Finding of No Significant Impact

Final Environmental Assessment

Big Wood River Diversion Dam (Diversion 45) Remediation and Fish Passage Project

Blaine County, Idaho

U.S. Department of the Interior
Bureau of Reclamation
Columbia-Pacific Northwest Region
Snake River Area Office

CPN FONSI # 23-03

Introduction

The Bureau of Reclamation (Reclamation) has prepared this Finding of No Significant Impact (FONSI) to comply with the Council of Environmental Quality (CEQ) regulations for implementing procedural provisions of the National Environmental Policy Act (NEPA). This document briefly describes the Proposed Action, other alternatives considered, the scoping process, Reclamation's consultation and coordination activities, and Reclamation's finding. The Final Environmental Assessment (EA) fully documents the analyses of the potential environmental effects of implementing the Proposed Action.

Location and Background

The proposed project is located at a diversion dam (Diversion 45) on the Big Wood River in the city of Bellevue, in Blaine County, Idaho. Bellevue is located in the Wood River Valley about 18 miles south of the resort area of Ketchum and Sun Valley, Idaho. Water diverted into the Bellevue Canal at Diversion 45 is used for irrigation in an area known as the Bellevue Triangle, and serves approximately 9,000 acres of land and roughly 200 users.

Diversion 45 and the Bellevue Canal serve both the Wood River Irrigation District (WRID) 45 and the Triangle Irrigation District (TID), who jointly own the diversion structure. A third entity, the Board of Control (BOC), facilitates the operation and management of Diversion 45.

Purpose and Need

Reclamation's purpose and need for the Proposed Action is to fulfill selection of a WaterSMART Water and Energy Efficiency grant proposal from BOC that would fund rehabilitation of aging water delivery infrastructure. In its present state, the existing diversion dam structure (Diversion 45) is undercut and unstable, acts as a barrier to upstream fish and downstream sediment passage, creates a hazard for recreationists, and contributes to ongoing channel incision which impairs riverine, riparian, and floodplain ecological functions. Due to sediment trapped upstream of the structure, it is necessary for BOC to conduct instream work annually to create and remove pushup dams to ensure sufficient water is diverted to the Bellevue Canal. The proposed project would stabilize and restore the functionality of the dam, restore fish passage, improve sediment transport, ameliorate a safety hazard for recreationists, and restore channel dynamics in the vicinity of the dam.

Alternatives Considered and Recommended Action

The range of alternatives developed for the Proposed Action is based on the purpose and need for the project. The alternatives analyzed include a no-action alternative and the recommended action.

The recommended action involves three components:

1. **Dam Structure Stabilization and Notch**

   Stabilizing the existing dam structure would include cutting the concrete cap off the top of the dam and filling existing voids within and downstream of the structure with compacted gravel to fill all scour holes, constructing a concrete slab with rebar for structural support on the top of the dam, backfilling the downstream side of the dam to the dam crest to help prevent subsurface flows and associated scour issues, and cutting a 1.3-feet-deep by 10-feet-wide notch into the existing downstream wall within the diversion structure, which would allow for hydraulic transport of sediment at high flows and improve low-flow fish passage.

2. **Construction of Downstream Rock Ramp**

   An approximately 300-foot-long roughened rock ramp would be built downstream of the dam to raise and stabilize the stream bed below the dam, easing the transition between the discontinuous stream bed heights above and below the dam and restoring a more natural gradient profile. The ramp would provide a low-flow fish passage that would tie into the proposed notch in the dam structure, enabling fish to move up to higher elevation and cooler water. Boulders, dormant hardwood cuttings, and log jam structures would be incorporated into the downstream rock ramp to promote vertical channel stability and increase instream complexity, improving aquatic habitat quality. The boulders (3-4 feet in diameter) would be dispersed throughout the rock ramp. The hardwood cuttings would be planted along the entire bank of the ramp.

3. **Post-Construction Site Reclamation and Monitoring**

   After construction has been completed, a native transitional seed mix would be dispersed throughout the 0.3-acre footprint of a former gravel stockpile area used for construction purposes, as well as any temporary access roads and material staging areas established during the project. BOC and Trout Unlimited (TU) would monitor the effectiveness of the project over 5 years. This monitoring would include photo points, surveys and visual inspections to investigate the stability of the structure and the capacity to provide fish passage. Annual monitoring reports would be made available to interested parties upon request.

The No Action alternative (Alternative A) does not meet the defined purpose and need for action, but was evaluated because it provides an appropriate basis to which the recommended action is compared.

Summary of Environmental Effects

The following discussion summarizes the effects the Proposed Action (Alternative B) would have on each resource category analyzed in the Final EA. For a full analysis and explanation of how each resource was evaluated, readers may reference *Chapter 3 – Affected Environment and Environmental Consequences* in the Final EA.

Hydrology and Geomorphology

Anticipated effects include stabilized and restored fluvial function of the Big Wood River in the reach of the project area. The proposed project would result in a long-term increase in effectiveness of downstream transport of sediment at high flows, increased continuity in channel profile, and reliable hydraulic head conditions at low flows to enable BOC's diversion of water at Diversion 45. Previously deposited alluvium upstream of the diversion structure would be scoured out and moved downstream at high flows over the long term. Cumulatively with other river restoration actions in the vicinity of the project area, the Proposed Action would further maximize the restoration of fluvial functions while protecting land adjacent to the river from further erosion. Additive to other actions considered for cumulative effects in the EA, this project would positively contribute to the overall long-term effectiveness of restoration activities in this reach of the Big Wood River. Overall basin hydrology in the Big Wood River would be unaffected.

Water Quality

Anticipated effects include the short-term construction-related effects of minor increases in turbidity in the Big Wood River from airborne sediment due to use of existing roads for construction equipment, concrete dust from cutting the concrete cap and notch in the dam, and disturbance and mobilization of river-bottom sediments during the construction of the downstream rock ramp and excavation and stabilization of the downstream bench. The sediment plume created by these actions would dissipate rapidly (within minutes of introduction) due to high water velocity and would be deposited downstream at locations determined by sediment particle size relative to varying areas of

flow velocity in the river channel. Effects to water quality would be lessened by the timing of construction to occur during low-flow conditions. Overall duration of construction-related turbidity effects is not expected to exceed 25 nephelometric turbidity units over background for a period greater than ten consecutive days.

Post-construction effects include long-term reduced likelihood of continued erosional sediment movement in the Big Wood River due to increased vertical channel stability, improved bank stability, and cooler water temperatures due to established vegetation plantings. The project would also alleviate the need for BOC to perform instream heavy equipment work twice annually, as occurs presently.

Cumulative effects of this project, in combination with the other already-completed actions recommended in the geomorphic assessment and conceptual design of which the proposed project is a component, include long-term improvement of water quality and overall watershed function of the subbasin.

Biological Resources – Vegetation, Wildlife, and Fisheries

Existing vegetation at sites proposed for construction activities would be disturbed and removed. This short-term detrimental effect would be offset by the planting of bank-stabilizing vegetation upon completion of construction, as well as reseeding of staging areas. Long-term effects to vegetation would be beneficial due to the establishment of a more natural stream gradient, reduced channel incision, increased floodplain connectivity, and improved riparian function which would increase vegetation recruitment and health in the long term. Wildlife would likewise be temporarily disturbed during construction, but would reestablish in the project area following the conclusion of construction. Available terrestrial habitat would increase in quality and quantity in the long term. Fisheries would experience localized detrimental short-term effects during construction due to increased turbidity and direct disturbance of the river channel. These effects would be limited in size and duration, as the areas proposed for construction are small in the context of the surrounding landscape and Big Wood River watershed, and sediments released into the water during construction would be expected to dissipate rapidly downstream to background levels within a matter of days. Fisheries would experience long-term beneficial effects from the removal of a barrier to upstream migration and the creation of a channel designed to provide fish passage even in low-flow conditions, which would enable fish to move upstream to escape warm summer water temperatures that have historically resulted in periodic large-scale fish mortality events.

