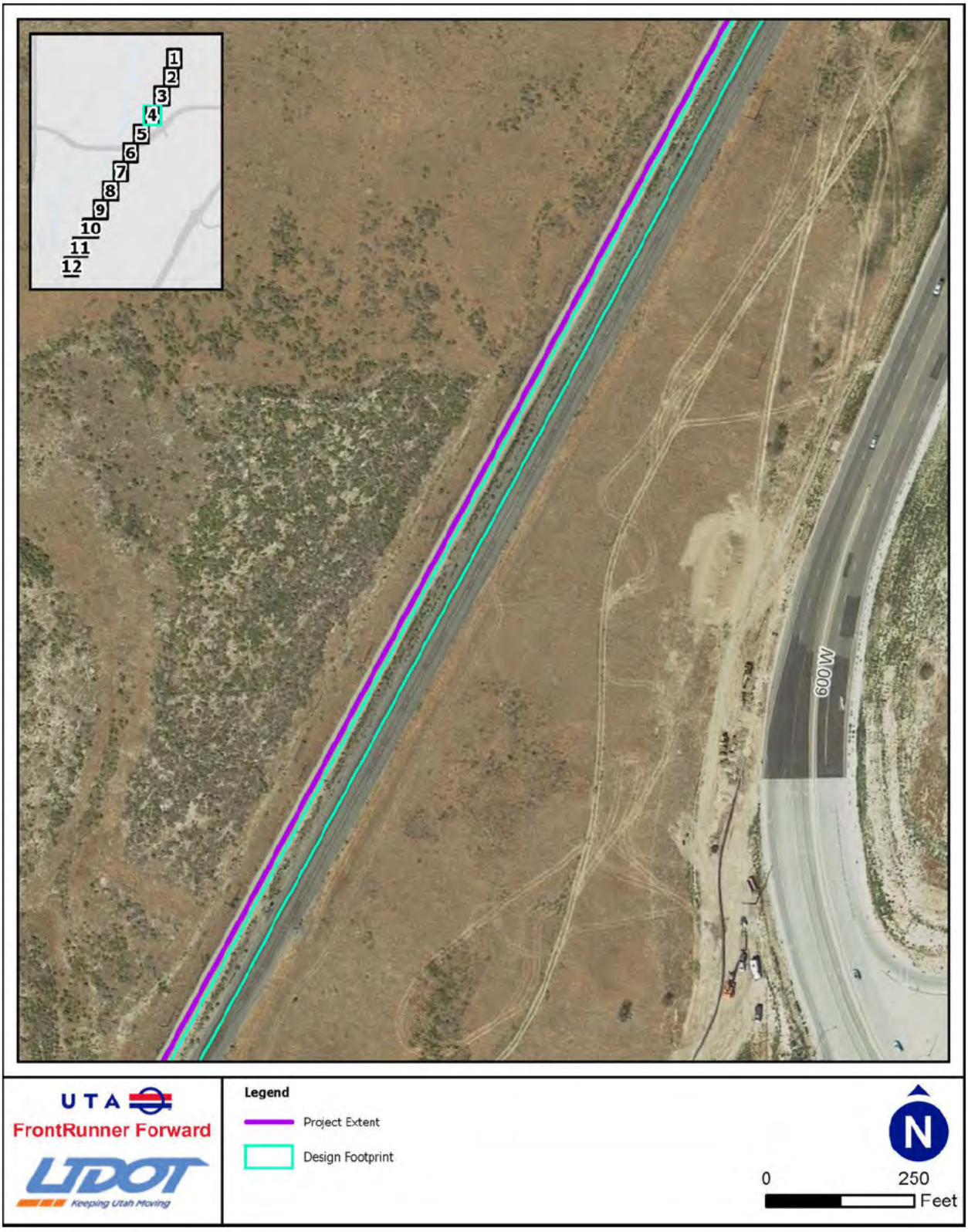
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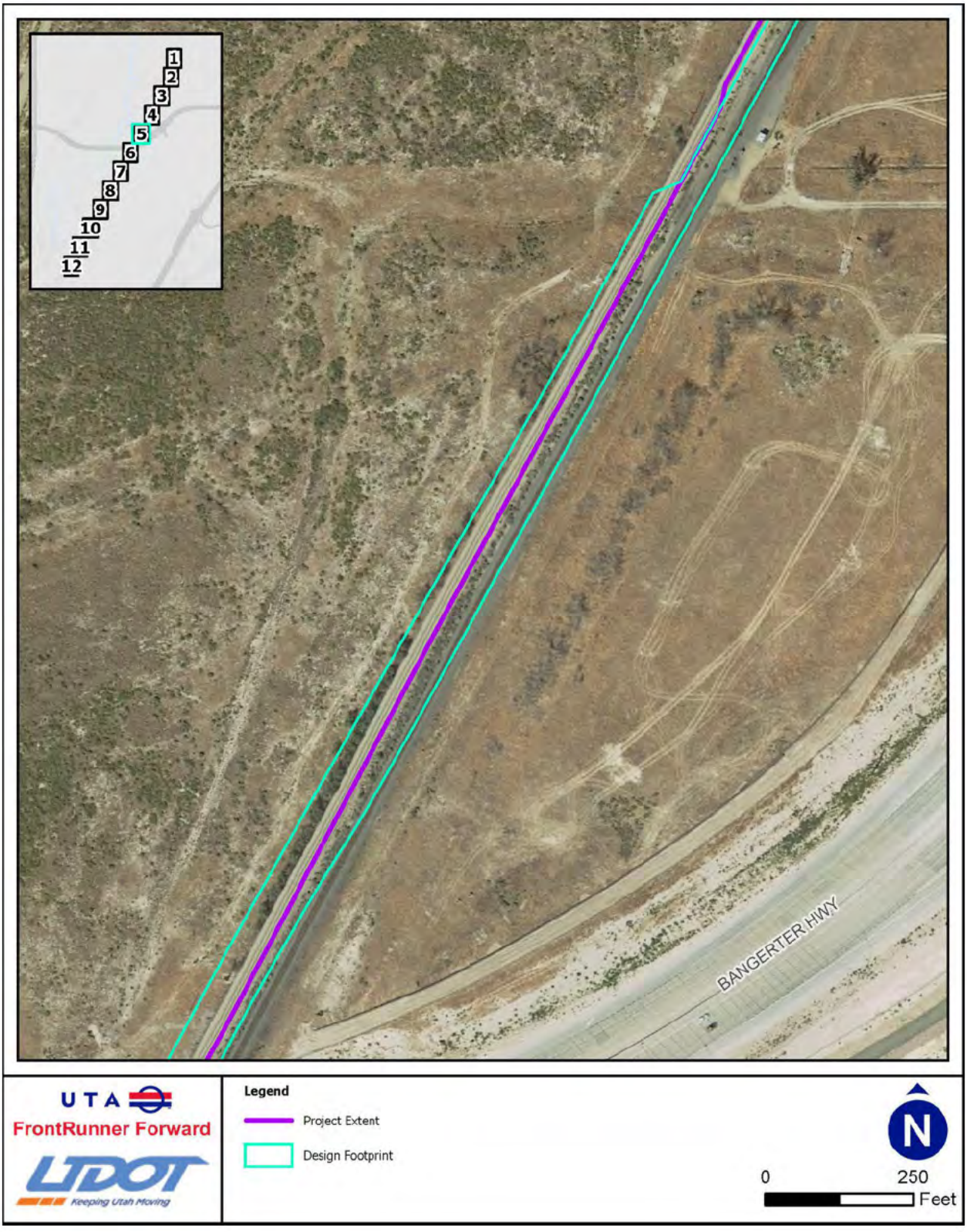
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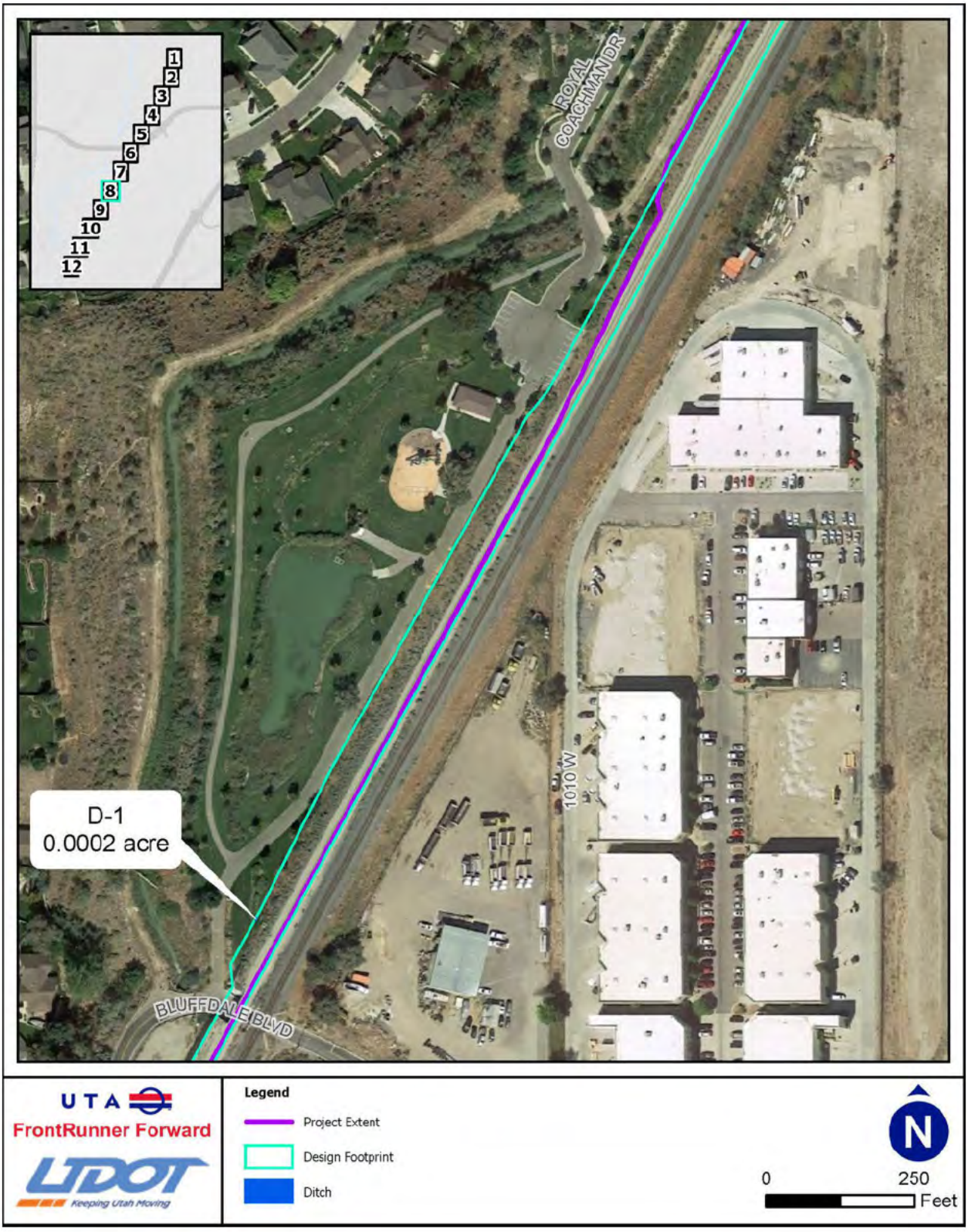
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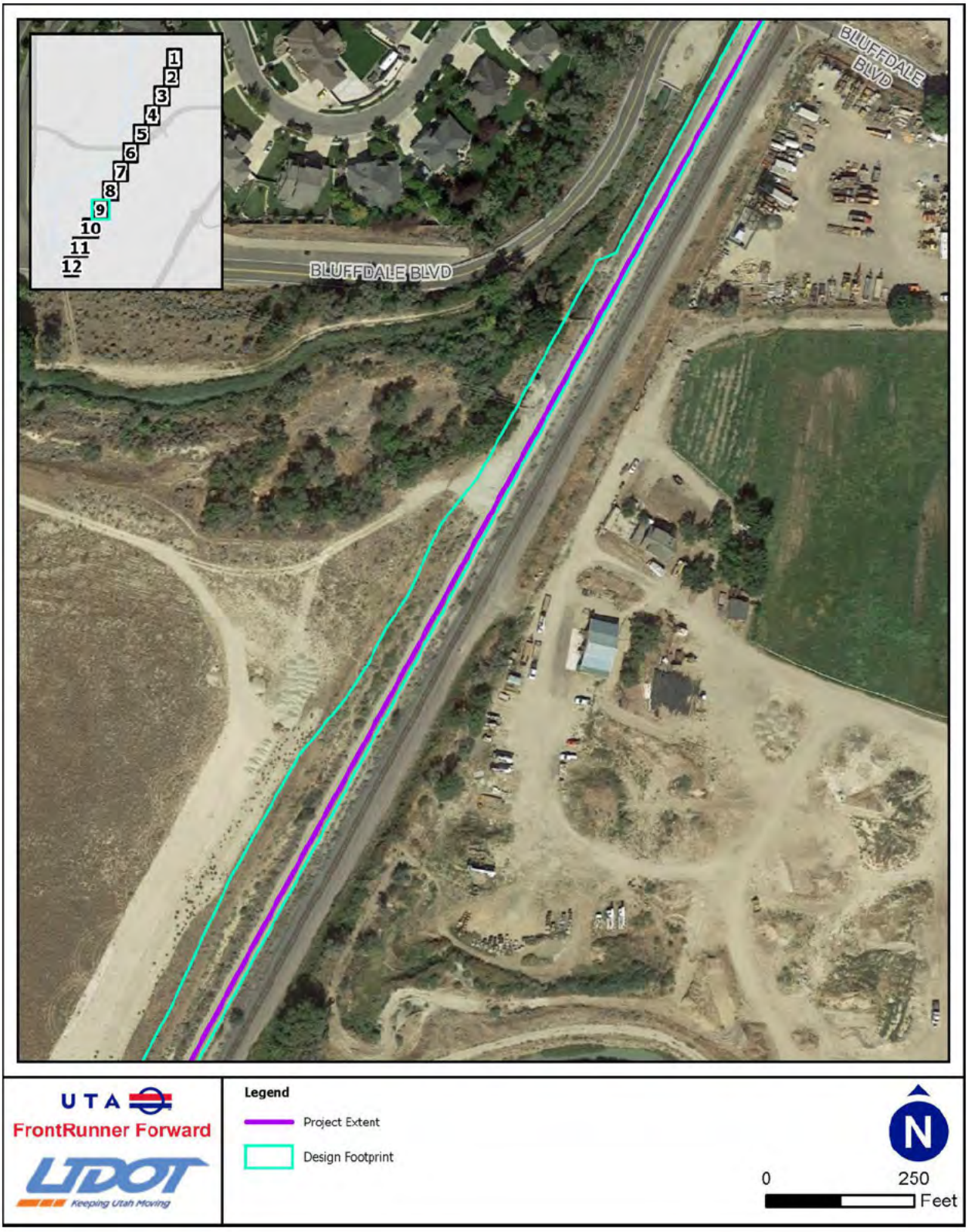
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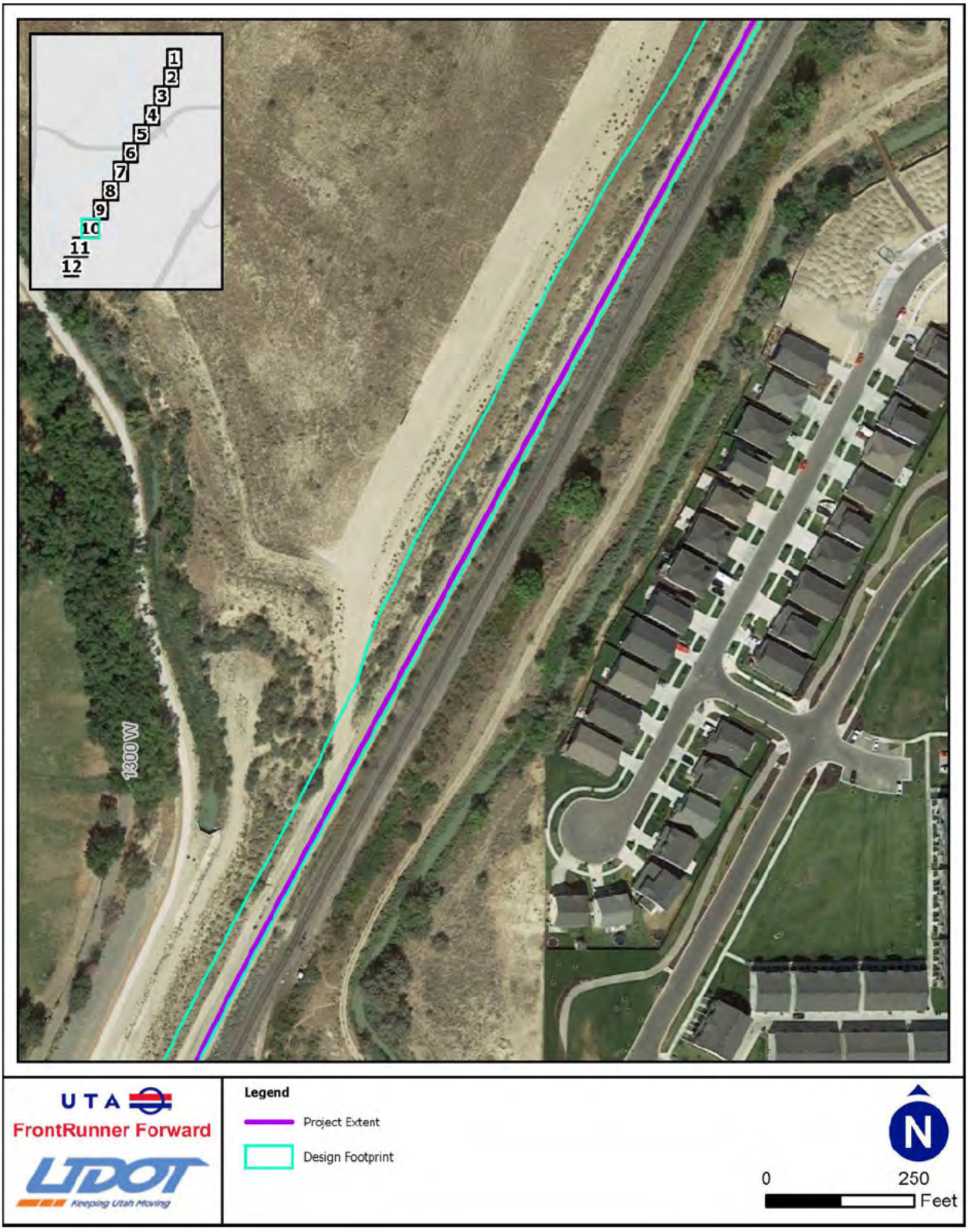
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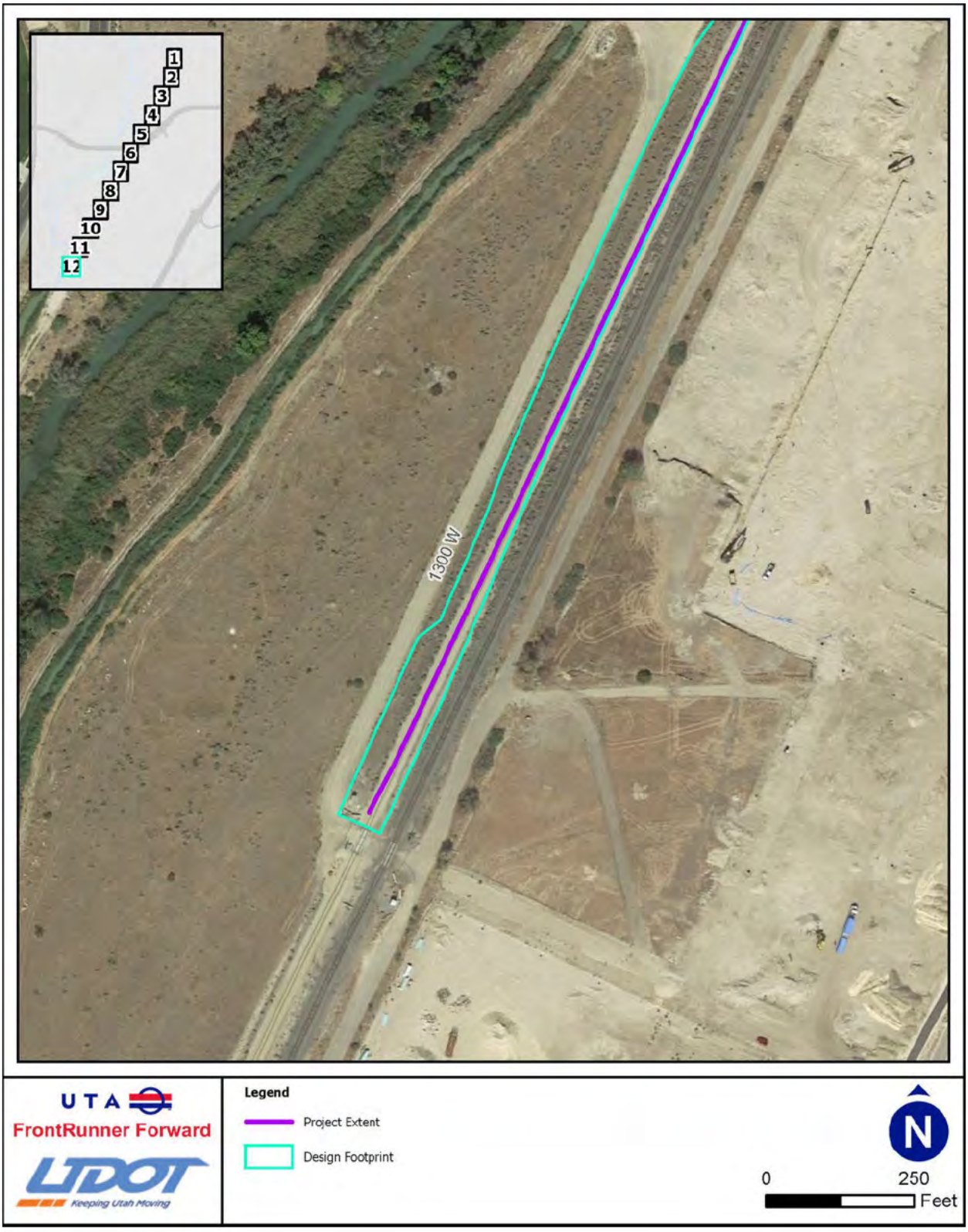
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South of Draper Double Track Project

Aquatic Resources Delineation Report

April 2024

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List of Appendices

Executive Summary

The project team has prepared this aquatic resources delineation report in support of the proposed FrontRunner Forward South of Draper Double Track Project (the Project) in Draper and Bluffdale, Utah. HDR conducted fieldwork for the delineation on May 22, 2022.

