BUREAU OF RECLAMATION

Draft Environmental Assessment for the Fort Laramie Canal Tunnels No. 1 and 2 Rehabilitation Project

United States Department of the Interior
Bureau of Reclamation
Missouri Basin, Wyoming Area Office

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Draft Environmental Assessment for the Fort Laramie Canal Tunnels No. 1 and 2 Rehabilitation Project

Prepared for:
United States Department of the Interior
Bureau of Reclamation
Missouri Basin Wyoming Area Office

Prepared by

HDR Engineering, Inc.

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Cover Photo: View of the Tunnel No. 1 outlet, Winter 2023, Goshen, WY. (HDR).

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1 Introduction

This Draft Environmental Assessment (EA) has been prepared on behalf of the Goshen Irrigation District (GID) (Applicant) and the Gering-Fort Laramie Irrigation District (GFLID) (Applicant) to evaluate and disclose the potential environmental effects of the proposed improvements to the Fort Laramie Canal Tunnels 1 and 2 ("Project" or "Proposed Action"). The federal action evaluated in this Draft EA is to determine if the U.S. Department of Interior - Bureau of Reclamation (Reclamation) approves the rehabilitation of the tunnels as a component of federal funding through the Bureau.

As Reclamation owns the Project, they are the lead federal agency for the Proposed Action. The U.S. Department of the Interior - Bureau of Land Management (BLM) is a cooperating agency for authorization of the Proposed Action since a portion of the Project is situated on BLM lands.

As lead agency, Reclamation has prepared this Draft EA in compliance with the National Environmental Policy Act (NEPA) and the Council on Environmental Quality's (CEQ's) NEPA regulations at 40 Code of Federal Regulations (CFR) Parts 1500–1508 (2022). An Environmental Impact Statement (EIS) will be prepared if potentially significant impacts to environmental resources are identified. A Finding of No Significant Impact (FONSI) will be issued if no significant impacts are identified.

1.1 Project Location and Legal Description

The Project is located in the North Platte River Basin near the Town of Fort Laramie in Goshen County, Wyoming. The Proposed Action involves the rehabilitation of Fort Laramie Canal Tunnels No. 1 and 2. The Project area associated with Tunnel No. 1 is approximately 2.5 miles northwest of Fort Laramie, Wyoming. The Project area associated with Tunnel No. 2 is approximately 1.5 miles to the southeast of Fort Laramie (Figure 1-1). These Project areas are within Sections 17, 20, 26, 35, and 36 of Township 26N, Range 64W. The extent of the areas involved in the Proposed Action and the general locations of the two tunnels are listed in Table 1-1.

The Project areas consist of private lands and also public lands administered by BLM and the State of Wyoming. The Project area includes 80 acres of BLM-managed land, 99 acres of state-managed land, and 176 acres of private land. The National Park Service (NPS) manages land adjacent to the Project area that includes portions of the Fort Laramie National Historic Site. BLM lands within the Proposed Action area are managed by the BLM Casper Field Office (CFO).

Figure 1-1. Project Overview

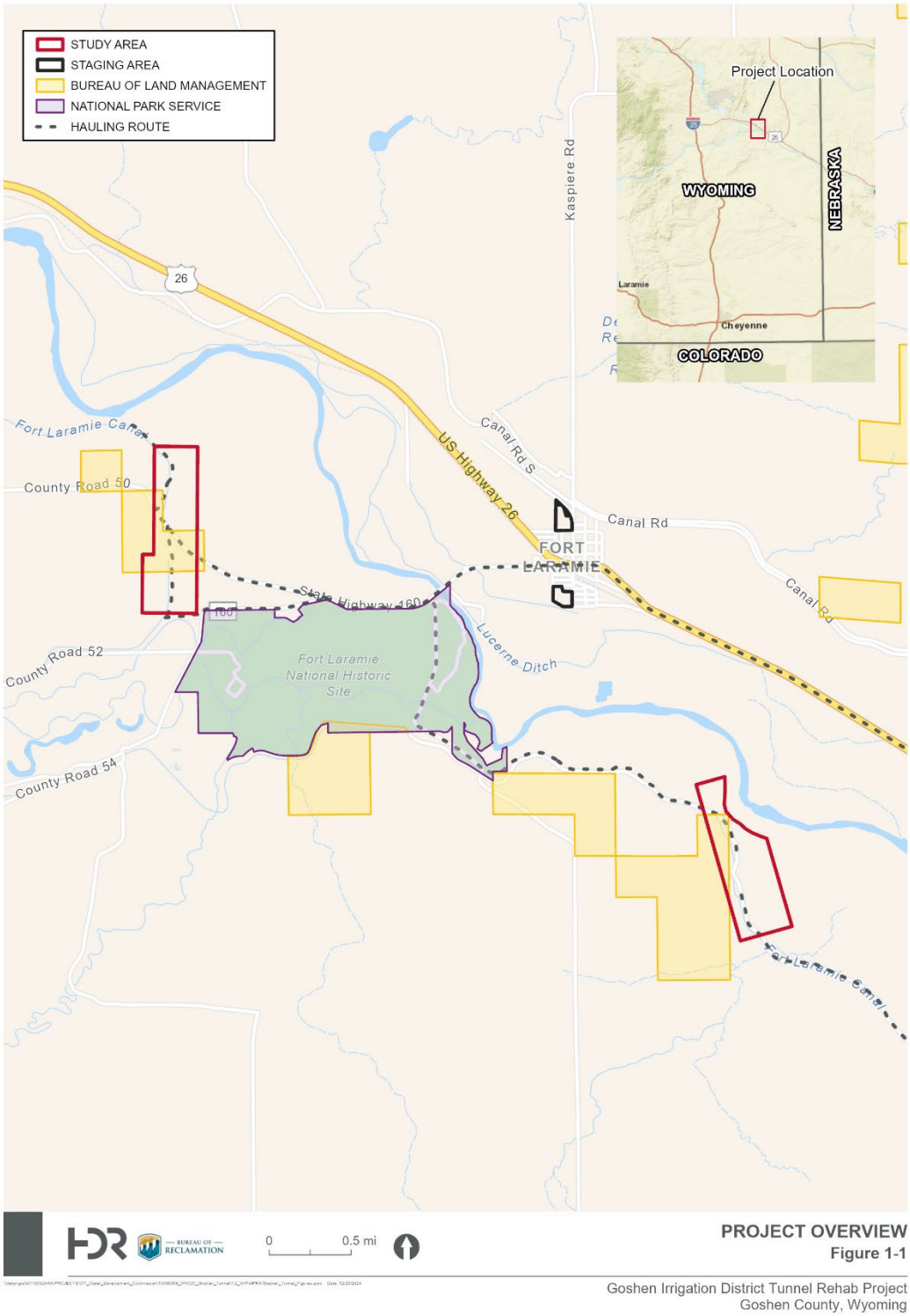


Figure 1-2. Project Access and Ownership Areas

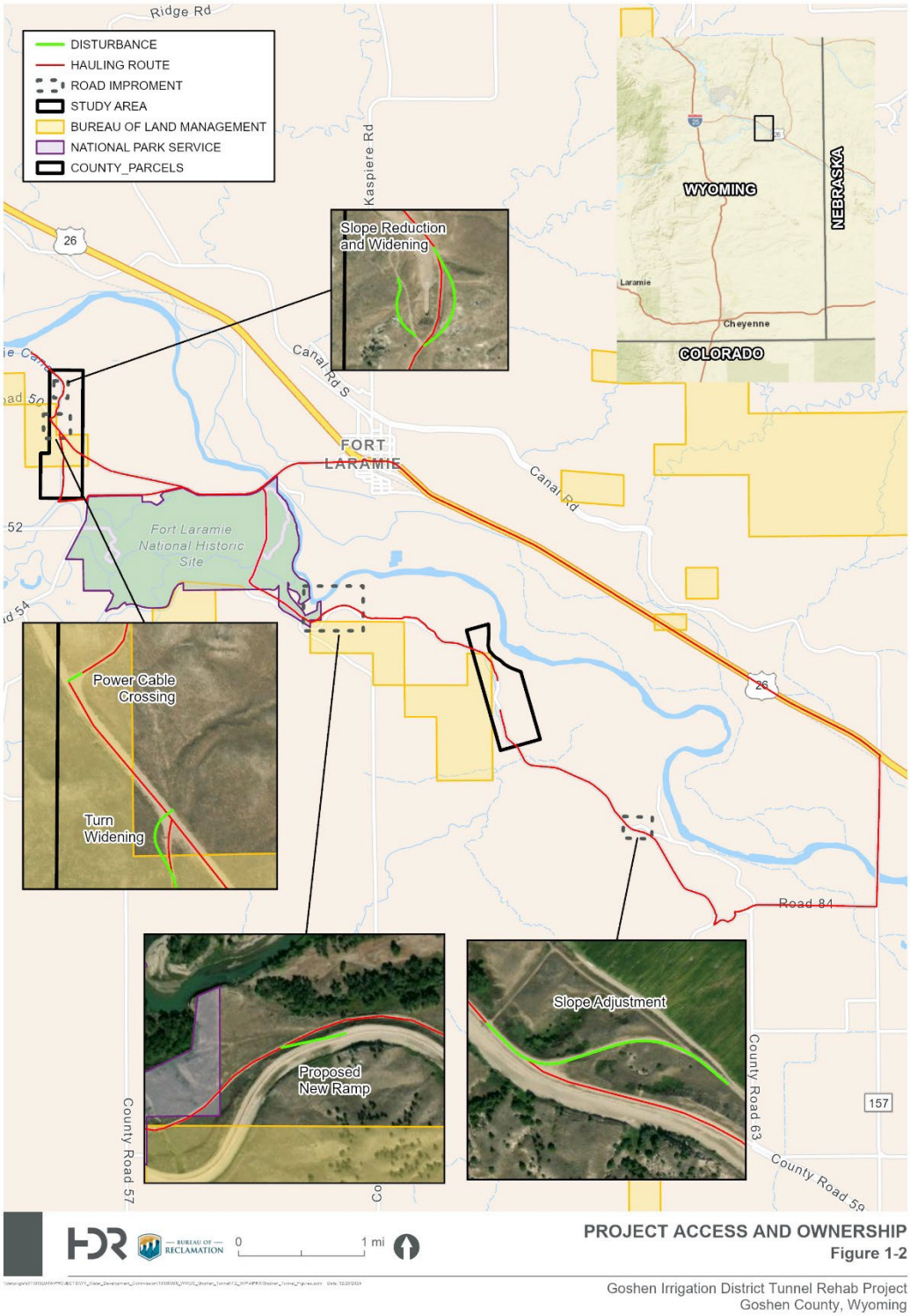


Table 1-1. Project Elements

Project Area	Project Elements	General Physical Location
Tunnel No. 1	The existing Fort Laramie Canal and Fort Laramie Canal Tunnel No. 1 are located in this area. Project elements include the existing Tunnel No. 1 (2,699 ft), concrete tunnel inlet (209 ft), and concrete tunnel outlet (794 ft). Area includes access routes, staging yards, stockpiling areas, temporary powerline and transformer site, and earthwork associated with the reconstruction of the tunnel inlet and outlet. Project areas are located on private and BLM lands.	Located approximately 2.5 miles northwest of Fort Laramie in Goshen County, WY. Inlet—SW ¼ of the SE ¼, Section 17, Township 26N, Range 64W Outlet—SW ¼, NE ¼, Section 20, Township 26N, Range 64W
Tunnel No. 2	The existing Fort Laramie Canal and Fort Laramie Canal Tunnel No. 2 are located within this area. Project elements include the existing Tunnel No. 2 (2,028 ft), concrete tunnel inlet (316 ft), and concrete tunnel outlet (596 ft). Area includes access routes, staging yards, stockpiling sites, temporary powerline and transformer site, and earthwork associated with the reconstruction of the tunnel inlet and outlet. Project area is located on private, BLM, and State of Wyoming lands. Additional overhead power is proposed for the site south of County Road 44E2.	Located approximately 1.5 miles southeast of Fort Laramie in Goshen County, WY. Inlet—NE ¼ of the NE ¼, Section 35, Township 26N, Range 64W Outlet—NW ¼, SW ¼, Section 36, Township 26N, Range 64W
Fort Laramie admin sites	Two parcels within Fort Laramie have been proposed for administrative sites during construction, equipment maintenance, and project staging areas.	Parcel 1: T:26N R:64W S:17 and 20 Parcel 2: T:26N R:64W S:26, 35, and 36

Note: ft = feet; WY = Wyoming; SW = southwest; SE = southeast; N = north; W = west; NE = northeast

1.2 Background

On July 17th, 2019, the ceiling of Tunnel No. 2 collapsed, forming a sinkhole above the midpoint of the tunnel. Following the collapse, the tunnel filled with soil and debris and created a blockage which prevented water from flowing through the tunnel. The debris obstruction inside the tunnel resulted in a breach of the Fort Laramie canal upstream of the tunnel and damaged adjacent property. The breach also destroyed the emergency wasteway upstream of the tunnel as well (HDR, 2022).

Temporary emergency repairs were initiated in late summer of 2019. Initial work included backfilling the sinkhole and emplacement of steel ribs inside the tunnel to reinforce the damaged concrete walls. The stopgap placement of steel ribs caused a loss of water-flow capacity in the canal estimated at 10-15%. Metal sheeting was added to the ribs and improved tunnel capacity (HDR, 2022).

GID is proposing this interstate Project (in Wyoming and Nebraska) with the support of GFLID. The Fort Laramie Canal is a transferred works facility whereby Reclamation owns the facility but the responsibility for operation and maintenance of the 85.3-mile-long canal, as well as 300 miles of laterals and 200 miles of drains located within Wyoming, has been transferred to GID. As a North Platte Project beneficiary, GFLID is responsible for approximately 51 percent of operations and maintenance within Wyoming. By contrast within Nebraska, the Fort Laramie Canal is a reserved works whereby Reclamation owns and also maintains the canal.

A 51/49% cost share exists between GID and GFLID for the operation and maintenance of the canal system. This cost share also applies to potential Bureau funding for the rehabilitation of the two tunnels considered within this EA. Together, the districts have sought funding from a multitude of sources including federal funding through the Reclamation Extraordinary Measures (XM) program, a Congressional budget earmark, NRCS PL-566 program, the FEMA BRIC program, and the Urban Canals Act. Funding has already been secured from the States of Wyoming and Nebraska. It is anticipated that total project funding will consist of a variety of federal programs and other non-federal sources if they become available.

Water for the Fort Laramie Canal is diverted at the Whalen Diversion Dam, part of Reclamation's North Platte Project completed in 1918. Water is obtained from the North Platte River and flows through the Fort Laramie Canal to Tunnel No. 1 located 4.8 canal miles downstream of the Whalen Diversion Dam. Tunnel No. 2 is located approximately 4 miles southeast of Tunnel No. 1 and 13.5 miles downstream of the Whalen Diversion Dam.

1.3 Purpose and Need for the Proposed Action

The purpose of the Proposed Action is to improve water supply reliability for Fort Laramie Canal users by rehabilitating Tunnels No. 1 and 2 along the existing alignments. Reclamation's approval is required to support GID in addressing these deficiencies as Reclamation owns the Fort Laramie Canal and Reclamation may provide federal funding to support the proposed rehabilitation. The Proposed Action would comply with the 1926 agreement between Reclamation and GID (Reclamation's federal nexus) by restoring the full permitted flow capacity through the two tunnels and managing water resources associated with the Fort Laramie Canal. The BLM-connected action would be to grant a new right-of-way (ROW) on BLM lands to comply with the Federal Land Policy and Management Act of 1976 (BLM's federal nexus).

The Proposed Action is necessary as a result of the existing inadequacies of the tunnels, as well as the high risk of infrastructure failure. Originally installed in 1917, Tunnels 1 and 2 are located along the Fort Laramie Canal, which provides water to approximately 107,000 acres of irrigated lands (52,000 acres in Wyoming and 55,000 acres in Nebraska). The risk of the tunnels' failure reduces water supply reliability to the users who rely on the Fort Laramie Canal for agricultural and recreational uses. The system has seen a significant failure when Tunnel 2 collapsed in July of 2019 that resulted in the disruption of the delivery of irrigation water to approximately 107,000 acres of land. Emergency repairs in late summer 2019 restored approximately 95% of the tunnel's capacity (HDR, 2022). Without the proposed rehabilitation of the tunnels there is a high likelihood of an additional failure of one or both tunnels resulting in further disruption to the delivery of irrigation water along Fort Laramie Canal.

1.4 Decision to be Made

Reclamation will decide whether to implement the Proposed Action. As portions of the Proposed Action would occur on BLM land, BLM would decide whether to acknowledge historic prescriptive ROW and whether to grant new ROW on BLM lands to the Applicant to allow implementation of the Proposed Action.

1.5 Scoping, Coordination, and Public Review

Reclamation has coordinated closely with GID and GFLID operators and stakeholders. Design concepts for this Draft EA have been refined based on feedback from, and coordination with, these partners. Stakeholder scoping letters were distributed to the following agencies on November 3, 2023, and are provided in Attachment A.

- Bureau of Reclamation – Wyoming Area Office (Reclamation - WYAO), Mills, WY
- National Park Service (NPS), Santa Fe, NM
- U.S. Department of Agriculture – Natural Resource Conservation Service (USDA – NRCS), Casper, WY
- U.S. Fish and Wildlife Service (USFWS), Cheyenne, WY
- Potentially interested tribal authorities
- Wyoming Game and Fish Department (WGFD), Cheyenne, WY
- Wyoming Department of Environmental Quality (WYDEQ), Cheyenne, WY
- Wyoming Regulatory Office, U.S. Army Corps of Engineers (USACE), Cheyenne, WY
- Wyoming State Engineer's Office (WSEO), Cheyenne, WY
- Wyoming State Historic Preservation Office (WSHPO), Cheyenne, WY
- Wyoming Office of Homeland Security, Cheyenne, WY

In compliance with NEPA, this Draft EA will be available for a 30-day public comment period. Comments received will be evaluated for the Final EA.

Table 1-2. Issues Not Carried Forward for Full Analysis

Resource	Rationale for Elimination from Further Analysis
Farmland Protection	No prime or unique farmland, or farmland of statewide or local importance, was found within the Project area; therefore, no potential exists for the No Action Alternative or the Proposed Action to conflict with the Farmland Protection Policy Act (FPPA).
Greenhouse Gas Emissions & Climate Change	A preliminary evaluation of greenhouse gas (GHG) emissions and climate change were considered early in the NEPA process. During the evaluation of air quality impacts, it was determined that neither GHG emissions nor climate change would likely be impacted by either alternative as emissions would be localized and negligible. CEQ's December 2014 revised draft guidance, for Federal agencies' consideration of GHG emissions within NEPA documents, states that quantification of GHG emissions is not warranted if the project is likely to cause a change in GHG emissions of less than 25,000 metric tons per year. The main project components that may impact GHG emissions and climate change would be a digger shield for excavation, plus additional construction equipment, and vehicular transport of up to 40 workers per day to the site from Fort Laramie. With the use of a fully electric digger shield and shuttles to transport workers, the total emissions for this project would be well below the CEQ threshold for quantitative analysis and would have a negligible contribution to climate change. Therefore, the resources were dismissed from further consideration.
Wilderness, Wild and Scenic Rivers, and National Parks Resources	No wild and scenic rivers, lands with wilderness characteristics, wilderness study areas, national parks, or other ecologically critical areas exist within the Project area. Although the Project area for Tunnel No. 1 is close to the boundary of the Fort Laramie National Historic Site, there are no anticipated impacts to the site. Therefore, neither the No Action Alternative nor the Proposed Action Alternative would affect these resources.

2 Proposed Action and Alternatives

This Draft EA analyzes two alternatives, a No Action Alternative and a Proposed Action Alternative. No other alternatives were identified for analysis. Alternatives that were screened, but not carried forward for further analysis, are detailed below.

2.1 Alternatives Considered but Not Carried Forward

Alternatives for the Project were considered during the rehabilitation options analysis. This analysis process began with a workshop held in December 2021 and concluded with the submittal of the *Fort Laramie Canal Tunnel 1 and 2 Rehabilitation Report* (Rehabilitation Report; HDR 2022) in August 2022. A summary of these alternatives is included in Table 2-1. Only alternatives denoted with an asterisk (*) were carried forward for full analysis. Alternatives not carried forward were expected to have a high impact on cultural or biological resources or were considered economically prohibitive. Additional details on the alternatives, not carried forward for full analysis, are provided in the Rehabilitation Report (HDR 2022).

Table 2-1. Alternatives Considered

Category	Alternative	Description
Removal	Open Cut	Excavation and removal of existing tunnels with installation of concrete lined channels
	Cut and Cover	Excavation and installation of new reinforced concrete tunnel system
Rehabilitation	Excavation and Replacement*	Excavate existing tunnel lining with a digger shield and replace with segmented concrete lining.
	SEM: On-Alignment	Tunnel replacement along existing alignment
	SEM: New Alignment	Tunnel replacement along new alignment
Repair	Structural Renewal – Steel Liner	Structural steel lining
	Structural Renewal – CFRP	Carbon fiber reinforced polymer (CFRP) lining

* Proposed Action

2.2 No Action Alternative

The No Action Alternative would include no further construction or management actions. This alternative is analyzed for the purpose of disclosing the potential effects of the Proposed Action on the landscape and is required to be included in a NEPA analysis. The No Action Alternative would not meet the purpose and need of the Project.

Under the No Action Alternative, operation of both irrigation tunnels would remain the same as with current conditions. Current conditions limit the efficiency and carrying capacity of the canal according to GID estimates. Implementation of the Project would not be completed and the rehabilitation of both Tunnel No. 1 and Tunnel 2 would not be addressed.

2.3 Proposed Action

The Proposed Action Alternative would allow for the rehabilitation of approximately 6,642 feet of irrigation tunneling along the Fort Laramie Canal. Improvements would be made during the

reconstruction phase of the Project to extend the service life of both tunnels. The Proposed Action Alternative would include approval from Reclamation in order to complete the Project, as well as access to BLM-managed land and an additional ROW within the Project area to complete construction activities. The Proposed Action was developed and vetted through Reclamation processes which included value planning and value engineering workshops, and also design, estimating, and constructability workshops.

2.3.1 Project Overview

The activities funded by the Proposed Action would include rehabilitation of Tunnels No. 1 and 2 on existing alignment. In total, the Project area includes approximately 355 acres (188 acres at Tunnel No. 1 and 167 acres at Tunnel No. 2). Additional administrative, maintenance, and staging areas would potentially be located in the Town of Fort Laramie, WY. Major phases of the Proposed Action would include construction access and staffing, site preparation, portal structure modification, tunnel demolition, tunnel reconstruction, and reclamation at both tunnel sites. Each phase of the Proposed Action is described in detail in the following sections. Site plans for each of the two tunnels are provided in Figure 2-4 and Figure 2-5. These site plans detail all proposed phases of tunnel construction; phases are scheduled to occur in succession.

The USACE has issued an agricultural exemption for waters within the tunnel and adjacent wetlands (Appendix E).

2.3.2 Construction Access & Staffing

Access roads would be needed to facilitate construction and regular inspection, operation, and maintenance of the two canal tunnels. Construction access would occur primarily from existing canal access roads, which are located off Tank Farm Road/County Road 50 at Tunnel No. 1 and County Road 15, as well as County Road 84/Highway 63 at Tunnel No. 2. Existing private driveways and public roads may also be utilized to access these locations. Except where described below, access within the Project area by construction vehicles and crew shuttles would be from existing roads.

Under the Proposed Action, portions of the canal road are anticipated to require upgrading to facilitate adequate heavy equipment transport to and from the work zones. As noted in Figure 1-1, this would require straightening curves and tight corners to allow for adequate vehicle space to safely maneuver. A spur road from County Road 53, connecting the canal road which parallels the length of the irrigation canal, would be constructed to facilitate improved access to Tunnel No. 1. This road would be removed and rehabilitated following completion of repairs at Tunnel No. 1. Additionally, it is proposed that the intersection of County Road 90 and the canal road be upgraded to facilitate the movement of large construction vehicles to include the transport of the digger shield equipment.

The site would be accessed from the main Project parking area proposed within Fort Laramie, as depicted on Figure 1-1. The contractor would use shuttles to reduce traffic volume within the local transportation network. Crew vans or other shuttle vehicles are anticipated to facilitate crew changes and other daily movement of personnel to and from the work sites.

Finally, concrete access ramps from the canal road into the canal would be constructed to allow equipment ingress and egress of the canal. It is anticipated that these ramps would be removed after rehabilitation activities for each tunnel are completed.

2.3.3 Staging Yards & Maintenance

Potential temporary construction staging yards (or laydown yards) were originally identified for short-term storage of construction equipment and materials for the Proposed Action. Following onboarding of the construction manager at risk (CMAR), additional locations for staging, laydown, and maintenance of equipment were identified. The proposed staging yards range from approximately 1 acre to 25 acres in size. Proposed staging yards are located on private, state lands, and on lands owned by the Town of Fort Laramie, Wyoming. As depicted in Figure 2-1 and Figure 2-2, the parcels owned by the Town of Fort Laramie are proposed as the primary staging, laydown, and maintenance sites. A power study is currently underway to determine the ability of the electrical grid to support the needs of the contractor on the site. Negotiations with the Town of Fort Laramie are underway related to use of the site for the purposes noted above. If the site meets power needs and is approved for use by the Town of Fort Laramie, the staging yards would be revegetated and reclaimed, as needed, after the Proposed Action is complete.

As currently proposed, a temporary 80-foot by 120-foot temporary structure would be built in the Town of Fort Laramie on the parcel indicated in Figure 2-1 to serve as the primary maintenance site throughout the Project duration. Additionally, the use of connex boxes is proposed to perform routine maintenance at each portal.