ESA-Listed Species

A preliminary report generated through the U.S. Fish and Wildlife Service's (USFWS) Information and Planning and Consultation (IPaC) site indicated that one federally listed and one candidate species are potentially present in or adjacent to the action area: the North American wolverine (*Gulo gulo luscus*) and the monarch butterfly (*Danaus plexippus* – candidate for listing). Analysis discussed in the Final EA concluded that the Proposed Action may affect, but is unlikely to adversely affect, these species. The habitat in the proposed project area falls outside the elevation range and does not contain habitat characteristics that would support denning of the North American wolverine. While

the species could infrequently use the area as a migration corridor, any disruption to habitat use by this species during construction would be limited to temporary avoidance behavior for the short duration of increased human activity, and is considered minimal in the context of the greater surrounding landscape. The timing of construction outside the breeding season, minimal vegetation disturbance in the context of the greater landscape, and an expectation that any trampled or disturbed vegetation would be re-seeded or re-generate in the following growing season would limit any short-term effect to monarch butterflies that may utilize nectaring and breeding habitat in the project area.

Recreation and Aesthetics

Public access to the project area would be limited during construction, and users' aesthetic experience of the nature preserve would be temporarily disrupted by the operation of heavy machinery during the construction period. These effects would be short term and localized. The popular angling site directly below the diversion dam would be permanently lost. This loss would be mitigated by a long-term overall enrichment in more dispersed angling opportunities attributable to the improvement of riparian habitat and aquatic conditions, and the reestablishment of upstream fish passage. In the long term, visitors would experience beneficial effects to aesthetics and recreation from the removal of the hydraulic hazard at the Diversion 45 structure and the establishment of more abundant and complex wildlife habitat due to improved riparian function.

Tribal Interests: Treaty Rights

The proposed project construction ingress and egress routes may cause a temporary, short-term adverse effect on access to traditional or customary hunting, fishing, or gathering sites during the construction periods. Reclamation requested information from the Shoshone-Bannock Tribes of the Fort Hall Reservation, Burns Paiute Tribe, and the Shoshone-Paiute Tribes of the Duck Valley Indian Reservation, who traditionally and currently use the area for hunting, fishing, and gathering of plants; however, no responses were received. The lack of specific information about the area is not indicative of a lack of importance to Tribes. With no specific response, Reclamation assumes that there would be no adverse effects to reserved Treaty Rights, such as access or impacts to areas for hunting, fishing, or gathering.

Greenhouse Gases

The construction actions necessary for the proposed project would cause approximately 233 metric tons of carbon dioxide, or the equivalent of the emissions of 51 passenger vehicles' use in one year, in an area with a population of roughly 24,000. In this context, the greenhouse gases emitted as a result of this project are considered negligible due to the localized area in which the project would occur and the short duration of the action.

Unaffected Resources

The Proposed Action would not cause any short- or long-term, direct or indirect effects to the following resource categories:

- Indian Trust Assets
- Cultural Resources
- Indian Sacred Sites
- Environmental Justice

Consultation, Coordination, and Public Involvement

On December 22, 2022, Reclamation mailed a scoping document including a letter, project information, and a map to agencies, Indian Tribes, members of Congress, organizations, and individuals, soliciting help in identifying any issues and concerns related to the Proposed Action. Reclamation received 15 comments from the scoping period, many of which were letters to express support for the proposed project. Topics of concern that were brought to Reclamation's attention by commenters included: the potential impacts of heavy equipment usage on existing and potential new access routes, including effects on adjacent landowners, existing roads in Howard Preserve, and vegetation; potential effects to both formal and informal trails in the vicinity of the proposed project area; the spread of noxious weeds; and the potential presence of an ESA-listed bird. Comments received from this scoping solicitation were addressed or incorporated into the Final EA. The mailing list, scoping letters, and comments received are included in Appendix C of the Final EA.

Reclamation initiated consultation with the Idaho State Historic Preservation Office (SHPO) on August 2, 2023. SHPO concurrence with Reclamation's finding of No Adverse Effect to Historic Properties for the project area was received on August 22, 2023. This concurrence was conditional, requiring that Reclamation develop an Inadvertent Discovery Plan which would provide direction for the immediate cessation of work in the event cultural material is inadvertently encountered during project implementation. Reclamation's finding, communications with the SHPO, and the Inadvertent Discovery Plan are included in Appendix D of the Final EA.

Pursuant to Reclamation's determination that the Proposed Action would not be likely to adversely affect any ESA-listed species, no formal Section 7 consultation was undertaken for this project.

On December 22, 2022, Reclamation mailed scoping letters to representatives of the Shoshone-Bannock Tribes of the Fort Hall Reservation, Burns Paiute Tribe, and the Shoshone-Paiute Tribes of the Duck Valley Indian Reservation, who traditionally and currently use the area for hunting; no responses were received. Reclamation sent a formal invitation to the Shoshone-Bannock Tribe on August 2, 2023, to join in consultation on the Area of Potential Effect, Reclamation's determinations of eligibility, and finding of no adverse effects to historic properties, as well as requesting any information concerning cultural resources known to the Shoshone-Bannock Tribes that could be affected by the proposed project. No responses or concerns from the Tribes were brought forward during the scoping period or in response to Reclamation's invitation to consult. The invitation to

consult, scoping information provided, and associated FedEx confirmations of mailing are included in Appendix E of the Final EA.

Finding

Based on the analysis of the environmental effects presented in the Final EA and consultation with potentially affected agencies, Tribes, organizations, and the general public, Reclamation concludes that implementation of the Proposed Action will not have a significant impact on the quality of the human environment or natural and cultural resources. The effects of the Proposed Action will be minor, temporary, and localized. Therefore, preparation of an Environmental Impact Statement (EIS) is not required.

Decision

Based on the analysis in the Final EA, it is my decision to select for implementation the Proposed Action (Alternative B). The Proposed Action will best meet the purpose and need identified in the Final EA.

Recommended:

AMY GOODRICH Digitally signed by AMY GOODRICH
Date: 2023.09.25 09:29:11 -06'00'

Amy Goodrich
Natural Resource Specialist
Snake River Area Office, Boise, Idaho

Date

Approved:

MELANIE PAQUIN Digitally signed by MELANIE PAQUIN
Date: 2023.09.22 15:40:30 -06'00'

Melanie Paquin
Snake River Area Manager
Columbia-Pacific Northwest Region, Boise, Idaho

Date

BUREAU OF RECLAMATION

Environmental Assessment
Big Wood River Diversion Dam (Diversion 45) Remediation and Fish Passage Project

Blaine County, Idaho
Columbia-Pacific Northwest Region

U.S. Department of the Interior

September 2023

Mission Statements

The U.S. Department of the Interior protects and manages the Nation's natural resources and cultural heritage; provides scientific and other information about those resources; and honors its trust responsibilities or special commitments to American Indians, Alaska Natives, and affiliated Island Communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Cover photograph: Looking upstream at the Big Wood River Diversion Dam (Diversion 45), Blaine County, Idaho (Reclamation photo)

Table of Contents

List of Figures

List of Tables

Appendices

Acronyms and Abbreviations

Acronym or Abbreviation	Definition
APE	Area of Potential Effect
AU	Assessment Unit
BCS	Bellevue Canal System
BHD	Bellevue Historic District
BMP	Best Management Practice
BOC	Board of Control
BP	Before Present
CEQ	Council on Environmental Quality
cfs	Cubic feet per second
CFR	Code of Federal Regulations
CFU	Colony-forming units
CWA	Clean Water Act
DOI	Department of the Interior
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FONSI	Finding of No Significant Impact
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDL	Idaho Department of Labor
IDWR	Idaho Department of Water Resources
IFWIS	Idaho Fish and Wildlife Information System
IPaC	Information for Planning and Conservation
ISHS	Idaho State Historic Society
ITAs	Indian Trust Assets
National Register	National Register of Historic Places
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act

Acronym or Abbreviation	Definition
NTU	Nephelometric turbidity unit
Reclamation	Bureau of Reclamation
SHPO	State Historic Preservation Office
T&E	Threatened and Endangered
TID	Triangle Irrigation District
TMDL	Total maximum daily load
TP	Total phosphorous
TSS	Total suspended solids
TU	Trout Unlimited
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
WRLT	Wood River Land Trust
WRID45	Wood River Irrigation District 45

Chapter 1 Purpose and Need

1.1 Introduction

The Bureau of Reclamation (Reclamation) prepared this Environmental Assessment (EA) in accordance with the National Environmental Policy Act (NEPA). This EA analyzes the potential environmental effects that could result from the Wood River Diversion 45 Stabilization and Fish Passage Remediation Project (the Proposed Action in this document, for which Reclamation has received an application for grant funding).