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 2022)
- U.S. Army Corps of Engineers regulatory guidance letters and joint agency regulations, policies, references, and guidance

The entire delineation survey area is about 65 acres and contains a total of 1.002 acres of aquatic resources. These resources include 0.998 acres (2,941 linear feet) of canals and 0.004 acres (61 linear feet) of ditches.

Introduction

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 jurisdictional status of the delineated aquatic resources is subject to determination by the U.S. Army Corps of Engineers (USACE).

Aquatic Resource Delineation Survey Area

The survey area is located on both sides of the current UTA FrontRunner tracks from approximately UTA milepost S 20.5 north to UTA milepost S 17.2, a distance of about 3.3 miles. It covers about 65 acres and extends about 75 feet on each side of the track centerline. Property in the survey area includes land owned by UTA, Union Pacific Railroad (UP), and other private entities.

The survey area can be accessed from the USACE office in Bountiful, Utah, by traveling south on Interstate 15, taking exit 288 for 14600 South, and then heading west for approximately 0.8 miles until 14600 South crosses the UTA FrontRunner tracks. As defined by the Public Land Survey System, the survey area is located in Township 3 and 4 South, Range 1 West, and Sections 1, 2, 10, 14, 15, and 36. The elevation in the survey area ranges from about 4,410 to 4,430 feet above mean sea level.

Contact Information

Project Applicant and Owner

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

Land Ownership

Land in the survey area includes property owned by UTA, UP, and other private entities. Contact and access information for landowners can be coordinated as necessary.

Contact Information for the Delineation Consultant

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

Field biologists:

Joshua McMillin
(801) 743-7860
joshua.mcmillin@hdrinc.com

Lacey Wilder
(385) 347-1162
lacey.wilder@hdrinc.com

Delineation Methodology

Preliminary Data Gathering

Before conducting delineation fieldwork, HDR 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 2022a)
- U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) maps in geographic information systems (GIS) format (see Appendix B, *National Wetlands Inventory Map Series*)
- U.S. Department of Agriculture, Natural Resources Conservation Service's (USDA NRCS) Web Soil Survey (USDA NRCS 2022b)
- USACE delineation manuals and delineation reference guides (described in the *Delineation Procedures* section)

Delineation Procedures

The project team surveyed for wetlands and other waters of the United States on May 22, 2022. 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 2022)
- U.S. Army Corps of Engineers regulatory guidance letters and joint agency regulations, policies, references, and guidance

The project team assessed the entire survey area to determine the presence or absence of aquatic features. Because no wetlands were identified, no wetland delineation datasheets are presented in this report. Photographs of the canals and ditches identified in the survey area are included in Appendix C, *On-site Representative Photographs.*

The project team mapped aquatic resource boundaries in the survey area through a combination of global positioning system (GPS)-based field mapping (using ArcGIS Field Maps and an iPad) and desktop digitization using images from Google Images dated 2018. To produce aquatic resources delineation maps for the survey area, data were exported into GIS software (ArcGIS Pro 10.8.1). Appendix D, *Aquatic Resources Delineation Map Series*, provides the aquatic resources delineation maps. These data were also used to calculate the area of aquatic features in the survey area.

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 of the 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.

The project team visually assessed the survey area for wetlands and did not identify any sites that would qualify as wetlands; therefore, wetland delineation procedures are not explained further in this report.

Other (Non-wetland) Aquatic Resources

This delineation 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 OHWM in water features such as navigable streams, rivers, and lakes; interstate waters; and tributaries to navigable waters.

The project team delineated non-wetland aquatic features based on the presence of a bed and bank and an OHWM (Lichvar and McColley 2008; USACE 2005). 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.

Existing Conditions

The survey area is located in Draper and Bluffdale and is composed mainly of the UTA and UP rail tracks and associated right-of-way. The survey area is part of the Central Basin and Range ecoregion in the Moist Wasatch Front Footslopes subregion (Woods and others 2001). The Moist Wasatch Front Footslopes supports the bulk of Utah's population and commercial activity and is fed by perennial streams and aqueducts that originate in the Wasatch Range. The average annual precipitation in the survey area is 15.69 inches (US. Climate Data 2022). The survey area has experienced severe to exceptional drought over the last two growing seasons and is currently experiencing severe drought (National Integrated Drought Information System 2022).

The delineation field reconnaissance was conducted on May 22, 2022. Temperatures ranged from 49 to 75 degrees Fahrenheit during the field survey; there was no measurable precipitation and partly cloudy skies (National Weather Service 2022).

General Hydrology

The survey area is located in the Jordan River watershed, hydrologic unit code 16020204 (USGS 2022). The Jordan River originates at Utah Lake; flows north through the Salt Lake Valley, west of the survey area; and discharges to the Great Salt Lake. Water in the survey area and adjacent areas generally drains west toward the Jordan River.

Corner Canyon Creek crosses the survey area through a culvert beneath the UP and UTA railroad embankment and continues west until it drains into the Jordan River. Two named canals, the Jordan and Salt Lake City Canal and the East Jordan Canal, are in or near the survey area. Both canals are diversions of the Jordan River and eventually drain back into the river.

A portion of the Galena–Soónkahni Preserve is located in the survey area. The Galena–Soónkahni Preserve, which is owned by the Utah Division of Forestry, Fire and State Lands, comprises about 250 acres adjacent to the Jordan River between 12300 South and 14600 South in Draper. The preserve includes about 100 acres of riparian and wetland habitat on the east side of the Jordan River and about 150 acres of uplands. [redacted] The Project would not impact any aquatic resources in the preserve.

General Soil Conditions

Nine soil types have been identified in the survey area, none of which are listed as hydric in the Hydric Soils List for Utah (USDA NRCS 2022a). However, Magna and Mixed Alluvial Land are listed as minor components of Chipman silty clay loam, saline, sodic, 0 to 1 percent slopes, and are listed as hydric. Additionally, Saltair is listed as a minor component of Deckerman fine sandy loam, 0 to 1 percent slopes, and is also listed as hydric.

Table 1 lists the nine soil types that were identified in the survey area. Soil map unit boundaries for the survey area are provided in Appendix E, *USDA NRCS Soil Map Series* (USDA NRCS 2022b).

Table 1. Soil types identified in the survey area

Soil Name	Map Unit Symbol	Acreage
Bramwell silty clay loam, 0 to 1 percent slopes	BsA	8.3
Clayey terrace escarpments	CA	3.2
Chipman silty clay loam, saline, sodic, 0 to 1 percent slopes	Ck	13.6
Deckerman fine sandy loam, 0 to 1 percent slopes	De	10.8
Hillfield-Taylorsville complex, 6 to 30 percent slopes	HtF2	3.6
Lakewin sandy loam, 0 to 1 percent slopes	LaA	14.4
Lakewin sandy loam, 1 to 6 percent slopes	LaC	3.0
Stony terrace escarpments	SP	1.7
Welby silt loam, 0 to 1 percent slopes	WmA	7.0
Total		**65.4**

General Plant Community Types

In general, the survey area consists primarily of uplands, roads, and commercial development adjacent to the UTA right-of-way.

Dominant plant species observed in the uplands of the survey area include basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*), crested wheatgrass (*Agropyron cristatum*), and fivehorn smotherweed (*Bassia hyssopifolia).* Stands of common reed (*Phragmites australis*) and Russian olive (*Elaeagnus angustifolia*) were adjacent to the Jordan and Salt Lake City Canal.

Results

This section describes the results of the aquatic resources delineation. The maps in Appendix D, *Aquatic Resources Delineation Map Series*, show the extent of aquatic resource areas in the survey area. On-site photographs are provided in Appendix C, *On-site Representative Photographs*.

Wetlands

No wetlands were delineated in the survey area.

Other (Non-wetland) Aquatic Resources

Four canal segments and one ditch segment were identified in the survey area. Corner Canyon Creek traverses the survey area but has been piped underneath the UP and UTA railroad embankment and does not include any aboveground segments in the survey area.

Canals

Canal Segments C-1a through C-1d (Jordan and Salt Lake City Canal). Canal segments C-1a through C-1d total 0.988 acres (2,941 linear feet) and run through the southern half of the survey area. The lateral extent of the OHWM averaged approximately 13 feet and was indicated by physical characteristics including breaks in bank slopes and changes in vegetation cover and species. Canal segments C-1a through C-1d were moderately degraded with high invasive species cover (common reed). The Jordan and Salt Lake City Canal originates from the Jordan River and flows north through the Salt Lake Valley, eventually draining into City Creek. City Creek then flows west, draining into the Jordan River, which flows into the Great Salt Lake, a traditional navigable water (TNW).

Ditches

Ditch D-1. Ditch segment D-1 totals 0.004 acres (61 linear feet) and is located in Phillip Gates Memorial Park. The lateral extent of the OHWM measured approximately 3 feet and was indicated by physical characteristics including breaks in bank slopes and changes in vegetation cover. Ditch segment D-1 is located in a landscaped setting and appeared to have had artificial cobble added as a substrate. Ditch segment D-1 flows into an open-water pond beyond the survey area which appears to drain into the Jordan and Salt Lake City Canal. The Jordan and Salt Lake City Canal flows north through the Salt Lake Valley, eventually draining into City Creek. City Creek then flows west, draining into the Jordan River, which flows into the Great Salt Lake, a TNW. Ditch segment D-1 does not carry a relatively permanent flow of water.

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. Resources delineated include 0.998 acres (2,941 linear feet) of canals and 0.004 acres (61 linear feet) of ditches. All features recorded and mapped are included in Appendix D, *Aquatic Resources Delineation Map Series*. The jurisdictional determination for each feature is subject to USACE's review.

Table 2 summarizes all of the delineated aquatic resource features in the survey area. Features are ordered by resource type and then by their locations on the map sheets in Appendix D.

Table 2. Aquatic resources summary

Aquatic Resource Feature Name	Cowardin Classification[a]	Size (acres)	Length (feet)	Latitude[b]	Longitude[b]	Map Sheet Number(s)[c]
Canals						
C-1a (Jordan and Salt Lake City Canal)	R5UB	0.005	23	40.496533 40.496520	–111.914140 –111.914271	6
C-1b (Jordan and Salt Lake City Canal)	R5UB	0.925	2,709	40.496467 40.490085	–111.914628 –111.919448	6, 7, 8
C-1c (Jordan and Salt Lake City Canal)	R5UB	0.001	6	40.487268 40.487245	–111.921357 –111.921364	8
C-1d (Jordan and Salt Lake City Canal)	R5UB	0.067	203	40.486883 40.486433	–111.921597 –111.921967	8, 9
Ditches						
D-1	R6	0.004	61	40.487505 40.487667	–111.921036 –111.921042	8

[a] Codes from *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin and others 1979): R5UB (unconsolidated bottom, unknown perennial, riverine), R6 (riverine, ephemeral).

[b] Two sets of coordinates are included for long, linear features. The top row provides the uppermost (upstream) location of the feature in the survey area, and the bottom row provides the lowest (downstream) location of the feature in the survey area.

[c] See Appendix D, *Aquatic Resources Delineation Map Series*.

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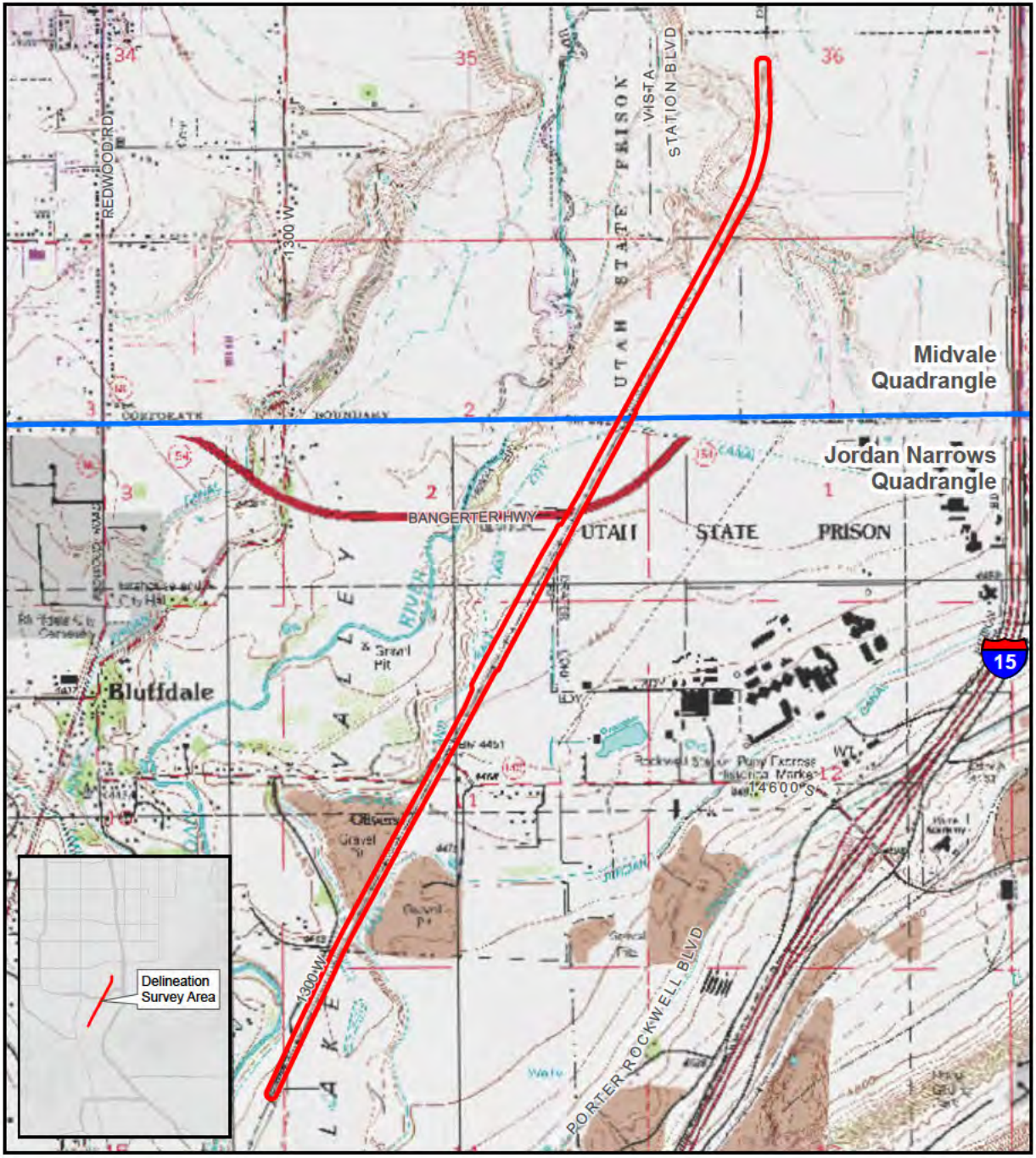
APPENDIX A

Project Overview Map



UTA
FrontRunner Forward

UDOT
Keeping Utah Moving

Legend

- Survey Area
- USGS 7.5 Minute Quadrangles

DATA SOURCES:
PLSS: State of Utah
PROJECTION:
Utah Stateplane Central
CARTOGRAPHER:
HDR

N

0 0.5 Miles

APPENDIX B

National Wetlands Inventory Map Series

UTA FrontRunner Forward

UDOT Keeping Utah Moving

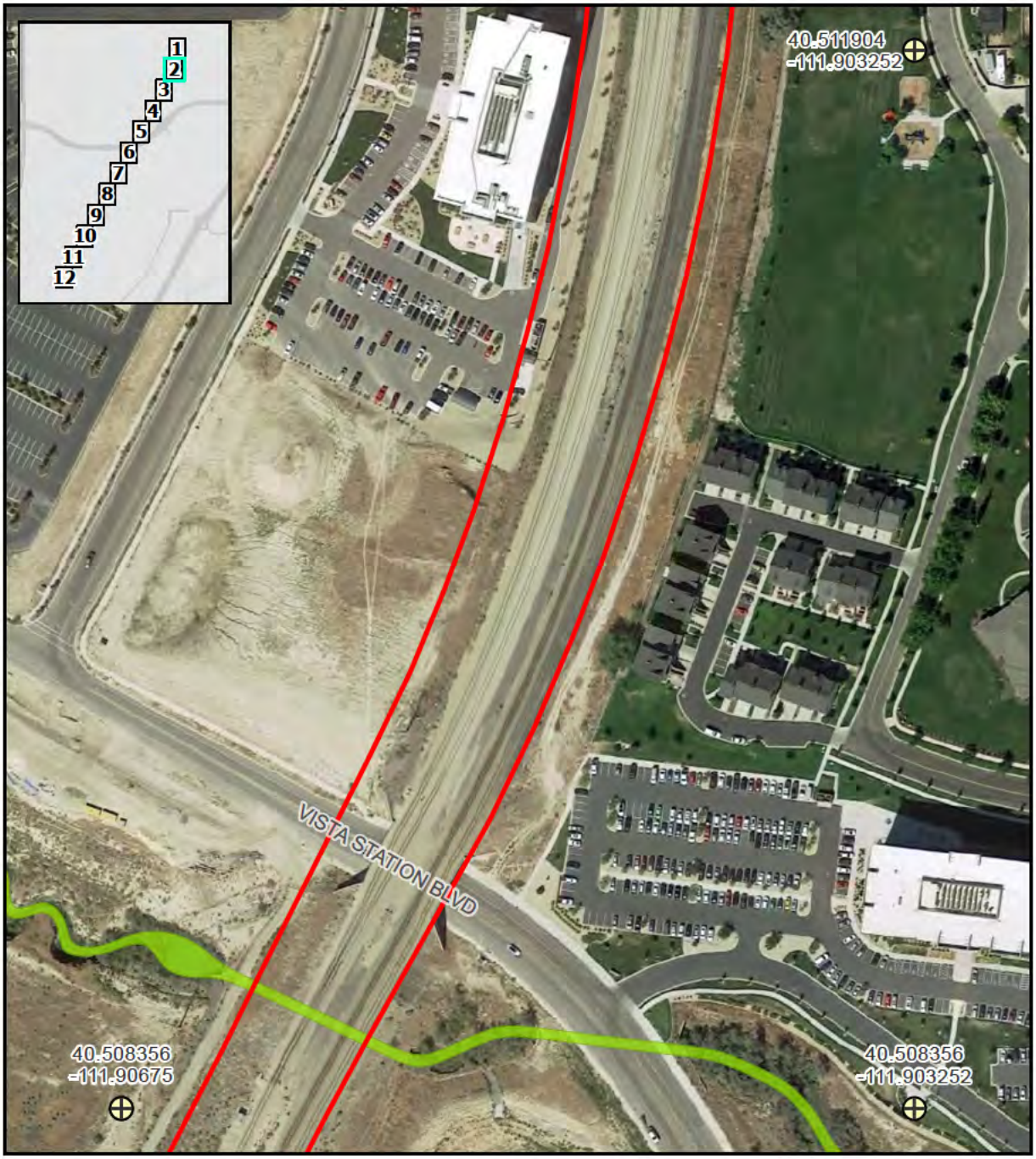
Legend

- Geographic Control Points
- Delineation Survey Area

DATA SOURCES:
Aerial Imagery: State of Utah
Google Imagery - 2018
NWI: U.S. Fish and Wildlife Service
PROJECTION:
Utah Stateplane Central
CARTOGRAPHER:
HDR