Figure 2-1. Proposed Facilities for Town of Fort Laramie

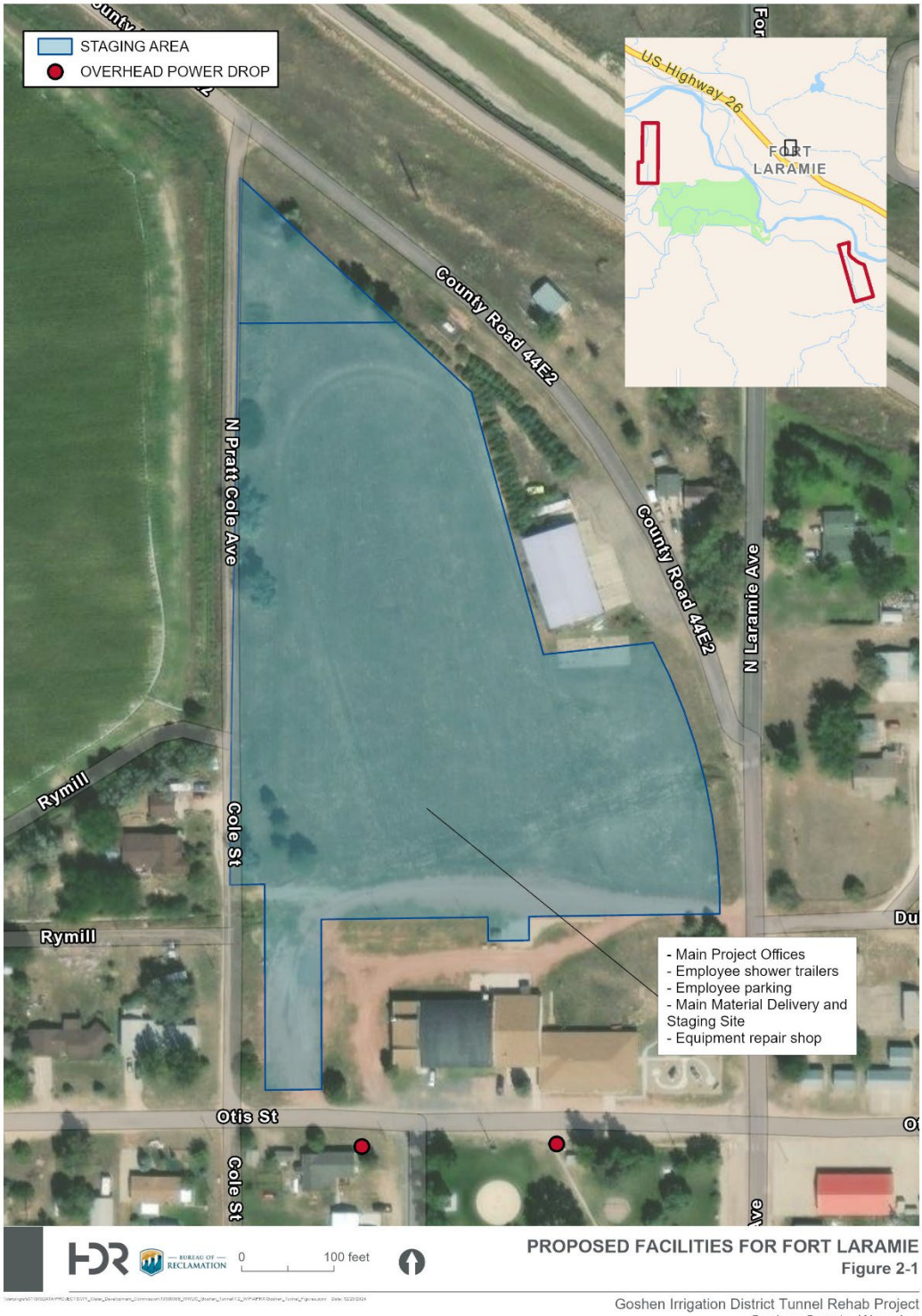


Figure 2-2. Proposed Facilities for Fort Laramie

Figure 2-3. Proposed Activities, Tunnel No. 1

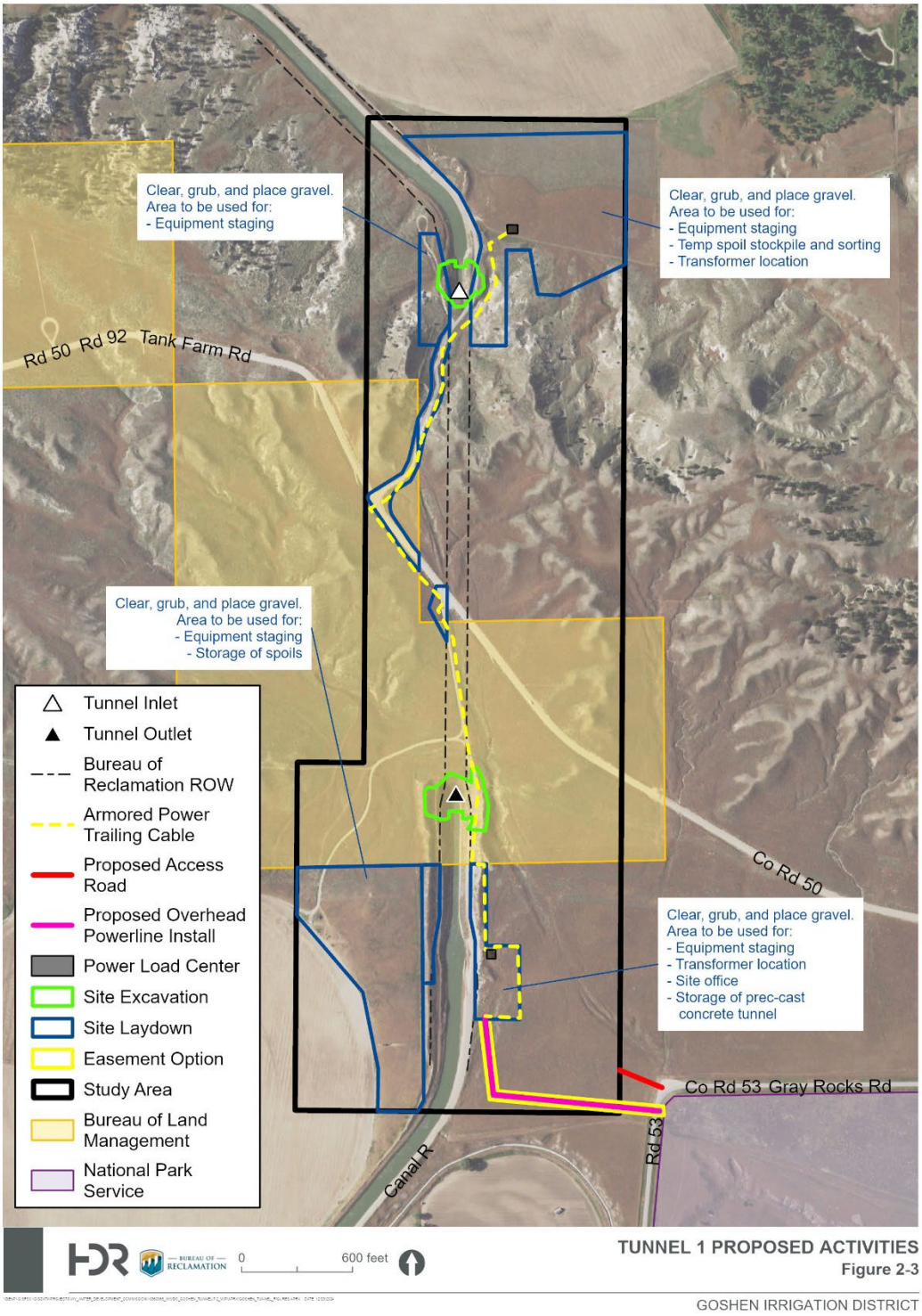
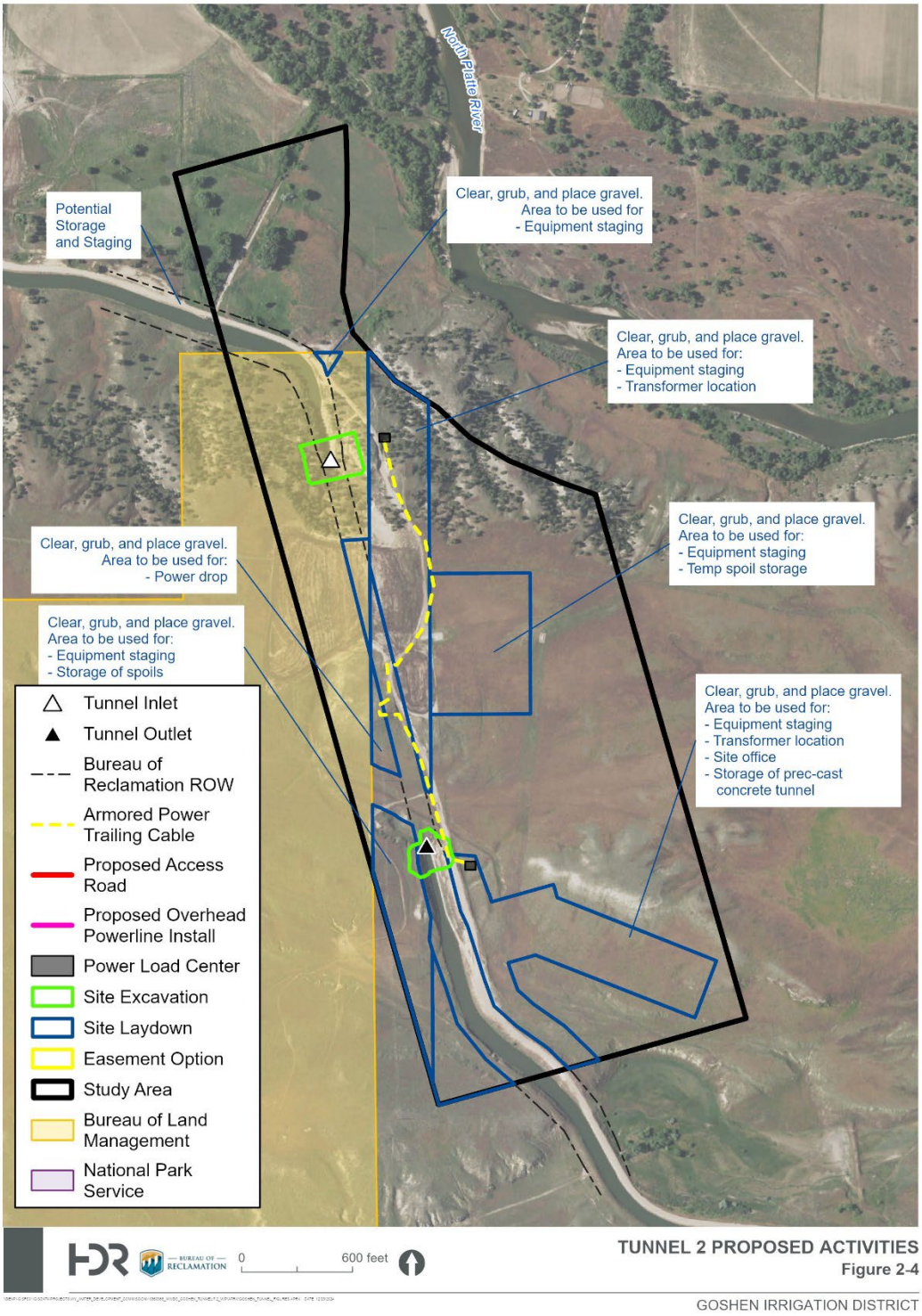


Figure 2-4. Proposed Activities, Tunnel No. 2



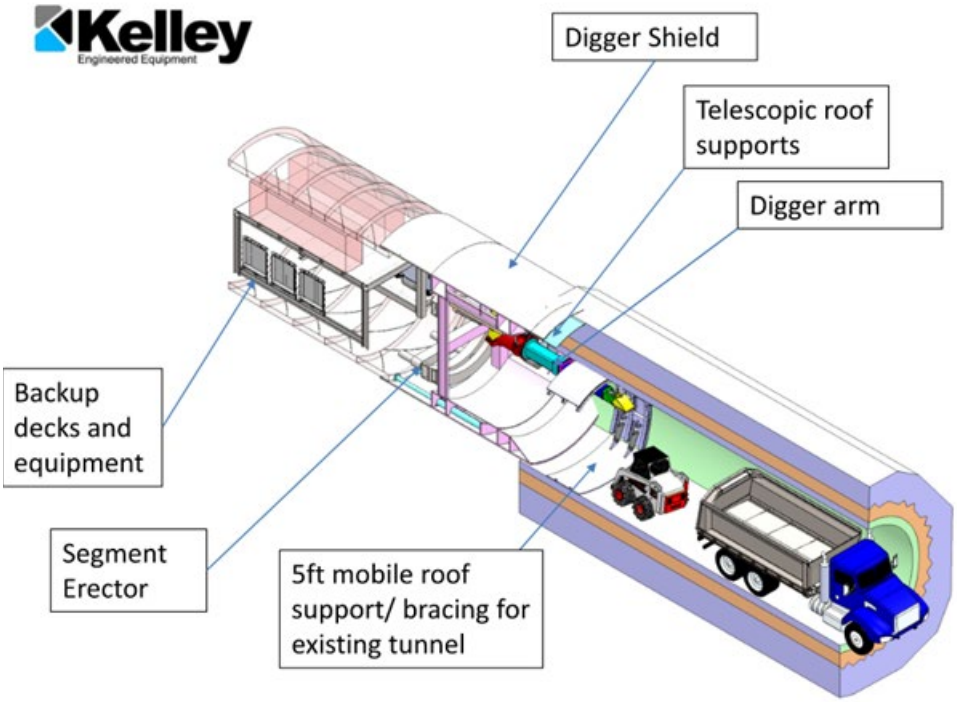
2.3.4 Rehabilitation of Existing Tunnels

Tunnel rehabilitation would include the demolition of the two existing tunnels, removal of spoil materials following demolition, and reconstruction of the tunnels on alignment. Project limits for this process include both above and below ground disturbance. Temporary areas of disturbance are also identified in Figure 2-3 and Figure 2-4; use of these areas may be required during construction phases of the Project. Use of access roads, staging, and stockpiling areas would be temporary during construction activities.

The inlet and outlet of each tunnel would be demolished and reconstructed. It is anticipated that earthwork as depicted in Figures 2-3 and 2-4 will be necessary for the removal and reconstruction of the inlet and outlet portals. This work may be sequenced to begin prior to work within the tunnels.

Tunnel replacement would rely on the use of a partial-face shielded tunnel excavation machine (digger shield) to excavate the existing tunnel lining and install the replacement segmented, precast, concrete linings. The digger shield excavates the tunnel in front of the shield while simultaneously providing below-ground support for the tunnel walls. Once forward excavation is complete, the digger shield advances and allows the precast concrete liners to be placed in the newly excavated tunnel. Spoils from the excavation process would be deposited in one of the designated spoil/laydown areas identified near the tunnel undergoing excavation.

Figure 2-5. Conceptual of Digger Shield



This figure is for illustrative purposes only. Actual digger shield may differ from what is shown above. The above figure was provided by Kelly Engineering Equipment as part of a proposal request.

It is anticipated that Tunnel No. 2 will be rehabilitated from late fall of 2025 to early spring of 2026 and would be followed by the rehabilitation of Tunnel No. 1 in late fall of 2026 to early spring of 2027.

This construction schedule would allow for avoiding peak water flow season through the canal during the irrigation season. The duration of on-site activities is expected to be approximately 9 months for each tunnel; however, permanent access roads within the area would remain accessible following construction to allow for future maintenance or monitoring of the tunnels.

Excavation of the two existing tunnels would produce large volumes of spoils that would require stockpiling. It is anticipated that the concrete liner and soils within the tunnel would be removed by the digger shield as it advances through the tunnels. Concrete and soils removed from within the tunnels would be deposited in temporary spoil piles to be located in one or more of the laydown/staging areas depicted on Figure 2-3. Spoils would remain stockpiled until the Project proponents decide on a final disposition for the materials.

It is anticipated that the final disposition of the spoils would be permanent stockpiling of the materials along the banks of the Fort Laramie Canal - within the Reclamation Canal Act ROW.

For each of the above actions, it is presumed that the spoils would not contain hazardous waste. Samples of the existing concrete liner were sent to a certified laboratory to test for asbestos; the results came back negative (HDR 2024).

A list of anticipated construction equipment is provided in Appendix D.

2.3.5 Reclamation

Appropriate erosion control measures would be implemented during construction. Construction stormwater plans and measures which meet local, state, and federal guidelines and intents would be developed and implemented during construction and revegetation activities. Disturbance would be minimized to the extent possible at each location. Construction mats and other compliance measures would minimize the temporary footprint and limit the need for reclamation. Additionally, proactive measures would be taken to prevent the introduction and/or spread of noxious weeds within the ROW. Construction equipment would be reasonably free of soil, seeds, vegetative matter, or other debris that could contain noxious weed seeds.

Following construction, measures would be taken to reclaim disturbed areas. Soil disturbance would primarily occur due to excavations for tunnel rehabilitation work and staging yards. Disturbed surfaces would be returned to pre-existing conditions through recontouring, reshaping, and reseeding, where possible. A BLM-approved upland seed mix would be used to revegetate and broadcast along the tunnel construction areas, staging yards, and access roads in disturbed areas on BLM lands. A county-approved seed mix would be utilized for all other disturbed areas. Full reclamation is anticipated in two to three seasons after Project completion. If there is snow cover at the time of Project completion, revegetation measures would be initiated as soon as practicable. If required, monitoring specifications would be included as part of permit conditions and area reclamation would need to meet permit closeout requirements as stipulated by the responsible agency.

Best management practices (BMPs) would be implemented during the various stages of construction. BMPs to control erosion and sediment transport from initial site activities would be installed prior to earth-disturbing activities. Permanent or temporary soil erosion control measures for slopes, channels, ditches, disturbed land areas, and soil stockpiles would be implemented as soon as practicable after final grading or after the final earth disturbance has been completed. When it is

not possible to permanently stabilize a disturbed area after an earth disturbance has been completed, or when significant earth disturbance activity temporarily ceases, temporary erosion control measures would be implemented as soon as practicable. All temporary measures, including fencing, would be removed post-construction.

2.3.6 Schedule

Construction would occur during the irrigation off-season (between late September and mid-May) to avoid interrupting irrigation activities of water users. Construction is anticipated to begin in spring 2025 and continue for approximately 2 years. This is because a single, non-irrigation season, which includes the winter months, is insufficient to complete the work on both tunnel rehabilitations. Tunnel portals would be reconstructed during opposite times of the tunneling construction seasons. Work would occur 7 days a week, 24 hours per day to ensure that each tunnel can be completed in a single season. During tunnel excavation and lining emplacement, it is anticipated that the Project would require 40 workers per day, with 20 workers per shift and two shifts per day, each twelve hours in length. During the portal work, the estimated staffing requirement would be slightly higher at 25 workers per day but only for the day shift.

2.3.7 Long Term Operation and Maintenance

GID inspects the tunnels annually using the existing canal access road. Tunnel inspections may be completed by a GID employee in a pickup truck, four-wheeler, or on foot. Inspections would occur generally during daylight hours.

After Project completion, monitoring and treatment to prevent and control the spread of invasive plants would be implemented, as required by a WDEQ Large Construction Stormwater Permit and any other necessary permits Once onsite work is complete, the stormwater permit would be transferred to GID. A BLM-approved herbicide would be used, as necessary.

2.4 Permits & Authorizations

If the Proposed Action is approved, it is anticipated that the permits and plans noted in Table 2-2 would be required prior to Project implementation.

Table 2-2. Permits and Authorizations

Agency	Permit/Approval	Trigger	Entity Responsible
Bureau of Land Management	Application for Transportation and Utility Systems and Facilities on Federal Lands or Standard Form 299 (SF-299)	Proposed Action occurring on BLM lands.	GID/Consultant
Wyoming State Historic Preservation Office	National Historic Preservation Act Section 106 Consultation	Projects receiving federal funding, license, or permit require review for cultural resources.	GID/Consultant
Wyoming Department of Environmental Quality – Water Quality Division	WYDEQ Large Construction Permit and SWPPP	Compliance with Clean Water Act – Section 402	Construction Contractor
Wyoming State Engineer's Office	Temporary Water Agreement	Temporary Water Use Authorizations	Construction Contractor

Agency	Permit/Approval	Trigger	Entity Responsible
Wyoming Department of Transportation	Oversize/Overweight Permit	Oversize and/or overweight vehicles on state highways	Construction Contractor
Wyoming Office of State Land and Investments	Non-roadway Easement and Temporary Use Permit	Construction on or across state lands	GID/Consultant
Goshen County Road and Bridge Department and Planning Office	Permits that may be required include Public Works Construction Permit, Road Use Agreement, Oversize and Overweight Load Permit, and Haul Route Assessment.	New construction or maintenance operation within Goshen County ROW	Construction Contractor
Goshen County Local Floodplain Administrator	Floodplain Development Permit	Construction in the 100--year floodplain or floodway	GID/Consultant
Local Utilities	Utility clearances prior to construction	Construction impacts to utilities	GID/Consultant

Compliance with the following laws is required prior to and during Project implementation.

2.4.1 Natural Resource Protection Laws

- Canal Act of 1890
- Clean Air Act of 1963 (CAA; 42 U.S.C. 7401)
- Endangered Species Act of 1973, as amended (ESA; 16 U.S.C. 1531-1544, 87 Strat. 884)
- Clean Water Act of 1972, as amended (CWA; 33 U.S.C. 1251 et seq.)
- Migratory Bird Treaty Act of 1918 (MBTA; 16 U.S.C. 703-712)
- Bald and Golden Eagle Protection Act of 1940 (BGEPA; 16 U.S.C. 668-668c)
- Federal Land Policy and Management Act of 1976 (FLPMA; 43 U.S.C. 1701-1785)

2.4.2 Cultural Resource Laws

- National Historic Preservation Act of 1966 (NHPA; 16 U.S.C. 470 et seq.)
- Archaeological Resources Protection Act of 1979 (ARPA; 16 U.S.C. 470aa-470mm et seq.)
- Native American Graves Protection and Repatriation Act of 1990 (NAGPRA; 25 U.S.C. 3001 et seq.)
- American Indian Religious Freedoms Act of 1978 (AIRFA; 42 U.S.C. PL 95-341)
- Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines (48 Federal Register 44716)

3 Affected Environment & Environmental Consequences

3.1 Introduction

The environmental effects of the No Action and the Proposed Action alternatives are described in the following sections. For each resource, the potentially affected area and/or resources are identified, existing conditions are described, and potential environmental impacts are analyzed.

3.2 Affected Environment & Environmental Consequences

3.2.1 Water Rights & Use

Water rights and use within the Project area, as well as the surrounding landscape, are allocated in large part by Reclamation's 1926 North Platte Project. This contract between Reclamation and GID (Contract no. 7-07-70-W0013) addresses approximately 53,000 acres of irrigable lands served by the Fort Laramie Canal within the GID. This original contract adjudicated direct flow water rights, to be diverted from the North Platte River at Whalen Diversion Dam, to be delivered through laterals and irrigate lands within the GID service area. Additionally, GID utilizes water rights in accordance with the North Platte Decree (*Nebraska v. Wyoming*, 2001). One stipulation included within the North Platte Decree is that 25 percent of the natural flow of the North Platte River is allocated to Wyoming water users - between Guernsey Reservoir and the Tri-State Dam (located southeast of Henry, Nebraska) (*Nebraska v. Wyoming*, 2001). Most supplemental supplies are provided by secondary water storage rights in Pathfinder and Guernsey reservoirs. These are released downstream and then diverted at Whalen Dam to beconveyed through the Fort Laramie Canal. In addition to North Platte River water rights, GID has the right to pump water from the Laramie River, to supplement North Platte River flows, up to the Wyoming statutory limit of 1 cubic foot per second (cfs) per 70 acres of irrigated land. When North Platte River water is insufficient to meet the district's water demand, GID may supplement diversions up to 25 cfs by pumping from the Laramie River - as determined by the Wyoming Supreme Court.

The Fort Laramie Canal water rights for both GID and GFLID are administered based on flow rates measured in the Fort Laramie Canal and at the Whalen Dam Diversion. Table 31 displays the adjudicated direct flow water rights serving GID. These water rights provide a total of 749.44 cfs for the irrigation of 52,515.8 acres. Additional adjudicated direct flow water rights which serve the Gering-Fort Laramie Canal total 782.96 cfs and 54,871.0 irrigated acres. The combined total of adjudicated water is 1,532.4 cfs for the irrigation of 107,386.8 acres.

Small portions of land in the GID are irrigated with supplemental water supplies from the Laramie River, Horse Creek, and Cherry Creek. Under the Final Settlement Stipulation, *Nebraska v. Wyoming*, 534 U.S. 40 (2001), additional Laramie River supplemental water rights (Permit No. 4883E) which were diverted at the GID pump station and conveyed within the enlarged Laramie River Diversion Canal, were cancelled.

Table 3-1. Goshen Irrigation District Adjudicated Water Rights

SEO Permit No.	Source	Conveyance	Priority	Uses	Type 1, 2	CFS	Acres
18544	North Platte River and Pathfinder Reservoir	Ft. Laramie Canal	12/6/1904	Domestic, Irrigation	Orig. and SS (Sec)	721.68	50,571.8
18544	North Platte River Pathfinder and Reservoir	Ft. Laramie Canal	12/6/1904	Irrigation	Orig. and SS (Sec)	17.63	1,234.0
18544	North Platte River and Pathfinder Reservoir	Ft. Laramie Canal	12/6/1904	Irrigation	Orig. and SS (Sec)	10.13	710.0
5014E	Guernsey Reservoir	Enl. Ft. Laramie Canal	4/20/1923	Domestic, Irrigation	SS (Sc)		52,515.8
4883E	Laramie River	Enl. Ft. Laramie Canal	1/20/1932	Domestic, Irrigation	SS		1,075.0
29342	Horse Creek	Horse Creek Main Lateral	8/26/1985	Irrigation	SS		1,144.0
25210	Cherry Creek Drain	Cherry Creek Pipeline	6/4/1976	Irrigation	SS		2,754.4
18554	North Platte River and Pathfinder Reservoir		Ft. Laramie Canal 12/6/1904	Domestic, Irrigation	Orig. and SS(Sec)	782.96	54,871.0
5014E	Guernsey Reservoir		Enl. Ft. Laramie Canal 9/19/1934	Domestic, Irrigation	SS(Sec)		54,871.0

Source: Water Rights in accordance with the October 1999 Tabulation of Adjudicated Water Rights of the State of Wyoming – Water Division Number 1, Surface Water

Notes: 1 Water Right Type: SS -- Supplemental Supply, SS(Sec) – Supplemental Supply from Federal Reservoir under Secondary Water Right

Conveyance efficiency can be defined as the ratio of water that reaches its destination (irrigated lands in this case) compared to the amount of water that was initially diverted into a canal or ditch. In years when the combined North Platte Project storage, along with estimated runoff, is anticipated to be less than the overall water demands for the area, the GFLID has historically been assigned 54,845 acres[1] and GID assigned 52,484 acres. District-wide conveyance efficiencies are calculated to be 56.1 and 58.7 percent[2], respectively. The contract acres and associated efficiencies directly affect the proportion or "allocation" of water supplies available to each irrigation district served by the North Platte Project.

[1] Reported and documented in 1990, 1992 and subsequent "Allocation Years." The short water years are designated as "Allocation Years" and the available water supplies are proportionally shared based on contract amounts, irrigated acreage, conveyance efficiencies and 10-year historic diversions under North Plate Project and Warren Act contractors.