This EA serves as a tool to aid the authorized official in making an informed decision that is in conformance with applicable federal laws and regulations. The Proposed Action and alternatives are described in Chapter 2 of this document, and the effects (direct, indirect, and cumulative environmental effects) of each alternative are evaluated for each of the affected resource areas in Chapter 3 of this document.

The NEPA process requires analysis of any federal action that may have an impact on the human environment. This EA is being prepared to assist Reclamation in finalizing a decision on the proposed action, and to determine whether to issue a Finding of No Significant Impact (FONSI) or a notice of intent to prepare an Environmental Impact Statement (EIS).

1.2 Location, Background, and Action Area

1.2.1 Location

The proposed project is located on the Big Wood River in the city of Bellevue, in Blaine County, Idaho (Figure 1). Bellevue is located in the Wood River Valley about 18 miles south of the resort area of Ketchum and Sun Valley, Idaho. The Big Wood River starts at Galena Summit and flows approximately 50 miles south past the resort towns of Ketchum and Hailey before reaching Bellevue. On its way, the river collects water from tributaries in the Smoky, Boulder, and Pioneer mountains. Approximately 16 miles downstream of Diversion 45, the Big Wood River joins Camas Creek at Magic Reservoir. Approximately 50 miles downstream from Magic Reservoir, the Big Wood River joins the Little Wood River to form the Malad River. The Malad River flows for another 12 miles before entering the Snake River.

Water diverted into the Bellevue Canal at Diversion 45 is used for irrigation in an area known as the Bellevue Triangle. This triangle of agricultural land is created where the Big Wood River Valley widens as it meets the Snake River Plain.

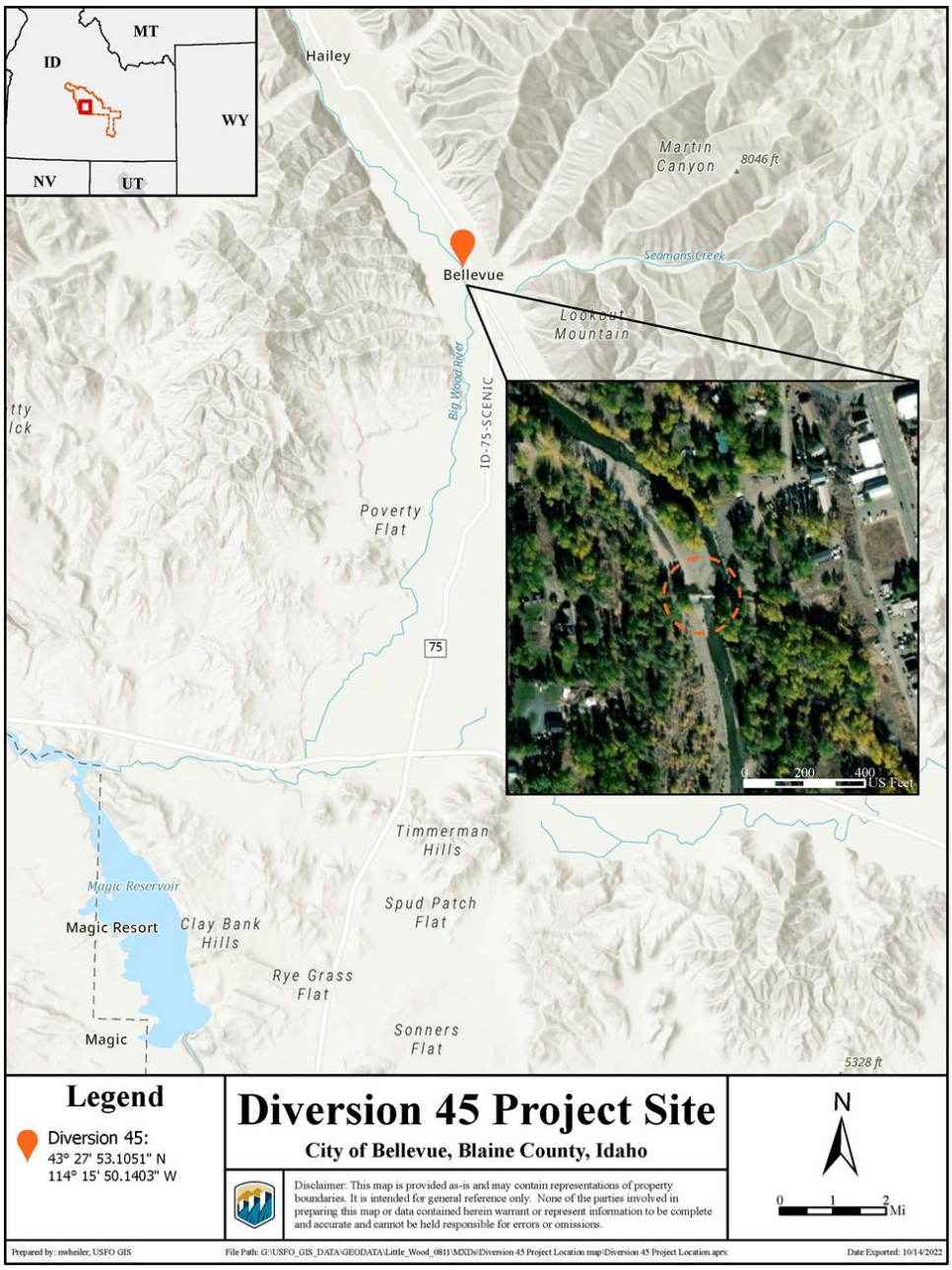


Figure 1. Location map of the proposed project

1.2.2 Background

Administrative

Diversion 45 and the Bellevue Canal serve both Wood River Irrigation District (WRID) 45 and Triangle Irrigation District (TID), who jointly own the diversion structure. In 2015, the original Wood River Valley Irrigation District was divided into two subdistricts: WRID45 and the TID. With some exceptions, the WRID45 now includes the smaller acreage properties generally located in the northern section of the Bellevue Triangle, while the TID consists of the larger acreage properties generally located in the southern section. The same legislation allowing the

WRID to be partitioned into two subdistricts also created a third entity: the Board of Control (BOC), which is the applicant for this grant. The BOC facilitates the operation and management of the mutually owned infrastructure (Diversion 45). The BOC Board is comprised of members from both irrigation districts and operates and maintains the structures and personnel to deliver water through the canals to each private diversion.

The water delivery system (canals and diversion structure) was constructed around 1915-1925. A major upgrade on Diversion 45 was completed in the early 1960s. The structure currently diverts up to 380 cubic feet per second (cfs) to serve approximately 9,000 acres of land and roughly 200 users.

2019 Bellevue Project Area Conceptual Restoration Designs

The Wood River experienced a large flooding event in 2017 which caused large volumes of gravel movement, with bed and bank erosion in some places and deposition in other places.

In 2019, the Wood River Land Trust (WRLT) retained a research and consulting firm to complete a geomorphic assessment and conceptual design for the Big Wood River from the Broadford Road Bridge downstream to the southern extent of the Riverside Subdivision (Bellevue Reach). The approximately 1-mile reach geomorphic assessment and conceptual design was developed to address the impacts of the 2017 event and maximize ecological benefits while protecting adjacent landowners from future erosion and flooding potential. This reach-scale assessment, which informs several site-specific restoration projects within the reach, including the proposed project, was completed and a report was published in 2019. The report is included in this EA as Appendix A.

Current Condition of Diversion 45

The current concrete diversion structure consists of upstream and downstream vertical walls that span the entire width of the river (Figure 2). There is a horizontal cap connecting the two walls. Over time, gravel and sediment have been scoured out from between the walls in some areas because of both downstream scour as well as cracks and holes in the horizonal connecting structure. The dam's existence has destabilized the stream bed downstream, resulting in upstream aggradation and significant downstream erosion up to and even underneath the existing structure, as well as channel incision. The dam currently bridges over very large scour holes and is in danger of collapsing, which would impair BOC's ability to deliver and divert water into the Bellevue Canal.