N

0 125 250 Feet



UTA FrontRunner Forward

UDOT Keeping Utah Moving

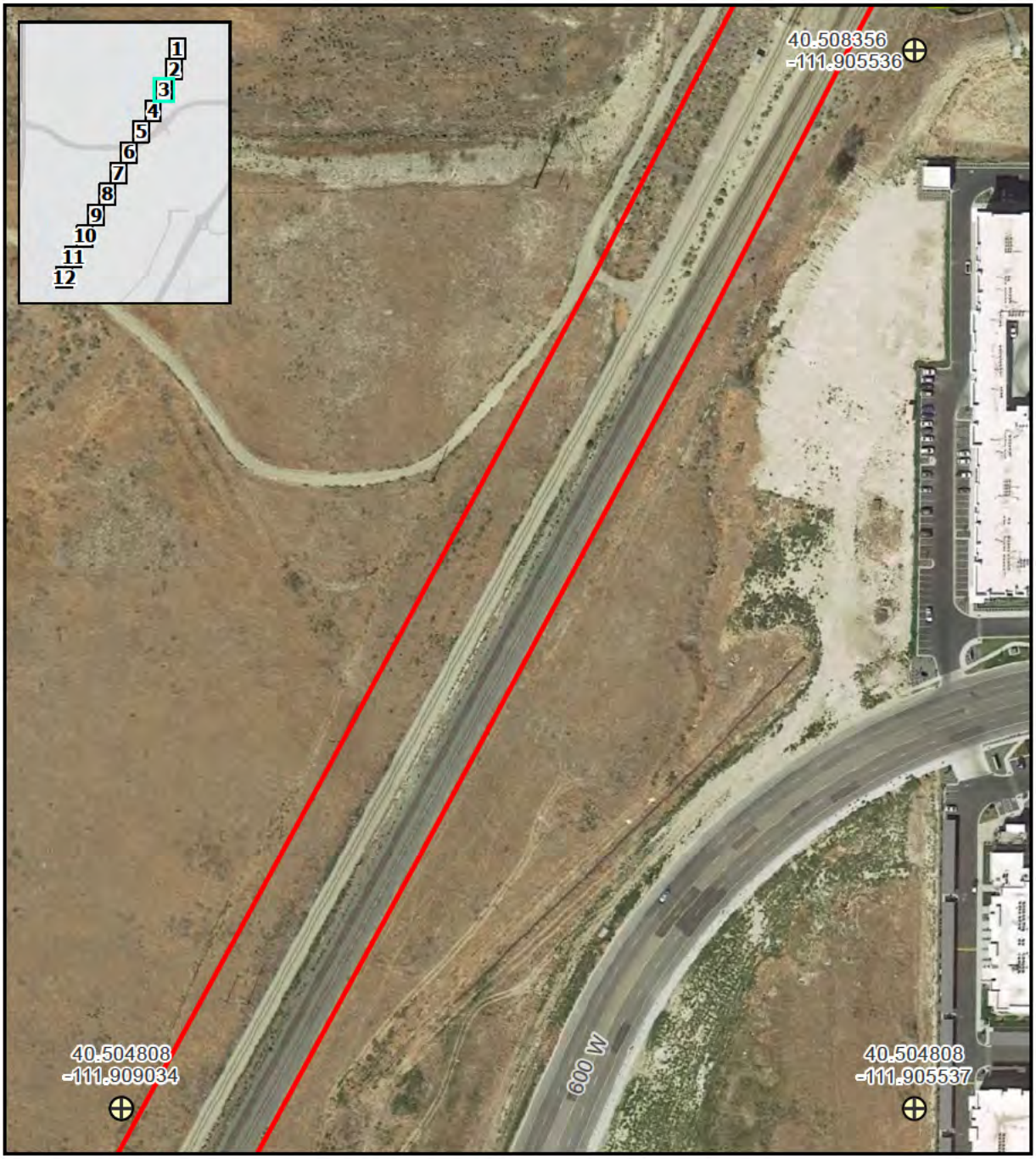
Legend

- Geographic Control Points
- Delineation Survey Area
- Riverine

DATA SOURCES:
Aerial Imagery: State of Utah
Google Imagery - 2018
NWI: U.S. Fish and Wildlife Service
PROJECTION:
Utah Stateplane Central
CARTOGRAPHER:
HDR

N

0 125 250 Feet



UTA FrontRunner Forward

UDOT Keeping Utah Moving

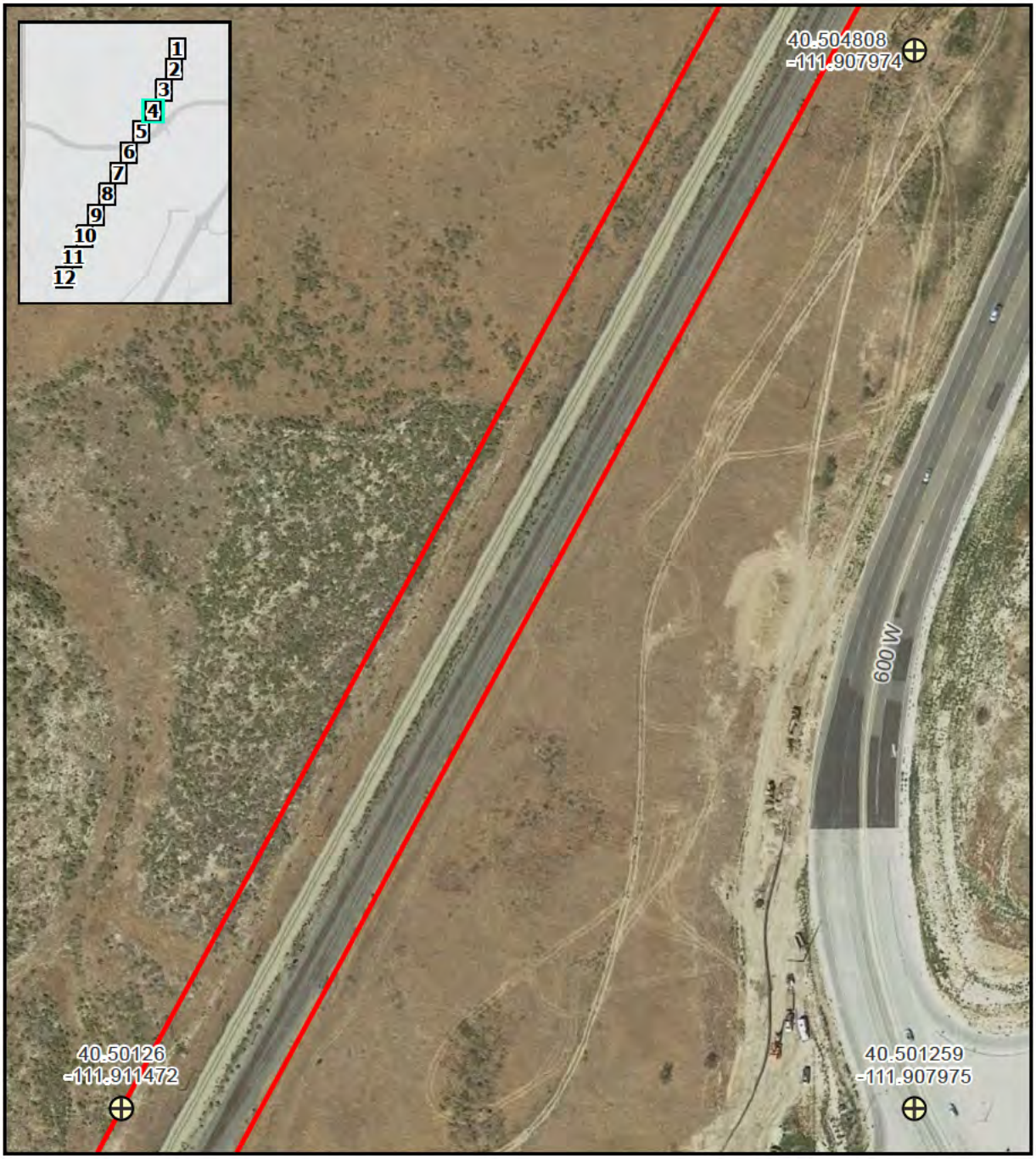
Legend

- Geographic Control Points
- Delineation Survey Area

DATA SOURCES:
Aerial Imagery: State of Utah
Google Imagery - 2018
NWI: U.S. Fish and Wildlife Service
PROJECTION:
Utah Stateplane Central
CARTOGRAPHER:
HDR

N

0 125 250 Feet



UTA FrontRunner Forward

LTDOT Keeping Utah Moving

Legend

Geographic Control Points

Delineation Survey Area

DATA SOURCES:
Aerial Imagery: State of Utah
Google Imagery - 2018
NWI: U.S. Fish and Wildlife Service
PROJECTION:
Utah Stateplane Central
CARTOGRAPHER:
HDR

N

0 125 250 Feet

UTA FrontRunner Forward

UDOT Keeping Utah Moving

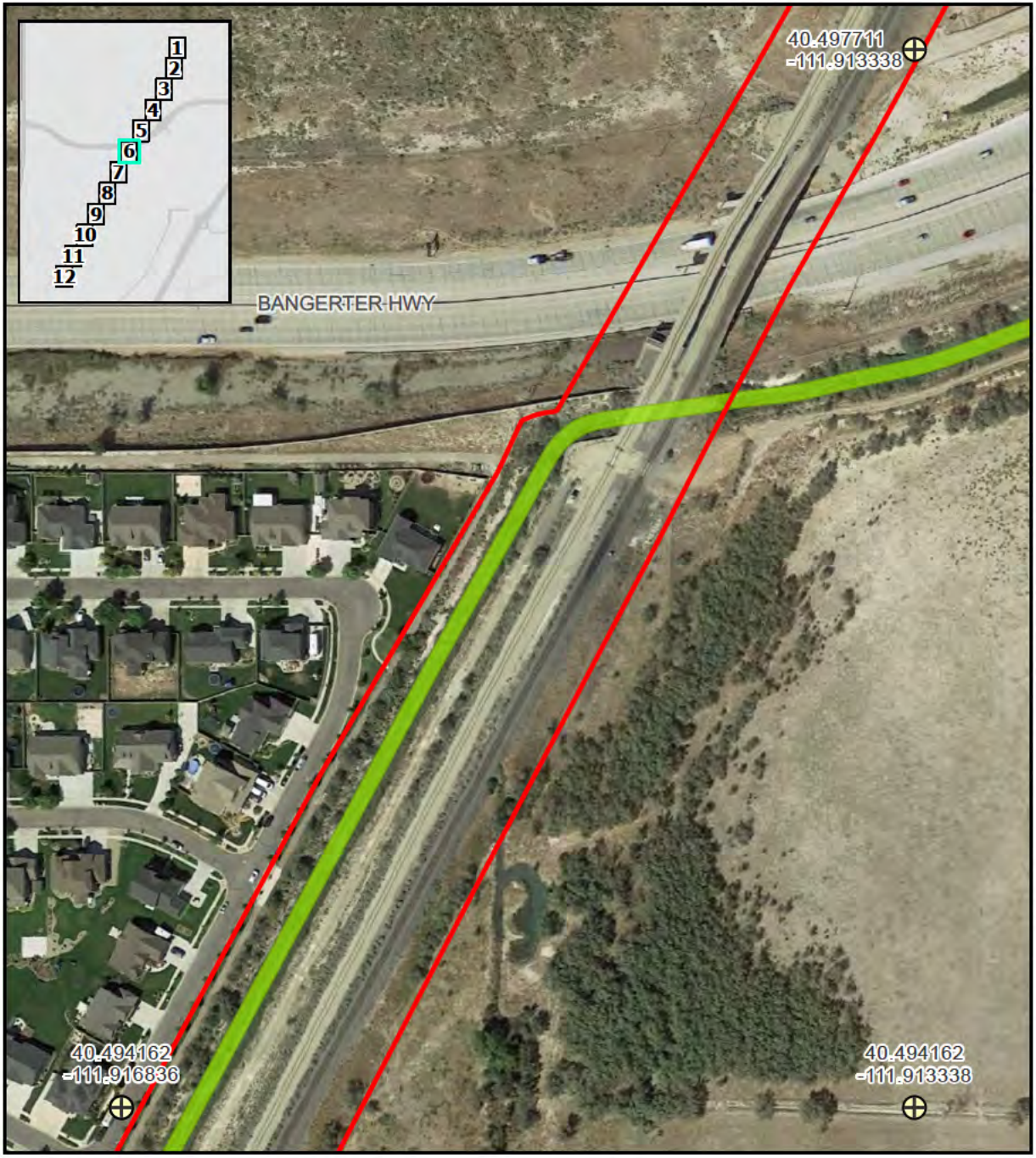
Legend

- Geographic Control Points
- Delineation Survey Area
- Riverine

DATA SOURCES:
Aerial Imagery: State of Utah
Google Imagery - 2018
NWI: U.S. Fish and Wildlife Service
PROJECTION:
Utah Stateplane Central
CARTOGRAPHER:
HDR

N

0 125 250 Feet



UTA FrontRunner Forward

UDOT Keeping Utah Moving

Legend

- Geographic Control Points
- Delineation Survey Area
- Riverine

DATA SOURCES:
Aerial Imagery: State of Utah
Google Imagery - 2018
NWI: U.S. Fish and Wildlife Service
PROJECTION:
Utah Stateplane Central
CARTOGRAPHER:
HDR

N

0 125 250 Feet

UTA FrontRunner Forward

UDOT Keeping Utah Moving

Legend

- Geographic Control Points
- Delineation Survey Area
- Freshwater Pond
- Riverine

DATA SOURCES:
Aerial Imagery: State of Utah
Google Imagery - 2018
NWI: U.S. Fish and Wildlife Service
PROJECTION:
Utah Stateplane Central
CARTOGRAPHER:
HDR

N

0 125 250 Feet

UTA FrontRunner Forward

UDOT Keeping Utah Moving

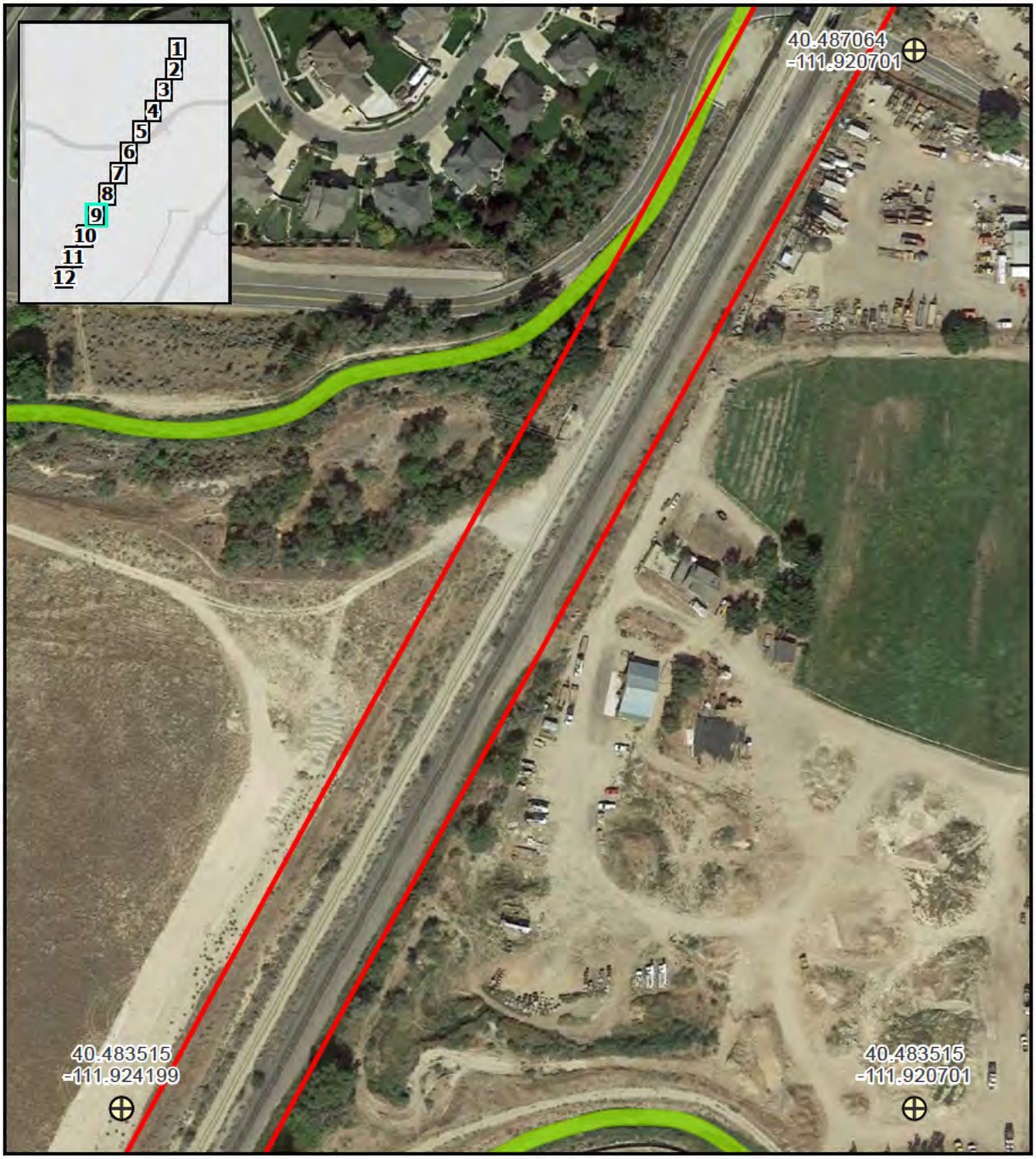
Legend

- Geographic Control Points
- Delineation Survey Area
- Freshwater Pond
- Riverine

DATA SOURCES:
Aerial Imagery: State of Utah
Google Imagery - 2018
NWI: U.S. Fish and Wildlife Service
PROJECTION:
Utah Stateplane Central
CARTOGRAPHER:
HDR

N

0 125 250 Feet



UTA FrontRunner Forward

UDOT Keeping Utah Moving

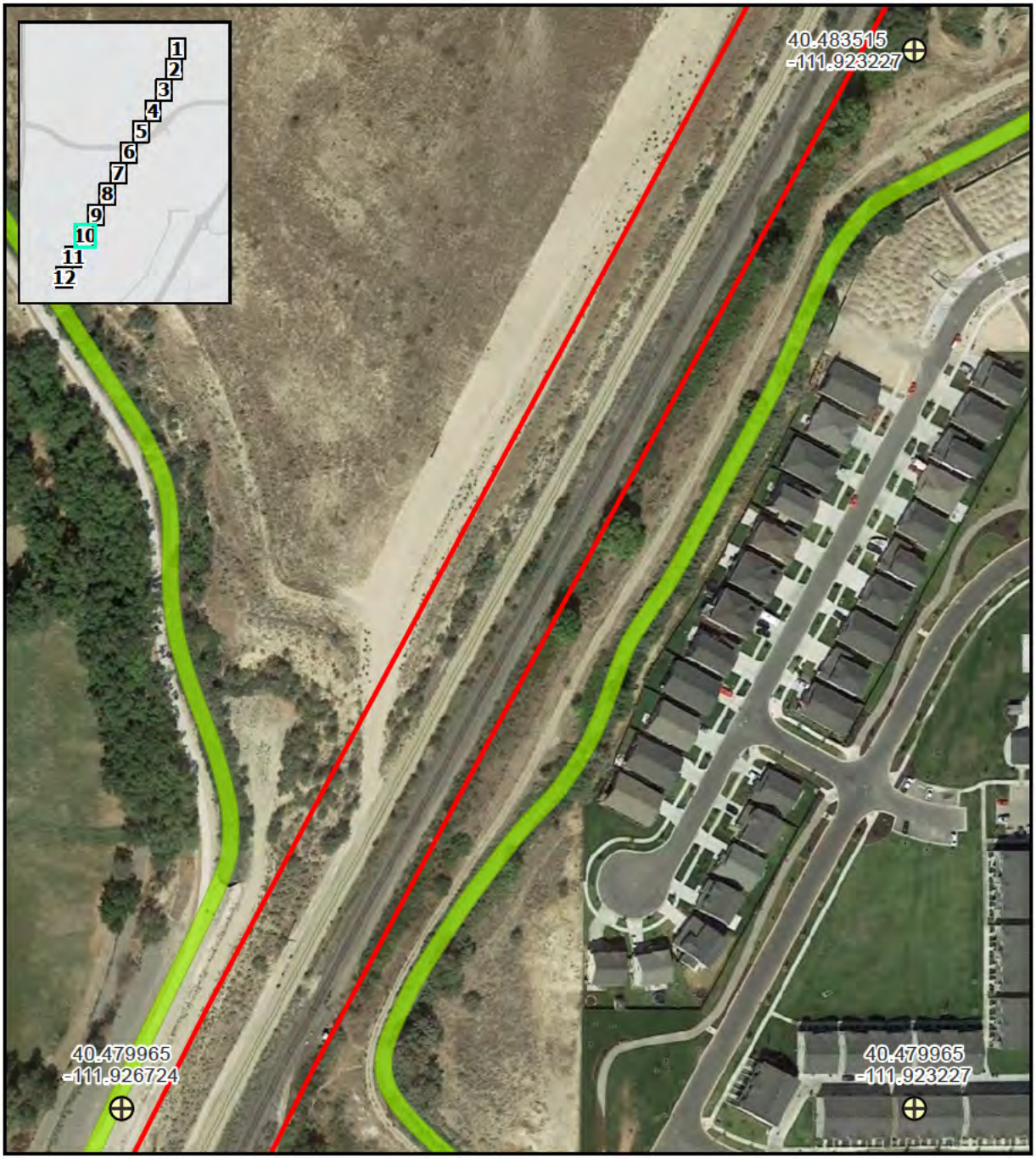
Legend

- Geographic Control Points
- Delineation Survey Area
- Riverine

DATA SOURCES:
Aerial Imagery: State of Utah
Google Imagery - 2018
NWI: U.S. Fish and Wildlife Service
PROJECTION:
Utah Stateplane Central
CARTOGRAPHER:
HDR