[2] The efficiency is based on efficiencies reported in Reclamation's annual Compiled Water Records for 1950 – 1954. The ratio is the diversions from the canal divided by the diversion at headgate at Whalen. There are additional losses from the delivery to farm to the crops.

No Action Alternative

The No Action Alternative would have minor to major impacts on water rights and usage. If no further corrective actions are taken to improve the conditions of Tunnel No. 2, the canal system is unlikely to operate at full capacity in the foreseeable future. This could affect the amount of adjudicated water rights reaching irrigated areas downstream of the Project. Additionally, without improvements, further future damage to the tunnels may occur. This damage could include system failures such as the 2019 collapse and could leave thousands of residents and irrigators along the canal in both Wyoming and Nebraska without access to the water to which they are legally entitled. These impacts could range from short term to long term, depending on the severity of tunnel degradation and how quickly temporary repairs could be made in the event of additional failures.

Proposed Action

The canal is designed to carry water flows of approximately 1,500 cfs but currently runs at a deficit due to temporary repairs at Tunnel No. 2. The Proposed Action is anticipated to return flows through the system to pre-tunnel collapse delivery rates. The Proposed Action would improve GID's ability to manage water allocations with increased reliability due to system improvements. Tunnel rehabilitation would not change the amount of water diverted into the canal at the Whalen Diversion Dam; however, repaired tunnel structures would optimize the maximum flow capacity of the system and the amount of water available to the district shareholders. It is important to note that the Proposed Action would not change existing water rights within the region but is anticipated to uphold existing interstate water rights compacts. Construction associated with the Proposed Action is anticipated to be completed over the span of two non-irrigation seasons (between late September and mid-April) to minimize impacts to water use and water delivery throughout the region.

The Proposed Action would have minor to major, long-term beneficial impacts on water rights and deliveries and no adverse effects on water rights or use are anticipated, when compared to the No Action Alternative.

3.2.2 Water Quality

The Project is located within the Six Mile Creek-Laramie River watershed (Hydrologic Unit Code [HUC]-12 #101800110906) and the Molly Fork-North Platte River watershed (HUC-12 #101800090304). Both subwatersheds are located within the Middle North Platte-Scottsbluff watershed (HUC-8 #10180009). Both WYDEQ and the U.S. Environmental Protection Agency (USEPA) monitor water quality within the region. Neither WYDEQ nor USEPA list waters within the Project area as impaired waterbodies. Water from the North Platte River is diverted at the Whalen Diversion Dam into the Fort Laramie Canal and conveyed through Tunnel No. 1 and Tunnel No. 2. Major tributaries to the North Platte River within this region include the Laramie River, Rawhide Creek, Horseshoe Creek, and Cottonwood Creek. However, contributions to the North Platte River by these tributaries are often minimal due to water diversions for irrigation uses prior to reaching the North Platte River (WYDEQ 2007). The North Platte River is categorized into four segments within WYDEQ reporting, with segments primarily based on similarities in ecoregion, geology, land use, and hydrologic regime. The project is within Segment 4 Glendo Reservoir to Wyoming-Nebraska Stateline. Waters within this segment are considered Class 2AB waters (WYDEQ 2007), which are waters known to support game fish populations or spawning/nursery areas on at least a seasonal

basis (including tributaries and wetlands), and where a game fishery and drinking water use is attainable (WYDEQ 2018).

Water quality within the area is affected by non-point sources such as irrigation return flows, which often elevate sediment and nutrient levels within the waters and impact water quality. Permitted discharges from municipal wastewater treatment facilities can also cause localized changes to water quality within this area of the North Platte River. Water quality within the North Platte River below the Guernsey Dam is also impacted on an annual basis by the Guernsey 'silt run.' This event is considered an exception to the State of Wyoming's turbidity criteria, which includes removing accumulated sediment from the Guernsey Reservoir and lining downstream irrigation canals to minimize transit losses. During this process, in-stream turbidity is elevated and substantial amounts of sediment directly enter irrigation canals and the North Platte River.

USEPA has not assessed the North Platte River within the vicinity of the Project at the time of this analysis (EnviroAtlas 2024). In 2002, wWater quality testing was completed within Segment 4 of the North Platte River. The 2002 testing showed waters within the area did not meet the recommended levels of dissolved oxygen concentrations of 8 milligrams per liter (mg/L) during low-flow summer months. However, this river segment was within the recommended pH values of 6.0-9.0 set by the WYDEQ in 2007. Concentrations of total phosphorous at most testing stations were found to be below the detection limit of 0.1 mg/L; however, federal recommended levels were lower than the detection levels at 0.030 mg/L and maximum levels of 0.06 mg/L. Nitrate-nitrogen levels largely ranged from 0.1 mg/L to 1.2 mg/L while the median levels taken at the Wyoming/Nebraska Stateline were elevated at 2.0 mg/L (U.S. Geological Survey [USGS] station 06674500). Federally suggested levels of nitrate-nitrogen were 0.030 mg/L with maximum concentrations of 0.72 mg/L. Indicators of nutrient enrichment were found within this segment of the river, including the presence of filamentous algae. The nutrient sources were deemed to be likely anthropogenic, including non-point source runoff and the introduction of groundwater from agricultural lands, nutrient-rich reservoir releases, malfunctioning septic systems, and wastewater treatment facilities. Other water quality categories such as sulfate, alkalinity, hardness, and conductivity were found to be elevated for several reasons, including naturally high concentrations of dissolved solids within streams and the effects of evapoconcentration due to river diversions and reservoir operations.

In addition to previous water quality testing completed by the WYDEQ's Water Quality Division, the USGS has two monitoring stations within the vicinity of the two tunnel locations (WYDEQ 2007). These active monitoring stations include the North Platte River Below Whalen Diversion Dam (ID #0665700) and Laramie River Near Fort Laramie, WY (ID #06670500). The North Platte River location historically completed water quality sampling in the early to mid-1970s; currently this location is used to monitor water depth and discharge rates (cfs) (USGS 2024). The Laramie River location was used to complete a variety of water quality monitoring parameters between 1965 and today, including inorganics, metals, non-metals, sediment, and nutrients (USGS 2024).

No Action

The No Action Alternative would have potentially minor to major negative impacts to water quality at and downstream of the Project area. The alternative could result in further system failure of the canal tunnels without the proposed improvements. A system failure could lead to pollutants, such as building materials and concrete sediments entering the waterway - as well as a washout from the surrounding area, as seen following the 2019 Tunnel No. 2 collapse. This could be especially

serious if the failure occurred during the irrigation season. If canal waterflooded the surrounding area, it is likely that large amounts of sediment, as well as numerous other possible contaminants, could be introduced into the North Platte River. This would negatively impact water quality within the watershed, in both the short and long term.

Proposed Action

The Proposed Action is anticipated to be beneficial to water quality within the Project areas. The tunnel improvements would reduce canal water contact with substrates and water would be less likely to be impacted by debris from damaged and deteriorating building materials from the current tunnels. These improvements may have a minor to moderate long-term improvement on water quality within this system.

Temporary minor to major water quality impacts could occur during the construction phase of this alternative. However, with proper precautions, such as completing construction activities during low-flow season and implementing BMPs, short-term negative impacts on water quality within the Project area, as well as within the greater North Platte River basin, would be avoided.

Impacts at staging areas and laydown sites may also have minor, temporary impacts on water quality during the construction phase of this Project. Runoff from unvegetated areas may cause minor impacts to nearby waterways. It is anticipated that BMPs would be used at these locations to minimize the amount of ground disturbance and runoff as required by WYDEQ through a Stormwater Pollution Prevention Plan (SWPPP) application process. Following the completion of construction, revegetation would occur in feasible locations to minimize sediment runoff post construction in conjunction with the SWPPP and the revegetation plan as noted in Section 2.3.5.

3.2.3 Aquatic Resources

Significant surface waters within the Project region include the North Platte River and the Laramie River. Aquatic resources within the Project area include the Fort Laramie Canal as well as a palustrine emergent wetland mapped by the National Wetland Inventory (NWI), and also drainage from the canal to the North Platte River at Tunnel No. 2.

Portions of the Project area are located within the Federal Emergency Management Agency (FEMA) 100-year (or 1% annual chance flood hazard area) floodplain. Approximately 2.46 acres of floodplain are located along the Tunnel No. 1 channel and 4.32 acres along the Tunnel No. 2 channel. Both Project areas are located adjacent to the North Platte River floodplain and Tunnel No. 1 is also located just north of the Laramie River floodplain. The USACE has issued an agricultural exemption for waters within the tunnel and adjacent wetlands, including the NWI mapped wetland (Appendix E).

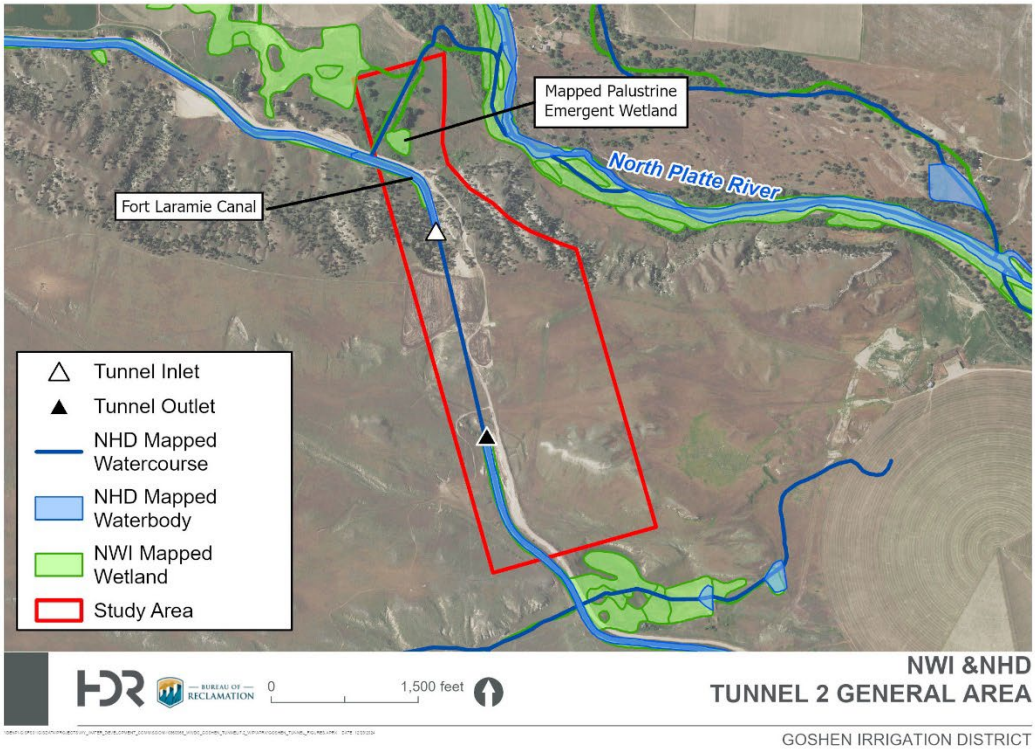
No Action

The No Action Alternative is anticipated to have minimal to no impact on aquatic resources within the area. In the event of a system failure, flows from the canal could potentially breach the canal system and flow either out into open agricultural areas, floodplains, or back toward the North Platte River. A rapid breach of the canal could impact the banks of nearby water bodies due to wash out and possible sediment deposits. Such an event is anticipated to have a moderate, short-term impact.

Proposed Action

Impacts to wetlands and Waters of the U.S. are not anticipated under the Proposed Action. Construction staging sites would be located in upland areas and stabilized during and after use to avoid potential water quality impacts to wetlands and waterbodies. The NWI wetland located at Tunnel No. 2 (see Figure 3-1) is not anticipated to be impacted by construction activities since it is outside the limits of disturbance. The NWI wetland will be fenced to ensure construction avoidance. No impacts to adjacent rivers are anticipated to occur due to their location outside the limits of disturbance. BMPs, such as stormwater barriers and staking construction limits, would be utilized at both tunnel sites to minimize any potential indirect impacts to Waters of the U.S. - including any localized increases in turbidity and sedimentation caused by soil disturbance or stormwater runoff from the construction area into the North Platte River.

Figure 3-1: Wetland and Aquatic Resources near Tunnel No. 2



Impacts to floodplains along the canal route are anticipated to be temporary and minimal. Temporary ground disturbance would occur within the floodplain during construction activities; no new impervious area is expected to be created that would displace floodplain areas or impact floodplain functions. Access along existing roads and staging areas would be limited to previously disturbed areas and would be revegetated and reclaimed after construction is completed. Construction would take place within the existing tunnel footprint. As such, no permanent impacts are anticipated as a result of the Proposed Action.

3.2.4 Air Quality

The WYDEQ and USEPA use guidelines and standards to monitor and enforce air quality in the State of Wyoming. WYDEQ standards are set to meet the USEPA's National Ambient Air Quality Standards (NAAQS). Areas that are within the NAAQS criteria for pollutants are classified as attainment areas. The nearest WYDEQ air quality monitoring station to the Project area (with a wide range of monitored pollutants) is the Cheyenne NCore location, approximately 71 miles from the Project area. Gaseous parameters measured at this monitoring station include carbon monoxide (CO), ozone (O_3), nitrogen oxide (NO_x), nitrogen dioxide (NO_2), trace sulfur dioxide (SO_2), and total reactive oxides of nitrogen (NO_y). Particulate matters (PM) such as PM_{10} and $PM_{2.5}$ are also monitored at the site. Ambient air quality within the vicinity of the Cheyenne NCore is within attainment for all pollutants and particulate matters (WYDEQ 2023). The Yoder monitoring location is closer to the Project area at approximately 20 miles distant but only monitors for PM_{10} (WYDEQ 2023). Air quality at the Yoder site is within attainment. Currently, no impacts to air quality are likely to occur due to routine maintenance of the tunnels (such as dust and exhaust from vehicles along the maintenance roadways and along the canal) or from ranching and agricultural activities within the area that require heavy equipment.

No Action

Under the No Action Alternative, no changes to air quality are expected. The tunnels would continue to operate in their current state, with occasional maintenance and inspection vehicles generating dust and exhaust within the Project footprint. Local ranching and agricultural activities within the area would also continue at levels currently supported by irrigation flows delivered through the tunnels. The No Action Alternative is not anticipated to have an impact on air quality.

Proposed Action

The Proposed Action may result in minor, temporary impacts to air quality within the immediate vicinity of the two tunnel locations. Minor impacts from the use of light vehicles and heavy equipment within the Project area, as well as travel to and from the Project area, may result in temporary and minimal particulate and diesel emissions. These impacts are anticipated to be localized and would be comparable to air quality impacts associated with activities that require heavy machinery. Impacts are also likely to occur during the demolition phase of reconstruction. Demolition of the existing tunnel structures may increase dust and other particulate matter within the Project area. However, these impacts are anticipated to be localized to the Project area without permanent or long-term impacts on air quality within the Project area or surrounding landscape. No significant impacts to air quality are expected to occur in the two staging areas in the process of constructing facilities and upon removal once the Project is completed.

Any temporary impacts to air quality as a result of the Proposed Action are anticipated to be negligible. Therefore, these construction activity emissions were not calculated. The area would remain within the required standards set by the USEPA and WYDEQ.

Where practicable, the Project would implement the following BMPs to mitigate exhaust emissions from construction equipment:

- An anti-idling policy for equipment and vehicles not in use or unmanned.

- Use of ultra-low sulfur fuel in on-road vehicles; and
- Use of grid power where available and accessible (i.e., powering the digger shield and associated equipment by means of electricity).

Dust abatement on roads utilized for construction traffic within the project area would occur as necessary and may include:

- Speed reductions, as authorized and approved by local offices
- Application of water
- Application of gravel

Application of a dust palliative.

3.2.5 Access, Transportation, & Safety

Several local, state, and federal agencies manage access, transportation, and safety within the Project area. These agencies include the Torrington Police Department, the Goshen County Commissioners/Goshen County Fire Warden (nine volunteer fire departments within the county), Goshen County Road and Bridge Department, and Wyoming Department of Transportation (WYDOT). Major transportation routes within the vicinity of the Project area include U.S. Highway 26 and State Highway 160. There are three privately owned roads within the Project area, two located at Tunnel No. 1 and one at Tunnel No. 2. The roads which cross over Tunnel No. 1 are County Road 50, owned by Goshen County, and Canal Road, which is privately owned. A privately owned access road crosses over Tunnel No. 2.

The Proposed Action would occur on privately owned land, BLM-managed land, and State of Wyoming-managed land, in addition to the canal itself, which is managed under a Reclamation easement (HDR 2022). Project activities would also occur on existing access roads located along the canal. The main point of entry to access roads at Tunnel No. 1 is County Road 50 with additional access via County Road 52 and County Road 54. Entry to access roads at Tunnel No. 2 is via County Road 59, County Road 63, or County Road 64. These roadways are public roadways and are used to access existing canal maintenance roads.

Staging areas at both tunnel locations would be accessible from the existing canal maintenance roads.

County roads, highways, and private roadways provide general access and mobility for residents within the area. Traffic volumes are generally light on county roads within the area. Safety risks within the Project area include open, moving water during irrigation season as well as the occasional heavy agricultural machinery on the roadway or within the ROW.

No Action

Under the No Action Alternative, no immediate impact to public access, transportation, or public safety would occur. Operation and maintenance of the canal system would continue as currently undertaken. This would include workers using public and private roadways within the Project area. Permitting and coordination efforts with local, state, and federal agencies would not be required. Safety risks associated with the deteriorating condition of the structures would continue.

The No Action Alternative for this Project could have future potential impacts to access and transportation within the immediate vicinity of the tunnels involved. If a system failure occurred and water backed up and breached the canal, there is potential that adjacent roads could be washed out or, at the very least, temporarily covered by flowing water. Safety within the immediate area of the canal tunnels could be compromised if the No Action Alternative was chosen. Due to the chance of potential system failure and potential flooding, the safety of motorists and recreational users could be negatively affected and increase the likelihood of injury. It is anticipated that impacts resulting from the No Action Alternative could span from minor to major and from short to long term.

Proposed Action

Under the Proposed Action, the Project area would be accessed primarily from Tank Farm Road/County Road 50 at Tunnel No. 1 and County Road 84/Highway 63 and County Road 59 at Tunnel No. 2. It is anticipated that there would be a temporary increase in traffic within the Town of Fort Laramie coinciding with shift changes. This includes an addition of twenty vehicles per shift traveling to and through town. The Proposed Action includes improvements such as grading and stabilizing existing access roads, specifically above the Tunnel No. 2 inlet and outlet areas (see Figure 1-1). Construction vehicles entering and exiting access roads may temporarily cause delays for residents and other members of the public using the surrounding roadways. Temporary delays and detours may be implemented at locations where access roads intersect or cross county roads within the Project area. The contractor would prepare and implement a traffic control plan in coordination with WYDOT, the Goshen County Sheriff's Office, and other emergency services departments. Coordination with landowners would also occur when work within the ROW occurs on privately owned property or if access to private lands/residences would be impeded or delayed. Traffic within the area (including private roads, county roads, and highways) would have a temporary, minor impact as a result of the Proposed Action.

The Goshen County Sheriff and Goshen County Fire Warden would continue to service the Project area for emergency response. Coordination with these entities would occur to minimize impacts to emergency response associated with the Proposed Action. Additionally, the active construction areas would be adequately marked and barricaded to prevent public access. No significant adverse effects to public safety are anticipated with the Proposed Action.

GID and the contractor would coordinate with local utility companies, the Goshen Road and Bridge Department, and the Floodplain Coordinator to minimize additional access, transportation, and public safety impacts. This additional coordination would include gathering proper construction utility clearances, road crossings, and permits, and coordinating with WYDOT and the Goshen County Sheriff to minimize traffic/access delays during construction. Effects to health and safety would be minimized through the use of BMPs during construction (such as dust control and a traffic control plan) (see Table 4-1 for environmental commitments). All impacted employees would be required to follow Section 4.02, *Tunnel and Shaft Construction*, and other applicable requirements as defined in the Reclamation Safety and Health Standards – 2024 Edition (RSHS). Requirements in this section of the RSHS include proper training in subjects such as recognition and avoidance of hazards associated with underground construction activities, working in confined spaces, air monitoring, ventilation, electrical safety, etc. To ensure the safety of all workers in the tunnel work areas, ventilation fans are required per 29 CFR Part 1926.800 Subpart S, Part K, as with all components governing the type of ventilation (i.e., natural vs. mechanic air flow), the quantity of fresh air flow needed for all persons (i.e., minimum of 200 cubic feet of fresh air per minute per employee), the

required protocols of ventilating after blasting, and the adherence of using diesel-powered mobile machines in lieu of gas within tunnels. To power the machinery and equipment needed for the tunnel rehabilitation, a Mine Safety and Health Administration approved type SHD-GC 3/C portable power cable or MP-GC 3/C grounded mine power feeder would be used during construction.

Nighttime lighting of construction areas around the tunnels would result in short-term impacts affecting nearby residents within visual radius of either tunnel entrance or exit locations. The impacts would occur only during scheduled construction activities at night. It may be possible to mitigate the impacts of lighting with light shields or other devices to minimize lighting impacts beyond the construction site.

The Proposed Action would improve long-term access and safety with temporary impacts resulting from increased traffic during shift changes and construction lighting during periods of active construction at each tunnel at night. Access roads would remain open for inspection and maintenance needs of the irrigation canal. Improvements to tunnel infrastructure are anticipated to minimize the risk of catastrophic failures such as the one experienced by Tunnel No. 2 in 2019. This would improve safety for anyone within the general area of the two tunnels.

A new access road connecting County Road 53 southeast of Tunnel No. 1 is proposed to provide an alternative access route to the joint laydown/spoils storage area (see Figure 1-1). In coordination with local entities, this new access route would be returned to pre-construction conditions following construction. The Proposed Action is anticipated to result in minor beneficial impacts to access, transportation, and public safety.

3.2.6 Noise

Noise is generally defined as unwanted or excessive sound which may disturb residents, wildlife, or others within an area. Existing noise levels within the Project area are typical of a low development, grassland habitat and may include noise associated with rural traffic, farming operations, residential dwellings, and other sources. Noise from the North Platte River channel may also be heard within the Project area at times. Noise levels within the area are typically comparable on a year-to-year basis.

The construction methods that would be employed for the Project are described in Section 2.3. Operational impacts of the Proposed Action would remain the same as current conditions. Therefore, operational noise impacts were not considered.

No Action

No impact to noise would be anticipated under the No Action Alternative. Noise would be expected to remain at levels similar to current conditions.

Proposed Action

The Proposed Action is likely to temporarily elevate noise levels within the Project area at the locations of tunnel reconstruction and at the staging and maintenance facilities.

Numerous equipment staging yards are located within the Project area. One maintenance facility is located within Fort Laramie, as noted in Figure 2-1 and Figure 2-2. These staging and maintenance sites would experience temporary construction noise increases from construction equipment and

associated activities. The staging yards would be located on lands that range from 1 to 25 acres in size, allowing trees and geographic features to act as natural noise barriers. The maintenance facility, an 80-foot by 120-foot temporary structure to serve as the primary maintenance site, would be located in an environmental justice community and would experience a temporary increase in noise levels for the duration of the Project. Increased noise levels would occur from regular construction equipment movement and associated activities. Noise levels from construction equipment can be expected to range from approximately 75 to 85 A-weighted decibels (dBA) (FHWA 2005). A list of anticipated equipment is provided in Appendix D. The maintenance facility would also serve as the primary parking location for construction workers to then ride passenger shuttles to the tunnel construction sites. This increase in traffic would temporarily increase typical roadway traffic noise.

The tunnel rehabilitation sites would experience a temporary increase in noise during construction. The digger shield would produce noise during excavation. There would also be increased noise during tunnel demolition, waste removal, excavation, and tunnel reconstruction.

Construction noise related to tunnel rehabilitation would be limited to two 9-month windows, the first ranging from late fall 2025 to spring 2026 and the second ranging from late fall 2026 to spring 2027. There could also be construction-related noise from general operation of maintenance facilities between the two rehabilitation windows.

All noise impacts from the Proposed Action would be temporary and would be remediated once construction is finished.

3.2.7 Visual Resources

The Project area landscape is located in rolling hills, patches of flat grassland, and irrigated farmland. Most of the Project area is located at the two tunnel locations, which are west and southeast of Fort Laramie, Wyoming. The North Platte River is located in the vicinity of these tunnels and can be seen from portions of the Project area. Several public roadways are located within the vicinity of the tunnel locations, and the Project area would be visible from these roads, which are used by both the public and private landowners in the area. Notable cultural resources that may be within the viewshed of the Project area include the Fort Laramie National Historic Site; remnants of the Oregon Trail; the Mary Elizabeth Homsley Grave; Chicago, Burlington, and Quincy Railroads; Lucerne Canal; Interstate Canal; precontact Indigenous cairns; and others.

Two additional locations within the Town of Fort Laramie, Wyoming, and surrounded largely by residential and agricultural lands, would be used for staging and other project related activities. One area is located on the north side of Fort Laramie and is visible from residential lots as well as public roadways. The southern secondary staging area would be located south of Highway 26 and is bordered by the Fort Laramie City Park on the north side and agricultural lands to the west and south. This area may also be visible from residential lots located east of the proposed staging area.

No Action

The No Action Alternative is unlikely to have impacts on visual resources as no additional construction activities would take place outside of the work completed in 2020 at Tunnel No. 2. Potential impacts to visual resources would be expected if a large system failure were to reoccur. If a system failure were to reoccur, water could potentially wash out portions of the surrounding

landscape near one or both tunnels. Impacts caused by a potential washout could include minor to major displacement of vegetation and soils as well as debris carried within the waterway downstream of the tunnels. Impacts from a washout could be temporary to long term, dependent upon how quickly repairs and remediation activities could occur.

Proposed Action

Under the Proposed Action Alternative, construction activities are anticipated to cause visual impacts, including surface disturbance over large portions of the Project area, at all four areas associated with this Project (Tunnel No. 1, Tunnel No. 2, the north Fort Laramie office location, and the south Fort Laramie secondary staging area).

Visual impacts at the tunnel locations included in the Project area would include earthwork, the construction of overhead powerlines, staging, spoils storage/sorting, and heavy machinery presence. Surface disturbances at Tunnel No. 1 would include grading of existing roadways as well as the addition of a new access road off County Road 53/Gray Rocks Road. These roadway improvements are anticipated to cause minor permanent impacts to visual resources. Construction of an overhead powerline is proposed along the new access road and would extend north at Canal Road until the intersection with County Road 50. The powerline installation would involve a limited number of poles and is anticipated to cause minor temporary impacts to visual resources at this location. The poles and powerlines would be removed and the site reclaimed following construction. Minor to moderate temporary impacts are anticipated during construction of the overhead powerlines due to the machinery required for construction. Equipment would be removed following completion of construction and staging areas would be reclaimed to pre-construction conditions wherever possible.