Figure 2. Existing condition of Diversion 45 on the Big Wood River, Bellevue, Idaho. Photo taken at low river flows, November 2022.

Issues in Need of Correction

The vertical water drop associated with the Diversion 45 concrete check dam poses multiple issues in need of correction, including serving as a barrier to upstream fish migration and as a major contributing factor to ongoing channel incision downstream of the diversion. Channel incision (or lowering) results in a hydrologic disconnection between the river and the floodplain that impairs floodplain function, riparian vegetation conditions, and river function.

The structure also serves as a barrier to downstream sediment transport. Sediment that cannot pass the check dam has deposited upstream of the dam, creating a braided channel and a vegetated island where there used to be a pool. Because of this, BOC currently experiences issues delivering water to their users during low flows and regular maintenance is required to divert allocated water rights. This maintenance involves instream heavy equipment work performed twice annually to move deposited gravel in order to manually direct water toward the diversion.

The existing structure's vertical water drop additionally creates a hazard for recreationists using the waterway. Low-head channel-spanning structures such as the Diversion 45 dam can create dangerous hydraulic conditions in their tailwaters (the area immediately downstream of the water drop). Below a low-head dam, the velocity transition area where fast-moving (supercritical) water drops over the dam and enters the slower moving (subcritical) water downstream can create phenomena called hydraulic jumps (Figure 3). Hydraulic jumps can be extremely dangerous due to a combination of factors: they create an area of turbulent recirculating currents that can be difficult to escape, and the water in this recirculating area can contain high amounts of entrained air, reducing the buoyancy of a trapped swimmer and increasing the risk of drowning. For these reasons, hydraulic jumps, particularly those below channel-spanning structures, are also often referred to as "keepers" and "drowning machines."

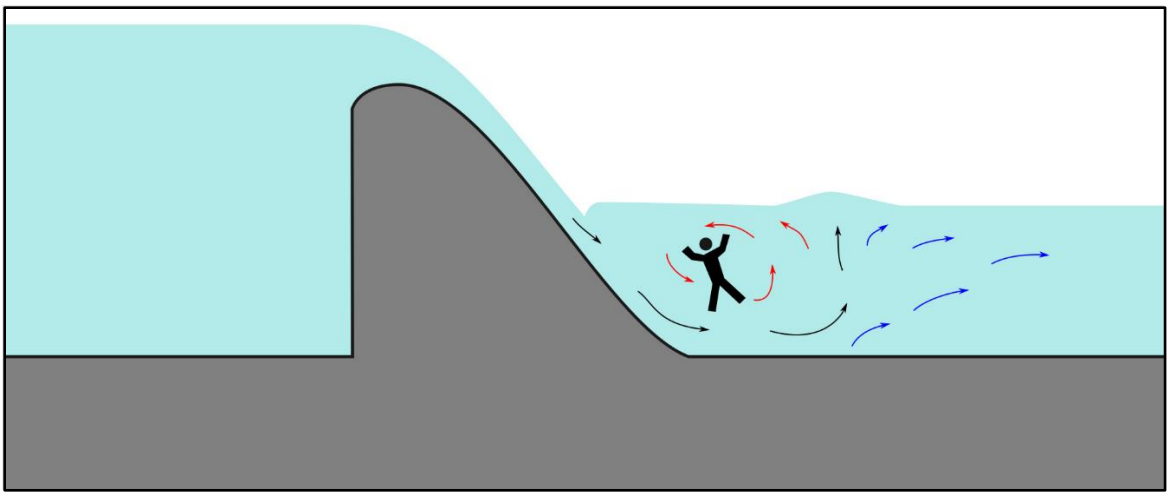


Figure 3. Diagram of a hydraulic jump created by a low-head dam. Supercritical flow (water moving faster than wave velocity) dropping over the top of the structure is indicated by green arrows. Subcritical flow (water moving slower than wave velocity) downstream from the dam is indicated by blue arrows. Red arrows indicate the area of recirculating current and reduced buoyancy where objects become trapped.

1.2.3 Action Area

The proposed project area is located in an area known as Howard Preserve, which stretches along the Big Wood River in Bellevue, Idaho. The diversion structure, haul roads, and local gravel sources that would be used in the Proposed Action are all located within the Howard Preserve. The city of Bellevue owns the land and jointly manages it with the Wood River Land Trust and the Friends of the Howard Preserve. Most of the proposed work would occur within the river channel, above and below the diversion itself (Figure 4).

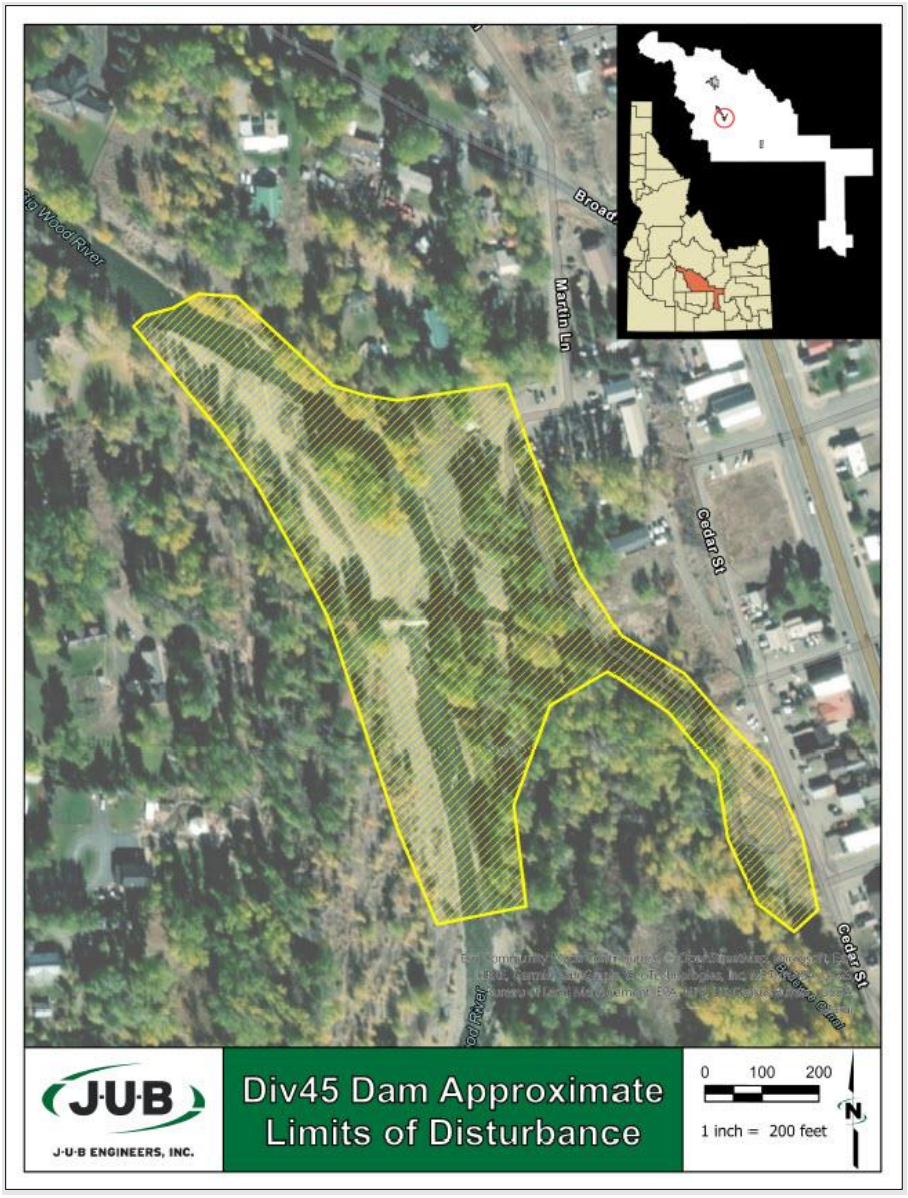


Figure 4. Map of the approximate limits of disturbance for the proposed project. The river channel where construction activities would occur is shown at left; the shaded area at right includes the location of an existing gravel stockpile and unpaved access road. Map provided by J.U.B. Engineers, Inc.