N

0 125 250 Feet



UTA FrontRunner Forward

UDOT Keeping Utah Moving

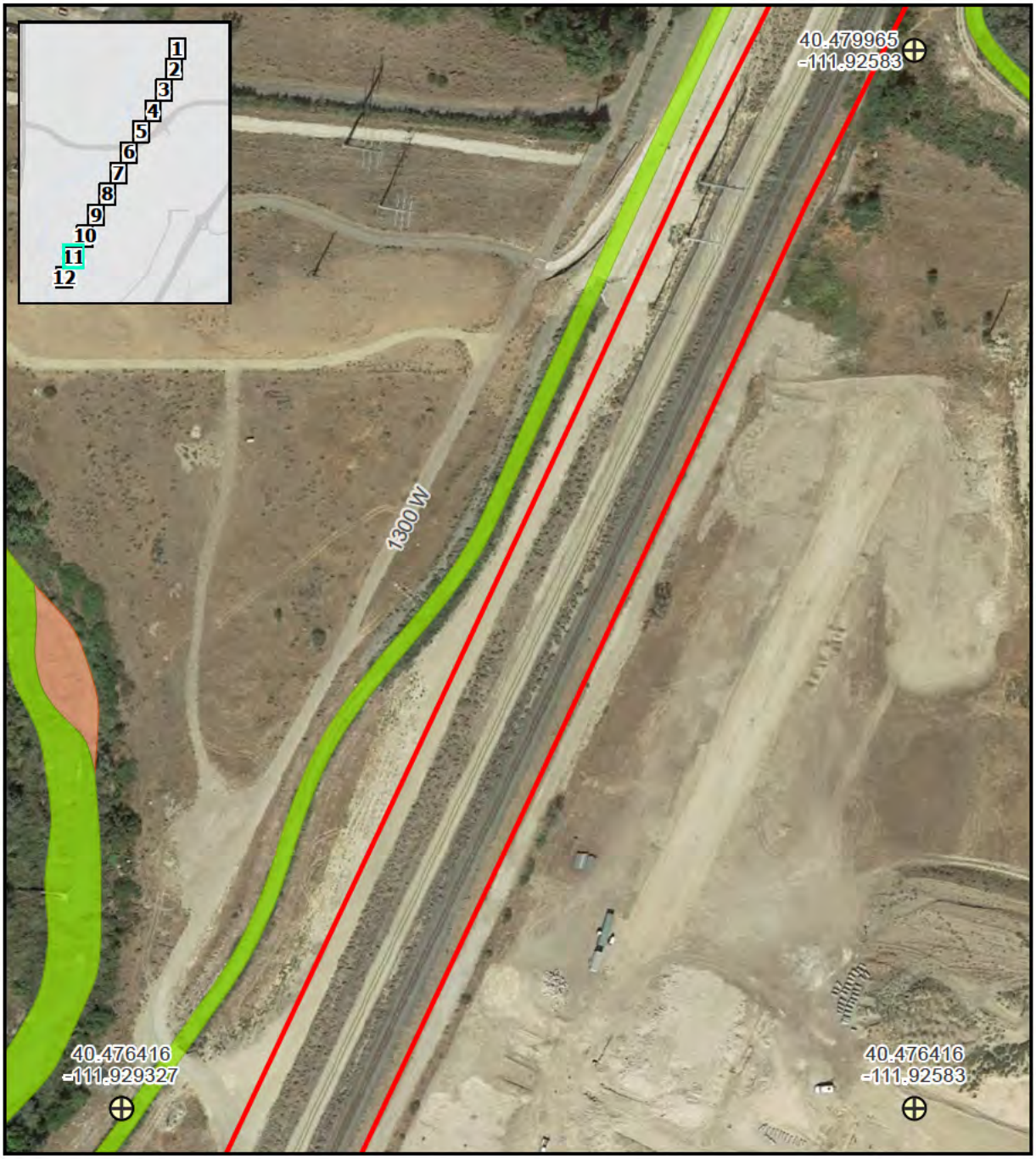
Legend

- Geographic Control Points
- Delineation Survey Area
- Riverine

DATA SOURCES:
Aerial Imagery: State of Utah
Google Imagery - 2018
NWI: U.S. Fish and Wildlife Service
PROJECTION:
Utah Stateplane Central
CARTOGRAPHER:
HDR

N

0 125 250 Feet



UTA FrontRunner Forward

UDOT Keeping Utah Moving

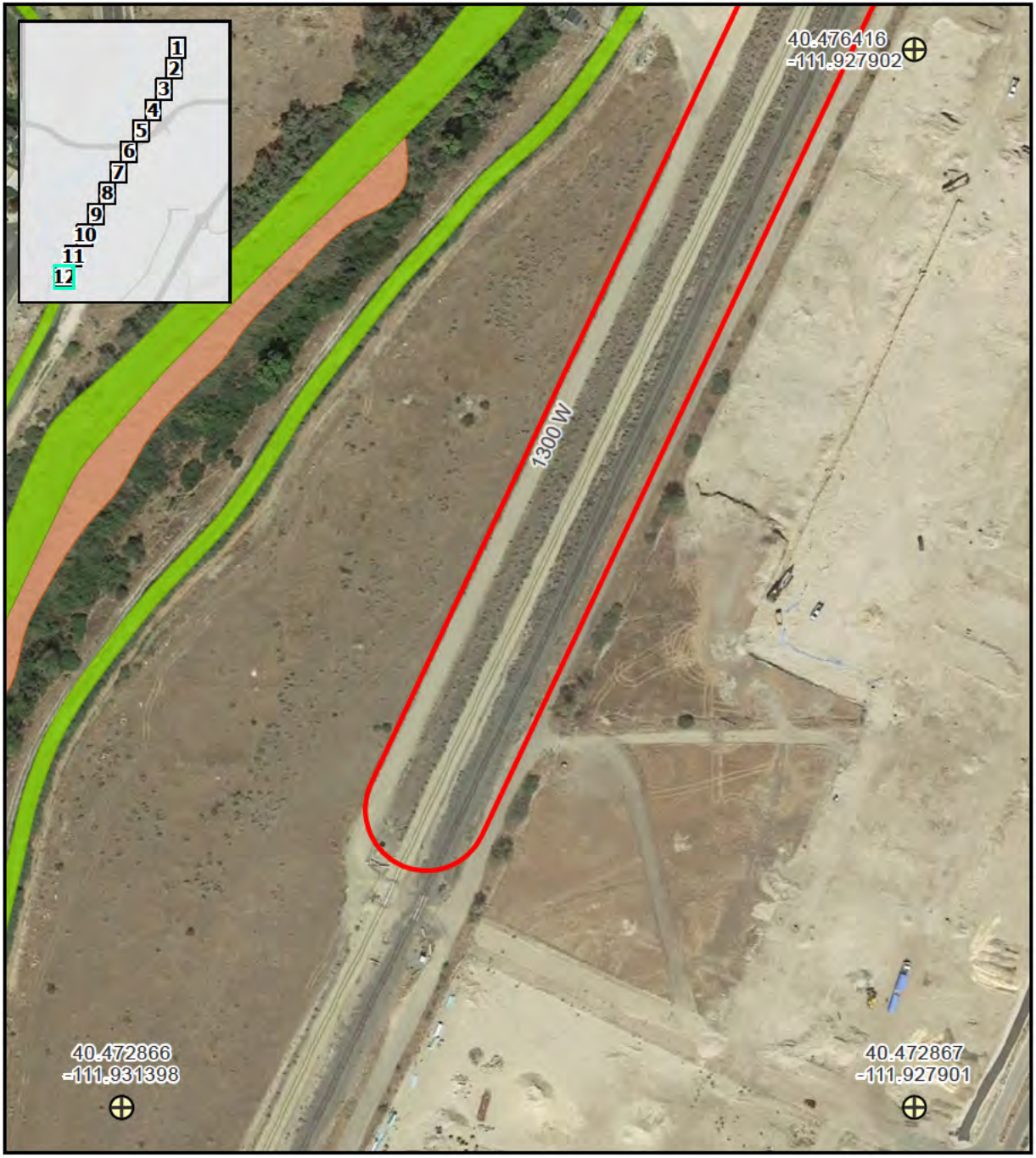
Legend

- Geographic Control Points
- Delineation Survey Area
- Riverine

DATA SOURCES:
Aerial Imagery: State of Utah
Google Imagery - 2018
NWI: U.S. Fish and Wildlife Service
PROJECTION:
Utah Stateplane Central
CARTOGRAPHER:
HDR

N

0 125 250 Feet



UTA FrontRunner Forward

UDOT Keeping Utah Moving

Legend

- Geographic Control Points
- Delineation Survey Area
- Freshwater Emergent Wetland
- Riverine

DATA SOURCES:
Aerial Imagery: State of Utah
Google Imagery - 2018
NWI: U.S. Fish and Wildlife Service
PROJECTION:
Utah Stateplane Central
CARTOGRAPHER:
HDR

N

0 125 250 Feet

APPENDIX C

On-site Representative Photographs

Photo of Canal Segment C-1b (Jordan and Salt Lake City Canal)

Photo Orientation: Downstream, South
Date: 05/22/2022

Photo of Canal Segment C-1b (Jordan and Salt Lake City Canal)

Photo Orientation: Upstream, North
Date: 05/22/2022

Photo of Canal Segment C-1b (Jordan and Salt Lake City Canal)

Photo Orientation: Downstream, South
Date: 05/22/2022

Photo of Canal Segment C-1b (Jordan and Salt Lake City Canal)

Photo Orientation: Downstream, South
Date: 05/22/2022

Photo of Canal Segment C-1b (Jordan and Salt Lake City Canal)

Photo Orientation: Upstream, North
Date: 05/22/2022

Photo of Ditch Segment D-1

Photo Orientation: Downstream, West
Date: 05/04/2022

APPENDIX D

Aquatic Resources Delineation Map Series

UTA FrontRunner Forward

UDOT Keeping Utah Moving

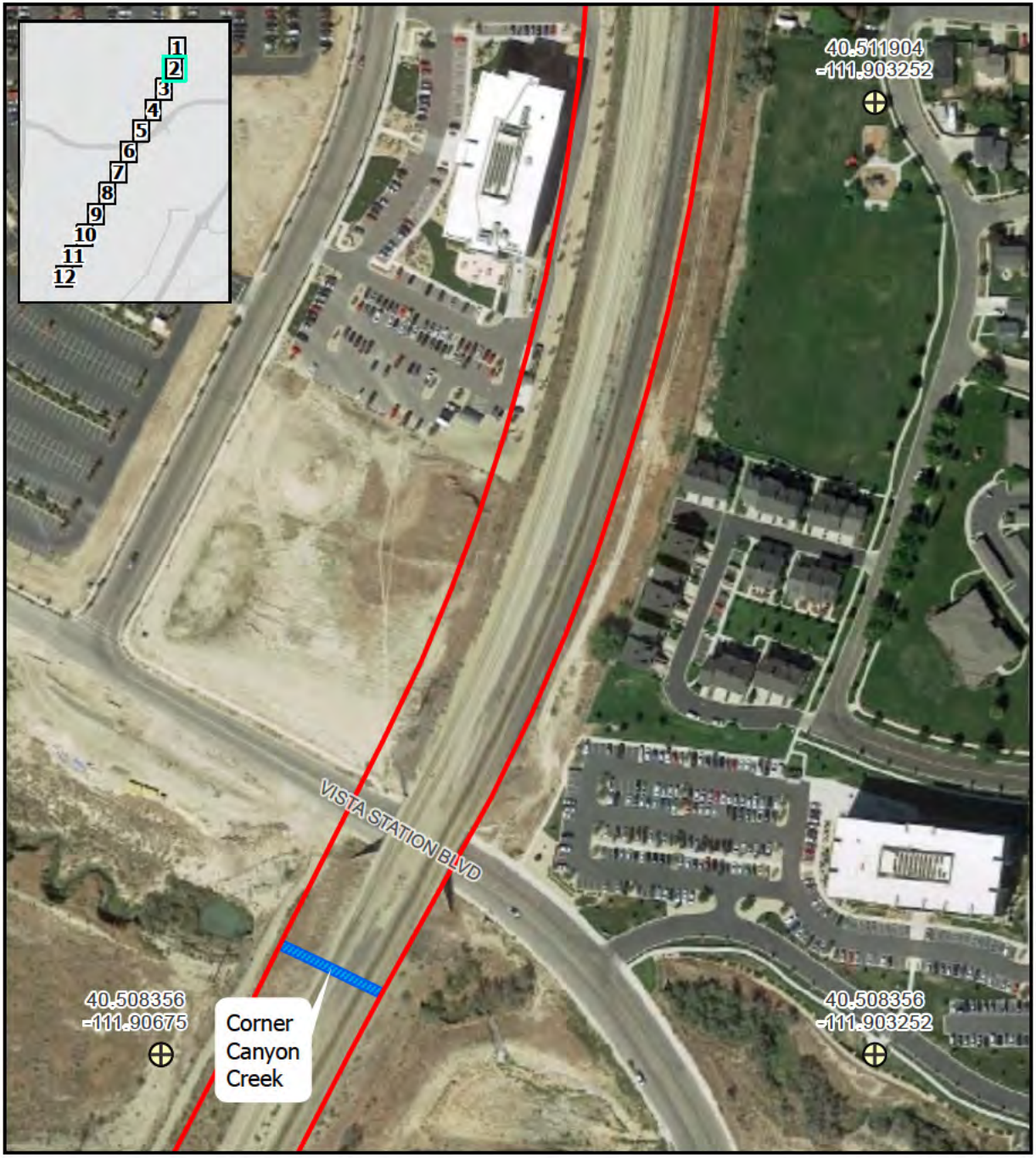
Legend

- Geographic Control Points
- Delineation Survey Area

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

N

0 125 250
Feet



UTA FrontRunner Forward

UDOT Keeping Utah Moving

Legend

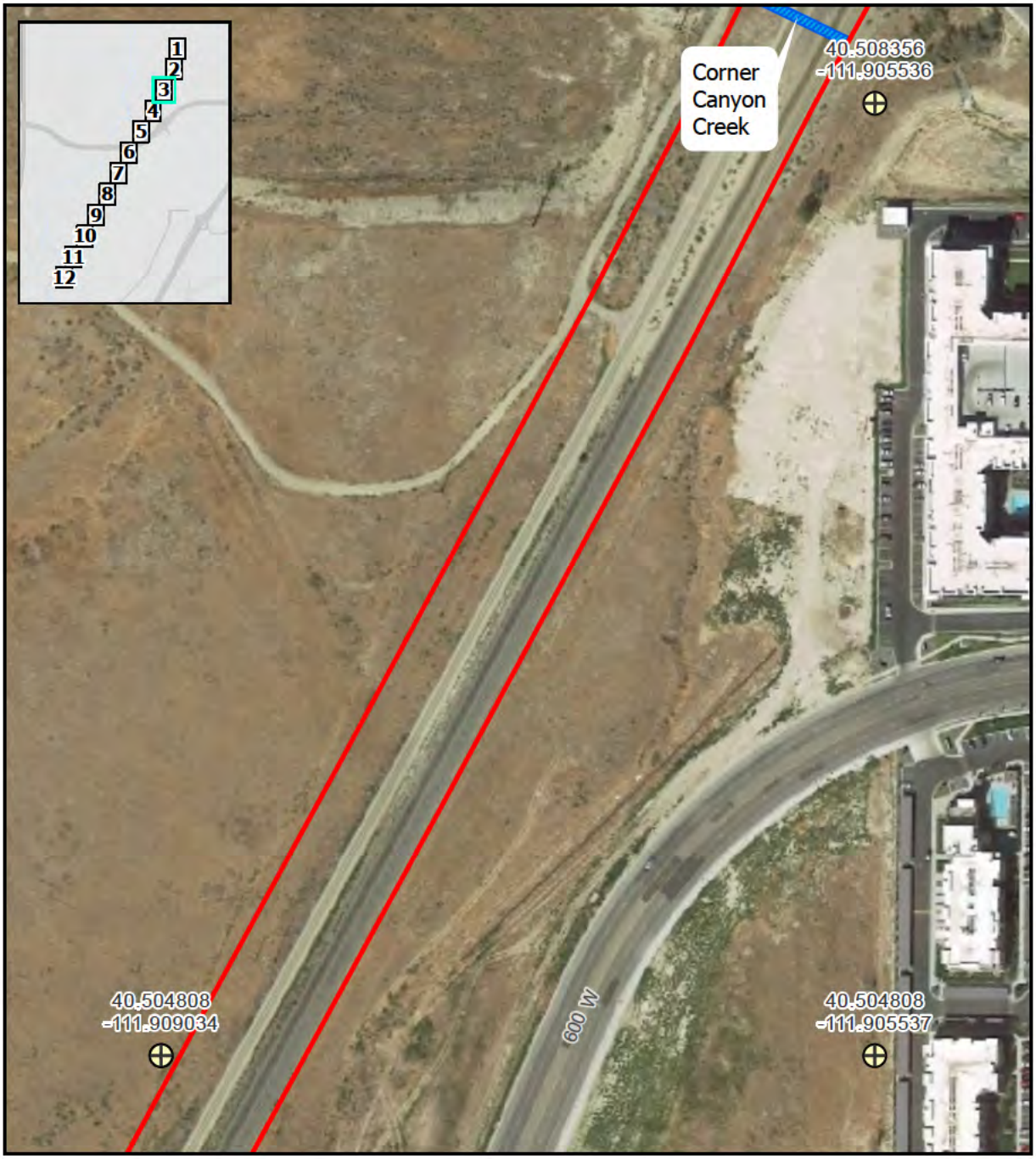
- Geographic Control Points
- Delineation Survey Area
- Culverted Stream Sections