The Proposed Action at Tunnel No. 2 would include earthwork, staging and laydown areas, and spoils storage/sorting areas. Most of the visual impacts at Tunnel No. 2 would be temporary in nature and would be remediated following the completion of construction. Minor permanent impacts are anticipated to occur at locations where roadway grading is required. Impacts at these locations may be visible to public roadway users and nearby private landowners.

A cultural resources viewshed analysis was calculated using a geographic information system (GIS) for the Proposed Action. The analysis considered potential permanent visual effects caused by reconstruction of Tunnel No. 1 and Tunnel No. 2. Of concern was the potential for the Proposed Action to create a significant visual contrast to existing historic properties in the vicinity – where the integrity of the local setting contributed to eligibility for inclusion in the National Register of Historic Places (NRHP). These nearby historic properties include the Fort Laramie National Historic Site; the Oregon Trail; the Mary Elizabeth Homsley Grave; Chicago, Burlington, and Quincy Railroads; Lucerne Canal; Interstate Canal; precontact Indigenous cairns; and others. To complete the GIS analysis, a 1-mile, indirect Area of Potential Effect (APE) was established and subjected to a file search of WSHPO records. Pursuant to the BLM CFO Resource Management Plan, the nearest horizon (or a 3-mile indirect APE) was also used to assess visual effects for the Oregon Trail (48GO37) and other historic properties on nearby BLM land. The analysis found that no segments of the Oregon Trail would be within the viewshed of permanent Project improvements. The Chicago, Burlington, and Quincy Railroads; Lucerne Canal; and Interstate Canal did fall within the GIS-calculated viewshed but field visits determined that permanent and negative visual effects, which could result from the Proposed Action, would be obscured by vegetation and would not cause a significant visual contrast to these nearby cultural resources.

The Fort Laramie National Historic Site is also within the potential viewshed of the Proposed Action, 0.25-mile (0.4 kilometers) southeast of Tunnel No. 1 and 1.4 miles (2.2 kilometers) west of Tunnel No. 2. The viewshed is based on a sightline from tunnel inlet/outlet portals and was calculated with the Viewshed tool in ArcGIS Pro, using a 1-meter digital elevation model (DEM). Additionally, several key observation point (KOP)-style photographs were taken from the tunnel openings, facing toward the Fort Laramie National Historic Site, and from various locations at Fort Laramie National Historic Site facing toward the tunnel portals. The viewshed analysis determined that the Proposed Action would have no visual impacts on Fort Laramie National Historic Site since the tunnel openings are not visible from any of the KOPs at Fort Laramie National Historic Site. Likewise, Fort Laramie National Historic Site is not visible from either of the tunnel inlets or outlet structures. Furthermore, the period of significance for Fort Laramie National Historic Site (1834–1890) pre-dates construction of the Laramie Canal. As such, the canal itself already adversely impacts the integrity of the viewshed and setting for the Fort Laramie National Historic Site. Since the tunnel work would be similar in scale and scope to the current structures and not visible from Fort Laramie National Historic Site, no additional adverse effects are anticipated.

Additional Project components within the Town of Fort Laramie would be visible to residents from public roadways, parks, hiking/walking trails within the vicinity, as well as from residential homes. Impacts would include temporary ground disturbance at the secondary staging location on the south side of town. Moderate temporary and permanent impacts at the Project area located south of County Road 44E2/ Fire House Road on the north side of Fort Laramie are anticipated to include the construction of temporary project offices, temporary employee shower trailers, employee parking areas, a delivery/staging site, and an equipment repair shop. These buildings would be removed following Project completion, and at the time of this report, the site is anticipated to be regraded to pre-construction conditions.

Overall, impacts to the visual resources of the Project area as a result of the Proposed Action are expected to be minor and temporary. Temporary impacts would be mitigated at the end of the construction period by restoring grading to pre-construction conditions, removing temporary access roads, and replacing vegetation where possible. Other temporary impacts at all locations could include the presence of large construction equipment and vehicles, which would be located within the Project area throughout the construction timeline.

3.2.8 Public Recreation

Public recreation within the Project area is limited to pedestrian foot traffic as well as some recreational hunting. Motorized vehicles are not allowed off existing paths/roadways within the area due to the historic emigrant trails - within the area (NREX 2024). The grave of Mary Homsley and the road to the site, where it splits off from Canal Road, are within the Project area of Tunnel No. 1 near the north entrance (Wyoming Historical Society 2017).

No Action

The No Action Alternative would not impact recreational activities in the Project area. If a system failure were to reoccur, areas surrounding the tunnels could become unsafe for pedestrian traffic or off-road vehicle use due to potentially unbounded waters resulting in minor impacts.

Proposed Action

Temporary impacts to public access within the general area would be expected as the area would be closed to address public safety concerns associated with the presence of construction equipment. Access to the Mary Homsley gravesite may be restricted due to closures on Canal Road north of the Tunnel No. 1 inlet. This loss in public access could be mitigated throughout construction by allowing access from the south via Canal Road from County Road 52. Temporary closures may temporarily impede the public's ability to hike, hunt, or enjoy historical aspects of the area. There may also be temporary impacts to the enjoyment of recreational activities due to construction noise, traffic, and the visual presence of equipment in the construction staging areas.

The Proposed Action is not anticipated to result in long-term impacts to public recreation. Any impacts to recreational activities or experiences would cease with completion of the project when access to recreational lands would return to pre-construction access. Short-term, minor impacts are anticipated as a result of the Proposed Action.

3.2.9 Grazing

The Project area includes land along the irrigation canal which contains BLM grazing allotments (NREX 2024). The Tunnel No. 1 Project area is 188 acres in size and includes approximately 122 acres of grazing allotments. Similarly, Tunnel No. 2 has a Project area of 167 acres and includes approximately 145 acres of grazing allotments. Upland native vegetation along and adjacent to the irrigation canal show signs of grazing. During site visits, cattle were observed grazing within the Project area and were able to cross the canal during times of low-to-no flows.

No Action

The No Action Alternative is anticipated to have short-term minor to moderate impacts on grazing activities within the Project area. Portions of land along the canal used as grazing may be at a higher risk of flooding in the event of a system failure. A failure could produce flooding potentially deadly to cattle under the right circumstances or temporarily decrease the quality of the grazing available. Therefore, under the No Action Alternative, short-term, minor-to-moderate impacts are anticipated.

Proposed Action

Construction activities and the movement of equipment throughout the area associated with the Proposed Action may create stressful and/or dangerous conditions for cattle. The allotment permittees would be notified of activities prior to construction under the Proposed Action. Grazing land could be impacted by construction machinery and/or staging areas; these areas would be reclaimed following the completion of construction activities. The Proposed Action is expected to have minimal, short-term impacts on grazing activities within the area.

3.2.10 Vegetation

The Project area is within the northern part of the central High Plains and part of Major Land Resource Area (MLRA) 67A (NRCS 2022a) which contains warm and cool-season grassland vegetation. Vegetation within the Project area consists of a mix of both native and nonnative species typical of sagebrush-prairie, as well as agricultural crops. Crops common to the area include alfalfa (*Medicago sativa*), small grains, sugar beets, and corn. Areas not used for farming include a variety of prairie and grassland species and some scattered trees. Grassland species typical of this area

include wheatgrasses (*Elymus lanceolatus* and *Pascopyrum smithii*), needle and thread (*Hesperostipa comata*), blue gramma (*Bouteloua gracilis*), prairie sandreed (*Calamovilfa longofolia*), Indian ricegrass (*Achnatherum hymenoides*), and little bluestem (*Achizacnyrium scoparium*) (NRCS 2022b, NRCS 2023). The dominant sagebrush species within the area is sand sagebrush (*Artemisia filifolia*) (NRCS 2023). The area near the spillway at Tunnel No. 2 does contain a higher density of trees than other areas within the Project area. Tree species within this area may include the following deciduous and coniferous species: cottonwood (*Populus deltoides*), mountain juniper *(Junperus scopulorum*), and ponderosa pine (*Pinus ponderosa*) (NRCS 2022b). Staging areas would be located in areas of open field that are owned by the Town of Fort Laramie. These areas contain a number of grass species as well as species typical of disturbed land and bare ground.

No Action

Under the No Action Alternative, impacts to vegetation would be expected to be negligible. There is the possibility of damage to vegetation in the case of tunnel collapse or another similar event. In 2019, the tunnel collapse impeded the flow of water within the canal, resulting in water washing out areas of vegetated lands.

Proposed Action

Under the Proposed Action, approximately 90 acres of vegetation could potentially be impacted as a result of construction activities. Impacts would be associated with construction of access roads, site grading, parking areas, staging areas, and other activities. Trees within the permitted ROW width of 75 feet and access road width of 15 feet (or 25 feet at corners) would be removed, as necessary. Impacts caused by construction equipment accessing the site would be minimized to the extent possible. To minimize vegetation and habitat disturbance, GID would coordinate with the contractor to establish an appropriate buffer through the use of flagging, marking, or fencing. Construction activities would avoid undisturbed areas, when possible, to maximize the amount of vegetation available for erosion control. Revegetation would be done through the conventional reseeding with appropriate seed mixes would be utilized as approved by the following landowners: BLM, BOR, and the State of Wyoming. The requirements for the Large Construction General Permit will likely stipulate revegetation requirements. Significant permanent impacts to vegetation are not expected as vegetation would be rehabilitated in disturbed areas, where possible, following Project construction.

3.2.11 Noxious Weeds

Noxious weeds are plant species having seeds or other plant parts determined to be detrimental to the general health or welfare of the state by their ability to aggressively invade native plant communities and agricultural crops, are injurious or poisonous to livestock, are a carrier of disease or parasites, or can, by virtue of either direct or indirect effect, negatively impact management of agricultural or natural ecosystems (W.S. 11-5-101 1978). Noxious weed species have the potential to occur within the project area.

No Action

Under the No Action Alternative, changes to noxious weeds would not be expected. Native plant communities would continue to be altered by the continued presence of noxious weed species and disturbance from ongoing road and tunnel maintenance activities, uncleaned equipment, livestock

movement, the application of non-native seed, contaminated foot traffic, and irrigation waters. The irrigation canal could transport weed seeds to downstream locations when adequate flows are present.

Proposed Action

The presence of heavy machinery and construction crews could introduce or cause the spread of noxious weeds into the Project area and surrounding vicinity. GID would coordinate and consult with Goshen County Weed and Pest District to develop an integrated noxious weed management program to minimize noxious weed impacts to the area.

3.2.12 Wildlife Resources

Terrestrial Species

Wildlife within the area includes species typical of eastern Wyoming. Small mammalian species likely found in the area include several species of bat, black-tailed jackrabbit (*Lepus californicus*), snowshoe hare (*Lepus americanus*), red squirrel (*Tamiascirus hudsonicus*), foxes (*Vulpes sp.),* and coyote (*Canis latrans*). Large mammals and game species include mountain lion (*Puma concolor*), elk (*Cervus elaphus*), American pronghorn (*Antilocapra americana*), mule deer (*Odocoileus hemionus*), and white-tailed deer (*Odocoileus virginianus*) (BLM 2008, WGFD 2020).

The Project area is located within seasonal ranges for American pronghorn (antelope), mule deer, and white tail deer but is located outside of the designated crucial seasonal ranges for all three species. Tunnel No. 1 is located approximately 3.6 miles north of crucial mule deer range and less than 7 miles east of crucial antelope range. Tunnel No. 2 is located approximately 4 miles northeast of the same crucial mule deer range. Additionally, the Project is located within hunting areas for American pronghorn, deer, black bear (*Ursus americanus*), and elk. The Project area for Tunnel No. 2 is also situated approximately 6.5 miles northeast of a crucial habitat for the prairie lizard (*Sceloporus consobrinus*).

Migratory Birds and Eagles

The Project area is within the Central Flyway and likely experiences large numbers of avian species and individuals during annual migration. It is likely that grassland birds, songbirds, wetland birds, and raptors are all present within the area. There are no known raptor nests within a 1-mile radius of the Project area. However, Tunnel No. 1 is located 0.8 miles southeast of the edge of a 1-mile nest buffer. Although there are no nests within the area, it is likely that several different raptor species could be found within the area as part of their hunting range. Timing restrictions may be used to avoid nesting periods for raptor species within the vicinity, many of which nest between April and August (Table 3-2).

Table 3-2: Raptors with Potential to be Located within the Project Area and Their Nesting Periods

Species	Seasonal Buffer
Golden Eagle (*Aquila chrysaetos*)	January 15 – July 31
Ferruginous Hawk (*Buteo regalis*)	March 15 – July 31
Swainson's Hawk (*Buteo swainsoni*)	April 1 – August 31
Bald Eagle (*Haliaeetus leucocephalus*)	January 1 – August 31

Species	Seasonal Buffer
Prairie Falcon (*Falco mexicanus*)	March 1 – August 15
Peregrine Falcon (*Falco peregrinus*)	March 1 – August 15
Short-eared Owl (*Asio Strigiformes*)	March 15 – August 1
Burrowing Owl (*Athene cunicularia*)	April 1 – September 15
Northern Goshawk (*Accipiter atricapillus*)	April 1 – August 15

Source: USFWS 2022.

No Action

Under the No Action Alternative impacts to wildlife are not anticipated. Existing habitat conditions for terrestrial, aquatic, and avian species would remain the same within the Project areas. Disturbance and displacement of wildlife would not occur and the canal would continue to serve as a seasonal water source for species within the area. Canal operation and maintenance activities would also continue on its historic schedule unless a failure occurred as experienced in 2019.

Proposed Action

Temporary impacts to terrestrial species would likely be caused by the presence of construction workers and equipment as well as temporary elevations in noise levels within the vicinity of construction activities. Areas of suitable habitat for some species may also be disturbed in staging areas or construction access locations. Larger, more mobile species are likely to be dispersed by these activities. Impacts on smaller species such as burrowing reptiles, amphibians, and small mammals may include temporary displacement and mortality during construction and vegetation removal. Individuals may face mortality; however, the species and habitats are common within the area and the Proposed Action would not have significant impacts to the species at the population level or disrupt habitat at the landscape level. No permanent impacts to terrestrial habitat are anticipated.

The Proposed Action would occur during the months of September to May, which is outside most migratory bird, eagle, and other raptor breeding and nesting seasons; thereby avoiding direct impacts on these species. Much of the vegetation removal associated with the Proposed Action is scheduled to take place outside of the nesting window (February through August); however, some may occur during nesting seasons. Nonbreeding individuals may be dispersed by construction activities (including vegetation removal); however, there is similar habitat surrounding the Project area for species to use. If vegetation removal is required during nesting seasons, nesting surveys would be required prior to vegetation disturbance. If active nests are found within the Project area during nesting surveys, work within the USFWS-recommended buffers for raptors and other protected species may not occur until the chicks fledge (see Table 4-1 for additional requirements related to migratory birds, and Table 3-2 for specific raptors and their seasonal buffers) (USFWS 2024b). If nests are found after construction begins, the contractor would contact the Reclamation biologist, WGFD, and USFWS prior to continuing construction activities. With proper preparation and adequate surveys, the Proposed Action would not have a significant impact on raptors or migratory bird species.

No impacts to aquatic species are anticipated. As previously stated, the conveyance system does not typically support aquatic populations due to its intermittent flows, and construction would occur during no-flow periods of the year (during fall and winter) The Project would not involve any water

depletions or changes in water quality within the North Platte River system; therefore, there are no anticipated impacts to North Platte River aquatic species.

Minor and temporary impacts to species within the Project area at both tunnel locations are anticipated. It is unlikely that the Project would cause any permanent impacts to wildlife within the general area.

3.2.13 Threatened & Endangered Species and Special Status Species

The USFWS Information for Planning and Conservation (IPaC) database was used to obtain an official species list (Appendix B; USFWS 2024c) (Consult Code: 2023-0035868). The species on the list and their unofficial impact determination are shown in Table 3-3.

There are several species protected under the ESA within the general area. The Project area contains potential suitable habitat for two species-- the monarch butterfly (*Danaus plexippus*), a candidate species, and the tricolored bat *(Perimyotis subflavus*), a proposed endangered species. However, it is unlikely that these species would regularly be found within the area although they could pass through the Project area during warmer months of the year. Other sensitive species include those listed on the BLM's Sensitive Species list and are listed in the Biological Resources Report (Appendix B).

These federally listed species are protected under the ESA and could occur in or near the Project area and could be affected by Project activities. There is no designated critical habitat for any of the species within the Project area.

Table 3-3. Federally Listed Species within the General Area[3]

Common Name*	Scientific Name	Status	Habitat/Distribution	Effects Determination
Piping Plover*	*Charadrius melodus*	Threatened	Wide, flat, open, sandy beaches with very little grass or other vegetation. Nesting territories often include small creeks or wetlands.	No effect
Whooping Crane*	*Grus americana*	Endangered	Variety of habitats used during migration including croplands and palustrine wetlands.	No effect
Pallid Sturgeon*	*Scaphirhynchus albus*	Endangered	Large, deep turbid river channels, usually in strong current over firm sand or gravel.	No effect
Monarch Butterfly	Danaus plexippus	Proposed	Feed on a wide variety of nectar plants and require ample milkweed on which to lay their eggs.	***The proposed action will not jeopardize the continued existence of this species.***

[3] Informal consultation with USFWS has been initiated.

Common Name*	Scientific Name	Status	Habitat/Distribution	Effects Determination
Ute Ladies'-Tresses	*Spiranthes diluvialis*	Threatened	Thrive in moist to wet conditions including shores of lakes and reservoirs, in mesic meadow-type vegetation maintained by lake level fluctuations or seasonal flooding of gravel bars. Elevation: 4,200-7,000 feet.	No effect
Western Prairie Fringed Orchid*	*Platanthera praeclara*	Threatened	Full sun on moist to wet, calcareous prairies and sedge meadows. Often grows in relatively undisturbed grassland but also found in moderately disturbed sites such as roadside ditches.	No effect
Tricolored Bat	*Perimyotis subflavus*	Proposed Endangered	Caves and mines during the winter. During the spring, summer, and fall, they can be found in forested habitats where they roost in trees, primarily among leaves.	***The proposed action will not jeopardize the continued existence of this species.***

Source: USFWS 2024c
Note: * species associated with North Platte River.

Monarch Butterfly

The Project area is within the summer breeding and fall migration range for this species (Monarch Joint Venture 2023). Additionally, monarch butterflies have been documented within the general area in recent years (WYNDD 2023). The Proposed Action would likely occur during the months of September to May for two consecutive years. Construction activities for the Proposed Action may impact breeding and foraging habitat for this species during the months of September and April due to vegetation removal and ground disturbance. Vegetation removal and ground disturbance may result in the removal of nectarous flowers that migrating adults feed on as well as removal of milkweed (*Asclepias* spp.) species that breeding adults and larva use during summer months. This could temporarily displace individual monarchs, which may otherwise occupy the Project area. However, removal of these important vegetative species is anticipated to be minimal due to the lack of flowering species and milkweed within the immediate Project area. High-quality habitat for the monarch is available along both the North Platte and Laramie River corridors near the Project area, allowing individuals to avoid construction areas during the overlapping migratory and breeding seasons. Ground and vegetation disturbances within the Project area would be reclaimed following the completion of construction and are not anticipated to contribute to short- or long-term impacts on the monarch butterfly population or habitat within the region.

Activities associated with the Proposed Action are not anticipated to result in the loss of the species' viability within the planning area, cause the monarch to trend towards a federal listing, or cause the loss of the species' viability range wide. As a result, the Proposed Action would not jeopardize the continued existence of this species.

Tricolored Bat

Tricolored bats are known to occupy Goshen County on a regular basis (WYNDD 2023). and the species often roost within dense growths of trees with intact underbrush coverings. Portions of the Project area near Tunnel No. 2 contain moderately dense tree coverage. There are no documented roosts within the area and biological field surveys found no signs of bat activity within the Project area. Based on conversations with USFWS, surveys for the tricolored bat will be conducted according to *Range-Wide Indiana Bat & Northern Long-eared Bat Survey Guidelines,* which has been amended to include tricolored bat for the 2024 field season (USFWS 2024a). Some tree removal may be necessary under the Proposed Action within the project area. Tree removal may cause temporary impacts to individuals who may be forced to relocate. Relocation of individuals is likely possible due to the variety of roosting sites available within the area (including trees, bridges, and other human made structures). Additionally, maintenance on the tunnel structures may cause temporary impacts to the species as it is known to use structures such as culverts, caves, and bridges. Noise from construction activities and human presence within the Project area may also temporarily impact the bat species. Any individuals displaced during construction due to tree removal, noise impacts, or other reasons are likely to return to the area following the completion of the Project. Due to the presence of suitable habitat within the Project area, and lack of significant disturbance to the direct habitat, the Proposed Action would not jeopardize the continued existence of this species.

The BLM maintains a list of sensitive species in Wyoming (BLM 2010). Based on preliminary assessment, wildlife species that may occur in the Project area are listed in Table 3-4. Based on analysis of the Proposed Action, impacts to species in Table 3-4 are anticipated to be minor and temporary.

Table 3-4. BLM Sensitive Species within Potential Occurrence in Project Area

Species (*Scientific Name*)	Habitat and Distribution	Potential to Occur in Project area?	Potential Impacts?
Bats			
Long-eared Myotis (*Myotis evotis*)	Roosts in caves and abandoned mines; forages in coniferous forests; suitable habitat may be present near project area (BLM 2007)	Yes	Yes; Minor impacts to foraging habitat due to construction/ vegetation removal.
Fringed Myotis (*Myotis thysanodes*)	Roosts in caves and abandoned mines; forages in coniferous forests (BLM 2007)	Yes	Yes; Minor impacts to foraging habitat due to construction/ vegetation removal.
Spotted Bat (*Euderma maculatum*)	Deserts and open woodlands; often forages over open water; project area outside known range (BLM 2007)	No	No
Townsends Big-eared Bat (*Corynorhinus townsendii*)	Roosts in caves and abandoned mines; forages in deciduous forests; suitable habitat may be present near project area (BLM 2007)	Yes	Yes; Minor impacts to foraging habitat due to construction and vegetation removal.
Grassland Obligates			

Species (*Scientific Name*)	Habitat and Distribution	Potential to Occur in Project area?	Potential Impacts?
Swift Fox (*Vulpes velox*)	Found in short- and mid-grass prairies, agricultural areas, and meadows (BLM 2007)	Yes	Unlikely; construction occurring outside of breeding/denning season, individuals would likely avoid area during construction.
Black-tailed Prairie Dog (*Cynomys ludovicianus*)	Use dry, flat, or gently sloping, open grasslands with low, relatively sparse vegetation, including areas overgrazed by cattle (BLM 2007)	Unlikely	None
Baird's Sparrow (*Ammodramus bairdii*)	Found in grasslands; no known nests in CFO planning area (BLM 2007)	Yes	Unlikely; construction occurring outside of breeding season.
Long-billed Curlew (*Numenius americanus*)	Found in grasslands, plains, foothills, and wet meadows; suitable habitat located adjacent to project area (BLM 2007)	Yes	Unlikely; construction occurring outside of breeding season. No anticipated impacts to wetlands as a result of the project.
Mountain Plover (*Charadrius montanus*)	Typically require grassland and desert shrub with at least 50 percent bare ground (BLM 2007)	Unlikely	None
Sagebrush Obligates			
Sage Thrasher (*Oreoscoptes montanus*)	Found in basin-prairie shrublands and mountain-foothills shrublands (BLM 2007)	Yes	Unlikely; construction occurring outside of breeding season.
Greater Sage-Grouse (*Centrocercus urophasianus*)	Species nest on the ground under sage brush or grass patches. Live in elevations ranging from 4,000 to over 9,000 feet and are sagebrush obligate (BLM 2007)	Unlikely	None
Loggerhead Shrike (*Lanius ludovicianus*)	Found in basin-prairie shrublands and mountain-foothills shrublands (BLM 2007)	Yes	Temporary disturbances to foraging individuals during construction
Brewer's Sparrow (*Spizella breweri*)	Found in basin-prairie shrublands (BLM 2007)	Yes	Temporary disturbances to foraging individuals during construction
Riparian and Wetland Obligates			
Yellow-billed Cuckoo (*Coccyzus americanus*)	Mature cottonwood forests and riparian gallery forests (BLM 2007); recent sightings documented near project area	Yes	Unlikely; construction occurring outside of breeding season. No anticipated impacts to wetlands as a result of the project.
White-faced Ibis (*Plegadis chihi*)	Found in marshes and wet meadows (BLM 2007); has potential to occur in areas along the North Platte River	Yes	Unlikely; construction occurring outside of breeding season. No anticipated impacts to wetlands as a result of the project.

Species (*Scientific Name*)	Habitat and Distribution	Potential to Occur in Project area?	Potential Impacts?
Trumpeter Swan (*Cygnus buccinator*)	Found in wetlands, lakes, and pond edges (BLM 2007); recent sightings have occurred near project area	Yes	Unlikely; construction occurring outside of breeding season. No anticipated impacts to wetlands as a result of the project.
Northern Leopard Frog (*Lithobates pipiens*)	Found in wetlands, streams, and ponds amongst aquatic vegetation (BLM 2007)	Yes	Unlikely; construction occurring outside of breeding season. No anticipated impacts to wetlands as a result of the project.

Source: BLM 2010

No Action

Impacts to federally Threatened and Endangered Species, as well as BLM special status species, are not anticipated to occur under a No Action Alternative. Further disturbance to the study areas would not occur beyond what was required for the 2020 repairs at Tunnel No. 2.

Proposed Action

Minor impacts to wildlife are anticipated as a result of the Proposed Action. These impacts are anticipated to be temporary and would likely be associated with noise and human activity. Some temporary and permanent habitat loss for forest-dwelling and scrub-shrub dwelling species may occur within areas of staging yards associated with the proposed action. Impacts to federally listed species including the tricolored bat and monarch butterfly may occur but are unlikely to be significant.

Monarch Butterfly

Activities associated with the Proposed Action are not anticipated to result in the loss of the species' viability within the planning area, cause the monarch to trend towards a federal listing, or cause the loss of the species' viability range wide. As a result, the Proposed Action will not jeopardize the continued existence of this species.

Tricolored Bat

At the direction of USF&WS, tricolor bat surveys were conducted by Civil & Environmental Consultants, Inc. The Fall emergence surveys were conducted utilizing the USF&WS 2024 Range-wide Indiana Bat & Northern Long-Eared Bat Survey Guidelines and included harp trapping and acoustic monitoring. No bats were captured at either tunnel during the survey period. Acoustic monitoring did identify bats in the area, but as no bats of any species were captured during the harp trapping effort, the survey was suspended after two nights of monitoring, as stipulated in the protocol (USFWS. 2024a). The report and monitoring data were shared with USF&WS and email concurrence that the survey efforts were sufficient for the Service to agree that listed bats will not be impacted by the Proposed Action (Personal communication, November 06, 2024).