1.3 Purpose and Need

Reclamation's purpose and need for the Proposed Action is to fulfill selection of a WaterSMART (Sustaining and Managing America's Resources for Tomorrow) Water and Energy Efficiency grant proposal that would fund rehabilitation of aging water delivery infrastructure. In its present state, the existing diversion dam structure (Diversion 45) is undercut and unstable, acts as a barrier to upstream fish and downstream sediment passage,

creates a hazard for recreationists, and contributes to ongoing channel incision which impairs riverine, riparian, and floodplain ecological functions. Due to sediment trapped upstream of the structure, it is necessary for BOC to conduct instream work annually to create and remove pushup dams to ensure sufficient water is diverted to the Bellevue Canal. The proposed project would stabilize and restore the functionality of the dam, restore fish passage, improve sediment transport, ameliorate a safety hazard for recreationists, and restore channel dynamics in the vicinity of the dam.

1.4 Regulatory Compliance

The following major laws, executive orders, and secretarial orders apply to the Proposed Action, and compliance with their requirements is documented in this EA:

- National Environmental Policy Act (NEPA)
- Endangered Species Act (ESA)
- Fish & Wildlife Coordination Act
- Clean Air Act
- National Historic Preservation Act (NHPA)
- Clean Water Act (CWA)
- Executive Order (EO) 13007, Indian Sacred Sites
- EO 12898 and 14008, Environmental Justice
- EO 13175, Consultation and Coordination with Tribal Governments
- EO 13990, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis
- Secretarial Order 3175, Department Responsibilities for Indian Trust Assets (ITAs)

1.5 Scoping Summary

The scoping process provides an opportunity for the public, governmental agencies, and Tribes to identify their concerns or other issues and aids in developing a full range of potential alternatives that address meeting the project's purpose and need as stated in this document. To accomplish this, Reclamation provided information to the public through a mailed preliminary information package, posted written materials in both English and Spanish in public locations in Bellevue, and solicited oral and written comments from the public, governmental agencies, and potentially affected Tribes. Details regarding the public and agency scoping are presented in Chapter 4.

Chapter 2 Description of Alternatives

2.1 Introduction

This chapter describes the two alternatives analyzed in this EA: Alternative A—No Action Alternative; and Alternative B—Proposed Action.

2.2 Alternative Development

The alternatives presented in this chapter were developed based on the purpose and need for the project, as described in Chapter 1, and any issues raised during internal, external, and Tribal scoping. The alternatives analyzed in this document include the No Action alternative and the Proposed Action alternative. A no action alternative is evaluated because it provides an appropriate basis to which the other alternative is compared. No new alternatives were identified during the scoping process.

2.3 Alternative A – No Action

The No Action alternative would lead to a continuation of current conditions and processes associated with the existing diversion structure. The structure would continue to deteriorate over time exacerbating the current public safety, fish passage and diversion functionality issues. The scour holes below the diversion which currently extend under the structure itself would continue to expand and threaten the integrity of the structure.

A high level of maintenance by the BOC would continue to be necessary in order to keep gravels from blocking the water flow to the Bellevue Canal headgates. This maintenance currently requires heavy equipment to move sediment and gravel around in the active river channel at least twice a year. The structure would continue to act as a barrier to upstream fish movement and present a hazard for recreationists.

2.4 Alternative B – Wood River Diversion 45 Stabilization and Fish Passage Remediation Project (Proposed Action)

The Proposed Action would consist of the following major components. The instream portion of all work is proposed for the low-flow period of late summer through fall as water runoff conditions allow. If access to the site using existing canal/Howard Preserve access roads on the east side of the river is not sufficient for necessary heavy equipment, an alternate temporary access route may be established.

2.4.1 Dam Structure Stabilization and Notch

Stabilizing the existing dam structure would include cutting the concrete cap off the top of the dam and filling the existing voids with compacted gravel, which would be sourced from an existing stockpile of surplus native riverbed material remaining from the Lower Howard Preserve project and currently staged on the east side of the river, between the Bellevue Canal and Cedar Street. The compacted gravel would be extended below the structure walls to fill all scour holes. Once filled and compacted, a concrete slab with rebar for structural support would be constructed on the top of the dam, and the downstream side of the dam would be backfilled up to the dam crest to help prevent subsurface flows and associated scour issues (Figure 5). A 1.3-feet deep by 10-feet wide notch would be cut into the existing downstream wall within the diversion structure, which would allow for hydraulic transport of sediment at high flows and would improve low-flow fish passage. Compared to the current condition, the diversion structure itself would be less visible post-construction.

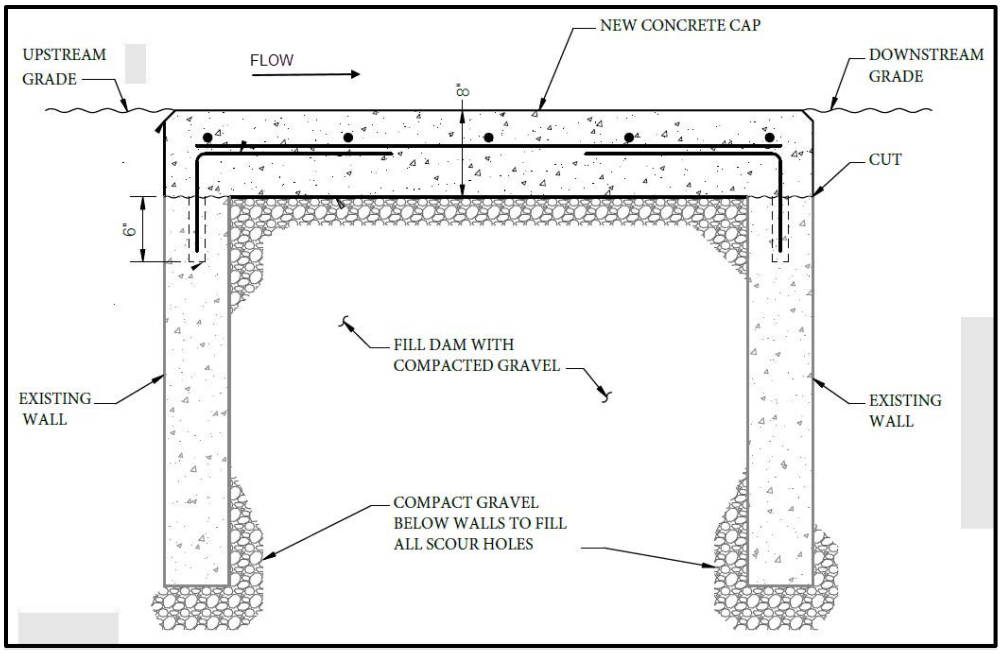
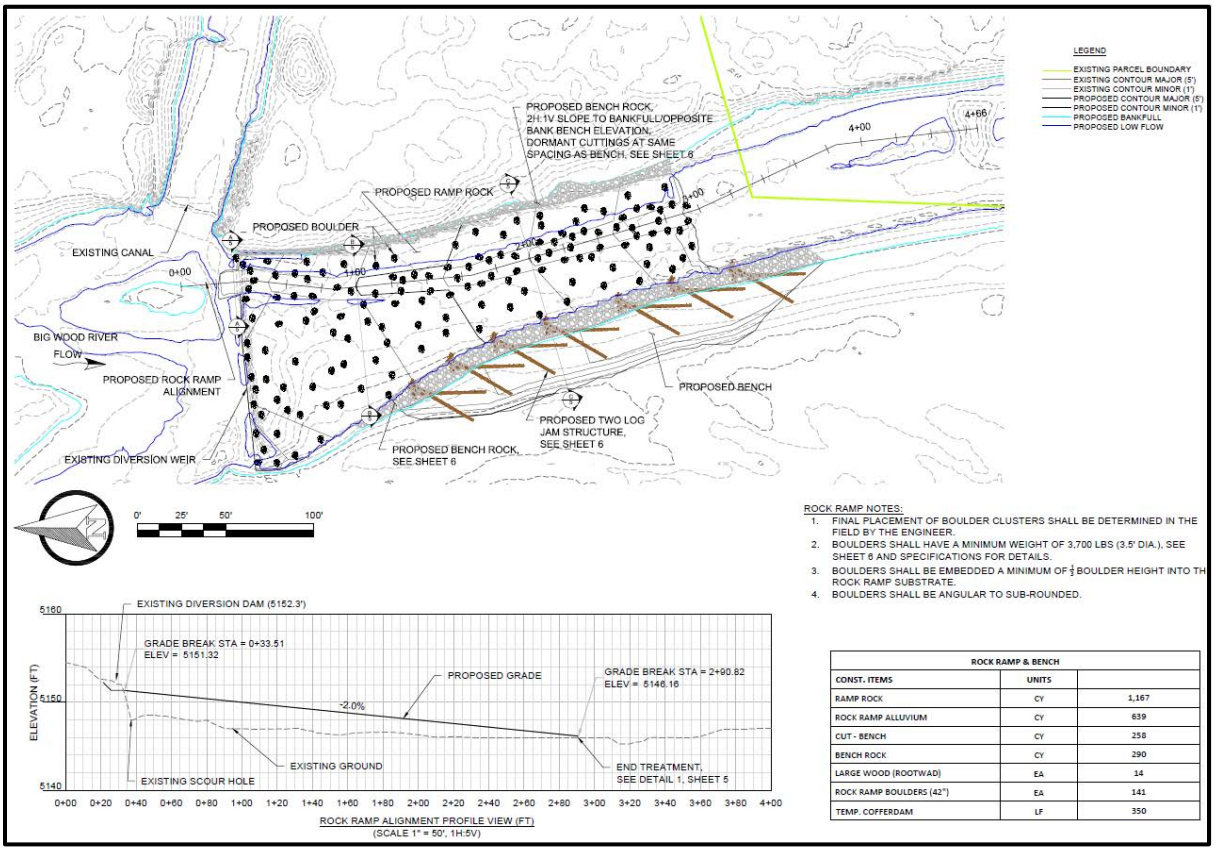