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

N

0 125 250

Feet



UTA FrontRunner Forward

UDOT Keeping Utah Moving

Legend

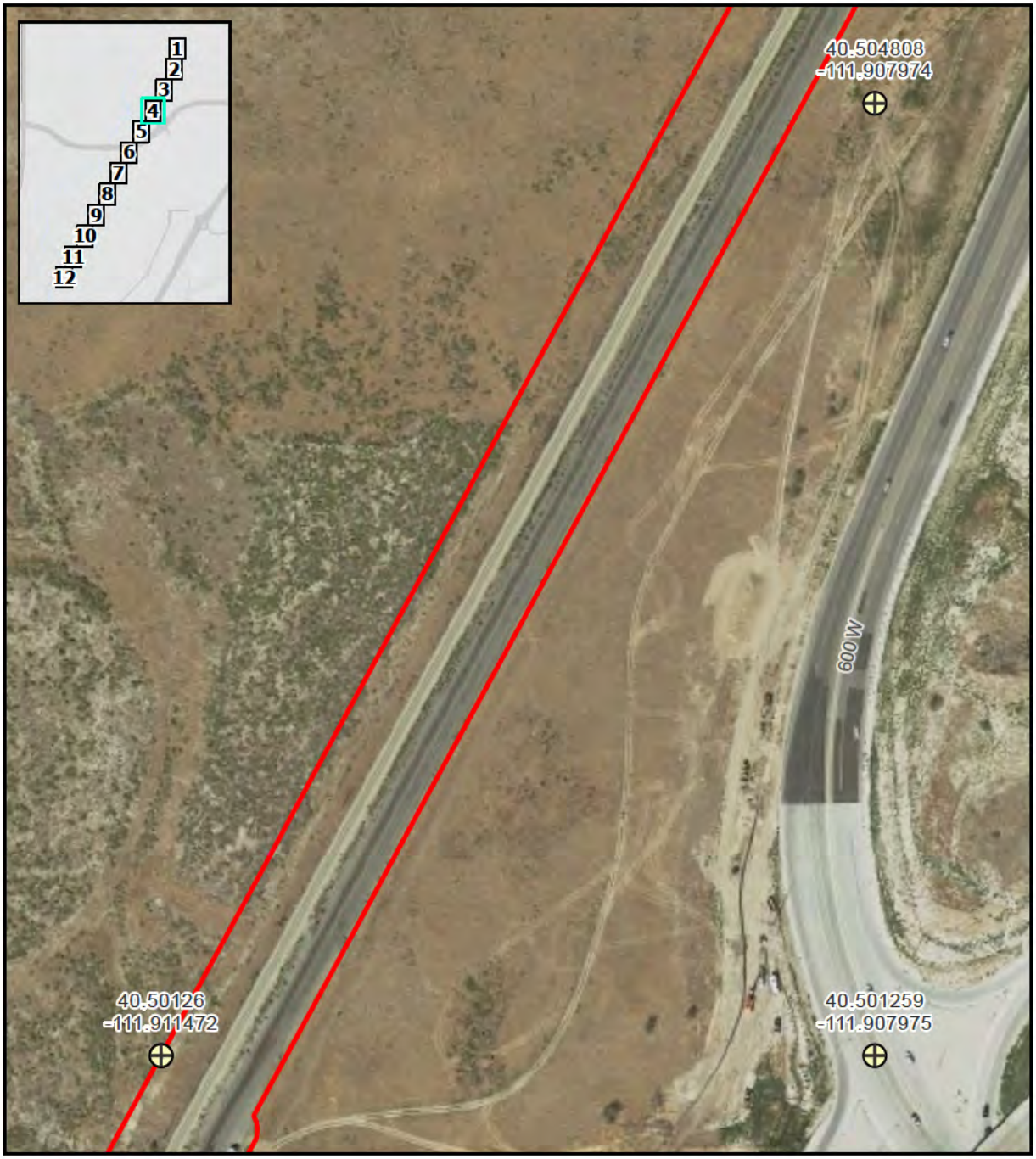
- Geographic Control Points
- Delineation Survey Area
- Culverted Stream Sections

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

N

0 125 250

Feet



UTA FrontRunner Forward

UDOT Keeping Utah Moving

Legend

Geographic Control Points

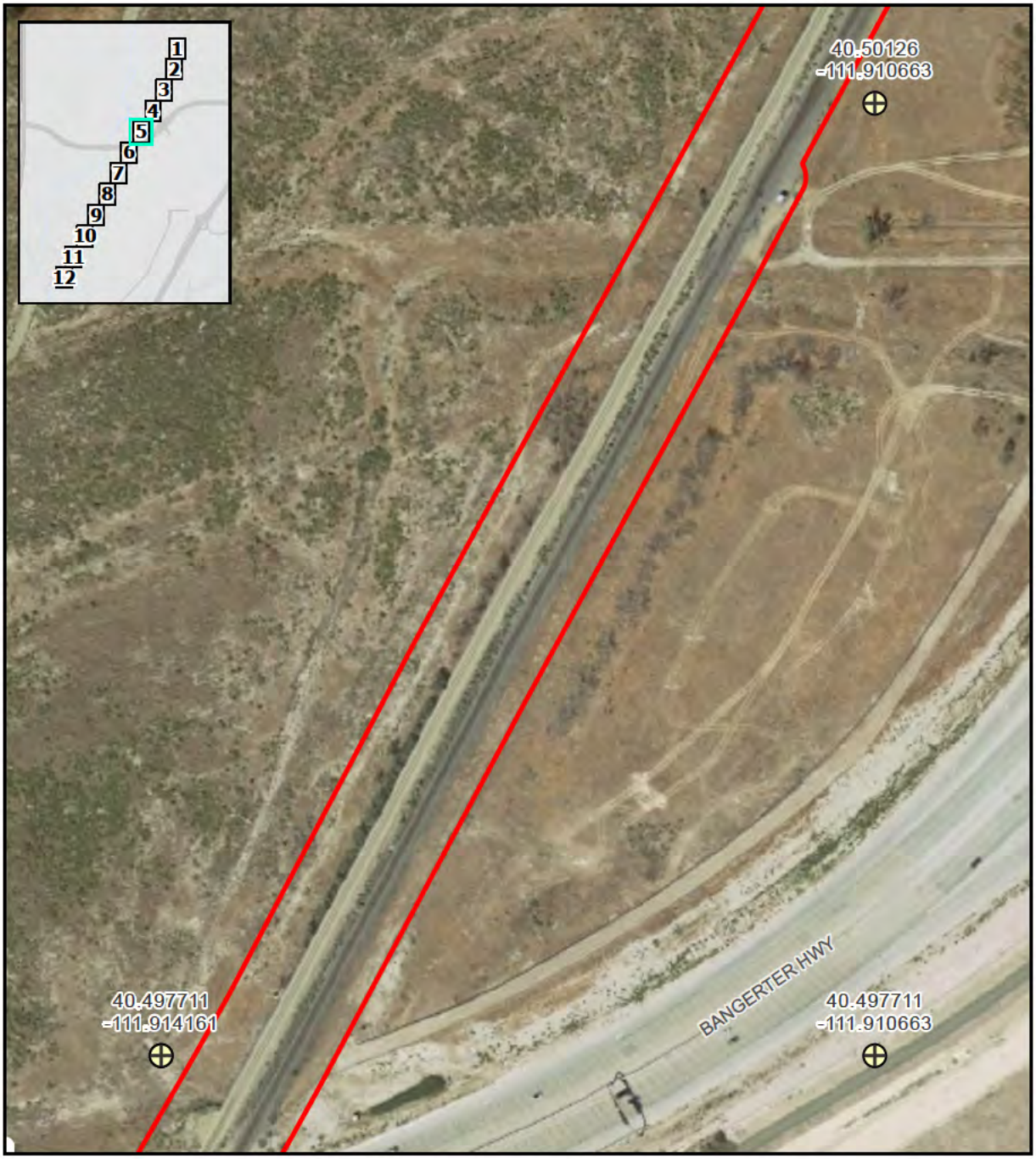
Delineation Survey Area

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

N

0 125 250

Feet



UTA FrontRunner Forward

UDOT Keeping Utah Moving

Legend

Geographic Control Points

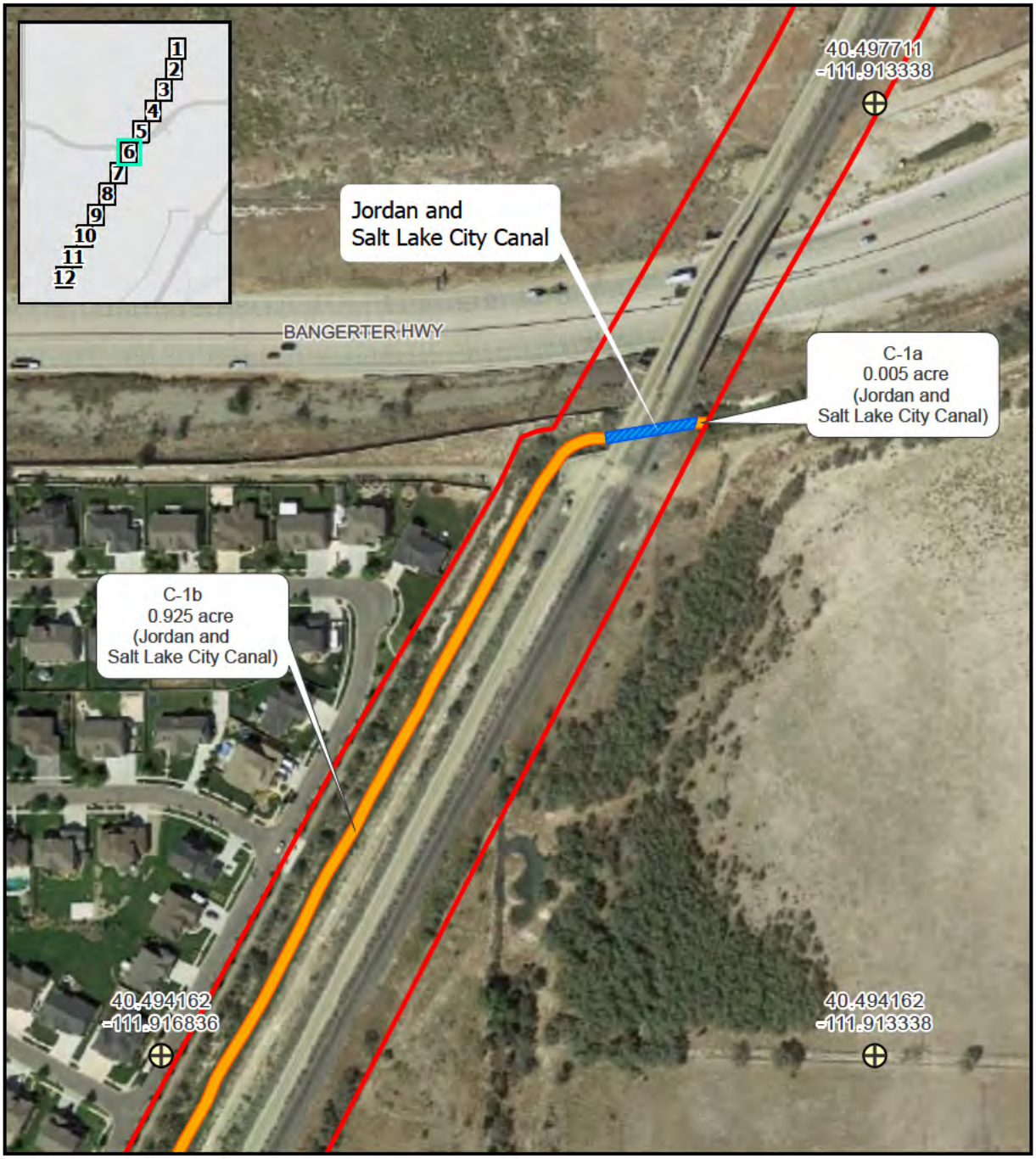
Delineation Survey Area

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

N

0 125 250

Feet



UTA FrontRunner Forward

UDOT Keeping Utah Moving

Legend

- Geographic Control Points
- Delineation Survey Area
- Culverted Stream Sections
- Canal

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

N

0 125 250 Feet

UTA FrontRunner Forward

UDOT Keeping Utah Moving

Legend

- Geographic Control Points
- Delineation Survey Area
- Canal

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

N

0 125 250
Feet

UTA FrontRunner Forward

UDOT Keeping Utah Moving

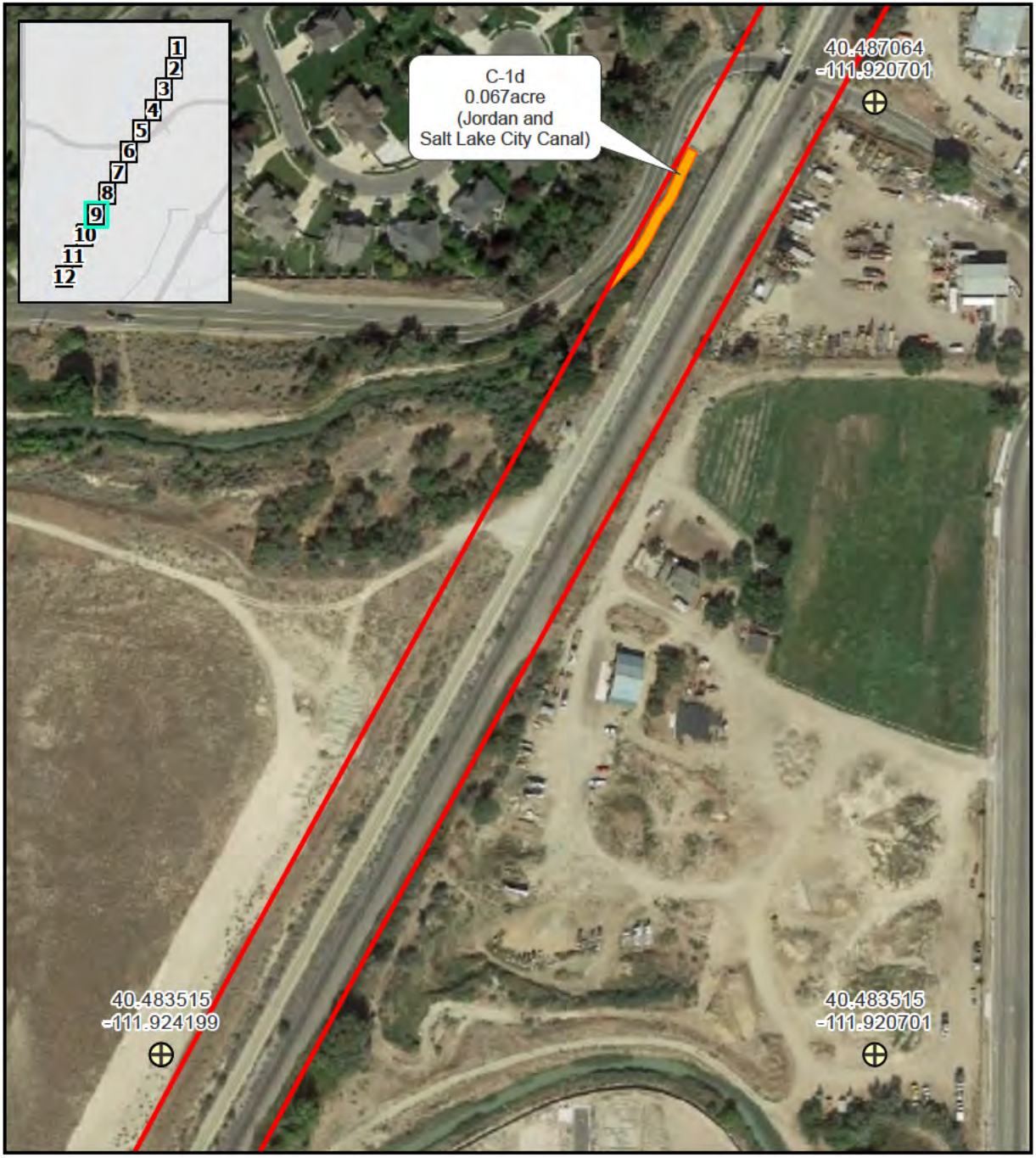
Legend

- Geographic Control Points
- Delineation Survey Area
- Canal
- Ditch

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

N

0 125 250
Feet



UTA FrontRunner Forward

UDOT Keeping Utah Moving

Legend

- Geographic Control Points
- Delineation Survey Area
- Canal

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

N

0 125 250
Feet

UTA FrontRunner Forward

UDOT Keeping Utah Moving

Legend

Geographic Control Points

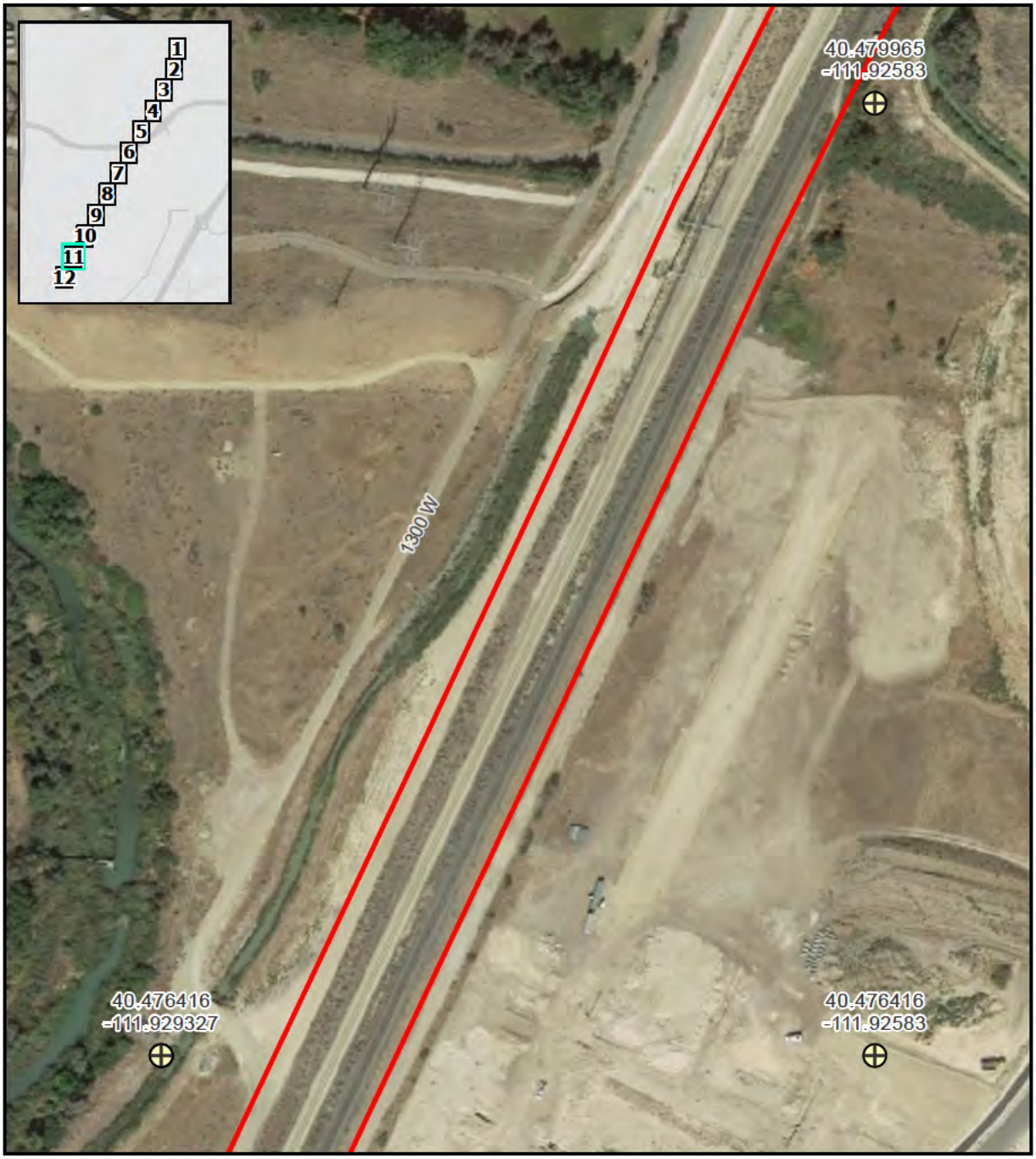
Delineation Survey Area

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

N

0 125 250

Feet



UTA FrontRunner Forward

UDOT Keeping Utah Moving

Legend

Geographic Control Points

Delineation Survey Area

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

N

0 125 250

Feet

UTA FrontRunner Forward

UDOT Keeping Utah Moving

Legend

Geographic Control Points

Delineation Survey Area

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

N

0 125 250

Feet

APPENDIX E

USDA NRCS Soil Map Series

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 Salt Lake Area, Utah

UTA FrontRunner Forward - Draper

September 12, 2022

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.