3.2.14 Cultural Resources

Cultural resources are the physical remains of past human activities - ranging in time from the initial peopling of Wyoming in the Late Pleistocene to recent history. These resources contribute to the quality of the human environment by preserving the "tangible links" by which living communities

relate to the past (Reclamation 2023). Cultural resources include property types such as historical buildings and structures, archaeological sites, objects, or districts (a collection of individual cultural resources associated with place and a unifying historical theme). The natural landscape may also have significance as a cultural landscape or Traditional Cultural Property for its associations with historical events or long held ethnographic importance to contemporary communities. Generally, at the federal level, the historical significance of a cultural resource is determined by its eligibility to be listed in the NRHP. Cultural resources eligible for or listed in the NRHP are defined as historic properties. Under the NRHP eligibility guidelines, potential historic properties must be 50 years of age or more, meet at least one of four criteria for significance, and retain sufficient historic integrity to convey that significance. If a cultural resource is unevaluated for inclusion in the NRHP, pending further historical research, consultation with stakeholder communities, or other considerations, the resource is treated as eligible for the NRHP until its historical significance is established. In the case of a linear cultural resource, such as a road or canal, individual segments of the linear resource may be considered as supporting or non-supporting of the eligibility of the overall cultural resource. Similarly, for historic districts, individual cultural resources may be determined as contributing or non-contributing to the historical significance of the district.

A Class III cultural resources survey of the APE for the Project was completed in June 2023. Reclamation defined the APE as a 188-acre area surrounding Tunnel No. 1 and a 167-acre area surrounding Tunnel No. 2 which together encompassed the limits of permanent and temporary construction impacts associated with the Proposed Action. The total area of the APE across both Tunnel No. 1 and Tunnel No. 2 is 355 acres. The APE extends over private (177 acres; 49.9 percent), State (98 acres; 27.6 percent), and Federal (80 acres; 22.5 percent) lands. In Fall 2024, a supplemental APE of 25.2 acres was surveyed to consider additional permanent and temporary construction impacts that were identified following the completion of the initial survey. The supplemental APE encompasses two proposed staging areas within the Town of Fort Laramie, three access improvements along the Fort Laramie Canal Road, and a temporary overhead power easement. The land ownership of the supplemental APE is municipal (20.4 acres; 81 percent) and private land (4.8 acres; 19 percent). Known or potential historic properties within the original and supplemental APE include segments of the Fort Laramie Canal, segments of the Oregon Trail, the Mary Elizabeth Homsley Grave, segments of the Cheyenne to Black Hills Road, and Indigenous precontact campsites, stone tool manufacture areas, and cairns. In total, 16 individual cultural resources or segments of linear resources have been identified within the original and supplemental APE and are recommended as eligible for inclusion in the NRHP or unevaluated pending further research or consultation.

No Action

No immediate impacts would occur to cultural resources within the Project area or adjacent lands under the No Action Alternative. No further surface disturbance would be required near the tunnel locations and there would be no potential to disturb buried archaeological deposits that may exist within the study area. No indirect impacts, such as temporary or permanent visual impacts, would occur to cultural resources in adjacent areas. However, continued neglect of the Fort Laramie Canal may result in an adverse effect to the historic property. In 2019, Tunnel No. 2 suffered a partial collapse at two cave-in locations. Tunnel No. 1 was constructed in the same year as Tunnel No. 2 and is susceptible to similar structural inadequacies. Intentional neglect of the Fort Laramie Canal

under the No Action Alternative may constitute an adverse effect to the historic property if the historic integrity of the canal is deteriorated by further structural failures.

Proposed Action

The Proposed Action would cause an immediate adverse effect to the Fort Laramie Canal, which constitutes a historic property under the NHPA of 1966. Major phases of the Proposed Action include site preparation, tunnel demolition, tunnel reconstruction, and reclamation of both tunnels. The two Fort Laramie Canal tunnels would be demolished and reconstructed as part of these activities, resulting in total disturbance to about 6,642 feet of the historic tunnel structures. While much of the disturbance would be limited to below ground elements of the tunnels, above ground disturbance would include removing the historic tunnel inlet and outlet structures and modifying the concrete-lined flume. To mitigate this adverse effect to the Fort Laramie Canal under the Proposed Action, Reclamation and GID have consulted with WSHPO to execute the mitigation treatment plan outlined under Appendix B of the *Statewide Programmatic Agreement on Irrigation Infrastructure of 2020* among the Reclamation, WSHPO, Native American tribes, and other parties, as required and appropriate, to resolve adverse effects. This treatment plan requires Reclamation to prepare a historical context on the Fort Laramie Canal that would contribute to the Wyoming Irrigation Wiki. The purpose of the wiki is for the "public dissemination of the history of a system or district (Horn and Prouty 2023). Historical contextual data compiled on the canal would be supplemented with high-resolution (300 dpi or greater) historical imagery of the character defining features of the canal and tunnel inlet and outlet structures.

Alongside the demolition and reconstruction of the Fort Laramie Canal tunnels, the Proposed Action would require the establishment of access roads, staging areas, and laydown yards. These Project components may cause adverse effects to historic properties within the Project area. To avoid potential adverse effects resulting from the Proposed Action, GID would contract with a qualified, professional archaeologist to flag or otherwise delineate "no surface occupancy buffer zones" at each identified cultural property within the Project area. Avoidance flagging would be installed at 100-foot buffers or as determined in the field by the contract archaeologist. In areas where the 100-foot buffer cannot be met, exclusionary fencing would be installed to protect historic properties. In consultation with WSHPO, Reclamation anticipates that avoidance flagging and exclusionary fencing would be sufficient to avoid direct adverse effects to the segments of the Oregon Trail, the Mary Elizabeth Homsley Grave, segments of the Cheyenne to Black Hills Road, and Indigenous precontact campsites, stone tool manufacture areas, and cairns within the Project area. One segment of the Cheyenne to Black Hills Road exists as the present-day Fort Laramie Canal Road. Project actions are not expected to cause adverse effects to this cultural resource if no changes to this portion of the Fort Laramie Canal Road are required.

Although the Project area was subjected to a Class III archaeological survey to current WSHPO standards, ground disturbance required for construction may result in the inadvertent discovery of buried archaeological deposits that were not previously identified. In the event that an inadvertent discovery is made during construction for the Proposed Action, Reclamation and GID would halt work and consult with WSHPO, Native American tribes, federal agencies, and other stakeholders, as appropriate, to resolve potential adverse effects to potential undiscovered historic properties.

Along with assessing for direct effects, the Proposed Action has the potential to cause indirect visual effects to historic properties in outlying areas where integrity of setting contributes to eligibility for

inclusion in the NRHP. These historic properties where integrity of setting contributes to eligibility for the NRHP include the Fort Laramie National Historic Site; the Oregon Trail; the Mary Elizabeth Homsley Grave; Interstate Canal; Lucerne Canal; Chicago, Burlington, and Quincy Railroads; precontact Indigenous cairns; and others. However, under the Proposed Action, the planned reconstruction of the two tunnel structures would be comparable to the existing structures and is unlikely to cause a substantial visual contrast. Improvements to each tunnel would include replacement of tunnel inlet and outlet structures and below-ground reconstruction of the tunnels. Temporary construction impacts are anticipated to include the use of temporary work areas for the purposes of staging equipment, stockpiling materials, and construction access. Temporary impacts were not considered to represent a visual effect if consistent with the established use of an existing staging area or access road, etc., or resolved within 1 year.

A GIS-based viewshed analysis undertaken for the Project similarly indicates that the Proposed Action is unlikely to have indirect visual effects on historic properties within the Project area or surrounding area. The study considered all cultural resources within a 1-mile buffer of the Project area while the nearest horizon or a 3-mile buffer was used to assess visual effects for the Oregon Trail and historic properties on BLM lands. Cultural resources, identified in the GIS model as being within the potential viewshed of permanent project visual effects, were then visited to assess real-world visibility. In all cases, visibility was obscured by landscape or vegetation conditions and the Proposed Action is not anticipated to cause indirect effects to these historic properties.

The Proposed Action is not expected to cause direct or indirect adverse effects to identified historic properties apart from the demolition and reconstruction of the Fort Laramie Canal. Ongoing mitigation using the treatment prescribed in the *Statewide Programmatic Agreement on Irrigation Infrastructure of 2020* is expected to adequately resolve adverse effects to the Fort Laramie Canal. Accordingly, the Proposed Action is not expected to cause significant impacts to cultural resources.

3.2.15 Paleontological Resources

For the evaluation of paleontological resources, the BLM relies on a five-tiered scale known as Potential Fossil Yield Classification (PFYC) system. The scale ranges from Class 1 (very low) to Class 5 (very high). An evaluation of the PYFC for the project area surrounding both tunnels was completed by Chronical Heritage in 2023.

The PYFC ratings within the study area surrounding Tunnel No. 1 were largely Class 2 (low) with a smaller proportion of Class 5 (very high). The PFYC ratings within the study area surrounding Tunnel No. 2 were also Class 2 and Class 5, with a small portion mapped as unknown.

No Action

Under the No Action Alternative, soils in the study area would not be disturbed other than for regular operations and maintenance activities associated with the canal system. Therefore, there are not anticipated impacts for paleontological resources anticipated with the No Action Alternative.

Proposed Action

The Proposed Action would result in the disturbance of surface and subsurface soils in both the Class 2 and Class 5 mapped PFYC areas in both tunnel locations. Direct impacts to paleontological resources, if present, are higher in the Class 5 areas than in the Class 2. Paleontological monitors

will be required when excavating areas within the mapped PFYC 5 areas - as health and safety permits. If paleontological resources are discovered during excavation, BoR and BLM will be contacted and an evaluation made of the resources before additional disturbance is allowed to take place. With the above mitigations, there are no anticipated impacts to paleontological resources.

3.2.16 Soils & Farmlands of Agricultural Significance

The soil units mapped by the NRCS in the Project area are generally loamy sands with Eolian deposit parent material and are only slightly saline. The NRCS web soil survey classifies soils in the Project area as “prime farmland if irrigated” (NRCS 2024). Approximately 45 acres of prime farmland if irrigated and 14 acres of farmland of statewide importance if irrigated are located within the Project area. However, the soils within the Project area are not irrigated despite being located near the canal. The area above the tunnels is unused for farmland but does contain roads, two tracks, and powerlines. Prime farmland provides the best physical and chemical traits for raising a variety of crops with minimal inputs (NRCS 2012). Winter wheat, small grains, and dry beans are the main crops grown within Goshen County. The county is ranked number one in Wyoming for agricultural importance to the state economy (Goshen County Government, No Date).

No Action

The No Action Alternative is not anticipated to have any impacts on soils within the Project area. Farmlands of agricultural significance would not be impacted by any aspects of construction under the No Action Alternative. However, without improvements to the tunnels, the risk of system failure increases, which increases the risk of crop failure on agricultural lands served by the irrigation district.

Proposed Action

Despite the presence of prime farmland and farmland of statewide importance, none of the land within the Project area is currently irrigated by the canal. The Proposed Action would not impact any irrigated acres adjacent to the tunnels within the Project footprint. Therefore, the impact to farmlands of agricultural significance within the Project area are not anticipated to be significant. In addition, the Proposed Action would not remove farmlands from production or cause a disruption to agricultural activities within the Project area. Temporary impacts to soils within the Project area from the use of heavy machinery and staging areas would occur. The Proposed Action implements a variety of BMPs to minimize soil erosion, protect soil health, and stabilize/rehabilitate disturbed soils (see Table 4-1 for environmental commitments). Some of these measures include temporary erosion and sediment control methods, such as silt fence and wattle placement near disturbed areas. Construction activities would also be halted during extreme weather events or conditions to avoid excess runoff or soil disturbance caused by the use of heavy machinery. During site reclamation activities, temporary soil disturbance outside of previously disturbed land would be reclaimed following construction activities. No agriculturally significant lands in current production would be impacted as a result of the Proposed Action. Under the Proposed Action Alternative, no significant adverse impacts to soils and farmlands of agricultural significance are anticipated.

3.2.17 Socioeconomics

The collapse of Tunnel No. 2 in July 2019 disrupted irrigation water deliveries to approximately 107,000 acres of farmland in Wyoming and Nebraska. Emergency repairs to the tunnel resulted in a 10 to 15 percent reduced water conveyance capacity. Additional repairs were made in the winter of 2020-2021, increasing the efficiency of water conveyance to approximately 95 percent of tunnel capacity (HDR 2022).

No Action

Selection of the No Action Alternative would likely result in long-term, moderate to major economic impact to the agricultural producers in both GID and GFLID in Wyoming and Nebraska, respectively. A long-term moderate economic impact would result from continued under-performance of water conveyance through Tunnel No. 2, while a major economic impact would result should a second tunnel failure occur, which is a continuing risk without the proposed repairs.

Proposed Action

Under the Proposed Action, both Tunnel No. 1 and Tunnel No. 2 would be rehabilitated. The improvements would likely result in 1) short-term economic benefits during tunnel reconstruction and 2) moderate to major long-term economic benefits to the region after completion. When compared to the No Action Alternative, the repair and enhancements of the two tunnels would extend their serviceable life, restore water to pre-collapse conveyance levels, and remove the risk of a second tunnel collapse and the disruption of irrigation water to 107,000 acres of farmland. Therefore, it is anticipated that under the Proposed Action, moderate to major beneficial economic impacts would result.

3.2.18 Environmental Justice

One block group (Census Tract 9577, Block Group 1) was analyzed for the presence of environmental justice minority and low-income populations. The environmental justice analysis was completed using the definitions and thresholds outlined in CEQ guidance documents and BLM Instruction Memorandum (IM) 2022-059 (CEQ 1997; BLM 2022), in accordance with Executive Order 12898, 14091, and 14096.

The CEQ defines minorities as individuals who identify as American Indian or Alaska Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. A minority environmental justice population is recognized if the percentage of minority individuals constitutes greater than or equal to 50 percent of the total population within a given area or if the minority population percentage is “meaningfully greater” than the minority population percentage in a reference area (CEQ 1997). To determine whether a minority population is “meaningfully greater,” the minority population percentage in the reference area is multiplied by 1.1 (equivalent to 110 percent) to calculate a threshold value (BLM 2022). Subsequently, each block group’s minority population percentage within that county is compared against this calculated threshold. Block groups with minority populations meeting or exceeding this threshold are identified as having potential environmental justice populations. For the purposes of this analysis, Goshen County serves as the reference area.

Low-income populations are defined relative to the annual statistical poverty thresholds from the U.S. Census Bureau (CEQ 1997). The CEQ guidance does not provide criteria for determining low-

income populations as explicitly as it does for minority populations; however, the BLM guidance defines low-income individuals as people whose income is less than or equal to twice (200 percent of) the federal poverty level (BLM 2022). For this analysis, low-income populations were identified following guidance in BLM IM 2022-059. A block group is considered to have a significant low-income population and contain environmental justice populations when its low-income population percentage is greater than or equal to 50 percent of the overall population or if the low-income population percentage is greater than or equal to the low-income population percentage of a reference area. Similar to minority populations, Goshen County is used as the reference area for low-income populations, except as noted above.

Goshen County has a minority population of 15.72 percent, and the threshold for an environmental justice minority population is 17.27 percent.

The one block group that has been analyzed has an environmental justice population of 24.27 percent, which is over the 17.27 percent threshold for environmental justice minority populations in Goshen County. The minority populations are shown in Table 3-5 below.

Table 3-5. Minority Populations

Geographic Area	Total Population	Total Minority Population	Percent Minority
Goshen County, Wyoming	12,592	1,980	15.72%
Census Tract 9577, Block Group 1	1,170	284	**24.27%**

Source: U.S. Census Bureau 2023a.

Goshen County has a low-income population of 29.75 percent, making the threshold for environmental justice low-income populations 29.75 percent.

The one block group that has been analyzed has a low-income population of 30.26 percent, which is over the 29.75 percent threshold for environmental justice low-income populations in Goshen County. The low-income populations are shown in Table 3-6 below.

Table 3-6. Low-Income Populations

Geographic Area	Low-Income Population	Percent Low-Income
Goshen County	3,478	29.75%
Census Tract 9577, Block Group 1	354	**30.26%**

Source: U.S. Census Bureau 2023b.

Since the block group contains both environmental justice minority and low-income populations, references to environmental justice communities refer to both low-income and minority environmental justice populations.

No Action

Selection of the No Action Alternative would not result in disproportionately high and adverse impacts to environmental justice populations. However, under the No Action Alternative, the identified need improving water supply reliability would not be met. The risk of the tunnel failure reduces water supply reliability to the users and communities that rely on the Fort Laramie Canal for agricultural uses.

Proposed Action

The environmental justice community would experience temporary construction impacts to access and transportation under the Proposed Action. Construction activities may temporarily cause delays for residents and members of the environmental justice community using the surrounding roadways. These delays would be attributed to construction vehicles entering and exiting access roads. Temporary delays and detours may be used at locations where access roads meet or cross county roads within the Project area. Traffic within the area (including private roads, county roads, and highways) would have a temporary, minor impact as a result of the Proposed Action.

Noise from construction activities is expected to have a temporary impact on the environmental justice community surrounding the maintenance facility, specifically along N Pratt Cole Avenue, Otis Street, and Laramie Avenue, as well as users of the Fort Laramie Community Center. The noise that the environmental justice community would experience would be greater than current noise levels. They would experience higher frequencies of construction equipment and increased traffic noise as the construction workers would use the maintenance facility as primary parking and shuttle to the tunnel construction sites.

Environmental justice communities would not experience visual impacts for the newly constructed tunnels, but they would experience temporary construction impacts from construction activities in Fort Laramie and in public roadways, parks, hiking/walking trails within the vicinity, and residential homes. These temporary construction activities that would have visual impacts to environmental justice communities include the building of the temporary maintenance facility northwest of the intersection of Laramie Avenue and Otis Street in their community; the construction of temporary powerlines over a new access road, which would cause a minor temporary visual impact due to the introduction of vertical poles and overhead powerlines; temporary ground disturbance occurring at the secondary staging location on the south side of town; and the construction of temporary project offices, temporary employee shower trailers, employee parking areas, a delivery/staging site, and an equipment repair shop. These temporary buildings and structures would be removed following the completion of the Project and the site is anticipated to be regraded and restored to pre-construction conditions.

There would be minimal temporary air quality impacts to the environmental justice community with the increased frequency of construction vehicles entering the construction areas. Impacts are also likely to occur during the demolition phase of construction. Demolition of the existing tunnel structures may cause an increase in dust and other particulate matter within the Project area.

These temporary construction impacts on the environmental justice community would not have adverse effects, as conditions would be returned to their original condition after construction, and the benefits of the Project outweigh the temporary negative impacts.

These impacts to environmental justice communities would not be disproportionate or adverse because they will be impacting the rest of the population at the same magnitude. It cannot be determined at this level of analysis if the residences surrounding the maintenance facility are home to members of environmental justice populations. The impacts are also temporary and would only last the duration of construction, the areas experiencing construction impacts will be returned to their original state once construction is complete.

3.2.19 Cumulative Impacts

NEPA requires the consideration of cumulative effects that result from the incremental effects of actions when added to the effects of other past, present, and reasonably foreseeable actions, regardless of what agency or person undertakes such actions. This section summarizes the known past, present, and reasonably foreseeable actions in the Project area. Given the dispersed nature of the Project between the two tunnel locations, laydown yards, road improvements, and sites within the Town of Fort Laramie, a broad approach was used to ascertain cumulative impacts rather than a spatially explicit boundary drawn around the Project footprint.

Past

Recent actions in the vicinity of the Project area which may be the source of cumulative impacts include the emergency repairs of Tunnel No. 2 in 2019 following the tunnel's collapse and additional repairs to both tunnels which included the installation of steel ribs and metal sheeting inside the tunnels.

Data gathering for the tunnel repair project included a geotechnical investigation in the Winter of 2023. Activities associated with that action included drilling 12 bore holes to facilitate logging soil and bedrock samples. In addition to the drilling, a set of eight seismic refraction surveys were completed and a temporary 30-foot by 30-foot drill pad was prepared. The BLM initiated a Categorical Exclusion (DOI-BLM-WY-P060-2023-0035-CX) to analyze the environmental impacts associated with the geotechnical data gathering.

The review of ePlanning did not reveal any additional BLM projects completed within the last 5 years within the Project vicinity.

Present

Beyond potential repair of the tunnels, the area is likely to see continued agricultural operations in the vicinity of both tunnel locations, Project laydown and stockpiling, and road improvement areas. This includes grazing as permitted by the BLM on nearby grazing allotments.

Reasonably Foreseeable

It is reasonably foreseeable to anticipate continuing operations and maintenance of the canal system, headworks, and other irrigation infrastructure whether the No Action Alternative or Proposed Action is selected. Likewise, continued agricultural operations in and around the Project are anticipated.

A review of ePlanning provided information the proposed Russel Quarry Contract Renewal project wherein the BLM is evaluating, under NEPA, the potential impacts associated with renewing the quarry to continue operations within its current footprint for 10 additional years.

Conclusions

Table 3-7 denotes the likelihood for significant impacts related to the above identified actions related to cumulative impacts.

Table 3-7. Cumulative Impacts

Action	Significant Impacts (Y/N)	Justification
Emergency repairs of existing tunnels (Past)	N	No significant impacts have been identified following completion of the emergency repairs.
Continued agricultural activities (Present)	N	Ongoing agricultural activities in the rural landscape, agricultural dominated landscape is not anticipated to produce impacts beyond those that are a regular part of such operations.
Russel Quarry Contract Renewal (Future)	N	Renewal of an existing contract without expansion of the project boundary is unlikely to produce additional significant impacts.

Based on the past, present, and reasonably foreseeable actions in the Project area, it is not anticipated that these actions, in addition to the impacts associated with the No Action or Proposed Action analyzed within this EA, would result in cumulative, significant impacts. This determination is based on the limited impacts anticipated from each action noted above added to the potential impacts for either the No Action or Proposed Action.

3.3 Summary

Table 3-8. Project Summary Table

Resource	No Action Alt Effects	Proposed Action Alt Effects
Water Rights and Use	Minor to major impacts	Minor to major beneficial impacts
Water Quality	Minor to major impacts	Minor impacts
Aquatic Resources	Minimal to no Effect	Temporary, minimal impacts
Air Quality	No Effect	Minor, temporary impacts
Access, Transportation, and Public Safety	Minor to major impacts	Minor beneficial impacts
Noise	No Effect	Temporary, minor impacts
Visual Resources	Minor impacts	Minor temporary
Public Recreation	Minor impacts	Minor, temporary impacts
Grazing	Minor to moderate impacts	Minimal, short-term impacts
Vegetation	No Effect	Minor, temporary impacts
Noxious Weeds	No Effect	Minor impacts
Wildlife	No Effect	May affect, but not likely to adversely affect.
Threatened & Endangered and Special Status Species	No Effect	May affect, but not likely to adversely affect.
Cultural	Potential adverse effect	Adverse effect, mitigation proposed
Soils and Farmland	No Effect	Minimal, short-term impacts
Paleontological Resources	No Effect	No effect with mitigations
Socioeconomic	Moderate to major impacts	Moderate to major beneficial impact

4 Environmental Commitments

Table 4-1. Environmental Commitments and Best Management Practices (BMPs)

Environmental Commitment/BMP	Impacted Resource	Authority
Wyoming Pollutant Discharge Elimination System (WYPDES)	Water Quality	WYDEQ
Large Construction General Permit (Stormwater runoff)	Water Quality	WYDEQ
National Pollutant Discharge Elimination System (NPDES)	Water Quality	USEPA
Best Management Practices (wetland mats, stormwater barriers, and other construction practices).	Aquatic Resources	USACE
Anti-idling policy	Air Quality	WYDEQ
Ultra-low sulfur fuel	Air Quality	WYDEQ
Utilize grid power when available	Air Quality	WYDEQ
Dust Abatement: Speed reductions as authorized and approved by local offices, application of water, application of gravel, and application of a dust palliative.	Air Quality	WYDEQ
Traffic Control Plan	Access, Transportation, and Public Safety	WYDOT, Goshen County Sheriff's Department, and Goshen County Fire Rescue
Dust Control Plan	Access, Transportation, and Public Safety	WYDOT, Goshen County Sheriff's Department, and Goshen County Fire Rescue
Ventilation Fans	Access, Transportation, and Public Safety	WYDOT, Goshen County Sheriff's Department, and Goshen County Fire Rescue
Notification of allotment permittees	Grazing	BLM
Buffer, flagging, marking, or fencing, as appropriate.	Vegetation	BLM, State of WY, and Private Landowners
Reseeding as appropriate with BLM approved seed mix and county approved seed mix.	Vegetation	BLM, State of WY, and Private Landowners
Integrated Pest Management Plan	Noxious Weeds	Goshen Weed and Pest, BLM, State of WY, and Private Landowners
Migratory bird timing restrictions.	Wildlife Resources	USFWS, WGFD
Nest surveys, if applicable.	Wildlife Resources	USFWS, WGFD
Fall emergence surveys will be conducted at each tunnel location for tricolored bat prior to construction. Construction will occur during fall/winter months thereby limiting potential impacts to foraging individuals.	T&E Species	USFWS, WGFD
SHPO consultation	Cultural	WSHPO

Environmental Commitment/BMP	Impacted Resource	Authority
Exclusionary fencing	Cultural	WSHPO
Inadvertent Discovery Protocol	Cultural	WSHPO
Tribal Monitors	Cultural	THPO
Paleontological Monitors	Paleontological	BLM, Reclamation

5 Consultation and Coordination

5.1 Public Involvement

A 30-day public comment period is scheduled for the Project. During the comment period, public meetings are scheduled to be held in Torrington, WY and Scottsbluff, NE. A morning and evening meeting is planned for both locations for a total of four public meetings. Comments received on the project will be summarized in the Final EA and any substantive edits made to the document based on comments received will be identified in a FONSI, if that is the appropriate document at the end of the NEPA process.

5.2 Agency Consultation

Several state and federal agencies were contacted for comment regarding potential impacts to recreational, environmental, and structural resources. These agencies included Reclamation, BLM, NRCS, NPS, WGFD, and the WSEO. The NRCS found no protected farmlands within the Project area. The NPS indicated no concerns about the repair of the canals as proposed as long as resources related to the Oregon National Historic Trail are protected and avoided. WGFD recommended steps to prevent the spread of invasive species for aquatic and terrestrial habitat. A representative from the WSEO confirmed, based on the outlined Project, that there were no Platte River Recovery Implementation Program compliance issues.