Figure 5. Cross-section view of post-construction concrete dam structure

2.4.2 Construction of Downstream Rock Ramp

An approximately 300-foot-long roughened rock ramp would be built downstream of the dam to raise and stabilize the stream bed below the dam, easing the transition between the discontinuous stream bed heights above and below the dam and restoring a more natural gradient profile (Figure 6). Materials would be sourced primarily from the existing gravel stockpile on the east side of the river, with additional material, if necessary, sourced from sediment that has been deposited upstream of the dam. The ramp would provide a low-flow fish passage that would tie into the proposed notch in the dam structure, enabling fish to move up to higher elevation cooler water. Boulders, dormant hardwood cuttings, and log jam structures would be incorporated into the downstream rock ramp to promote vertical channel stability and

increase instream complexity, improving aquatic habitat quality (Figure 6). The boulders (3-4 feet in diameter) would be dispersed throughout the rock ramp. The hardwood cuttings would be planted along the entire bank of the ramp.



ROCK RAMP & BENCH		
CONST. ITEMS	UNITS	
RAMP ROCK	CY	1,167
ROCK RAMP ALLUVIUM	CY	639
CUT - BENCH	CY	258
BENCH ROCK	CY	290
LARGE WOOD (ROOTWAD)	EA	14
ROCK RAMP BOULDERS (42")	EA	141
TEMP. COFFERDAM	LF	350

Figure 6. Diagram of the proposed rock ramp structure

2.4.3 Excavation and Stabilization of Downstream Bankfull Bench

Downstream of the diversion, the existing channel is entrenched and confined. A bankfull bench is proposed to be excavated in the unvegetated right bank adjacent to the rock ramp (Figure 6 and Figure 7). The bench would maintain conveyance width along the ramp to reduce stress during flood conditions. Hardwood cuttings, collected from native riparian trees and shrubs on-site, would be installed along the bench face and crest to improve stability via vegetation and to provide shading of the elevated gravel bar along the right bank, which is a consequence of the historic downcutting that has resulted from the diversion dam profile discontinuity. Log jam structures using two logs with a minimum 30-foot length and 18-inch diameter would be partially buried into the bench on the west side of the channel (Figure 7). These structures would promote the longevity of the proposed bench, improve sediment sorting, and tend to accumulate natural debris over time. Excavated materials would be reused in this location; no materials are planned to be transported.

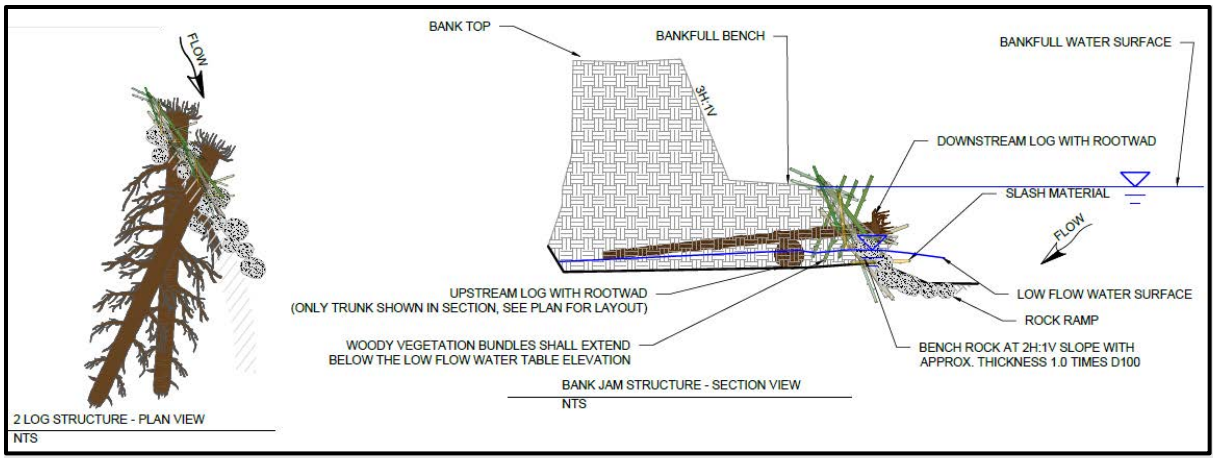


Figure 7. Cross-sectional diagram of proposed bankfull bench and stabilization methods

2.4.4 Post-Construction Site Reclamation and Monitoring

After construction has been completed, a native transitional seed mix would be dispersed throughout the 0.3-acre footprint of the former gravel stockpile area at the end of the haul road, as well as any temporary access roads and material staging areas established during the project.

BOC and Trout Unlimited (TU) would monitor the effectiveness of the project over 5 years. This monitoring would include photo points, surveys and visual inspections to investigate the stability of the structure and the capacity to provide fish passage. Annual monitoring reports would be made available to interested parties upon request.

2.4.5 Permit Requirements

Multiple necessary permits would be acquired by BOC. Expanded site access permits have been obtained from the City of Bellevue. A Floodplain Permit from the City of Bellevue, a joint 404/401 permit from the U.S. Army Corps of Engineers, and permits from Idaho Department of Water Resources (IDWR) and the Idaho Department of Lands (IDL) would be obtained. Construction activities would comply with all permit conditions and be conducted using all industry standard best management practices (BMPs) noted in comments received from the Idaho Department of Environmental Quality (IDEQ) (included in full in Appendix C), including the use of clean fill material, implementation of erosion and sediment control measures, limitations/management of pollutants and toxins, implementation of turbidity containment measures, restriction of in-water work, and vegetation protection and restoration measures.

2.5 Alternatives Considered but Eliminated from Further Study

NEPA requires Reclamation to consider alternatives developed through public scoping. However, only those alternatives that are reasonable and meet the purpose and need of the

proposed action must be analyzed. There were no alternatives presented through the public scoping process.

2.6 Actions Considered for Cumulative Effects

Cumulative effects are defined in 40 CFR 1508.7 as the effect on the environment that results from the incremental effects of the action when added to other past, present, and reasonably foreseeable future actions. The Council on Environmental Quality (CEQ) interprets this regulation as referring only to the cumulative effect of the direct and indirect effects of the proposed action and its alternatives when added to the aggregate effects of past, present, and reasonably foreseeable future actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

Past, present, and reasonably foreseeable actions identified in the area (public or private) that could adversely affect the same resource areas evaluated in this EA would be additive effects to the proposed project. These actions are considered for cumulative effects and are identified below.