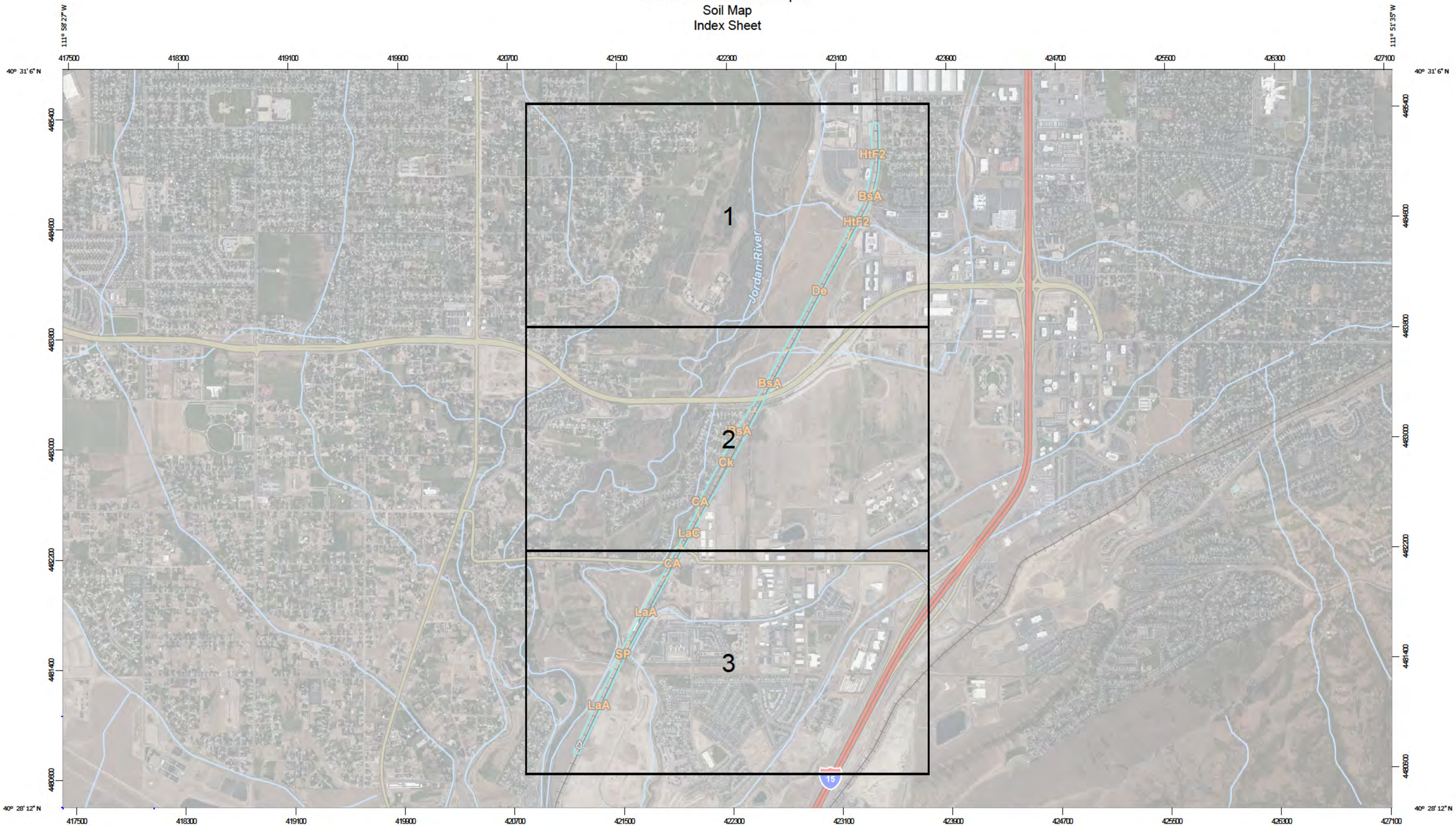
After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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



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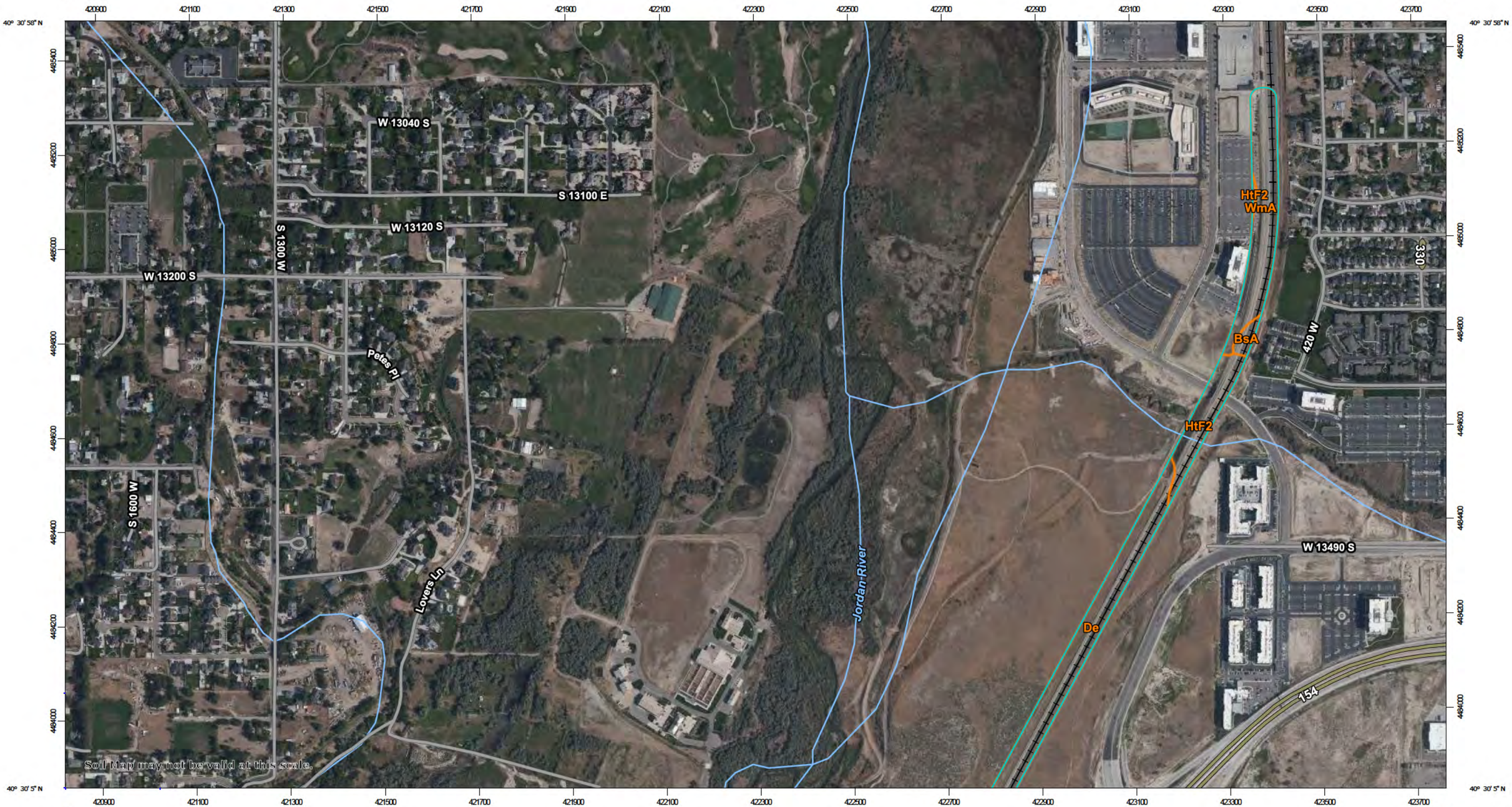
Feet: 0 1000 2000 4000 6000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84



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Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84

Map Sheet Location

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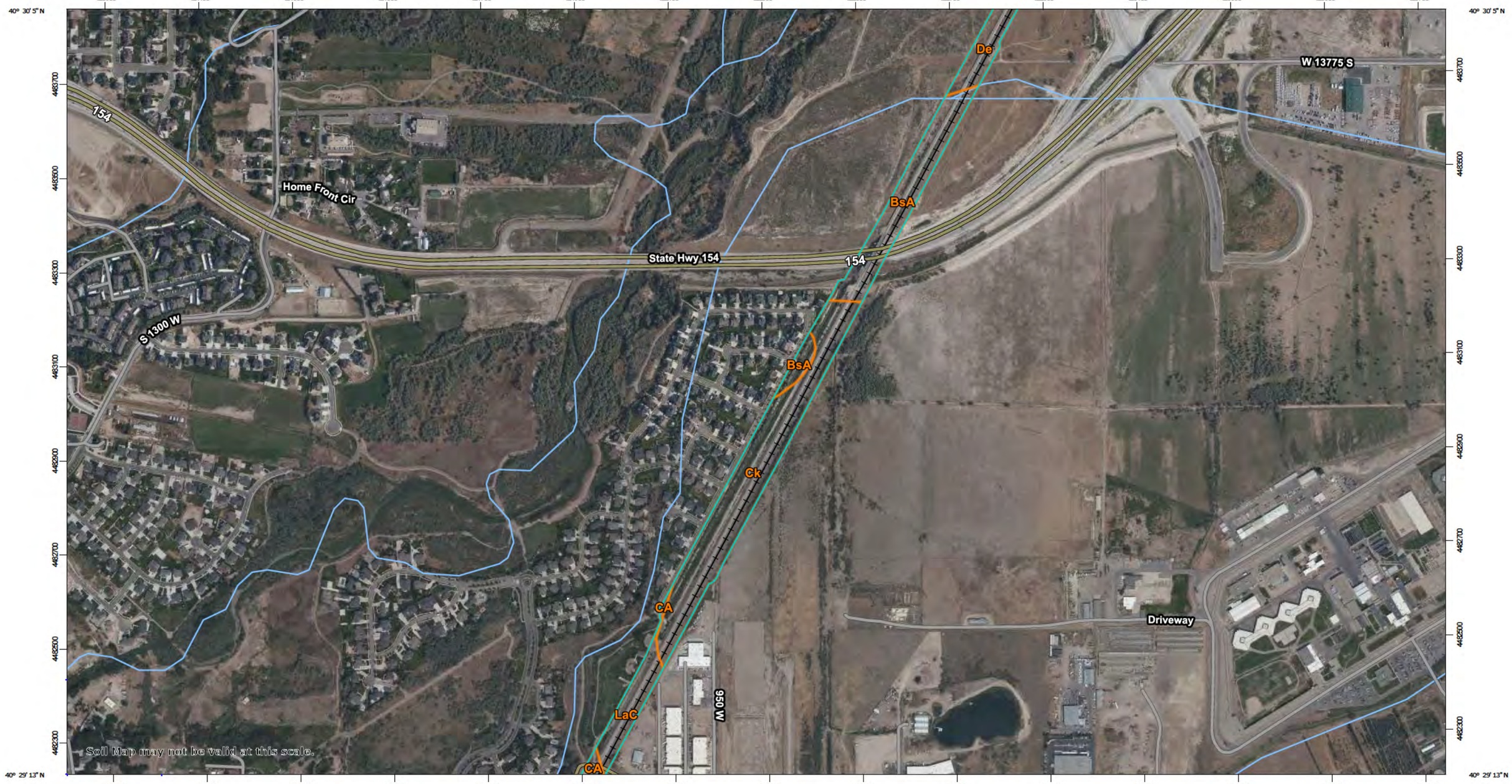

Joins sheet 3

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Feet: 0 350 700 1400 2100

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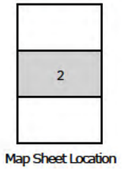
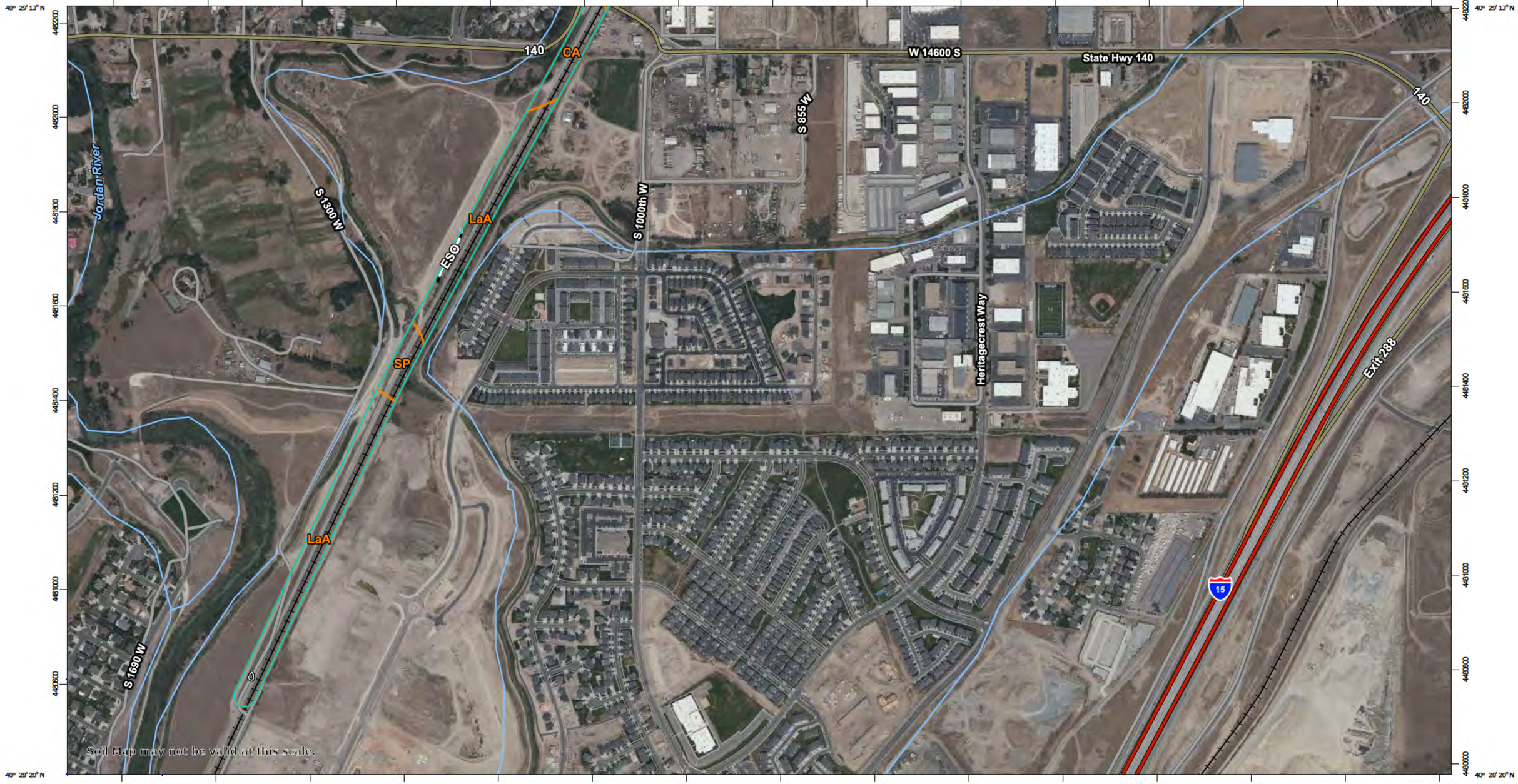


Map Sheet Location

Joins sheet 2



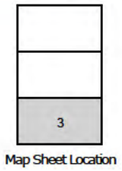
Map Scale: 1:7,920 if printed on B landscape (17" x 11") sheet.

N

Meters
0 100 200 400 600

Feet
0 350 700 1400 2100

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84



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.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

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: Salt Lake Area, Utah
Survey Area Data: Version 14, Sep 7, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 5, 2018—Sep 14, 2018

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
BsA	Bramwell silty clay loam, 0 to 1 percent slopes	8.3	12.7%
CA	Clayey terrace escarpments	3.2	4.9%
Ck	Chipman silty clay loam, saline, sodic, 0 to 1 percent slopes	13.6	20.7%
De	Deckerman fine sandy loam, 0 to 1 percent slopes	10.8	16.5%
HtF2	Hillfield-Taylorsville complex, 6 to 30 percent slopes	3.6	5.5%
LaA	Lakewin sandy loam, 0 to 1 percent slopes	14.4	21.9%
LaC	Lakewin sandy loam, 1 to 6 percent slopes	3.0	4.6%
SP	Stony terrace escarpments	1.7	2.6%
WmA	Welby silt loam, 0 to 1 percent slopes	7.0	10.6%
Totals for Area of Interest		**65.4**	**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.

Salt Lake Area, Utah

BsA—Bramwell silty clay loam, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: j6gv
Elevation: 4,300 to 4,450 feet
Mean annual precipitation: 13 to 15 inches
Mean annual air temperature: 49 to 51 degrees F
Frost-free period: 130 to 150 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Bramwell and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bramwell

Setting

Landform: Lake plains
Landform position (three-dimensional): Rise, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits

Typical profile

A11 - 0 to 2 inches: silty clay loam
A12 - 2 to 8 inches: silty clay loam
C1ca - 8 to 22 inches: silty clay loam
C2ca - 22 to 35 inches: silty clay loam
C3 - 35 to 47 inches: silty clay
C4 - 47 to 72 inches: clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat 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 36 to 48 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water supply, 0 to 60 inches: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): 3w
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: D
Ecological site: R028AY001UT - Alkali Bottom (Alkali Sacaton)
Hydric soil rating: No

Minor Components

Harrisville
Percent of map unit: 5 percent

Welby
Percent of map unit: 5 percent

Bluffdale
Percent of map unit: 5 percent

CA—Clayey terrace escarpments

Map Unit Setting
National map unit symbol: j6gz
Elevation: 4,200 to 5,200 feet
Mean annual precipitation: 14 to 18 inches
Mean annual air temperature: 48 to 56 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition
Clayey terrace escarpments: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Clayey Terrace Escarpments

Setting
Landform: Escarpments on terraces
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits

Interpretive groups
Land capability classification (irrigated): None specified
Ecological site: R028AY334UT - Upland Stony Loam (Wyoming Big Sagebrush)
Hydric soil rating: No

Minor Components

Hillfield
Percent of map unit: 6 percent

Taylorsville
Percent of map unit: 4 percent

Ck—Chipman silty clay loam, saline, sodic, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: j6h1
Elevation: 4,200 to 4,350 feet
Mean annual precipitation: 14 to 18 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 160 to 180 days
Farmland classification: Not prime farmland

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: Flood plains
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Concave
Parent material: Alluvium

Typical profile

A11 - 0 to 6 inches: silty clay loam
A12 - 6 to 16 inches: silty clay loam
C1ca - 16 to 36 inches: silty clay loam
C2ca - 36 to 46 inches: silty clay loam
C3ca - 46 to 51 inches: silty clay loam
C4 - 51 to 59 inches: silty clay

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Poorly drained
Runoff class: Medium
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 36 inches
Frequency of flooding: Rare
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): None specified
Land capability classification (nonirrigated): 7w

Hydrologic Soil Group: D
Ecological site: R028AY001UT - Alkali Bottom (Alkali Sacaton)
Hydric soil rating: No

Minor Components

Sandy alluvial land
Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R028AY022UT - Wet Fresh Streambank
Hydric soil rating: No

Ironton
Percent of map unit: 3 percent

Mixed alluvial land
Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R028AY022UT - Wet Fresh Streambank
Hydric soil rating: Yes

Magna
Percent of map unit: 3 percent
Landform: Flood plains
Landform position (three-dimensional): Dip, talf
Down-slope shape: Linear
Across-slope shape: Concave
Ecological site: R028AY024UT - Wet Saline Meadow (Saltgrass)
Hydric soil rating: Yes

Bramwell, hardpan variant
Percent of map unit: 3 percent

De—Deckerman fine sandy loam, 0 to 1 percent slopes

Map Unit Setting
National map unit symbol: j6hb
Elevation: 4,200 to 4,300 feet
Mean annual precipitation: 14 to 18 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 160 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition
Deckerman and similar soils: 90 percent

Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Deckerman

Setting

Landform: Lake plains, flood plains
Landform position (three-dimensional): Rise, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium and/or lacustrine deposits

Typical profile

A11&A12 - 0 to 6 inches: fine sandy loam
C1 - 6 to 12 inches: loam
C2ca - 12 to 20 inches: loam
C3 - 20 to 35 inches: sandy loam
C4 - 35 to 43 inches: loam
IIC5 - 43 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Somewhat poorly drained
Runoff class: Low
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 24 to 42 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 percent
Maximum salinity: Moderately saline to strongly saline (8.0 to 16.0 mmhos/cm)
Sodium adsorption ratio, maximum: 60.0
Available water supply, 0 to 60 inches: Moderate (about 6.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7w
Hydrologic Soil Group: D
Ecological site: R028AY001UT - Alkali Bottom (Alkali Sacaton)
Hydric soil rating: No

Minor Components

Lasil

Percent of map unit: 5 percent
Ecological site: R028AY001UT - Alkali Bottom (Alkali Sacaton)

Saltair

Percent of map unit: 5 percent
Landform: Lake terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: R028AY132UT - Desert Salty Silt (Iodinebush)
Hydric soil rating: Yes

HtF2—Hillfield-Taylorsville complex, 6 to 30 percent slopes

Map Unit Setting

National map unit symbol: j6j8
Elevation: 4,400 to 4,800 feet
Mean annual precipitation: 14 to 18 inches
Mean annual air temperature: 48 to 52 degrees F
Frost-free period: 160 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition

Hillfield and similar soils: 60 percent
Taylorsville and similar soils: 40 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hillfield

Setting

Landform: Escarpments on terraces
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits

Typical profile

Ap - 0 to 3 inches: loam
A1 - 3 to 10 inches: loam
Ac - 10 to 18 inches: loam
C1ca - 18 to 31 inches: loam
C2ca - 31 to 50 inches: very fine sandy loam
C3 - 50 to 60 inches: sandy loam

Properties and qualities

Slope: 20 to 30 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
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: 30 percent
Maximum salinity: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Sodium adsorption ratio, maximum: 20.0
Available water supply, 0 to 60 inches: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e

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

Description of Taylorsville

Setting
Landform: Escarpments on terraces
Landform position (three-dimensional): Riser
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits

Typical profile
Ap - 0 to 7 inches: silty clay loam
AC - 7 to 17 inches: silty clay loam
C1ca - 17 to 27 inches: silty clay loam
C2ca - 27 to 37 inches: silty clay loam
C3 - 37 to 59 inches: silty clay loam

Properties and qualities
Slope: 6 to 20 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
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: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 30 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): None specified
Land capability classification (nonirrigated): 6e
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

LaA—Lakewin sandy loam, 0 to 1 percent slopes

Map Unit Setting
National map unit symbol: j6jt
Elevation: 4,400 to 4,500 feet

Mean annual precipitation: 13 to 15 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 150 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Lakewin and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lakewin