5.3 Native American Consultation

A scoping letter which requested comments, information, or items of concern was sent to relevant agency and tribal representatives as noted in Appendix A. Responses were requested by December 6, 2023. The letter outlined the parties involved and the proposed purpose and need of reconstructing the water delivery tunnels. The letter also described HDR’s role as consultant for Project design and environmental permitting.

A request for tribal monitoring was made by the Northern Arapaho Tribe. As a result, tribal monitors for specific disturbance activities that occur outside the tunnels would be allowed and are noted in Table 4-1. Monitoring would be precluded in areas where it would be unsafe for such activities, including within the tunnels and in areas were the digger shield is operating.

6 Preparers

Table 6-1. List of Preparers

Name	Agency	Title	Areas of Responsibility
Brownlee, Sirena	HDR	Environmental Planning Lead	Senior Review/ QC
Buckner, Paul	HDR	Archaeologist	Cultural Resources
Carlson, Michaela	HDR	Environmental Scientist	Visual Resources Water Quality Water Rights & Use
Carter, Brianne	Bureau of Land Management	Realty Specialist	BLM Lands and Right-of-Way
Coats, Travis	HDR	Environmental Scientist	Aquatic Resources Noxious Weeds Threatened & Endangered Species Wildlife Resources
Ferugson, John	HDR	Architectural Historian	Cultural Resources
Johnson, Bradley, PhD	HDR	Federal Water Lead	NEPA Lead
Johnston, Stacey	Bureau of Reclamation	Chief, Contracts and Compliance Branch	Project Manager
Krall, Marcus	HDR		Project Manager
Krump, Rowan	HDR		Air Quality Grazing Public Recreation Soils & Farmlands of Agricultural Significance Vegetation
Lewis, Teri	HDR	Environmental Planner	Access, Transportation, & Safety Air Quality References Abbreviations and Acronyms
Meadows, Sabrina	HDR	Environmental Planner	Noise Environmental Justice
Shelley, Nathan	Bureau of Reclamation	Archeologist	Cultural Consultation and Resources
Wright, Shain	Bureau of Reclamation	Environmental Specialist	Agency NEPA Lead

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8 Abbreviations and Acronyms

APE	Area of Potential Effect
Applicant	Goshen Irrigation District (GID)
BLM	U.S. Bureau of Land Management
BMP	Best Management Practices
BRIC	Building Resilient Infrastructure and Communities
CEQ	Council on Environmental Quality
CFO	BLM Casper Field Office
CFR	Code of Federal Regulations
CFS	Cubic Feet per Second
CMAR	Construction Manager At Risk
EA	Environmental Assessment
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
GFLID	Gering Fort Laramie Irrigation District
GID	Goshen Irrigation District
GIS	geographic information system
FONSI	Finding of No Significant Impact
HUC	Hydrologic Unit Code
IM	Instruction Memorandum
IPaC	Information for Planning and Consultation tool
KOP	Key Observation Point
MBTA	Migratory Bird Treaty Act
mg/L	milligrams per liter
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
PFYC	Potential Fossil Yield Classification System
Reclamation	U.S. Bureau of Reclamation
ROW	right-of-way
RSHS	Reclamation Safety and Health Standards
THPO	Tribal Historic Preservation Officer
U.S.C.	United States Code
USACE	U.S. Army Corps of Engineers
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WGFD	Wyoming Game and Fish Department
WSEO	Wyoming State Engineer’s Office
WSHPO	Wyoming State Historic Preservation Office
WYDEQ	Wyoming Department of Environmental Quality

WYDOT	Wyoming Department of Transportation
XM	Extraordinary Measures

Appendix A. Distribution List

Appendix A: Distribution List

Federal, State, and Local Agencies

Last Name	First Name	Agency	Title
Little	Kevin	Wyoming Regulatory Office, US Army Corps of Engineers	State Program Manager
Schultz	Will	Wyoming Game and Fish Department	Statewide Habitat Protection Supervisor
Mangin	Zachary	Wyoming Department of Environmental Quality	Air Quality Planning Section Supervisor
Goats	Jeff	USDA Natural Resources Conservation Service	State Soil Scientist
Darnall	Nathan	US Fish and Wildlife Service	Deputy Field Supervisor
Johnson	Kim	Wyoming Office of Homeland Security	NFIP Coordinator
Gess	Michelle	Wyoming State Engineer's Office	River Basin Coordinator
Sheen (Needles)	Sara	Wyoming State Historic Preservation Office	Deputy Director/State Historic Preservation Officer
Beadles	Brian	Wyoming State Historic Preservation Office	Deputy State Historic Preservation Officer
Kiisk	Linda	Wyoming State Historic Preservation Office	CLG State Coordinator, Architect
Jensen	Jill	National Parks Service	Lead Planner, National Park Service, National Trails
Jarrett	Jordan	National Parks Service	Archeologist, National Trails Compliance Review
Preston	Rick	Gering-Ft. Laramie Irrigation District	District Manager

Tribal Agencies

Last Name	First Name	Tribal Name	Title	Response (Y/N)
Cooper	Durell	Apache Tribe of Oklahoma	Chairman	N
Wassana	Reggie	Cheyenne and Arapaho Tribes, Oklahoma	Governor	N
Bear	Max	Cheyenne and Arapaho Tribes, Oklahoma	THPO	N
LeBeau	Ryman	Cheyenne River Sioux Tribe of the Cheyenne River Reservation, South Dakota	Chairman	N
Vance	Steven	Cheyenne River Sioux Tribe of the Cheyenne River Reservation, South Dakota	THPO	N
Woommavovah	Mark	Comanche Nation, Oklahoma	Chairman	N
Minthorn	Martina	Comanche Nation, Oklahoma	THPO	N
Thompson Jr.	Lester	Crow Creek Sioux Tribe of the Crow Creek Reservation, South Dakota	Chairman	N
Marks	Merle	Crow Creek Sioux Tribe of the Crow Creek Reservation, South Dakota	THPO	Y
St. Clair	John	Eastern Shoshone Tribe of the Wind River Reservation	Chairman	N
Mann	Joshua	Eastern Shoshone Tribe of the Wind River Reservation	THPO	N
Stiffarm	Jeffrey	Fort Belknap Indian Community of the Fort Belknap Reservation of Montana	President	N
Blackwolf	Michael	Fort Belknap Indian Community of the Fort Belknap Reservation of Montana	THPO	N
Estes	Clyde	Lower Brule Sioux Tribe of the Lower Brule Reservation, South Dakota	Chairman	N
Gourneau	Boyd	Lower Brule Sioux Tribe of the Lower Brule Reservation, South Dakota	Director	N
Goggles	Lloyd	Northern Arapaho Tribe of the Wind River Reservation	Chairman	Y
Ridgley	Ben	Northern Arapaho Tribe of the Wind River Reservation	THPO	Y
Wetherelt	Serena	Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation, Montana	President	N
Limpy	Teanna	Northern Cheyenne Tribe of the Northern Cheyenne Indian Reservation, Montana	THPO	N
Killer	Kevin	Oglala Sioux Tribe	President	N
Brings	Thomas	Oglala Sioux Tribe	THPO	N
Herman	Scott	Rosebud Sioux Tribe of the Rosebud Indian Reservation, South Dakota	President	N
Quigley	Ione	Rosebud Sioux Tribe of the Rosebud Indian Reservation, South Dakota	THPO	N
Trudell	Roger	Santee Sioux Nation, Nebraska	Chairman	N

Last Name	First Name	Tribal Name	Title	Response (Y/N)
Thomas	Larry	Santee Sioux Nation, Nebraska	Acting THPO	N
Alkire	Janet	Standing Rock Sioux Tribe of North & South Dakota	Chairwoman	N
Eagle	Jon	Standing Rock Sioux Tribe of North & South Dakota	THPO	N

Appendix B. ESA Compliance Documentation

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Wyoming Ecological Services Field Office
334 Parsley Boulevard
Cheyenne, WY 82007-4178
Phone: (307) 772-2374 Fax: (307) 772-2358
Email Address: wyominges@fws.gov

In Reply Refer To: 06/11/2024 19:57:08 UTC
Project Code: 2023-0035868
Project Name: Goshen Irrigation Tunnel Rehabilitation

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 (ESA) 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 note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the ESA, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

Please feel free to contact us if you need more information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. We also encourage you to visit the Wyoming Ecological Services website at https://fws.gov/office/wyoming-ecological-services.

The purpose of the ESA 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 ESA and its implementing regulations (50 CFR 402 et seq.), federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical

impacts) that are major federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered
Species Consultation Handbook" at: https://www.fws.gov/sites/default/files/documents/endangered-species-consultation-handbook.pdf.

We also recommend you consider the following information when assessing impacts to federally listed species, as well as migratory birds, and other trust resources:

Colorado River and Platte River Systems: Federal agencies must consult with the Service under section 7 of the ESA for projects in Wyoming that may lead to water depletions or have the potential to impact water quality in the Colorado River system or the Platte River system, because these actions my affect threatened and endangered species inhabiting the downstream reaches of these river systems. In general, depletions include evaporative losses and/or consumptive use of surface or groundwater within the affected basin, often characterized as diversions minus return flows. Project elements that could be associated with depletions include, but are not limited to: ponds, lakes, and reservoirs (e.g., for detention, recreating, irrigation, storage, stock watering, municipal storage, and power generation); hydrostatic testing of pipelines; wells; dust abatement; diversion structures; and water treatment facilities. For more information on consultation requirements for the Platte River species, please visit https://fws.gov/partner/platte-river-recovery-implementation-program and for the Colorado River species, please visit https://coloradoriverrecovery.org/uc/.

Migratory Birds: The Migratory Bird Treaty Act (16 U.S.C. 703-712; MBTA), enacted in 1918, prohibits the taking of any migratory birds, their parts, nests, or eggs except as permitted by regulations. Section 703 of the MBTA states, “Unless and except as permitted by regulations ... it shall be unlawful at any time, by any means or in any manner, to ... take, capture, kill, attempt to take, capture, or kill, or possess ... any migratory bird, any part, nest, or eggs of any such bird....” Except for introduced species and some upland game birds, almost all birds occurring in the wild in the United States are protected (50 CFR 10.13).

The Service has identified bird species of highest conservation priority in the 2021 Birds of Conservation Concern Report (https://www.fws.gov/migratorybirds/pdf/management/birds-of-conservation-concern-2021.pdf). In accordance with the Fish and Wildlife Conservation Act (16 USC 2912 (a)(3)), this report identifies “species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing” under the ESA. This report is intended to stimulate coordinated and proactive conservation actions among federal, state, and private partners. Even if there is no federal nexus, the Project can take proactive, voluntary actions to benefit migratory birds. The following website contains recommendations for the protection of migratory birds (https://www.fws.gov/

program/migratory-birds). Guidance for minimizing impacts to migratory birds for projects that include communication towers can be found at https://www.fws.gov/sites/default/files/documents/usfws-communication-tower-guidance.pdf.

The Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d; Eagle Act) prohibits knowingly taking, or taking with wanton disregard for the consequences of an activity, any bald or golden eagles or their body parts, nests, or eggs, which includes collection, molestation, disturbance, destruction, or killing. Eagle nests are protected whether they are active or inactive. Removal or destruction of nests, or causing abandonment of a nest could constitute a violation of the Eagle Act. Projects affecting eagles may require development of an eagle conservation plan (https://www.fws.gov/library/collections/bald-and-golden-eagle-management). Additionally, wind energy projects should follow the wind energy guidelines (https://www.fws.gov/media/land-based-wind-energy-guidelines) for minimizing impacts to migratory birds and bats.

In addition to MBTA and the Eagle Act, **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 avoiding and minimizing incidental take of migratory birds, please visit https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds.

We appreciate your concern for threatened and endangered species. The Service encourages federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the ESA. Please include the Project Code in the header of this letter with any request for consultation or correspondence about your project that you submit to our office using our WyomingES@fws.gov email address or the letterhead address above.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

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:

Wyoming Ecological Services Field Office
334 Parsley Boulevard
Cheyenne, WY 82007-4178
(307) 772-2374

PROJECT SUMMARY

Project Code: 2023-0035868

Project Name: Goshen Irrigation Tunnel Rehabilitation

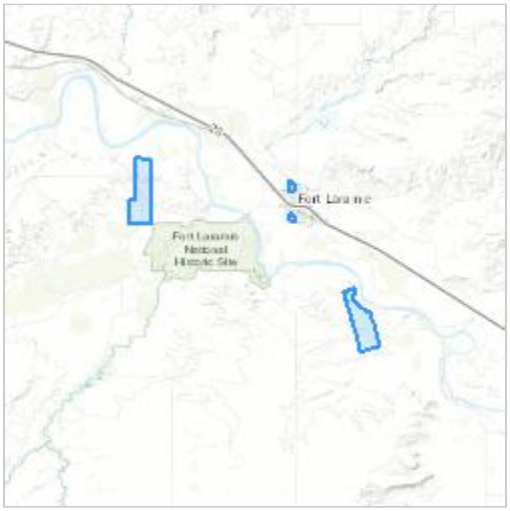
Project Type: Water Supply Pipeline - Maintenance/Modification - Below Ground

Project Description: Goshen Irrigation District, in conjunction with the Wyoming Water Development Office, is planning to reconstruct 2 irrigation tunnels located west and southeast of Fort Laramie, WY (the Project). The Project will consist of reconstructing approximately 1.25-miles of irrigation tunnelling (see Figure 1. Project Location). The Study Area for the Project will include a buffer area around each tunnel. Tunnel #1's buffer area includes approximately 188-acres and Tunnel #2's buffer area is approximately 167-acres. Additional staging areas have been identified within the town of Ft. Laramie. One staging area comprised of two parts is located northwest of the intersection of Otis St/Laramie Ave. These areas are approximately 6.5 acres and 0.3 acres in size. The secondary staging area located southwest of Park Rd/Laramie Ave is approximately 7.25 acres in size.

The reconstruction of these tunnels is necessary after a portion of Tunnel #2 collapsed in 2019, leaving the irrigation system unable to operate at full capacity. Initial work was done to temporarily repair the tunnel, but a more robust rebuild will be required to extend the lives of both irrigation tunnels and to ensure they are both operating at maximum capacity. If other alternatives arise that are outside of the provided Study Area, your agency will be notified.

Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@42.186664050000005,-104.49762544994246,14z



Counties: Goshen County, Wyoming

ENDANGERED SPECIES ACT SPECIES

There is a total of 7 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. Note that 1 of these species should be considered only under certain conditions.

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.

MAMMALS

NAME	STATUS
Tricolored Bat *Perimyotis subflavus* No critical habitat has been designated for this species. This species only needs to be considered under the following conditions: ▪ This species only needs to be considered if the project includes wind turbine operations. Species profile: https://ecos.fws.gov/ecp/species/10515	Proposed Endangered

BIRDS

NAME	STATUS
Piping Plover *Charadrius melodus* Population: [Atlantic Coast and Northern Great Plains populations] - Wherever found, except those areas where listed as endangered. There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/6039	Threatened
Whooping Crane *Grus americana* Population: Wherever found, except where listed as an experimental population There is **final** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/758	Endangered

FISHES

NAME	STATUS
Pallid Sturgeon *Scaphirhynchus albus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/7162	Endangered

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
Western Prairie Fringed Orchid *Platanthera praeclara* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/1669	Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and golden eagles are protected under the Bald and Golden Eagle Protection Act[1] and the Migratory Bird Treaty Act[2].

Any person or organization who plans or conducts activities that may result in impacts to bald or golden eagles, or their habitats[3], should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

---

1. The Bald and Golden Eagle Protection Act of 1940.
2. The Migratory Birds Treaty Act of 1918.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are likely bald eagles present in your project area. For additional information on bald eagles, refer to Bald Eagle Nesting and Sensitivity to Human Activity

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
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 Oct 15 to Aug 31

NAME	BREEDING SEASON
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Dec 1 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

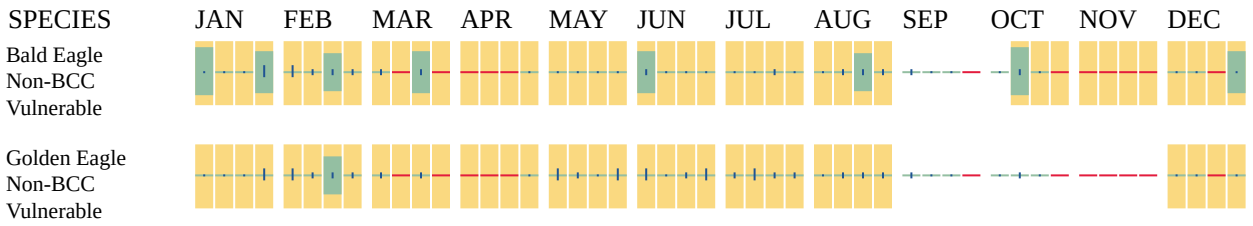
Probability of Presence (▪)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (▪)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management

- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

MIGRATORY BIRDS

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[3] should follow appropriate regulations and consider implementing appropriate conservation measures, as described in the links below. Specifically, please review the "Supplemental Information on Migratory Birds and Eagles".

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the PROBABILITY OF PRESENCE SUMMARY below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
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 Oct 15 to Aug 31
California Gull *Larus californicus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10955	Breeds Mar 1 to Jul 31
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9406	Breeds Mar 15 to Aug 25

NAME	BREEDING SEASON
Ferruginous Hawk *Buteo regalis* 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/6038	Breeds Mar 15 to Aug 15
Franklin's Gull *Leucophaeus pipixcan* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10567	Breeds May 1 to Jul 31
Golden Eagle *Aquila chrysaetos* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1680	Breeds Dec 1 to Aug 31
Grasshopper Sparrow *Ammodramus savannarum perpallidus* 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/8329	Breeds Jun 1 to Aug 20
Lark Bunting *Calamospiza melanocorys* 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/9451	Breeds May 10 to Aug 15
Northern Harrier *Circus hudsonius* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8350	Breeds Apr 1 to Sep 15
Pinyon Jay *Gymnorhinus cyanocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9420	Breeds Feb 15 to Jul 15
Red-headed Woodpecker *Melanerpes erythrocephalus* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9398	Breeds May 10 to Sep 10
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

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental

Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

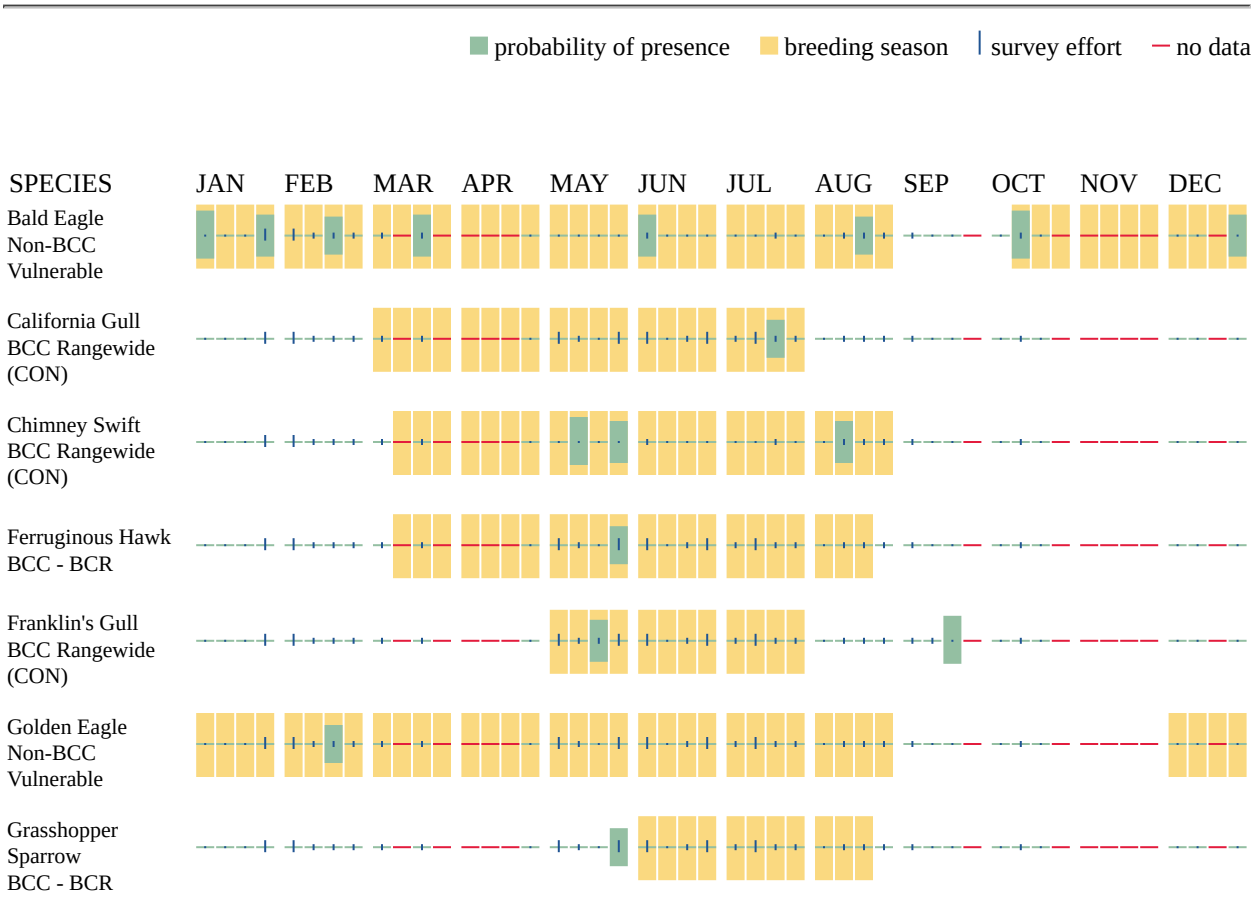
Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

FRESHWATER EMERGENT WETLAND

- PEM1C

RIVERINE

- R4SBCx
- R2UBFx
- R2UBGx

- R5UBFx
- R5UBH

IPAC USER CONTACT INFORMATION

Agency: HDR
Name: Michaela Carlson
Address: 101 S. Phillips Ave.
Address Line 2: Suite 401
City: Sioux Falls
State: SD
Zip: 57104
Email michaela.carlson@hdrinc.com
Phone: 6057828131

LEAD AGENCY CONTACT INFORMATION

Lead Agency: Bureau of Reclamation

Appendix C. Cultural Resource Compliance Documentation

PROGRAMMATIC AGREEMENT
AMONG
THE U.S. DEPARTMENT OF THE INTERIOR – BUREAU OF RECLAMATION, THE U.S. DEPARTMENT OF AGRICULTURE – NATURAL RESOURCES CONSERVATION SERVICE, THE U.S. DEPARTMENT OF AGRICULTURE – FOREST SERVICE INTERMOUNTAIN REGION AND ROCKY MOUNTAIN REGION, THE U.S. DEPARTMENT OF THE INTERIOR FISH AND WILDLIFE SERVICE – MOUNTAIN – PRAIRIE REGION, U.S. DEPARTMENT OF THE INTERIOR – NATIONAL PARK SERVICE – GRAND TETON NATIONAL PARK, THE WYOMING STATE HISTORIC PRESERVATION OFFICER, EASTERN SHOSHONE TRIBE, NORTHERN ARAPAHO TRIBE, AND THE ADVISORY COUNCIL ON HISTORIC PRESERVATION
REGARDING
THE MANAGEMENT OF IRRIGATION FACILITIES IN THE STATE OF WYOMING

PA Mitigation Proposal for Adverse Effects to Components of Irrigation Systems

Project Proponent: Goshen Irrigation District

Lead Agency: United States Bureau of Reclamation, Wyoming Area Office

Project Name, Agency Project Number, and Description:

Fort Laramie Canal Tunnels 1 and 2 Rehabilitation Project, DBI_WY_2023_275:

The Goshen Irrigation District proposes to rehabilitate the Fort Laramie Canal Tunnels 1 and 2 in Goshen County, Wyoming. The United States Reclamation Service (predecessor of the Bureau of Reclamation) built the tunnels in 1917. Tunnels 1 and 2, and their associated canal segments, are contributing features of the National Register of Historic Places-eligible Fort Laramie Canal (48GO264). Following the partial collapse of Tunnel 2 in 2019, and subsequent emergency repairs, Goshen Irrigation District and the Bureau of Reclamation determined that rehabilitation of both tunnels is necessary to ensure the continued operation of the canal. The Bureau of Reclamation is acting as the lead federal agency for the project overall, while the Bureau of Land Management, Casper Field Office is a cooperating agency.

Projected Project Construction Date: December 2024 through February 2027

Finding of Effect (describe the resource(s) affected by Smithsonian # including type of effect, scope of effect, and other details as needed):

Site 48GO264_5 consists of a Fort Laramie Canal segment that includes ***Tunnel 1*** and structural openings on either end of the tunnel. This segment is 5,390 ft (1,643 m) long. The canal leading up to the tunnel inlet consists of a broad earthen trench that is 80 ft (24. 3 m) wide and approximately 10 ft (3 m) deep. At approximately 200 ft (61 m) from the tunnel inlet, the canal transitions into a concrete-lined flume. The flume is 75 ft (22.9 m) wide and tapers to 15 ft (4.6 m) wide at the inlet. The tunnel opening features a concrete archway with a gable cap. The cap is stamped with 1 / USRS / 1917 //. At the outlet, the tunnel opens to a 775 ft (236 m) long concrete-lined channel 15 ft (4.6 m) wide at the tunnel opening, expanding to 85 ft (26 m) wide. Like the inlet, the outlet features a concrete archway with a gable cap. The cap is stamped with 1 / USRS / 1917 //. A valve is located above the outlet structure on the western edge. The valve is bound by concrete retaining walls located on the southern, western, and northern sides. The tunnel outlet is approximately 4 ft (1.2 m) lower in elevation than the entrance, resulting in a 1 percent slope. In total, the tunnel is 2,700 ft (823 m) long.

Sites 48GO264_8, 48GO264_9, and 48GO264_10 consist of Fort Laramie Canal segments that include ***Tunnel 2.*** The canal leading up to the tunnel inlet consists of a broad earthen trench 80 ft (24.4 m) wide and approximately 10 ft (3 m) deep. At approximately 350 ft (107 m) from the tunnel inlet, the canal transitions into a concrete-lined flume. The flume measures 75 ft (22.9 m) wide and tapers to 15 ft (4.6 m) wide at the inlet. The tunnel opening features a concrete archway with a gable cap. The cap is stamped with 2 / USRS / 1917 //. At the outlet, the tunnel opens to a 500 ft (152.4 m) long concrete-lined channel 15 ft (4.6 m) wide at the tunnel opening and expands to 90 ft (27.4 m) wide downstream from the outlet. Like the inlet, the outlet features a concrete archway with a gable cap. The cap is stamped with 2 / USRS / 1917 //. A valve is located above the outlet structure on the western edge. The valve is bound by concrete retaining walls located on the southern, western, and northern sides. The tunnel outlet is approximately 15 ft (4.6 m) lower in elevation than the entrance, resulting in a 2 percent slope. In total, the tunnel is 2,150 ft long.