2.6.1 Big Wood River Bank Stabilization (completed 2020)

The District 45 Big Wood River Bank Stabilization activities were completed in February 2020. In this project, the irrigation district removed a relict retaining wall upstream of the headgate (directly adjacent to the northeast) and replaced it with a bioengineered bank stabilization design and headgate wingwall extension.

2.6.2 Lower Howard Preserve Project (completed 2021)

The Lower Howard Preserve Project activities were completed in March 2021. This project consisted of opening access to an existing high-flow side channel and improving floodplain inundation through a relict levee without increasing flood hazard to nearby properties.

2.6.3 Bellevue Side Channels Project (completed spring 2023)

The Bellevue Side Channels Project, located approximately a half mile downstream from the Howard Preserve on the opposite side of the Big Wood River, was completed in the spring of 2023. This project involved restoring hydrologic connectivity with two high-flow side channels to improve peak flow floodplain inundation, reduce energy and flooding potential to nearby homeowners, and improve instream habitat conditions. The project was designed for and pursued by the WRLT.

Chapter 3 Affected Environment and Environmental Consequences

3.1 Introduction

This chapter evaluates the environmental consequences of implementing each of the alternatives described in Chapter 2. The level and depth of the environmental analysis corresponds to the context and intensity of the impacts anticipated for each environmental component (resource). The affected environment (Proposed Action area) addressed in this EA is defined in varied contexts depending on the affected resource being analyzed.

Resources evaluated in this document and analyzed in Chapter 3 were selected based on: Reclamation requirements; compliance with laws, statutes, and EOs; public and internal scoping; and the potential for resources to be affected by the Proposed Action.

3.2 Hydrology and Geomorphology

3.2.1 Affected Environment

Diversion 45 is located in Bellevue, Idaho, and diverts water from the Big Wood River. The structure is located approximately 5 miles downstream of the United States Geological Survey (USGS) Big Wood River at Hailey ID gage (gage number 13139510). Diversion 45 is located in Water District 37, IDWR. Water rights in the Big Wood River basin are administered by Water District 37. Figure 8 shows the general location of Diversion 45 in relation to the Bellevue Triangle and the City of Bellevue. The Bellevue Triangle (within the orange triangle in Figure 8) is the triangle of agricultural land where the Big Wood River Valley widens as it meets the Snake River Plain, generally beginning in the Bellevue area. Figure 9 shows the flows for the 30-year period from 1991 to 2020 for the USGS Big Wood River at Hailey, ID gage. Figure 10 shows the diversion levels for Diversion 45 for the 25-year period from 1991 to 2015.

In 2017, the Big Wood River experienced flows approximately three times as high as the mean daily flow during peak runoff. Following this event, WRLT contracted for a Conceptual Restoration Design Report study to complete a reach-wide assessment and conceptual design plan for the Big Wood River, which includes the project area. The *Biota Conceptual Restoration Design Report* (Appendix A) identified that a considerable volume of sediment was deposited within the project area in 2017 (approximately 20,221 cubic yards), with an even greater volume of erosion (approximately 41,401 cubic yards).

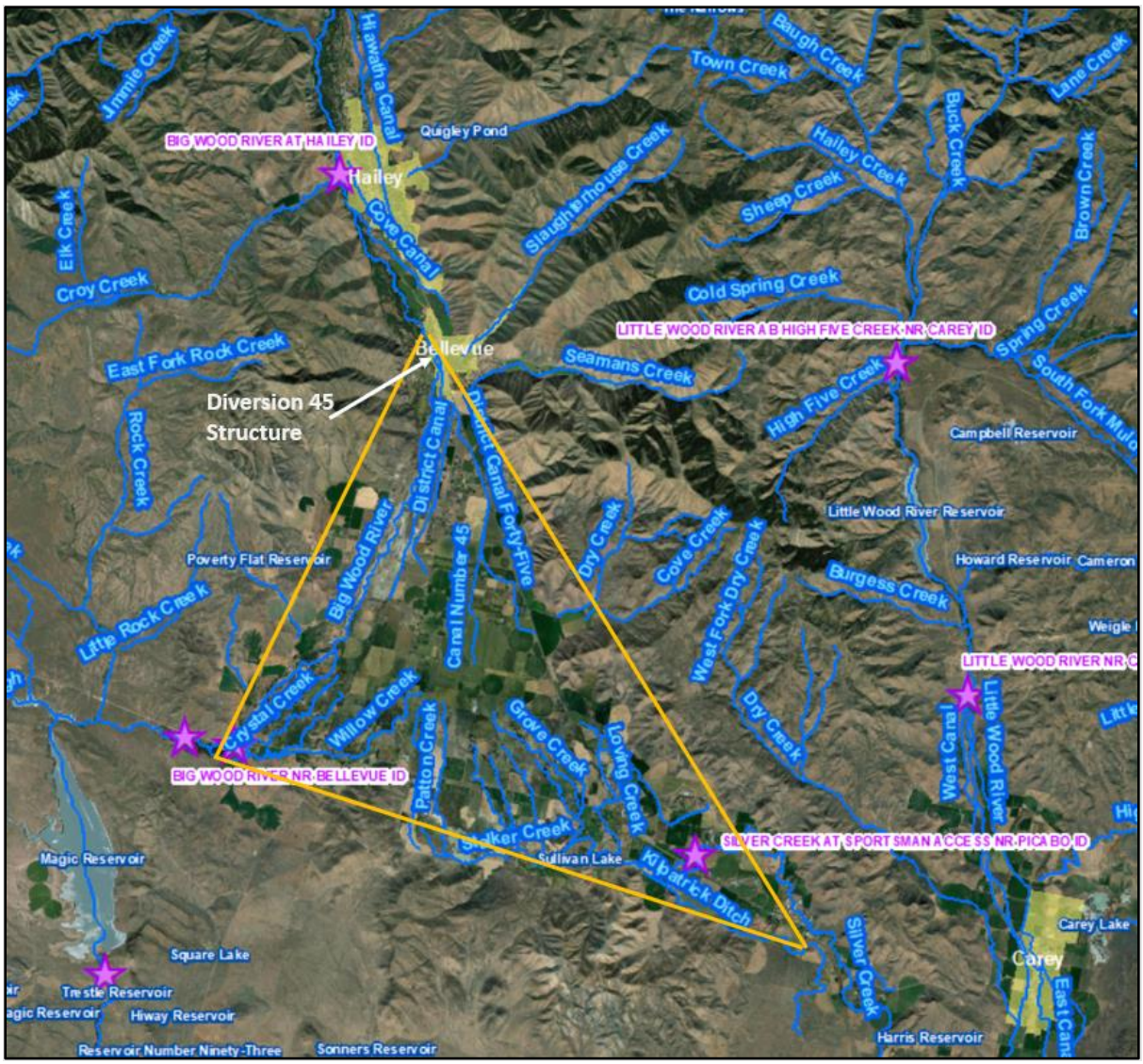


Figure 8. Map showing the general location of the proposed project (Diversion 45 structure) in relation to the Bellevue Triangle (orange triangle)