Setting

Landform: Lake terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits

Typical profile

Ap - 0 to 10 inches: sandy loam
A1 - 10 to 18 inches: gravelly sandy loam
B2 - 18 to 25 inches: very gravelly sandy loam
IIC1ca - 25 to 44 inches: very gravelly loamy coarse sand
IIC2ca - 44 to 64 inches: very gravelly coarse sand

Properties and qualities

Slope: 0 to 1 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: More than 80 inches
Frequency of flooding: None
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: 13.0
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): 3s
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: R028AY306UT - Upland Gravelly Loam (Bonneville Big Sagebrush)
Hydric soil rating: No

Minor Components

Kearns

Percent of map unit: 5 percent

Kidman

Percent of map unit: 5 percent

Deckerman

Percent of map unit: 5 percent

LaC—Lakewin sandy loam, 1 to 6 percent slopes

Map Unit Setting

National map unit symbol: j6jv
Elevation: 4,400 to 4,500 feet
Mean annual precipitation: 13 to 15 inches
Mean annual air temperature: 48 to 50 degrees F
Frost-free period: 150 to 160 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Lakewin and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lakewin

Setting

Landform: Lake terraces, deltas
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits

Typical profile

Ap - 0 to 10 inches: sandy loam
A1 - 10 to 18 inches: gravelly sandy loam
B2 - 18 to 25 inches: very gravelly sandy loam
IIC1ca - 25 to 44 inches: very gravelly loamy coarse sand
IIC2ca - 44 to 64 inches: very gravelly coarse sand

Properties and qualities

Slope: 1 to 6 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: More than 80 inches
Frequency of flooding: None
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: 13.0
Available water supply, 0 to 60 inches: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A

Ecological site: R028AY306UT - Upland Gravelly Loam (Bonneville Big Sagebrush)
Hydric soil rating: No

Minor Components

Bingham
Percent of map unit: 5 percent

Pleasant grove
Percent of map unit: 5 percent

SP—Stony terrace escarpments

Map Unit Setting
National map unit symbol: j6kt
Elevation: 4,200 to 5,200 feet
Mean annual precipitation: 14 to 18 inches
Mean annual air temperature: 49 to 56 degrees F
Frost-free period: 130 to 180 days
Farmland classification: Not prime farmland

Map Unit Composition
Stony terrace escarpments: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Stony Terrace Escarpments

Setting
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear

WmA—Welby silt loam, 0 to 1 percent slopes

Map Unit Setting
National map unit symbol: j6lc
Elevation: 4,200 to 4,400 feet
Mean annual precipitation: 14 to 16 inches
Mean annual air temperature: 49 to 51 degrees F
Frost-free period: 130 to 150 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition
Welby and similar soils: 85 percent

Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Welby

Setting

Landform: Lake terraces
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Lacustrine deposits

Typical profile

Ap - 0 to 8 inches: silt loam
A3 - 8 to 16 inches: silt loam
B2 - 16 to 25 inches: silt loam
C1ca - 25 to 33 inches: loam
C2ca - 33 to 44 inches: silt loam
C3 - 44 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 1 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: 25 percent
Maximum salinity: Slightly saline to moderately saline (4.0 to 8.0 mmhos/cm)
Sodium adsorption ratio, maximum: 13.0
Available water supply, 0 to 60 inches: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): 2c
Land capability classification (nonirrigated): 3c
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

Parleys

Percent of map unit: 3 percent

Kidman

Percent of map unit: 3 percent

Deckerman

Percent of map unit: 3 percent

Taylorsville

Percent of map unit: 3 percent

Hillfield

Percent of map unit: 3 percent

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ATTACHMENT B.14
Threatened and/or Endangered Species

See the Biological Resources Evaluation in Attachment B.15, Natural and Biological Resources

ATTACHMENT B.15
Natural and Biological Resources

FrontRunner Forward

South of Draper Double Track Project

Biological Resources Evaluation

May 2024

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Introduction

The Utah Transit Authority (UTA) in coordination with the Utah Department of Transportation (UDOT) is proposing to lengthen and shift the existing Draper Station area double track segment of its FrontRunner commuter rail system in the cities of Draper and Bluffdale in southern Salt Lake County, Utah, to create a true double track alignment through this area. See the Vicinity Map in Attachment A.1, *Vicinity Map for the South of Draper Double Track Project*.

This report summarizes the existing biological resources that could be affected by the Project.

Project Description and Need for the Project

The Project is located between 0.75 and 1 mile west of Interstate 15 (I-15) in Bluffdale and Draper in the southern portion of Salt Lake County. The Project extends from UTA milepost S 20.5 north to UTA milepost S 17.2, a distance of about 3.3 miles to encompass 2.8 miles of new double track and track tie-in.

The existing double track section at Draper Station is about 1.0 mile long, and its primary use is allowing trains traveling in opposite directions to pass each other. The Project would lengthen the existing double track section by approximately 2.8 miles, moving the southern terminus of the section from the Vista Station Boulevard bridge to 1300 West. North of Bangerter Highway, the anticipated track work consists of constructing a new FrontRunner mainline (ML) track east of the existing mainline track, shifting the existing FrontRunner mainline track where necessary, removing one existing turnout, constructing one new turnout, constructing a new bridge over Bangerter Highway and 14600 South, demolishing an existing retaining wall and constructing new retaining walls on the west side of the corridor on the north and south approaches to the Bangerter Highway bridge as well as in other sections to minimize property impacts and ROW acquisition, extending the Jordan and Salt Lake City Canal culvert under the Bangerter Highway bridge's south approach, modifying an existing private access road at-grade crossing, relocating utilities, and widening the existing trackbed. South of Bangerter Highway, the existing UTA mainline would remain in its current location, and a new track would be constructed west of the existing mainline. Preliminary track design modeling shows that the estimated depth of excavation from the top of the existing ground to the bottom of the proposed subballast or track ditch for proposed trackwork construction ranges from 2 to 5 feet. The estimated depth of excavation for walls, utilities, and the bridge over Bangerter Highway ranges from 3 to 10 feet.

The Project would improve reliability and reduce delays of the FrontRunner service. The Project is one of nine double track projects being proposed as part of long-term improvements under the FrontRunner Forward Program; however, it has independent utility and can be constructed with or without the other projects. Further detail 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)* (May 2023).

Regulatory Setting

Threatened and Endangered Species

The Endangered Species Act (16 United States Code [USC] Sections 1531–1544) provides for the conservation of threatened and endangered species and the ecosystems on which they depend. Section 3 of the Endangered Species Act prohibits the "taking" of any endangered species, and defines "taking" broadly to include actions that are not necessarily intended to cause harm to the species (an "incidental taking").

Section 7 of the Endangered Species Act requires federal agencies to consult with the U.S. Fish and Wildlife Service (USFWS) before taking any action that could affect a federally listed threatened or endangered species or designated critical habitat for an endangered species. In addition, federal agencies must ensure that their actions are not likely to jeopardize the continued existence of any listed species or to destroy or adversely modify any designated critical habitat.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (16 USC Sections 703–712) makes it unlawful to take, import, export, possess, sell, purchase, or barter any migratory bird, with the exception of the taking of game birds during established hunting seasons. The law also applies to feathers, eggs, nests, and products made from migratory birds. Executive Order 13186, *Responsibilities of Federal Agencies to Protect Migratory Birds* (January 10, 2001), directs federal agencies taking actions likely to affect migratory birds to support the implementation of the Migratory Bird Treaty Act by requiring agencies to analyze impacts to migratory birds and species of concern in accordance with the National Environmental Policy Act as appropriate.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC Sections 668–668d) makes it unlawful to take, import, export, sell, purchase, transport, or barter any bald or golden eagle or their parts, products, nests, or eggs. "Take" includes pursuing, shooting, poisoning, wounding, killing, capturing, trapping, collecting, molesting, or disturbing eagles.

Other Special-status Species

Resource and land management agencies, including the Utah Division of Wildlife Resources (UDWR), the U.S. Department of Agriculture Forest Service (USFS), the National Park Service (NPS), and the Bureau of Land Management (BLM), designate sensitive species, identify wildlife habitat areas (such as those for big-game species), and establish conservation agreements. These agencies and USFWS also manage designated lands as wildlife refuges or lands otherwise protected for wildlife. Sensitive species and conservation agreement species typically include species listed under the Endangered Species Act and additional species identified as those that warrant management considerations and actions in order to avoid becoming threatened or endangered.

Candidate Conservation Agreements encourage conservation actions for species that are candidates for listing as threatened or endangered, or that are likely to become candidates. Conservation agreements are designed to remove enough threats to the target species to eliminate the need for protection under the Endangered Species Act.

Methodology

Biological Resources Evaluation Area

The biological resources evaluation area is located on both sides of the UTA FrontRunner tracks south of Draper Station from UTA milepost S 20.5 north to UTA milepost S 17.2, a distance of about 3.3 miles. It covers about 65 acres and extends about 75 feet on each side of the track centerline. Figure 1 provides an overview of the evaluation area. The study area, which ranges in elevation from about 4,410 to 4,430 feet, is part of the Central Basin and Range Ecoregion and includes the Moist Wasatch Front Footslopes subregion (Woods and others 2001). The study area is part of the Jordan hydrologic region in the Jordan River watershed (hydrologic unit code 16020204), and the waters in the area eventually drain to the Great Salt Lake.

In general, the evaluation area consists primarily of uplands, roads, and commercial development adjacent to the UTA right-of-way. The Jordan and Salt Lake City Canal is located in the evaluation area and is lined with common reed (*Phragmites australis*) and Russian olive (*Elaeagnus angustifolia*). Uplands in the evaluation area are dominated by crested wheatgrass (*Agropyron cristatum),* basin big sagebrush (*Artemisia tridentata* ssp. *tridentata)*, and fivehorn smotherweed (*Bassia hyssopifolia*).

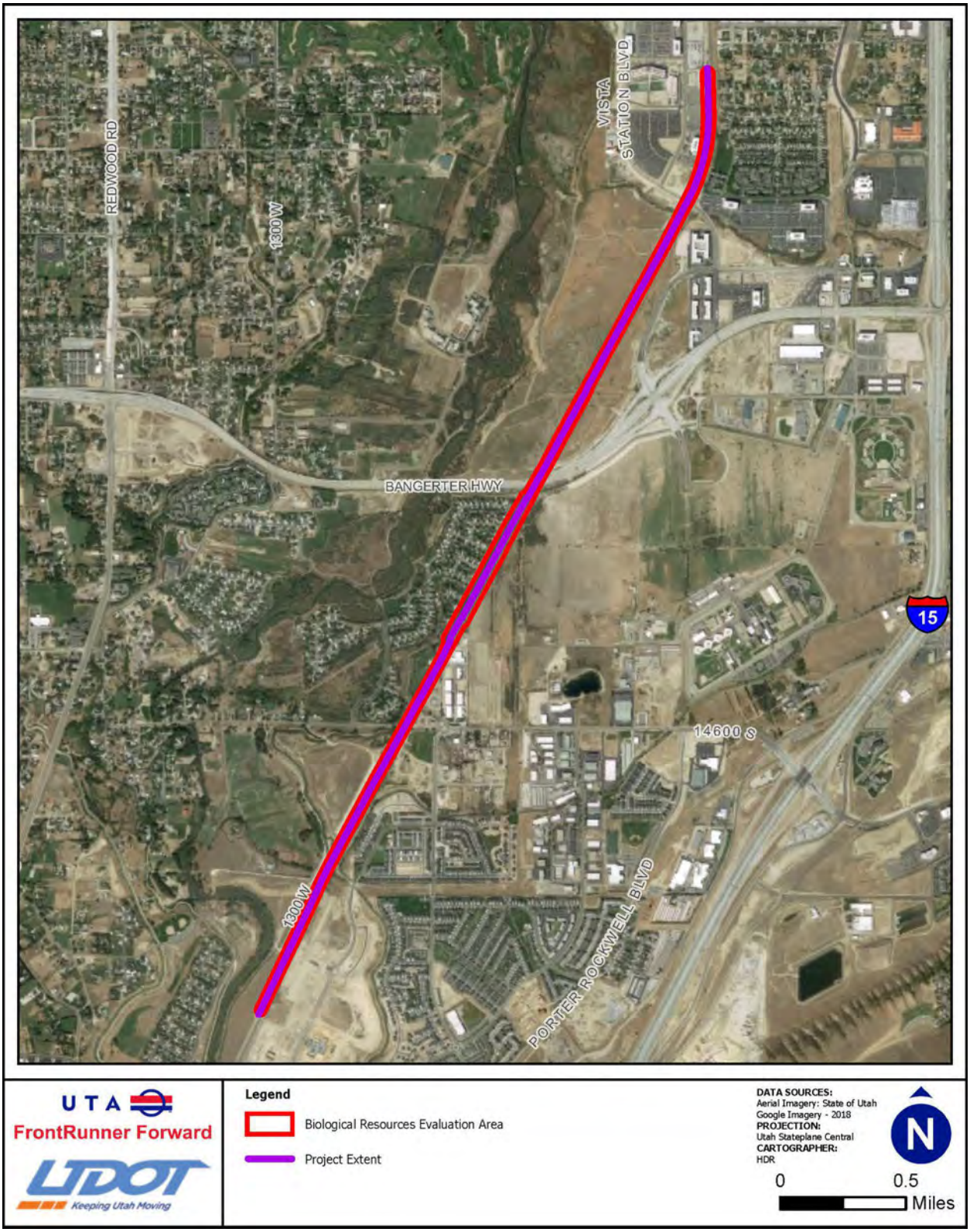
Analyses

The project team used several methods to collect data regarding the biological resources in the biological resources evaluation area. These methods included conducting literature reviews, interpreting aerial photographs, and conducting a reconnaissance-level field study for biological resources on May 22, 2022.

The project team obtained a species list from the USFWS Information, Planning, and Conservation System (IPaC) website for federally threatened, endangered, or candidate species that might occur in the evaluation area and/or might be affected by the Project (USFWS 2022). The project team also consulted the USFWS Environmental Conservation Online System (ECOS) for a list of species under conservation agreement that are known to occur in Salt Lake County. Additionally, the project team obtained a species list from the Utah Natural Heritage Program online data request website to determine whether there are records of for any of the federally listed threatened, endangered, and candidate species or species listed under conservation agreement in the vicinity of the evaluation area (UDWR 2022). Reports from IPaC and the Utah Natural Heritage Program are provided in Appendix A, *Species Lists*.

The Utah Species Field Guide (UDWR, no date), NatureServe (www.natureserve.org), Audubon (Audubon, no date), and Cornell Lab's All About Birds website (Cornell Lab of Ornithology 2019) were referenced for species habitat descriptions.

Figure 1. Biological resources evaluation area



Results

Special-status Plant Species

Threatened, Endangered, and Candidate Species. The IPaC report identified one federally listed plant species, Ute ladies'-tresses (*Spiranthes diluvialis*), that could occur or is known to occur in or near the evaluation area. The evaluation area does not include designated or proposed critical habitat for this species. Table 1 describes the preferred habitat for this species. Potentially suitable habitat does not exist in the evaluation area for this species.

Table 1. Federally listed plant species that are known to occur in or near the biological resources evaluation area and/or that might be affected by the Project

Common Name[a]	Scientific Name	Federal Status	Preferred Habitat[b]	Potentially Suitable Habitat Present?
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.	There is no potentially suitable habitat in the evaluation area.

[a] Sources: Species list from USFWS (2022) and Appendix A, *Species Lists*

[b] Sources: Fertig and others 2005; Utah Native Plant Society, no date

Special-status Wildlife Species

Threatened, Endangered, and Candidate Species. The IPaC report identified one federally listed bird species and one federally listed insect species that could occur or are known to occur in or near the biological resources evaluation area. The evaluation area does not include designated or proposed critical habitat for these species. Table 2 describes the preferred habitat for each species. Potentially suitable habitat does not exist in the evaluation area for either of the species.

Table 2. Federally listed wildlife species that might occur in or near the biological resources evaluation area and/or might be affected by the Project

Common Name[a]	Scientific Name	Federal Status	Preferred Habitat[b]	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 2017).	There is proposed critical habitat for this species, but the evaluation area is outside the critical habitat. There is no potentially suitable habitat in the evaluation area. There are records of individuals within a 1-mile radius of the evaluation area (eBird 2021).
Insects				
Monarch butterfly	*Danaus plexippus*	Candidate	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 where milkweed grows 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 no potentially suitable habitat in the evaluation area. No milkweed plants or other nectar sources were observed during the field survey.

[a] Sources: Species list from USFWS (2022) and Appendix A, *Species Lists*

[b] Sources: Audubon, no date; Cornell Lab of Ornithology 2019; NatureServe, no date; UDWR, no date

Species Listed under Conservation Agreements. The project team consulted the USFWS ECOS for a list of species listed under conservation agreements that are known to occur in Salt Lake County. One amphibian species and two fish species were identified. Table 3 describes the preferred habitat for each species. Potentially suitable habitat exists in the evaluation area for Columbia spotted frogs (*Rana luteiventris*).

Table 3. Species under conservation agreements that are known to occur in Salt Lake County

Common Name[a]	Scientific Name	Preferred Habitat[a]	Potentially Suitable Habitat Present?
Amphibians			
Columbia spotted frog	*Rana luteiventris*	Columbia spotted frogs are highly aquatic and are rarely found far from permanent quiet water. They usually live at the grassy/sedgy margins of streams, lakes, ponds, springs, and marshes and use stream-side small mammal burrows as shelter. Breeding typically occurs in small pools or ponds with little or no current surrounded by dense aquatic vegetation.	Potentially suitable habitat exists in the evaluation area near aquatic resources. There are records of individuals within a ½-mile radius of the evaluation area (UDWR 2022).
Fish			
Bonneville cutthroat trout	*Oncorhynchus clarkii utah*	Habitat for Bonneville cutthroat trout ranges from high-elevation streams with coniferous and deciduous riparian trees, to low-elevation streams in sage-steppe grasslands containing herbaceous riparian zones, to lakes.	There is no suitable habitat in the evaluation area. Additionally, there is no downstream habitat or water withdrawals that would impact downstream habitat.
Least chub	*Iotichthys phlegethontis*	Least chubs are endemic to the Bonneville Basin of Utah. There are only five wild populations, three in the Snake Valley in Utah's West Desert and two in the Sevier River drainage. Least chubs inhabit spring-fed marshes and wetlands.	There is no suitable habitat in the evaluation area. Additionally, there is no downstream habitat or water withdrawals that would impact downstream habitat.

[a] Source: Species list from USFWS ECOS

[b] Sources: NatureServe, no date; UDWR, no date

Migratory Birds. Table 4 lists the migratory bird species included in the IPaC report that could occur in or near the evaluation area. The table also describes the preferred habitat for each species and states whether there is potentially suitable habitat in the evaluation area. There is no suitable habitat in the evaluation area for any of the 16 identified species.

Table 4. Migratory birds known to occur in or near the biological resources evaluation area

Common Name[a]	Scientific Name	Preferred Habitat[b]	Potentially Suitable Habitat Present?
American white pelican	*Pelecanus erythrorhynchos*	Pelican habitat includes rivers, lakes, reservoirs, estuaries, bays, and open marshes. Pelicans prefer to roost and nest on islands and peninsulas associated with freshwater lakes but will also breed on coastal islands. In Utah, pelicans nest on Gunnison Island, but, during spring migration, the breeding season, and fall staging and migration, they can be observed at many reservoirs throughout the state.	There is no suitable breeding or nesting habitat in the evaluation area. There are records of individuals within ½-mile, 1-mile, and 2-mile radii of the evaluation area (eBird 2021).
Bald eagle	*Haliaeetus leucocephalus*	Breeding habitat for bald eagles most commonly includes areas close to coastal areas, bays, rivers, lakes, reservoirs, or other bodies of water that reflect the general availability of primary food sources including fish, waterfowl, or seabirds. Nests usually are in tall trees or on pinnacles or cliffs near water. Winter habitat is commonly associated with open water, though some bald eagles use montane areas if upland food resources such as rabbit or deer carrion are readily available.	There is no suitable breeding or nesting habitat in the evaluation area. There are records of individuals within ½-mile, 1-mile, and 2-mile radii of the evaluation area (eBird 2021).
Bobolink	*Dolichonyx oryzivorus*	Bobolinks breed in open spaces, preferring large fields and meadows with a mixture of grasses and broad-leaved plants. Nests are often placed on the ground well hidden in vegetation. Bobolinks do not breed in most of Utah. They occur in low abundance and in isolated patches primarily in the northern half of the state. Bobolinks' main wintering habitat is in the southern interior of South America.	There is no suitable breeding or nesting habitat in the evaluation area.
Cassin's finch	*Carpodacus cassinii*	Cassin's finches breed in montane conifer forests, especially spruce and fir, and also in pine and Douglas-fir in some areas and sometimes in pinyon-juniper woods. Nests are typically placed in a large conifer tree. They winter at lower elevations throughout much of the same range and into Mexico.	There is no suitable breeding or nesting habitat in the evaluation area. There are records of individuals within ½-mile and 2-mile radii of the evaluation area (eBird 2021).
Evening grosbeak	*Coccothraustes vespertinus*	Evening grosbeaks breed in mature coniferous and mixed forests and nest in trees or large shrubs. Winter habitat includes coniferous and deciduous forest as well as urban and suburban areas.	There is no suitable breeding or nesting habitat in the evaluation area. There are records of individuals within ½-mile, 1-mile, and 2-mile radii of the evaluation area (eBird 2021).