Both tunnels and their associated segments are contributing features of the National Register of Historic Places-eligible Fort Laramie Canal (48GO264). The canal is significant under National Register Criteria A and C and retains integrity of location, design, materials, workmanship, and association. It is eligible for the National Register. The proposed Project will include replacement of the Tunnel 1 and the Tunnel 2 inlet and outlet structures, and below-ground reconstruction of the tunnels. As such, this Project will have an ***adverse effect*** on the NRHP-eligible Fort Laramie Canal per 36 CFR 800.5.

Selected mitigation from Appendix B of the PA or other mitigation activity:

The Class III cultural resource survey and effects analysis report for Fort Laramie Canal Tunnels 1 and 2 Rehabilitation Project included a detailed historical review and description (including photography and detailed mapping). We propose to reformat this existing information (as needed for the wiki) and contribute this information to further develop PA Appendix B Topics:

VIII. Compiling Research on Canals and Irrigation Infrastructure
IX. Local Canal, Canal System, or Regional Irrigation History

All relevant historical information included in the Class III report will be used for the wiki and will be supplemented with additional historical contextual data, if available, that can be found through local historical research and/or online research to develop a detailed Fort Laramie Canal historical context for the wiki. The wiki submission will also include existing photographs of the canal and tunnel openings used in the Class III report and, if necessary, may be supplemented with additional high resolution (300dpi or greater) digital images as needed to fully capture the character-defining features of the tunnel openings. Finally, high resolution digital photographs will capture the new tunnel openings post construction. All this information will be compiled into a narrative that can be added to the wiki to help develop the history of the Fort Laramie Canal.

Mitigation for this project will be completed no later than: February 2029

Proponent's signature and date _____ 3/7/24

Lead agency official signature and date _____

SHPO/THPO concurrence letter will be attached acknowledging the adverse effect and the mitigation proposed.

Schedule of accomplishments for the mitigation proposal

Date submitted to SHPO/THPO (30-day review/comment for accepting proposal):

Date SHPO/THPO letter accepting the proposal:

Mitigation kickoff meeting to discuss proposal with the lead agency, proponent (including any contractors), and SHPO/THPO (must be within 30 days of proposal acceptance):

Progress meetings (must be within 6 months of kickoff meeting and occur at least every 6 months until a draft is submitted to the lead agency):

Date draft submitted to lead agency (30-day review):

Date revised draft final submitted to lead agency (15-day review):

Date final draft submitted to SHPO/THPO (30-day review):

Date SHPO/THPO accepts mitigation product and mitigation is considered complete:

Please attach all appropriate supporting documents of the proposal (e.g. historic properties treatment plans, etc.) to this template with initial and final submission.

Appendix D. Anticipated Construction Equipment List

Equipment List for Digger Shield Excavation Concept

.	Tunnel 1 Inlet	Tunnel 1 Outlet	Tunnel 2 Inlet	Tunnel 2 Outlet	Laydown Site
Tunnel Excavation Equipment					
Used 7day/wk, 24 hr/day					
375 cfm air compressor	x	x	x	x	x
Mine Ventilation Fan	x	x	x	x	
Deisel Generator	x	x	x	x	x
10k Forklift	x	x	x	x	x
Skidsteer Loader	x	x	x	x	
966 Wheel Loader	x	x	x	x	x
Tunnel Digger Shield	x	x	x	x	
Tunnel Utility Haulers	x	x	x	x	
Brokk Demolition Machine	x	x	x	x	
Boom Manlift	x	x	x	x	
Chemgrout Double Barrel Mixer	x	x	x	x	
Dewatering Pumps	x	x	x	x	
Electrical Transformer/Switch	x	x	x	x	x
Motor Grader					x
Crew Vans	x	x	x	x	
5T Truck and Trailer					x
Welder					x
Shower Trailers					x
Shop Gantry Crane					x
Storage Connexs	x	x	x	x	x
Grizzley or Impact Crusher	x	x	x	x	
Crew Buggie	x	x	x	x	
250T Crane	x	x	x	x	
Portal Demo and Replacement					
6 day/wk, 12 hr/day					
Excavator	x	x	x	x	
Bull Dozer	x	x	x	x	
Wheel Loader	x	x	x	x	
Off-Road Haul Trucks	x	x	x	x	
Water Truck	x	x	x	x	
Soil Nail Drill Rig	x	x	x	x	
Shotcrete Pump	x	x	x	x	
375cfm Air Compressor	x	x	x	x	
Sheeps Foot Compactor	x	x	x	x	
10k Forklift	x	x	x	x	
Concrete Placing Boom	x	x	x	x	
Concrete Power Screed	x	x	x	x	
Process Water Settling Tanks	x	x	x	x	
Motor Grader					x
Ready Mix trucks	x	x	x	x	
Delivery Trucks	x	x	x	x	
On road haul trucks	x	x	x	x	
Storage Connexs	x	x	x	x	
Manlift	x	x	x	x	
Mini Excavator	x	x	x	x	

Appendix E. U.S. Army Corps of Engineers Agricultural Exemption

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, OMAHA DISTRICT
WYOMING REGULATORY OFFICE
2232 DELL RANGE BOULEVARD, SUITE 210
CHEYENNE WY 82009-4942

February 2, 2024

Kevin Strecker
Goshen Irrigation District
2912 West E Street
Torrington, WY 82240
kevin.strecker@goshenirrigation.com

Dear Mr. Strecker:

This letter is in response to a request for comments we received from HDR Engineering, Inc. on November 3, 2023, concerning the Goshen Irrigation District, Fort Laramie Canal Rehabilitation Tunnel 1 and Tunnel project. The proposed work on Tunnel 1 is located in Sections 17 and 20, Township 26N, Range 64W and Tunnel 2 is located in Sections 35 and 36, Township 26N, Range 64W, Goshen County, Wyoming.

The U.S. Army Corps of Engineers regulates the placement of dredged and fill material into wetlands and other waters of the United States as authorized primarily by Section 404 of the Clean Water Act (33 U.S.C. 1344). The term "waters of the United States" has been broadly defined by statute, regulation, and judicial interpretation to include all waters that were, are, or could be used in interstate commerce such as streams, reservoirs, lakes and adjacent wetlands. The Corps regulations are published in the *Code of Federal Regulations* as 33 CFR Parts 320 through 332. Information on Section 404 program requirements in Wyoming can be obtained from our web site at https://www.nwo.usace.army.mil/html/od-rwy/Wyoming.htm

The Goshen Irrigation District (GID), in conjunction with the Gering-Ft. Laramie Irrigation District (GFLID) and Wyoming Water Development Office (WWDO), is proposing to reconstruct two water delivery (irrigation) tunnels (Tunnel 1 and Tunnel 2) located along the Fort Laramie Canal in the vicinity of Fort Laramie, Wyoming (the project). The proposed project is anticipated to include the excavation, demolition, and reconstruction of the original tunnels along their current alignments.

Based on the information provided, it has been determined that although the proposed project will affect potential waters of the U.S. including the Fort Laramie Canal, the proposed activities are considered a combination of routine maintenance and construction activities that do not require Department of the Army authorization because Part 323.4(a)(3) of our regulations states that the following activities are exempt:

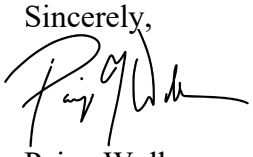
"Construction or maintenance of farm or stock ponds or irrigation ditches, or the maintenance (but not construction) of drainage ditches. Discharges associated with siphons, pumps, headgates, wingwalls, weirs, diversion structures, and such other facilities as are appurtenant and functionally related to irrigation ditches are included in this exemption."

As a result of this analysis, we determined that Department of the Army authorization is not required for the activities associated with the GID/GFLID/WWDO irrigation tunnel rehabilitation project because the activity is exempt.

This determination does not eliminate the requirement to obtain any other applicable federal, state, tribal, or local permits that may be required. In addition, any deviations from the plans and specifications for the project, provided as of November 3, 2023, could require additional authorization.

Thank you for your interest in cooperating with requirements of the U.S. Army Corps of Engineers' regulatory program. Please contact me at (307) 772-2300 or by email at Paige.M.Wolken@usace.army.com if you have any questions regarding this determination and reference NWO-2023-01724.

Sincerely,



Paige Wolken
Project Manager
Wyoming Regulatory Office

Electronic Copy Furnished:

Jessica Brisbois, HDR (Jessica.Brisbois@hdrinc.com)
Eric Hargett, Wyoming Department of Environmental Quality, Water Quality Division (eric.hargett@wyo.gov)

The Omaha District, Regulatory Branch, Wyoming Regulatory Office is committed to providing quality and timely service to our customers. In an effort to improve customer service, please take a moment to complete a Customer Service Survey found on our web site at https://www.nwo.usace.army.mil/html/od-rwy/survey.htm

Appendix F.
Concrete Testing Report

Memorandum

Date:	Wednesday, October 09, 2024
Project:	Fort Laramie Canal Tunnels No. 1 and No. 2 Rehabilitation Project, Goshen Irrigation District, Goshen County, Wyoming
To:	Brandon Noble, PE, HDR
From:	Andrew Smith, PG, HDR
Subject:	**Hazardous Materials Assessment Technical Memorandum**

Introduction

HDR has prepared this Hazardous Materials Assessment (HMA) Technical Memorandum (Report) for the Fort Laramie Canal Tunnels No. 1 and No. 2 Rehabilitation Project (Project). Both tunnels are part of the Fort Laramie Canal, which is part of the United States (US) Bureau of Reclamation's (USBR) North Platte Project. The Fort Laramie Canal is operated and maintained by the Goshen Irrigation District and the Gering-Fort Laramie Irrigation District (HDR 2023). HDR is currently under contract for final design of the permanent repair of both tunnels.

HDR performed this HMA investigation to determine whether concrete in the tunnels contains asbestos. The purpose of the HMA investigation is to confirm the testing and, if necessary, recommend remediation of potential asbestos-containing materials (ACMs) within the structure of the tunnels.

Subject Property Location

The Project is located near the town of Fort Laramie, Wyoming, which has a population of about 214 people. Fort Laramie is located at the junction of US Highway 26 and State Highway 160.

Figure 1 provides a proximity overview of the Project's two locations in relation to Fort Laramie, Wyoming, and the Whalen Diversion Dam. The inset map shows the location of the Project relative to the state of Wyoming (HDR 2023).

Figure 1. Project Vicinity Map

Source: HDR 2023

Scope of Work

Sampling Methods and Procedures

HDR performed confirmation sampling to determine the presence of ACM and evaluate if remediation of the ACM within the structures of both tunnels might be required. HDR used concrete core samples that were collected in both tunnels during structural investigation of the concrete lining in the tunnels. The core samples were collected during investigations conducted in 2019, 2020, and 2024, and the concrete core samples were archived. HDR selected archived core samples to submit for laboratory analyses for asbestos using polarized light microscopy (PLM) by US Environmental Protection Agency (EPA) Method 600/R-93-116.

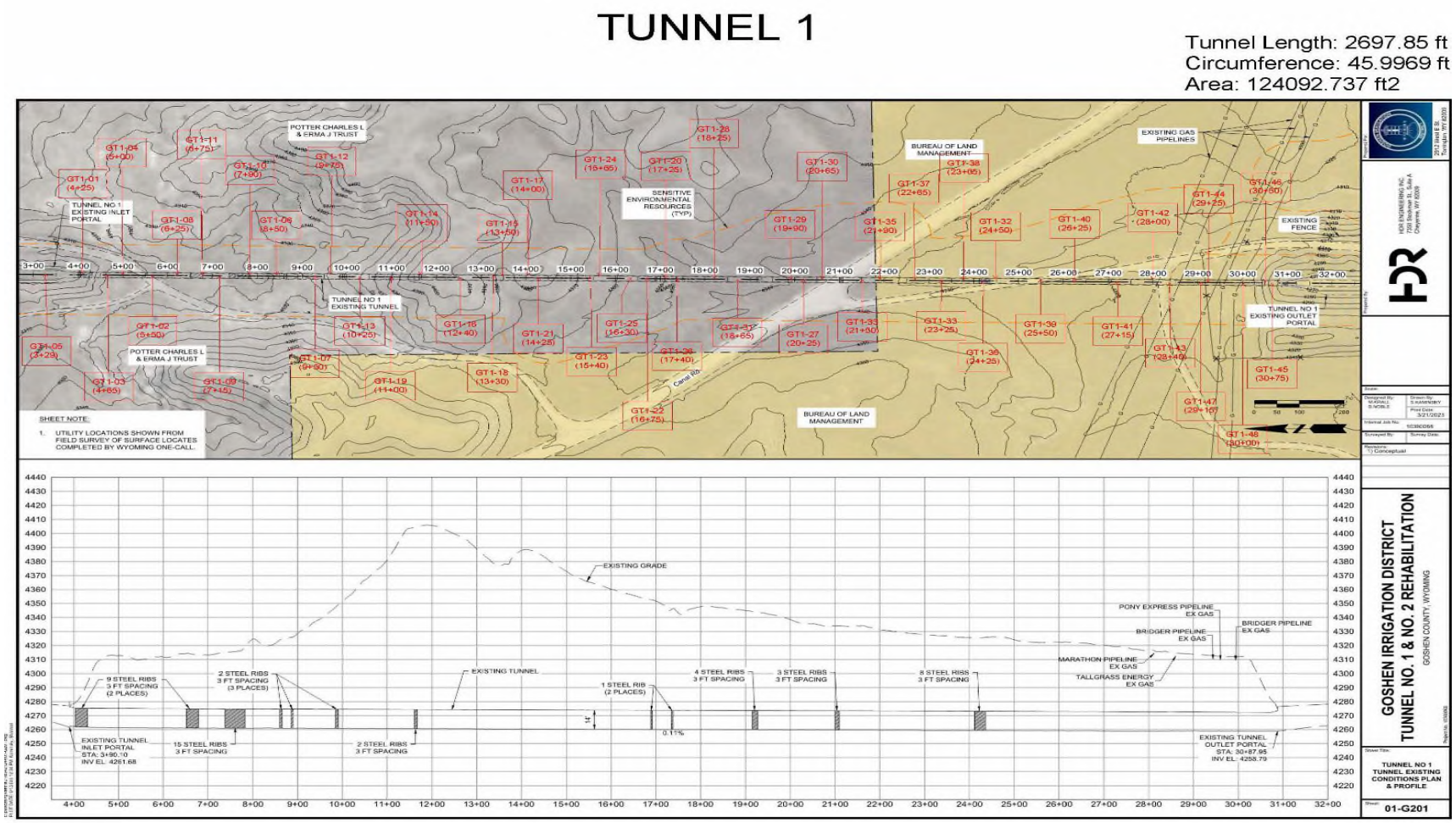
ACM is defined under the National Emission Standards for Hazardous Air Pollutants (NESHAP), Title 40 Code of Federal Regulations (CFR) Part 61, as any material containing more than 1% asbestos as determined using the methods specified in Appendix A, Subpart E, 40 CFR Part 763, Section 1, PLM.

In accordance with the EPA NESHAP regulation, facilities planned for renovation and demolition must be inspected for ACMs prior to the planned renovation or demolition. The asbestos NESHAP regulation (40 CFR 61, Subpart M, Section 61.145) requires the identification and removal of all ACM prior to demolition and renovation. The NESHAP regulation in combination with the requirements of the EPA governs the testing, handling, and disposal of materials containing asbestos.

Asbestos-Containing Materials Sampling

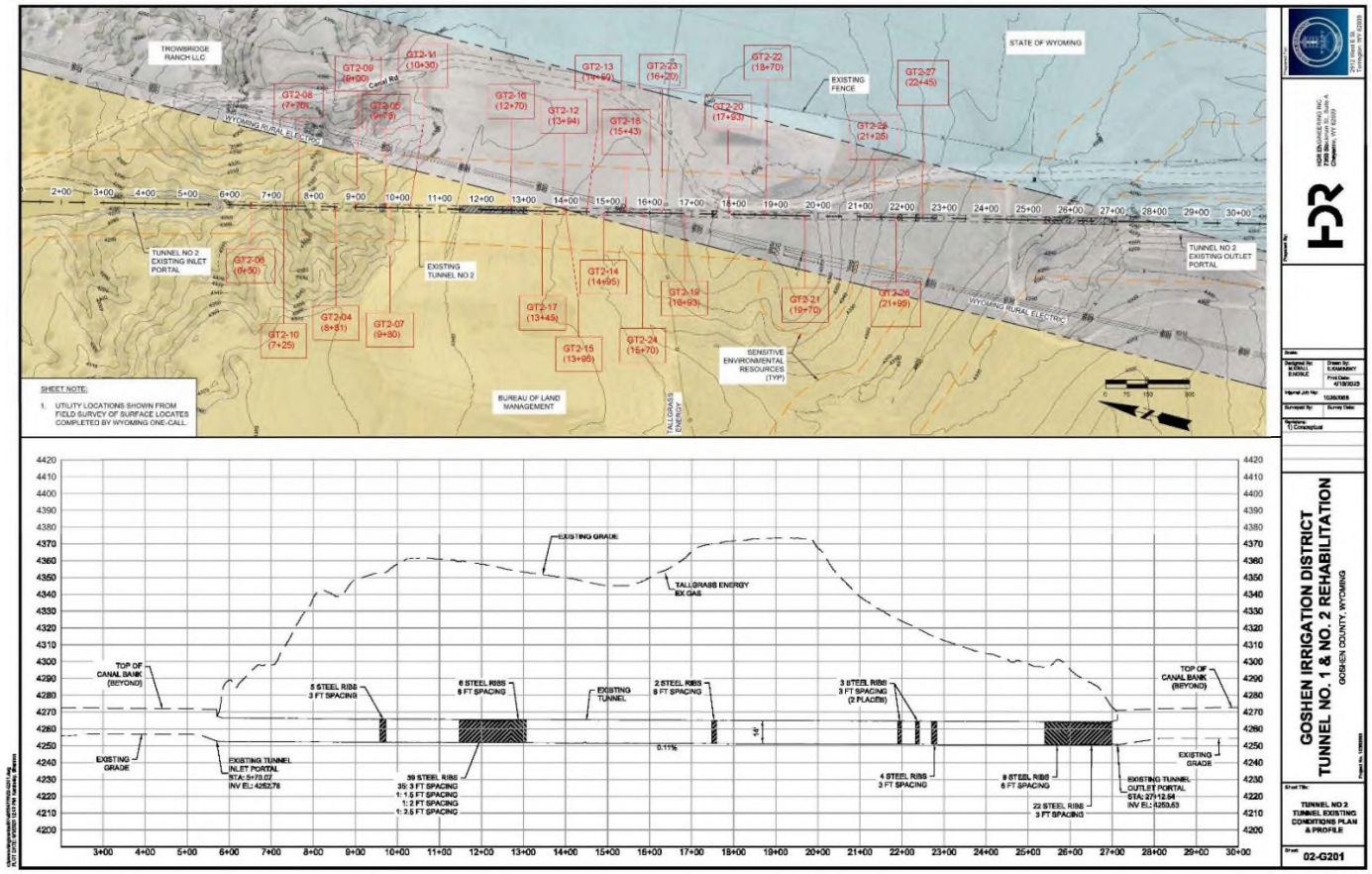
HDR submitted at total of 71 concrete samples consisting of 48 from Tunnel No. 1 and 23 from Tunnel No. 2. The samples were collected from archived concrete core samples collected during the 2019, 2020, and 2024 core sampling from the tunnels. Archived core samples were selected for analysis from specific tunnel survey station locations to provide representative sampling of each tunnel’s concrete lining. Pieces of the core samples were chipped with a rock hammer, and the concrete chips were placed in ziplock plastic bags, labeled with references to the tunnel number and survey station location. The samples were submitted to EMSL Laboratory in San Leandro, California, for analyses by PLM EPA Method 600/R-93-116. Figure 2 and Figure 3 show the sample locations for Tunnels No. 1 and No. 2.

Figure 2. Sampling Locations for ACM Analysis: Tunnel No. 1



Source: HDR 2023

Figure 3. Sampling Locations for ACM Analysis: Tunnel No. 2



Source: HDR 2023

Results and Findings

All samples submitted for ACM analyses were found not to contain greater than 1% asbestos and were “non-detect” for asbestos. The laboratory analytical results are included in Attachment 1.

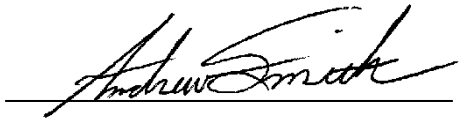
Conclusions and Recommendations

HDR conducted an HMA for ACM from the Goshen Irrigation District, Tunnels No. 1 and No. 2. All suspect ACM samples were below detection limits for asbestos content (less than 1%). ACMs in the concrete liner of Tunnels No. 1 and No. 2 do not present a hazard. Based on the results of this investigation and the statistically significant sample size, results indicate that the tunnels do not contain ACM.

Qualifications of Environmental Professionals and Signature

This Report has been prepared by or under the supervision of a Professional Geologist. The Registered Professional Geologist attests to the technical information contained herein and has judged the qualifications of any technical specialists providing environmental data upon which recommendations, conclusions, and decisions are based.

This HMA Technical Memorandum was prepared by the following HDR personnel:



Andrew Smith, Professional Geologist, California (No. 9313)
Date: October 9, 2024

Mr. Andrew Smith, Senior Geologist for HDR, conducted oversight during sample selection and report preparation of the data received. Mr. Smith has over 23 years of experience in environmental investigations, site characterizations, and regulatory compliance. Mr. Smith has the following professional registration relevant to the environmental field:

- Professional Geologist, California (No. 9313)
- Lead Inspector/Assessor certification
- Asbestos Building Inspector Refresher 1011

References

HDR

2023 Geotechnical Data Report, Fort Laramie Canal Tunnels No. 1 and No. 2 Rehabilitation Project. Goshen Irrigation District, Goshen County, Wyoming. June 1, 2023.

Code of Federal Regulations

2024 National Emission Standards for Hazardous Air Pollutants (NESHAP), Title 40 CFR Part 61. CFR :: 40 CFR Part 61 Subpart M -- National Emission Standard for Asbestos. Last amended October 7, 2024.

Attachment 1
EMSL Analytical Report

hdrinc.com 3003 Oak Road, Suite 500, Walnut Creek, CA 94597-4541
(925) 465-2700

EMSL Analytical, Inc.

464 McCormick Street San Leandro, CA 94577

Tel/Fax: (510) 895-3675 / (510) 895-3680

http://www.EMSL.com / sanleandrolab@emsl.com

EMSL Order: 092414380
Customer ID: WREC75
Customer PO:
Project ID:

Attention: Andrew Smith
HDR
3003 Oak Road, Suite 500
Walnut Creek, CA 94597-4541

Phone: (925) 941-0017
Fax: (925) 941-0018
Received Date: 08/01/2024 9:15 AM
Analysis Date: 08/08/2024
Collected Date: 07/18/2024

Project: GOSHEN TUNNELS 1 AND 2 CONCRETE SAMPLING

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
GT1-01	TUNNEL 1, AREA 1,	Gray		40% Quartz	None Detected
	HDR CHAINAGE:	Non-Fibrous		40% Ca Carbonate	
092414380-0001	4+25	Homogeneous		20% Non-fibrous (Other)	
GT1-02	TUNNEL 1, AREA 1,	Gray		40% Quartz	None Detected
	HDR CHAINAGE:	Non-Fibrous		40% Ca Carbonate	
092414380-0002	5+50	Homogeneous		20% Non-fibrous (Other)	
GT1-03	TUNNEL 1, AREA 1,	Gray		40% Quartz	None Detected
	HDR CHAINAGE: 4	Non-Fibrous		40% Ca Carbonate	
092414380-0003	+65	Homogeneous		20% Non-fibrous (Other)	
GT1-04	TUNNEL 1, AREA 1,	Gray		40% Quartz	None Detected
	HDR CHAINAGE:	Non-Fibrous		40% Ca Carbonate	
092414380-0004	5+00	Homogeneous		20% Non-fibrous (Other)	
GT1-05	TUNNEL 1, AREA 1,	Gray		40% Quartz	None Detected
	HDR CHAINAGE:	Non-Fibrous		40% Ca Carbonate	
092414380-0005	3+29	Homogeneous		20% Non-fibrous (Other)	
GT1-06	TUNNEL 1, AREA 2,	Gray		40% Quartz	None Detected
	HDR CHAINAGE:	Non-Fibrous		40% Ca Carbonate	
092414380-0006	08+50	Homogeneous		20% Non-fibrous (Other)	
GT1-07	TUNNEL 1, AREA 2,	Gray		40% Quartz	None Detected
	HDR CHAINAGE:	Non-Fibrous		40% Ca Carbonate	
092414380-0007	9+50	Homogeneous		20% Non-fibrous (Other)	
GT1-08	TUNNEL 1, AREA 2,	Gray		40% Quartz	None Detected
	HDR CHAINAGE:	Non-Fibrous		40% Ca Carbonate	
092414380-0008	6+25	Homogeneous		20% Non-fibrous (Other)	
GT1-09	TUNNEL. AREA 2.	Gray		40% Quartz	None Detected
	HDR CHAINAGE:	Non-Fibrous		40% Ca Carbonate	
092414380-0009	7+15	Homogeneous		20% Non-fibrous (Other)	
GT1-10	TUNNEL. AREA 2.	Gray		40% Quartz	None Detected
	HDR CHAINAGE:	Non-Fibrous		40% Ca Carbonate	
092414380-0010	7+90	Homogeneous		20% Non-fibrous (Other)	
GT1-11	TUNNEL. AREA 2.	Gray		40% Quartz	None Detected
	HDR CHAINAGE: 6	Non-Fibrous		40% Ca Carbonate	
092414380-0011	+75	Homogeneous		20% Non-fibrous (Other)	
GT1-12	TUNNEL. AREA 2.	Gray		40% Quartz	None Detected
	HDR CHAINAGE:	Non-Fibrous		40% Ca Carbonate	
092414380-0012	9+75	Homogeneous		20% Non-fibrous (Other)	
GT1-13	TUNNEL 1, AREA 3,	Gray		50% Quartz	None Detected
	HDR CHAINAGE:	Non-Fibrous		20% Ca Carbonate	
092414380-0013	10+25	Homogeneous		30% Non-fibrous (Other)	
GT1-14	TUNNEL 1, AREA 3,	Gray		40% Quartz	None Detected
	HDR CHAINAGE	Non-Fibrous		40% Ca Carbonate	
092414380-0014	11+50	Homogeneous		20% Non-fibrous (Other)	
GT1-15	TUNNEL 1, AREA 3,	Gray		40% Quartz	None Detected
	HDR CHAINAGE:	Non-Fibrous		40% Ca Carbonate	
092414380-0015	13+50	Homogeneous		20% Non-fibrous (Other)	
GT1-16	TUNNEL 1, AREA 3,	Gray		40% Quartz	None Detected
	HDR CHAINAGE:	Non-Fibrous		40% Ca Carbonate	
092414380-0016	12+40	Homogeneous		20% Non-fibrous (Other)	