(Continued on next page)

Common Name[a]	Scientific Name	Preferred Habitat[b]	Potentially Suitable Habitat Present?
Franklin's gull	*Leucophaeus pipixcan*	Franklin's gulls breed and nest in freshwater marshes with abundant emergent vegetation and patches of open water. Following breeding, Franklin's gulls will "wander" extensively throughout the prairie regions of the United States before wintering along the west coast of South America and the Gulf Coast of the United States.	There is no suitable breeding or nesting habitat in the evaluation area. There are records of individuals within ½-mile, 1-mile, and 2-mile radii of the evaluation area (eBird 2021).
Lesser yellowlegs	*Tringa flavipes*	Lesser yellowlegs breed in open forest in Alaska and Canada and winter in a variety of wetland habitats from the southern United States to Argentina. They are a common migrant through Utah.	There is no suitable breeding or nesting habitat in the evaluation area.
Lewis's woodpecker	*Melanerpes lewis*	The preferred breeding habitat of Lewis's woodpeckers consists of open, park-like Ponderosa pine forests as well as burned-over Douglas-fir, mixed conifer, pinyon-juniper, and riparian and oak woodlands. They also live in the fringes of pine and juniper stands and deciduous forests, especially riparian cottonwoods. Areas with a good understory of grasses and shrubs to support insect prey populations are preferred. Dead trees or stumps are required for nesting.	There is no suitable breeding or nesting habitat in the evaluation area.
Long-eared owl	*Asio otus*	Long-eared owls are found throughout Utah, especially where woodlands are bordered by open habitats. They roost and nest in deciduous and coniferous woodlands, orchards, parks, and other dense vegetation, and forage in open grasslands or shrublands. Nest sites are usually in a tree, sometimes in a giant cactus or on a cliff ledge, typically in nests abandoned by other birds.	There is no suitable breeding or nesting habitat in the evaluation area. There are records of individuals within ½-mile and 2-mile radii of the evaluation area (eBird 2021).
Olive-sided flycatcher	*Contopus cooperi*	Olive-sided flycatchers breed in various forest and woodland habitats—taiga, subalpine coniferous forest, mixed coniferous-deciduous forest, burned-over forest, spruce or tamarack bogs and other forested wetlands—and along the forested edges of lakes, ponds, and streams. Most nesting sites contain dead standing trees, which are used as singing and feeding perches. Nests are placed most often in conifers.	There is no suitable breeding or nesting habitat in the evaluation area. There are records of individuals within ½-mile, 1-mile, and 2-mile radii of the evaluation area (eBird 2021).
Pinyon jay	*Gymnorhinus cyanocephalus*	Pinyon-juniper forests are the preferred habitat for pinyon jays. Their diet consists primarily of pinyon and other pine seeds, and the timing and location of breeding is tied to pine seed availability. Nests are located in trees, usually conifers, 5 to 30 feet off the ground.	There is no suitable breeding or nesting habitat in the evaluation area.

(*Continued on next page*)

Common Name[a]	Scientific Name	Preferred Habitat[b]	Potentially Suitable Habitat Present?
Rufous humming bird	*Selasphorus rufus*	The typical breeding habitat for rufous hummingbirds includes coniferous forests, second-growth forests, thickets, and brushy hillsides, with foraging extending into adjacent scrubby areas and meadows with abundant nectar flowers. Nest sites are usually well-concealed in the lower part of coniferous trees, deciduous shrubs, or vines.	There is no suitable breeding or nesting habitat in the evaluation area. There are records of individuals within ½-mile, 1-mile, and 2-mile radii of the evaluation area (eBird 2021).
Sage thrasher	*Oreoscoptes montanus*	Sagebrush communities are the preferred breeding habitat for sage thrashers. They require relatively dense ground cover for concealment, but also some bare ground for foraging since they spend a majority of their time on the ground. Nest sites are located in sagebrush or other low shrubs. Sage thrashers use arid or semi-arid open country with scattered bushes, grasslands, and open pinyon-juniper woodlands during migration and wintering.	There is no suitable breeding or nesting habitat in the evaluation area.
Virginia's warbler	*Leiothlypis virginiae*	The preferred breeding habitat for Virginia's warblers is in low, brushy areas on dry mountainsides where an herbaceous or woody understory is well-developed. Lower mountain habitats with dense stands of Gambel oak and a relatively high slope are preferred for breeding, although mountain mahogany woodlands, riparian areas, Ponderosa pine forests, and pinyon-juniper woodlands, all with shrubby understories, are also used for breeding. Breeding occasionally occurs in Douglas-fir and aspen habitats with the required shrubby understory. Nests are often placed under grass tufts on ground covered by dense brush.	There is no suitable breeding or nesting habitat in the evaluation area. There are records of individuals within ½-mile, 1-mile, and 2-mile radii of the evaluation area (eBird 2021).
Western grebe	*Aechmophorus occidentalis*	Western grebes' preferred habitat includes freshwater lakes, reservoirs, and marshes during breeding season. In the winter nesting season, western grebes prefer coastal marine areas with emergent vegetation.	There is no suitable breeding or nesting habitat in the evaluation area. There are records of individuals within 1-mile and 2-mile radii of the evaluation area (eBird 2021).
Willet	*Tringa semipalmata*	Willets prefer marshes, wet meadows, mudflats, beach habitats. Birds nest in salt marshes in eastern North America and along marshy lake margins in western North America. Large expanses grasslands are required for nesting and foraging.	There is no suitable breeding or nesting habitat in the evaluation area. There are records of individuals within a 1-mile radius of the evaluation area (eBird 2021).

[a] Sources: Species list from USFWS (2022) and Appendix A, *Species Lists*

[b] Sources: Audubon, no date; Cornell Lab of Ornithology 2019; NatureServe, no date; UDWR, no date

Conservation Areas

A portion of the Galena–Soónkahni Preserve is located in the biological resources evaluation area. The Galena–Soónkahni Preserve, which is owned and managed by the Utah Division of Forestry, Fire and State Lands, comprises about 250 acres adjacent to the Jordan River between 12300 South and 14600 South in Draper. The preserve includes about 100 acres of riparian and wetland habitat on the east side of the Jordan River and about 150 acres of uplands [redacted]

Summary

The project team identified 3 species listed under conservation agreements and 16 migratory bird species that could occur or are known to occur in the biological resources evaluation area. Of these species, the project team identified potentially suitable habitat for Columbia spotted frogs. The Project would also impact part of the Galena–Soónkahni Preserve.

Columbia Spotted Frogs. Columbia spotted frogs are highly aquatic and require permanent quiet water. They usually live at the grassy/sedgy margins of streams, lakes, ponds, springs, and marshes and use stream-side small mammal burrows as shelter. Breeding typically occurs in small pools or ponds with little or no current surrounded by dense aquatic vegetation. The Jordan and Salt Lake City Canal provides potentially suitable habitat for Columbia spotted frogs. However, this canal is highly degraded—it is surrounded by invasive vegetation species (common reed); commercial, highway, and road development; and railroad tracks. Given the degradation of these resources, the habitat is low-quality and is unlikely to support Columbia spotted frog populations.

Galena–Soónkahni Preserve. The Project would permanently acquire an approximately 0.23-acre strip of land along the southeast corner of the Galena–Soónkahni Preserve just north of Bangerter Highway and immediately adjacent to the existing railroad ROW corridor. This area would be permanently converted to rail ROW. The Project would require an additional 0.39-acre strip of the preserve in this same area for a temporary construction easement (TCE), which would be used during construction only. On the northeast corner of the preserve, the Project would require another 0.03 acre of land for a TCE, about 600 feet south of Vista Station Boulevard, again immediately adjacent to the existing railroad corridor. No wildlife and waterfowl refuge features or resources of the Galena–Soónkahni Preserve have been identified in the areas of permanent or temporary acquisition. Both the permanent and TCE impacts to the preserve would be immediately adjacent to the Union Pacific/UTA rail corridor, and neither the permanent nor temporary conversion of preserve land to transportation use would impact the wildlife and waterfowl features of the preserve. Section 4(f) *de minimis* impacts to the preserve, as well as mitigation to minimize impacts to the preserve during construction, are addressed in Part C: *Environmental Evaluation*, Item 6: *Park and Recreation Resources*, of the Categorical Exclusion worksheet.

Mitigation

Any shrub, tree, or tree limb removal should occur outside a general bird nesting season from April 15 to July 31. If removal must occur during this period, preconstruction nesting surveys of affected trees will be performed by a qualified biologist. If active nests are found, the nests cannot be removed until young have been confirmed to have fledged. If these measures are followed, the Project would not result in direct or incidental take under the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act.

References

Audubon

No date Guide to North American Birds. https://www.audubon.org/bird-guide. Accessed September 10, 2022.

Cornell Lab of Ornithology

2019 All About Birds. Cornell Lab of Ornithology, Ithaca, New York. https://www.allaboutbirds.org. Accessed September 10, 2022.

eBird

2021 eBird: An Online Database of Bird Distribution and Abundance. Cornell Lab of Ornithology, Ithaca, New York. http://www.ebird.org. Accessed September 10, 2022.

NatureServe

No date NatureServe Explorer. http://explorer.natureserve.org. Accessed September 10, 2022.

[UDWR] Utah Division of Wildlife Resources

No date Utah Species Field Guide. https://fieldguide.wildlife.utah.gov. Accessed September 10, 2022.

2022 Utah Natural Heritage Program Online Species Search Report. Report Number 13417. June 13.

[USFWS] United States Fish and Wildlife Service

2017 Guidelines for the Identification and Evaluation of Suitable Habitat for Western Yellow-billed Cuckoo in Utah. https://www.fws.gov/utahfieldoffice/Documents/August%202017%20Guidelines%20for%20the%20identification%20and%20evaluation%20of%20suitable%20habitat%20for%20western%20yellow%20billed%20cuckoo%20in%20Utah.pdf.

2022 List of threatened and endangered species for the Draper Double Track Project. Species list provided by the Utah Ecological Services Field Office. September 10.

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 Study (map scale 1:1,175,000). https://gaftp.epa.gov/EPADataCommons/ORD/Ecoregions/ut/ut_front.pdf.

APPENDIX A

Species Lists

Utah Division of Wildlife Resources
Utah Natural Heritage Program
1594 W. North Temple
PO Box 146301
Salt Lake City, UT 84116

Report Number: 13417
June 13, 2022

Utah Natural Heritage Program Online Species Search Report

Project Information

Project Name
UTA FrontRunner Forward Environmental - Draper Project Area

Project Description
HDR is working on behalf of UTA to assist with preliminary design and environmental services for the UTA FrontRunner Forward project. HDR will prepare 5 separate Categorical Exclusions for each project area. Project will be in accordance with National Environmental Policy Act, U.S. Department of Transportation, and Federal Transit Authority.

Location Description
Salt Lake County

Animals within a ½ mile radius

Common Name	Scientific Name	State Status	U.S. ESA Status	Last Observation Year
Columbia Spotted Frog	Rana luteiventris	SGCN		1968
Green River Pebblesnail	Fluminicola coloradoensis	SGCN		1993
Northern Leopard Frog	Lithobates pipiens	SGCN		1979

Plants within a ½ mile radius

Common Name	Scientific Name	State Status	U.S. ESA Status	Last Observation Year
No Species Found				

Animals within a 2 mile radius

Common Name	Scientific Name	State Status	U.S. ESA Status	Last Observation Year
Coarse Rams-horn	Planorbella binneyi	SGCN		1936
Columbia Spotted Frog	Rana luteiventris	SGCN		1968
Green River Pebblesnail	Fluminicola coloradoensis	SGCN		1993
Northern Leopard Frog	Lithobates pipiens	SGCN		1979
Peregrine Falcon	Falco peregrinus	SGCN		2006

Plants within a 2 mile radius

Common Name	Scientific Name	State Status	U.S. ESA Status	Last Observation Year
No Species Found				

Definitions

State Status

SGCN	Species of greatest conservation need listed in the Utah Wildlife Action Plan

U.S. Endangered Species Act

LE	A taxon that is listed by the U.S. Fish and Wildlife Service as "endangered" with the probability of worldwide extinction
LT	A taxon that is listed by the U.S. Fish and Wildlife Service as "threatened" with becoming endangered
LE;XN	An "endangered" taxon that is considered by the U.S. Fish and Wildlife Service to be "experimental and nonessential" in its designated use areas in Utah
C	A taxon for which the U.S. Fish and Wildlife Service has on file sufficient information on biological vulnerability and threats to justify it being a "candidate" for listing as endangered or threatened
PT/PE	A taxon "proposed" to be listed as "endangered" or "threatened" by the U.S. Fish and Wildlife Service

Disclaimer

The information provided in this report is based on data existing in the Utah Division of Wildlife Resources' central database at the time of the request. It should not be regarded as a final statement on the occurrence of any species on or near the designated site, nor should it be considered a substitute for on-the-ground biological surveys. Moreover, because the Utah Division of Wildlife Resources' central database is continually updated, any given response is only appropriate for its respective request.

The UDWR provides no warranty, nor accepts any liability, occurring from any incorrect, incomplete, or misleading data, or from any incorrect, incomplete, or misleading use of these data.

The results are a query of species tracked by the Utah Natural Heritage Program, which includes all species listed under the U.S. Endangered Species Act and species on the Utah Wildlife Action Plan. Other significant wildlife values might also be present on the designated site. Please contact UDWR's regional habitat manager if you have any questions.

For additional information about species listed under the Endangered Species Act and their Critical Habitats that may be affected by activities in this area or for information about Section 7 consultation under the Endangered Species Act, please visit https://ecos.fws.gov/ipac/ or contact the U.S. Fish and Wildlife Service Utah Ecological Services Field Office at (801) 975-3330 or utahfieldoffice_esa@fws.gov.

Please contact our office at (801) 538-4759 or habitat@utah.gov if you require further assistance.

Your project is located in the following UDWR region(s): Central region

Report generated for:
Joshua McMillin
HDR Engineering, Inc.
2825 E Cottonwood Parkway Suite 200
Salt Lake City, UT 84121
(801) 913-8522
joshua.mcmillin@hdrinc.com

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
https://fws.gov/office/utah-ecological-services

In Reply Refer To: September 10, 2022
Project Code: 2022-0053602
Project Name: UTA FrontRunner Environmental - Draper Project Area

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 ECOS-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 ECOS-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:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.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, intentional or unintentional, 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/birds/policies-and-regulations.php.

The MBTA has no provision for allowing take of migratory birds that may be unintentionally killed or injured by otherwise lawful activities. 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/birds/bird-enthusiasts/threats-to-birds.php.

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/birds/policies-and-regulations/executive-orders/e0-13186.php.

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
- 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: 2022-0053602
Project Name: UTA FrontRunner Environmental - Draper Project Area
Project Type: Railroad - Maintenance/Modification
Project Description: HDR is working on behalf of UTA to assist with preliminary design and environmental services for the UTA FrontRunner Forward project. HDR will prepare 5 separate Categorical Exclusions for each project area. Project will be in accordance with National Environmental Policy Act, U.S. Department of Transportation, and Federal Transit Authority.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@40.4943444,-111.9160820092172,14z

Counties: Salt Lake County, Utah

Endangered Species Act Species

There is a total of 3 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. The location of the critical habitat is not available. Species profile: https://ecos.fws.gov/ecp/species/3911	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

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.

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.

Migratory Birds

Certain birds are protected under the Migratory Bird Treaty Act[1] and the Bald and Golden Eagle Protection Act[2].

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

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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)

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may find in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur off the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, click on the PROBABILITY OF PRESENCE SUMMARY at the top of your list to see when these birds are most likely to be present and breeding in your project area.

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

NAME	BREEDING SEASON
Bobolink *Dolichonyx oryzivorus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 20 to Jul 31
Cassin's Finch *Carpodacus 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
Evening Grosbeak *Coccothraustes vespertinus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 15 to Aug 10
Franklin's Gull *Leucophaeus pipixcan* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.	Breeds May 1 to Jul 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
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
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
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

NAME	BREEDING SEASON
Virginia's Warbler *Vermivora 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.	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 and understand the FAQ "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey effort (see below) can be used to establish a level of confidence in the presence score. One can have higher confidence in the presence score if the corresponding survey effort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

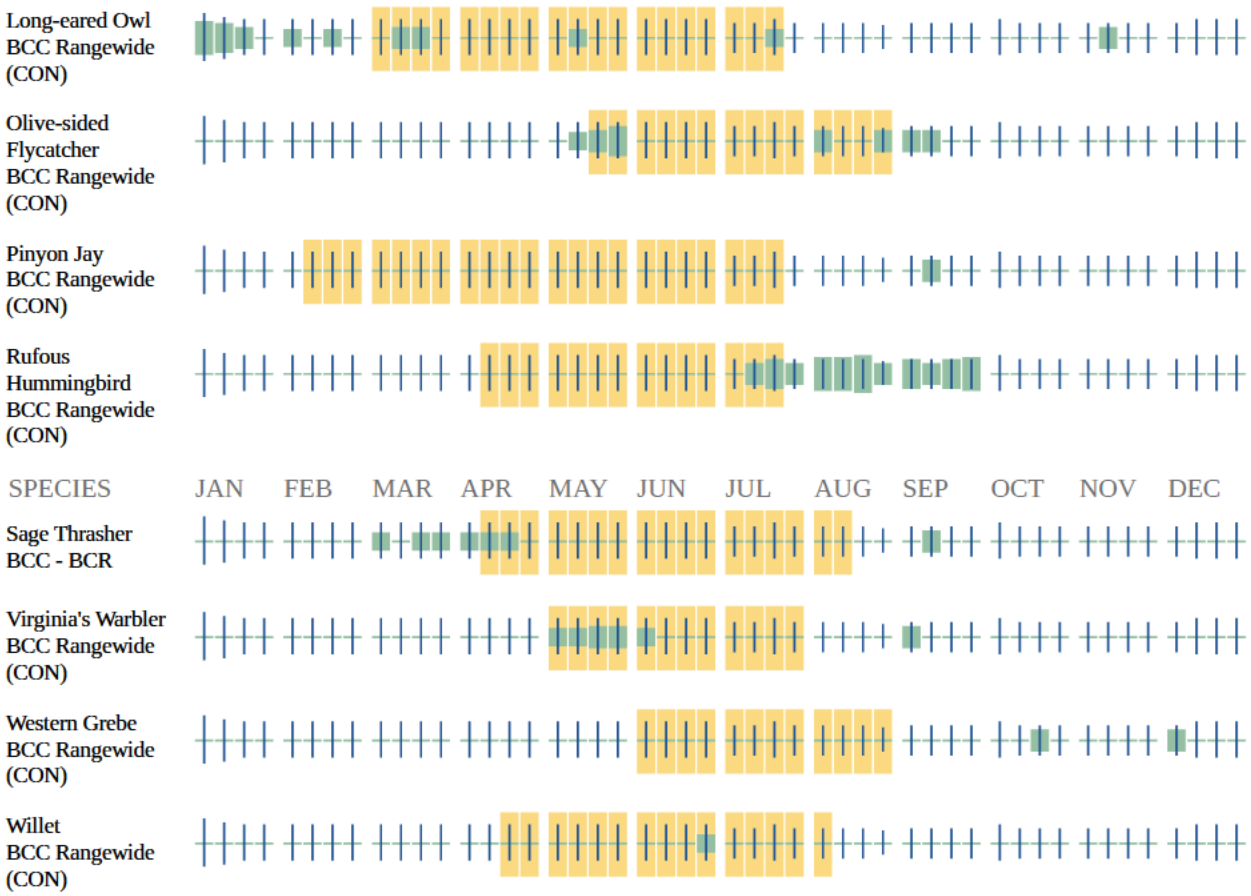
1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

Breeding Season (■)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

No Data (–)
A week is marked as having no data if there were no survey events for that week.

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas off the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.



Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf

Migratory Birds FAQ

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my specified location?
The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and filtered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identified as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to offshore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my specified location?
The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?
To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the profiles provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe specified. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?
Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Pacific Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and

3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in offshore areas from certain types of development or activities (e.g. offshore energy development or longline fishing).

Although it is important to try to avoid and minimize impacts to all birds, efforts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially affected by offshore projects
For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area off the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also offers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results files underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?
If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report
The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my specified location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey effort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey effort is the key component. If the survey effort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey effort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to confirm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be confirmed. To learn more about conservation measures, visit the FAQ "Tell

me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

IPaC User Contact Information

Agency: Utah Department of Transportation
Name: Joshua McMillin
Address: 2825 E Cottonwood Pkwy Suite 200
City: Salt Lake City
State: UT
Zip: 84124
Email joshua.mcmillin@hdrinc.com
Phone: 8015098143