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EMSL Order: 092414380
Customer ID: WREC75
Customer PO:
Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
GT1-17 *092414380-0017*	TUNNEL 1, AREA 3, HDR CHAINAGE: 14+00	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT1-18 *092414380-0018*	TUNNEL 1, AREA 3, HDR CHAINAGE: 13+30	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT1-19 *092414380-0019*	TUNNEL 1, AREA 3, HDR CHAINAGE: 11+00	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT1-20 *092414380-0020*	TUNNEL 1, AREA 4, HDR CHAINAGE: 17+25	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT1-21 *092414380-0021*	TUNNEL 1, AREA 4, HDR CHAINAGE: 14+25	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT1-22 *092414380-0022*	TUNNEL 1, AREA 4, HDR CHAINAGE: 16+75	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT1-23 *092414380-0023*	TUNNEL 1, AREA 4, HDR CHAINAGE: 15+40	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT1-24 *092414380-0024*	TUNNEL 1, AREA 4, HDR CHAINAGE: 15+65	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT1-25 *092414380-0025*	TUNNEL 1, AREA 4, HDR CHAINAGE: 16+30	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT1-26 *092414380-0026*	TUNNEL 1, AREA 4, HDR CHAINAGE:17+40	Gray Non-Fibrous Homogeneous		50% Quartz 20% Ca Carbonate 30% Non-fibrous (Other)	None Detected
GT1-27 *092414380-0027*	TUNNEL 1, AREA 5, HDR CHAINAGE: 20+25	Gray Non-Fibrous Homogeneous		30% Quartz 60% Ca Carbonate 10% Non-fibrous (Other)	None Detected
GT1-28 *092414380-0028*	TUNNEL 1, AREA 5, HDR CHAINAGE: 18+25	Gray Non-Fibrous Homogeneous		30% Quartz 60% Ca Carbonate 10% Non-fibrous (Other)	None Detected
GT1-29 *092414380-0029*	TUNNEL 1, AREA 5, HDR CHAINAGE: 19+90	Gray Non-Fibrous Homogeneous		30% Quartz 60% Ca Carbonate 10% Non-fibrous (Other)	None Detected
GT1-30 *092414380-0030*	TUNNEL 1, AREA 5, HDR CHAINAGE: 20+65	Gray Non-Fibrous Homogeneous		30% Quartz 60% Ca Carbonate 10% Non-fibrous (Other)	None Detected
GT1-31 *092414380-0031*	TUNNEL 1, AREA 5, HDR CHAINAGE: 18+65	Gray Non-Fibrous Homogeneous		30% Quartz 60% Ca Carbonate 10% Non-fibrous (Other)	None Detected
GT1-32 *092414380-0032*	TUNNEL 1, AREA 6, HDR CHAINAGE: 24+50	Beige Non-Fibrous Homogeneous		20% Quartz 60% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT1-33-Concrete *092414380-0033*	TUNNEL 1, AREA 6, HDR CHAINAGE: 23+25	Beige Non-Fibrous Homogeneous		20% Quartz 60% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT1-33-Skim Coat *092414380-0033A*	TUNNEL 1, AREA 6, HDR CHAINAGE: 23+25	Tan Non-Fibrous Homogeneous		60% Ca Carbonate 20% Gypsum 20% Non-fibrous (Other)	None Detected
GT1-34 *092414380-0034*	TUNNEL 1, AREA 6, HDR CHAINAGE: 21+50	Beige Non-Fibrous Homogeneous		20% Quartz 60% Ca Carbonate 20% Non-fibrous (Other)	None Detected

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Project ID:

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
GT1-35 *092414380-0035*	TUNNEL 1, AREA 6, HDR CHAINAGE: 21+90	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT1-36 *092414380-0036*	TUNNEL 1, AREA 6, HDR CHAINAGE: 24+25	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT1-37 *092414380-0037*	TUNNEL 1, AREA 6, HDR CHAINAGE: 22+65	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT1-38 *092414380-0038*	TUNNEL 1, AREA 6, HDR CHAINAGE: 23+65	White Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT1-39 *092414380-0039*	TUNNEL 1, AREA 7, HDR CHAINAGE: 25+50	Gray Non-Fibrous Homogeneous		70% Ca Carbonate 30% Non-fibrous (Other)	None Detected
GT1-40 *092414380-0040*	TUNNEL 1, AREA 7, HDR CHAINAGE: 26+25	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT1-41-Brick *092414380-0041*	TUNNEL 1, AREA 7, HDR CHAINAGE: 27+15	Brown Non-Fibrous Homogeneous		70% Quartz 30% Non-fibrous (Other)	None Detected
GT1-41-Concrete *092414380-0041A*	TUNNEL 1, AREA 7, HDR CHAINAGE: 27+15	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT1-42 *092414380-0042*	TUNNEL 1, AREA 7, HDR CHAINAGE: 28+00	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT1-43 *092414380-0043*	TUNNEL 1, AREA 7, HDR CHAINAGE: 28+40	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT1-44 *092414380-0044*	TUNNEL 1, AREA 8, HDR CHAINAGE: 29+25	Gray Non-Fibrous Homogeneous		70% Quartz 30% Non-fibrous (Other)	None Detected
GT1-45 *092414380-0045*	TUNNEL 1, AREA 8, HDR CHAINAGE: 30+75	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT1-46 *092414380-0046*	TUNNEL 1, AREA 8, HDR CHAINAGE: 30+50	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT1-47 *092414380-0047*	TUNNEL 1, AREA 8, HDR CHAINAGE: 29+15	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT1-48 *092414380-0048*	TUNNEL 1, AREA 8, HDR CHAINAGE: 30+00	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT2-04 *092414380-0049*	TUNNEL 2, AREA 2, HDR CHAINAGE: 8+81	Gray Non-Fibrous Homogeneous		30% Quartz 50% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT2-05 *092414380-0050*	TUNNEL 2, AREA 2, HDR CHAINAGE: 9+75	Gray Non-Fibrous Homogeneous		30% Quartz 50% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT2-06 *092414380-0051*	TUNNEL 2, AREA 2, HDR CHAINAGE: 6+50	Gray Non-Fibrous Homogeneous		80% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT2-07 *092414380-0052*	TUNNEL 2, AREA 2, HDR CHAINAGE: 9+80	Gray Non-Fibrous Homogeneous		20% Quartz 50% Ca Carbonate 30% Non-fibrous (Other)	None Detected

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Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
GT2-08 *092414380-0053*	TUNNEL 2, AREA 2, HDR CHAINAGE: 7 +70	Gray Non-Fibrous Homogeneous		20% Quartz 60% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT2-09 *092414380-0054*	TUNNEL 2, AREA 2, HDR CHAINAGE: 9+00	Gray Non-Fibrous Homogeneous		20% Quartz 60% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT2-10 *092414380-0055*	TUNNEL 2, AREA 2, HDR CHAINAGE: 7+25	Gray/Black Non-Fibrous Homogeneous		30% Quartz 60% Ca Carbonate 10% Non-fibrous (Other)	None Detected
GT2-11 *092414380-0056*	TUNNEL 2, AREA 3 , HDR CHAINAGE: 10+30	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT2-12 *092414380-0057*	TUNNEL 2, AREA 3, HDR CHAINAGE: 13+94	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT2-13 *092414380-0058*	TUNNEL 2, AREA 3 , HDR CHAINAGE: 19+50	Gray Non-Fibrous Homogeneous		50% Quartz 20% Ca Carbonate 30% Non-fibrous (Other)	None Detected
GT2-14 *092414380-0059*	TUNNEL 2, AREA 3 , HDR CHAINAGE: 14+95	Gray Non-Fibrous Homogeneous		40% Ca Carbonate 40% Matrix 20% Non-fibrous (Other)	None Detected
GT2-15 *092414380-0060*	TUNNEL 2, AREA 3, HDR CHAINAGE: 13+95	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT2-16 *092414380-0061*	TUNNEL 2, AREA 3, HDR CHAINAGE: 12+70	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT2-17 *092414380-0062*	TUNNEL 2, AREA 3 , HDR CHAINAGE: 13+45	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT2-18 *092414380-0063*	TUNNEL 2, AREA 4, HDR CHAINAGE: 15+43	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT2-19 *092414380-0064*	TUNNEL 2, AREA 4, HDR CHAINAGE: 16+93	Beige Non-Fibrous Homogeneous		40% Quartz 40% Gypsum 20% Non-fibrous (Other)	None Detected
GT2-20 *092414380-0065*	TUNNEL 2, AREA 4, HDR CHAINAGE: 17+93	Beige Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT2-21 *092414380-0066*	TUNNEL 2, AREA 4, HDR CHAINAGE: 19+70	White Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT2-22 *092414380-0067*	TUNNEL 2, AREA 4, HDR CHAINAGE: 18+70	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT2-23 *092414380-0068*	TUNNEL 2, AREA 4, HDR CHAINAGE: 16+20	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT2-24 *092414380-0069*	TUNNEL 2, AREA 4, HDR CHAINAGE: 15+70	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT2-25 *092414380-0070*	TUNNEL 2, AREA 5 , HDR CHAINAGE: 21+25	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected
GT2-26 *092414380-0071*	TUNNEL 2, AREA 5 , HDR CHAINAGE: 21+95	Gray Non-Fibrous Homogeneous		40% Quartz 40% Ca Carbonate 20% Non-fibrous (Other)	None Detected

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EMSL Order:	092414380
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Project ID:	

Test Report: Asbestos Analysis of Bulk Materials via AHERA Method 40CFR 763 Subpart E Appendix E supplemented with EPA 600/R-93/116 using Polarized Light Microscopy

			Non-Asbestos		Asbestos
Sample	**Description**	**Appearance**	**% Fibrous**	**% Non-Fibrous**	**% Type**
GT2-27	TUNNEL 2, AREA 5 , HDR CHAINAGE:	Gray Non-Fibrous		40% Quartz 40% Ca Carbonate	None Detected
092414380-0072	22+45	Homogeneous		20% Non-fibrous (Other)	

Analyst(s)

Brian Khoo (15)
Damaris Pineda Ayala (16)
David Nguyen (12)
Gavin Lee (15)
Vivian Lee (10)
Xeena Paul (6)

Oscar Merino, Laboratory Manager
or Other Approved Signatory

Initial report from: 08/08/2024 16:40:53

OrderID: 092414380

EMSL ANALYTICAL, INC.
TESTING LABS • PRODUCTS • TRAINING

Asbestos Chain of Custody (Air, Bulk, Soil)

EMSL Order Number / Lab Use Only: 092414380

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077
PHONE: (800) 220-3675
EMAIL: CinnAslab@EMSL.com

If Bill-To is the same as Report-To leave this section blank. Third-party billing requires written authorization.

Customer Information		Billing Information	
Customer ID:		Billing ID:	
Company Name:	HDR	Company Name:	same
Contact Name:	Andrew Smith	Billing Contact:	same
Street Address:	3003 Oak Road, suite 500	Street Address:	same
City, State, Zip:	Walnut Creek CA	City, State, Zip:	same
Country:	US	Country:	
Phone:	925.639.0013	Phone:	same
Email(s) for Report:	andrew.b.smith@hdrinc.com,robert.degaugh@hdrinc.com	Email(s) for Invoice:	Same

Project Information

Project Name/No: Goshen Tunnels 1 and 2 Concrete Sampling
Purchase Order:
EMSL LIMS Project ID: (if applicable, EMSL will provide)
US State where samples collected: WY
State of Connecticut (CT) must select project location: ☐ Commercial (Taxable) ☐ Residential (Non-Taxable)
Sampled By Name: Robert DeGaugh
Sampled By Signature: RJ D Gaugh
No. of Samples in Shipment: 72

Turn-Around-Time (TAT)

☐ 3 Hour ☐ 4-4.5 Hour AHERA ONLY ☐ 6 Hour ☐ 24 Hour ☐ 32 Hour ☐ 48 Hour ☐ 72 Hour ☐ 96 Hour ☑ 1 Week ☐ 2 Week

TEM Air 3-6 Hour, please call ahead to schedule. 32 Hour TAT available for select tests only; samples must be submitted by 11:30 am.

Test Selection

PCM Air
- ☐ NIOSH 7400
- ☐ NIOSH 7400 w/ 8hr. TWA

PLM - Bulk (reporting limit)
- ☑ PLM EPA 600/R-93/116 (<1%)
- ☐ PLM EPA NOB (<1%)
- ☐ POINT COUNT
  - ☐ 400 (<0.25%) ☐ 1,000 (<0.1%)
- POINT COUNT w/ GRAVIMETRIC
  - ☐ 400 (<0.25%) ☐ 1,000 (<0.1%)
- ☐ NIOSH 9002 (<1%)
- ☐ NYS 198.1 (Friable - NY)
- ☐ NYS 198.6 NOB (Non-Friable - NY)
- ☐ NYS 198.8 (Vermiculite SM-V)

TEM - Air
- ☐ AHERA 40 CFR, Part 763
- ☐ NIOSH 7402
- ☐ EPA Level II
- ☐ ISO 10312*

TEM - Bulk
- ☐ TEM EPA NOB
- ☐ NYS NOB 198.4 (Non-Friable-NY)
- ☐ TEM EPA 600/R-93/116 w Milling Prep (0.1%)

Other Test (please specify)

TEM - Settled Dust
- ☐ Microvac - ASTM D5755
- ☐ Wipe - ASTM D6480
- ☐ Qualitative via Filtration Prep
- ☐ Qualitative via Drop Mount Prep

Soil - Rock - Vermiculite (reporting limit)*
- ☐ PLM EPA 600/R-93/116 with milling prep (<0.25%)
- ☐ PLM EPA 600/R-93/116 with milling prep (<0.1%)
- ☐ TEM EPA 600/R-93/116 with milling prep (<0.1%)
- ☐ TEM Qualitative via Filtration Prep
- ☐ TEM Qualitative via Drop Mount Prep

*Please call with your project-specific requirements.

☐ Positive Stop - Clearly Identified Homogeneous Areas (HA) | Filter Pore Size (Air Samples): ☐ 0.8um ☐ 0.45um

Sample Number	Sample Location / Description	Volume, Area or Homogeneous Area	Date / Time Sampled (Air Monitoring Only)
GT1-01	Tunnel 1, Area 1, HDR Chainage: 4+25	4500 ft2	07/18/2024 8:38AM
GT1-02	Tunnel 1, Area 1, HDR Chainage: 5+50	4500 ft2	07/18/2024 8:40AM
GT1-03	Tunnel 1, Area 1, HDR Chainage: 4+65	4500 ft2	07/18/2024 10:05AM
GT1-04	Tunnel 1, Area 1, HDR Chainage: 5+00	4500 ft2	07/18/2024 10:07AM
GT1-05	Tunnel 1, Area 1, HDR Chainage: 3+29	4500 ft2	07/18/2024 12:06PM
GT1-06	Tunnel 1, Area 2, HDR Chainage: 08+50	6000 ft2	07/18/2024 8:34AM
GT1-07	Tunnel 1, Area 2, HDR Chainage: 9+50	6000 ft2	07/18/2024 8:35AM
GT1-08	Tunnel 1, Area 2, HDR Chainage: 6+25	6000 ft2	07/18/2024 8:36AM

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Method of Shipment: FedEx		Sample Condition Upon Receipt:	
Relinquished by: Robert DeGaugh	Date/Time: 7/30/24 2:00PM	Received by: JM FX @9:00AM	Date/Time: 8/1/24
Relinquished by:	Date/Time:	Received by:	Date/Time

Controlled Document - COC-05 Asbestos R15 10/25/2021

☑ AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature.)

OrderID: 092414380

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TESTING LABS • PRODUCTS • TRAINING

Asbestos Chain of Custody (Air, Bulk, Soil)

EMSL Order Number / Lab Use Only

092414380

EMSL Analytical, Inc.
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Cinnaminson, NJ 08077

PHONE: (800) 220-3675
EMAIL: CinnAsblab@EMSL.com

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Sample Number	Sample Location / Description	Volume, Area or Homogeneous Area	Date / Time Sampled (Air Monitoring Only)
GT1-09	Tunnel 1, Area 2, HDR Chainage: 7+15	6000 ft2	07/18/2024 9:39AM
GT1-10	Tunnel 1, Area 2, HDR Chainage: 7+90	6000 ft2	07/18/2024 9:30AM
GT1-11	Tunnel 1, Area 2, HDR Chainage: 6+75	6000 ft2	07/18/2024 9:58AM
GT1-12	Tunnel 1, Area 2, HDR Chainage: 9+75	6000 ft2	07/18/2024 10:03AM
GT1-13	Tunnel 1, Area 3, HDR Chainage: 10+25	6000 ft2	07/18/2024 8:22AM
GT1-14	Tunnel 1, Area 3, HDR Chainage: 11+50	6000 ft2	07/18/2024 8:31AM
GT1-15	Tunnel 1, Area 3, HDR Chainage: 13+50	6000 ft2	07/18/2024 8:33AM
GT1-16	Tunnel 1, Area 3, HDR Chainage: 12+40	6000 ft2	07/18/2024 9:15AM
GT1-17	Tunnel 1, Area 3, HDR Chainage: 14+00	6000 ft2	07/18/2024 9:44AM
GT1-18	Tunnel 1, Area 3, HDR Chainage: 13+30	6000 ft2	07/18/2024 9:45AM
GT1-19	Tunnel 1, Area 3, HDR Chainage: 11+00	6000 ft2	07/18/2024 9:47AM
GT1-20	Tunnel 1, Area 4, HDR Chainage: 17+25	6000 ft2	07/18/2024 8:17AM
GT1-21	Tunnel 1, Area 4, HDR Chainage: 14+25	6000 ft2	07/18/2024 8:19AM
GT1-22	Tunnel 1, Area 4, HDR Chainage: 16+75	6000 ft2	07/18/2024 8:20AM
GT1-23	Tunnel 1, Area 4, HDR Chainage: 15+40	6000 ft2	07/18/2024 9:25AM
GT1-24	Tunnel 1, Area 4, HDR Chainage: 15+65	6000 ft2	07/18/2024 9:51AM
GT1-25	Tunnel 1, Area 4, HDR Chainage: 16+30	6000 ft2	07/18/2024 9:51AM
GT1-26	Tunnel 1, Area 4, HDR Chainage: 17+40	6000 ft2	07/18/2024 11:07AM
GT1-27	Tunnel 1, Area 5, HDR Chainage: 20+25	4500 ft2	07/18/2024 8:14AM
GT1-28	Tunnel 1, Area 5, HDR Chainage: 18+25	4500 ft2	07/18/2024 8:18AM
GT1-29	Tunnel 1, Area 5, HDR Chainage: 19+90	4500 ft2	07/18/2024 9:54AM
GT1-30	Tunnel 1, Area 5, HDR Chainage: 20+65	4500 ft2	07/18/2024 10:02AM
GT1-31	Tunnel 1, Area 5, HDR Chainage: 18+65	4500 ft2	07/18/2024 10:45AM
GT1-32	Tunnel 1, Area 6, HDR Chainage: 24+50	6000 ft2	07/18/2024 8:08AM
GT1-33	Tunnel 1, Area 6, HDR Chainage: 23+25	6000 ft2	07/18/2024 8:09AM

Method of Shipment: FedEx		Sample Condition Upon Receipt:	
Relinquished by: Robert DeGaugh	Date/Time: 7/19/24 2:05PM	Received by: JM FX @ 9:00AM	Date/Time: 8/1/24
Relinquished by:	Date/Time:	Received by:	Date/Time

Controlled Document - COC-05 Asbestos R16 10/26/2021

☑ AGREE TO ELECTRONIC SIGNATURE (By checking, I consent to signing this Chain of Custody document by electronic signature.)

OrderID: 092414380

EMSL ANALYTICAL, INC.
TESTING LABS • PRODUCTS • TRAINING

Asbestos Chain of Custody (Air, Bulk, Soil)

EMSL Order Number / Lab Use Only

092414380

EMSL Analytical, Inc.
200 Route 130 North
Cinnaminson, NJ 08077

PHONE: (800) 220-3675
EMAIL: CinnAsblab@EMSL.com

Additional Pages of the Chain of Custody are only necessary if needed for additional sample information

Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Sample Number	Sample Location / Description	Volume, Area or Homogeneous Area	Date / Time Sampled (Air Monitoring Only)
GT1-34	Tunnel 1, Area 6, HDR Chainage: 21+50	6000 ft2	07/18/2024 8:16AM
GT1-35	Tunnel 1, Area 6, HDR Chainage: 21+90	6000 ft2	07/18/2024 11:03AM
GT1-36	Tunnel 1, Area 6, HDR Chainage: 24+25	6000 ft2	07/18/2024 9:30AM
GT1-37	Tunnel 1, Area 6, HDR Chainage: 22+65	6000 ft2	07/18/2024 11:04AM
GT1-38	Tunnel 1, Area 6, HDR Chainage: 23+65	6000 ft2	07/18/2024 11:06AM
GT1-39	Tunnel 1, Area 7, HDR Chainage: 25+50	4500 ft2	07/18/2024 8:04AM
GT1-40	Tunnel 1, Area 7, HDR Chainage: 26+25	4500 ft2	07/18/2024 8:07AM
GT1-41	Tunnel 1, Area 7, HDR Chainage: 27+15	4500 ft2	07/18/2024 9:19AM
GT1-42	Tunnel 1, Area 7, HDR Chainage: 28+00	4500 ft2	07/18/2024 9:35AM
GT1-43	Tunnel 1, Area 7, HDR Chainage: 28+40	4500 ft2	07/18/2024 10:49AM
GT1-44	Tunnel 1, Area 8, HDR Chainage: 29+25	6000 ft2	07/18/2024 8:10AM
GT1-45	Tunnel 1, Area 8, HDR Chainage: 30+75	6000 ft2	07/18/2024 8:13AM
GT1-46	Tunnel 1, Area 8, HDR Chainage: 30+50	6000 ft2	07/18/2024 10:56AM
GT1-47	Tunnel 1, Area 8, HDR Chainage: 29+15	6000 ft2	07/18/2024 10:51AM
GT1-48	Tunnel 1, Area 8, HDR Chainage: 30+00	6000 ft2	07/18/2024 10:58AM
GT2-04	Tunnel 2, Area 2, HDR Chainage: 8+81	6000 ft2	07/18/2024 7:59AM
GT2-05	Tunnel 2, Area 2, HDR Chainage: 9+75	6000 ft2	07/18/2024 8:02AM
GT2-06	Tunnel 2, Area 2, HDR Chainage: 6+50	6000 ft2	07/18/2024 8:03AM
GT2-07	Tunnel 2, Area 2, HDR Chainage: 9+80	6000 ft2	07/18/2024 11:41AM
GT2-08	Tunnel 2, Area 2, HDR Chainage: 7+70	6000 ft2	07/18/2024 11:49AM

Method of Shipment: FedEx		Sample Condition Upon Receipt:	
Relinquished by: Robert DeGaugh	Date/Time: 7/30/24 2:05 PM	Received by: JM FX @ 9:00AM	Date/Time 8/1/24
Relinquished by:	Date/Time:	Received by:	Date/Time

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OrderID: 092414380

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TESTING LABS • PRODUCTS • TRAINING

Asbestos Chain of Custody (Air, Bulk, Soil)

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Special Instructions and/or Regulatory Requirements (Sample Specifications, Processing Methods, Limits of Detection, etc.)

Sample Number	Sample Location / Description	Volume, Area or Homogeneous Area	Date / Time Sampled (Air Monitoring Only)
GT2-09	Tunnel 2, Area 2, HDR Chainage: 9+00	6000 ft2	07/18/2024 12:11PM
GT2-10	Tunnel 2, Area 2, HDR Chainage: 7+25	6000 ft2	07/18/2024 12:14PM
GT2-11	Tunnel 2, Area 3, HDR Chainage: 10+30	7500 ft2	07/18/2024 7:53AM
GT2-12	Tunnel 2, Area 3, HDR Chainage: 13+94	7500 ft2	07/18/2024 7:56AM
GT2-13	Tunnel 2, Area 3, HDR Chainage: 19+50	7500 ft2	07/18/2024 8:01AM
GT2-14	Tunnel 2, Area 3, HDR Chainage: 14+95	7500 ft2	07/18/2024 11:21AM
GT2-15	Tunnel 2, Area 3, HDR Chainage: 13+95	7500 ft2	07/18/2024 11:22AM
GT2-16	Tunnel 2, Area 3, HDR Chainage: 12+70	7500 ft2	07/18/2024 11:39AM
GT2-17	Tunnel 2, Area 3, HDR Chainage: 13+45	7500 ft2	07/18/2024 11:37AM
GT2-18	Tunnel 2, Area 4, HDR Chainage: 15+43	7500 ft2	07/18/2024 7:49AM
GT2-19	Tunnel 2, Area 4, HDR Chainage: 16+93	7500 ft2	07/18/2024 7:50AM
GT2-20	Tunnel 2, Area 4, HDR Chainage: 17+93	7500 ft2	07/18/2024 7:52AM
GT2-21	Tunnel 2, Area 4, HDR Chainage: 19+70	7500 ft2	07/18/2024 11:28AM
GT2-22	Tunnel 2, Area 4, HDR Chainage: 18+70	7500 ft2	07/18/2024 11:30AM
GT2-23	Tunnel 2, Area 4, HDR Chainage: 16+20	7500 ft2	07/18/2024 11:33AM
GT2-24	Tunnel 2, Area 4, HDR Chainage: 15+70	7500 ft2	07/18/2024 11:34AM
GT2-25	Tunnel 2, Area 5, HDR Chainage: 21+25	1500 ft2	07/18/2024 7:38AM
GT2-26	Tunnel 2, Area 5, HDR Chainage: 21+95	1500 ft2	07/18/2024 11:18AM
GT2-27	Tunnel 2, Area 5, HDR Chainage: 22+45	1500 ft2	07/18/2024 11:20AM

Method of Shipment: FedEx		Sample Condition Upon Receipt:	
Relinquished by: Robert DeGaugh	Date/Time: 7/30/24 2:05PM	Received by: JM FX @ 9:00 AM	Date/Time: 8/1/24
Relinquished by:	Date/Time:	Received by:	Date/Time

Controlled Document - COC-05 Asbestos R16 10/26/2021

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EMSL Analytical, Inc.'s Laboratory Terms and Conditions are incorporated into this Chain of Custody by reference in their entirety. Submission of samples to EMSL Analytical, Inc. constitutes acceptance and acknowledgment of all terms and conditions by Customer.