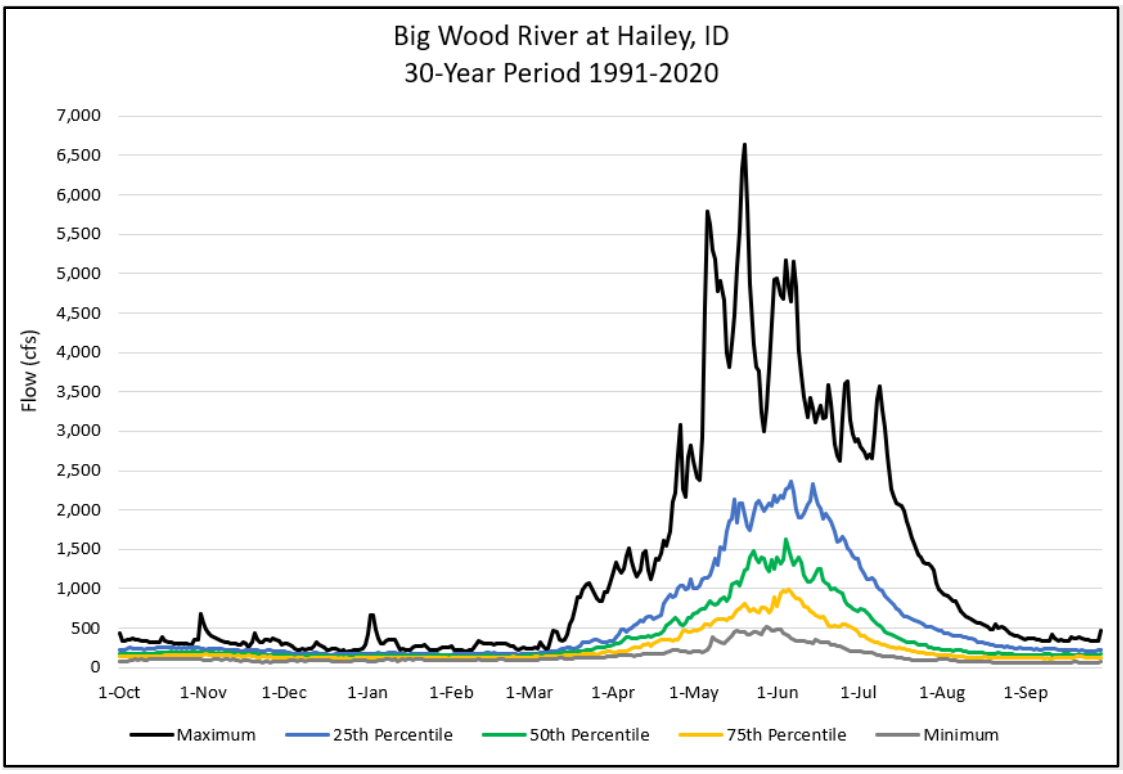


Figure 9. Daily historic flow data for the Big Wood River at Hailey, ID, for the 30-year period of record 1991-2020, available on Reclamation's Hydromet site (https://www.usbr.gov/gp/hydromet/)

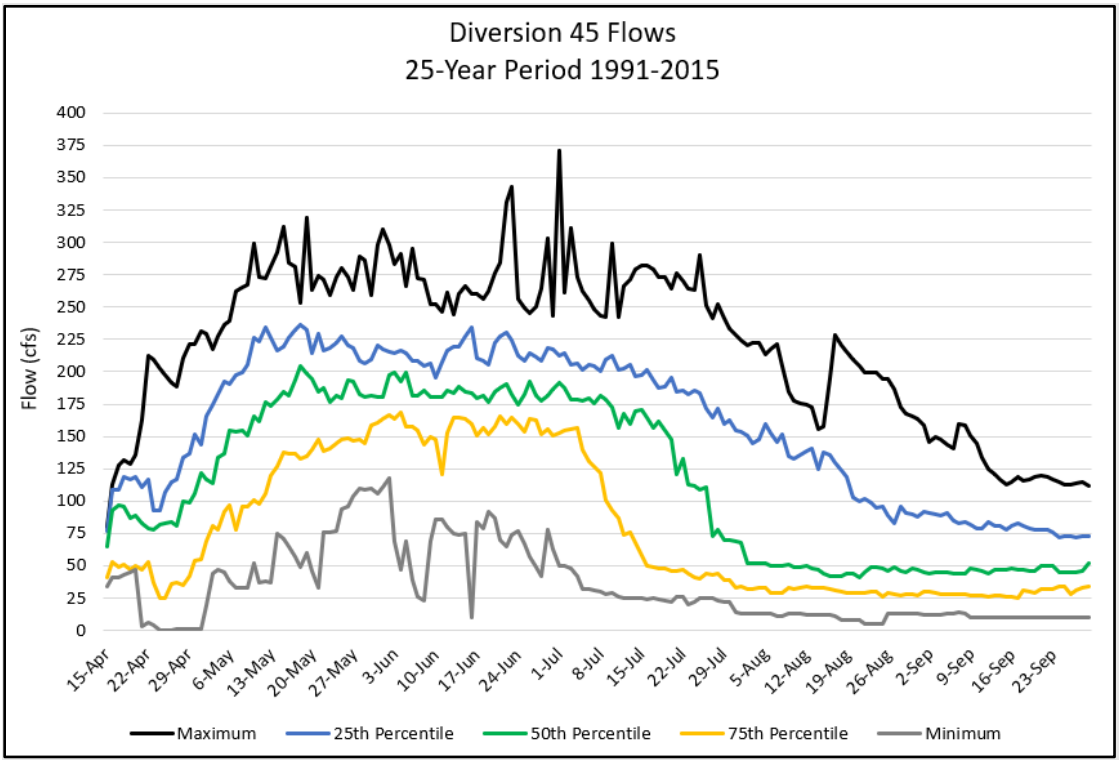


Figure 10. Daily historic diversion data for Diversion 45, from April 15 to September 30 for the 25-year period of record 1991-2015, obtained from Water District 37

3.2.2 Environmental Consequences

Alternative A- No Action

Under the No Action alternative, the existing Diversion 45 structure would continue to deteriorate in the short- and long-term. The existence of Diversion 45 would continue to destabilize the stream channel, resulting in upstream aggradation and significant downstream erosion up to and even underneath the existing structure, as well as ongoing channel incision. Sediment that cannot pass the structure would continue to contribute to formation of a braided channel and growth of a vegetated island upstream, and the challenges BOC faces in diverting water during low flows would continue to necessitate regular maintenance of the structure, including instream heavy equipment work performed twice annually to move gravel to allow for efficient diversion of water. This reach of the Big Wood River would continue to experience impaired fluvial functions associated with sediment movement and floodwater conveyance. The dam, currently bridging over very large scour holes in the Big Wood River, would be in long-term danger of collapsing. The dangerous river hydraulic downstream of the structure would continue to pose a safety risk. The overall basin hydrology in the Big Wood River would be unaffected under the No Action alternative.

Alternative B – Big Wood River Diversion Dam (Diversion 45) Remediation and Fish Passage Project (Proposed Action)

Under the Proposed Action, the project would stabilize and restore fluvial functions of the Big Wood River in the reach of the project area by effectively transporting high flows and sediment downstream, along with restoring a more uniform channel profile, providing more reliable hydraulic conditions at low flow for the Diversion 45 structure, and reducing the safety hazard posed by the current structure. Overall basin hydrology in the Big Wood River would be unaffected under the Proposed Action alternative.

The proposed project's roughened rock ramp would provide continuity in the channel profile under both high-flow and low-flow conditions. The rock ramp would help to maintain adequate hydraulic head, including at low flows, for sufficient water diversion without the need for additional recurring activity to create or maintain gravel pushup dams. The resulting water surface elevation would be similar to the pre-project water surface elevation created by the structure. These effects would be long-term and beneficial.

In conjunction with the rock ramp, the notch cutout on the dam structure would serve as a channel to deliver low flows in a manner conducive to upstream fish passage, as well facilitating sediment movement through the reach of the Big Wood River (illustrated in Figure 6). These features are anticipated to alleviate the current issue of sediment build-up at the vegetated island upstream of Diversion 45. When high-flow events pass through the project area, it is likely that sediment from the vegetated island would naturally be scoured out and passed downstream. High water levels at the diversion structure would initially be similar to pre-project conditions, but as the vegetated island would be scoured out by this dynamic over time, less of a backwater effect would be observed at high flows in the long term.

At low-flow conditions, some minor sedimentation may continue to periodically occur in the lowered notch in the rock ramp structure, when suspended sediment may deposit in low-velocity conditions. However, when even moderate flows are experienced in the reach, it is likely the sediment deposited at low flows would be moved downstream. High flows would considerably clean out the continuous notch in the rock ramp structure, which would ensure long-term sustained structure function and stability.

Post-construction, monitoring of the project area over 5 years would ensure the ongoing long-term effectiveness of the project's hydrologic goals. Photo points, surveys, and visual inspections would be performed to monitor the stability of the structure. Annual monitoring reports would be obtainable from BOC and TU post-construction.

Cumulative Effects

In combination with other actions in the vicinity of the project area (discussed in Section 2.6), the Proposed Action would further maximize the overall restoration of fluvial functions in this reach of the Big Wood River while protecting land adjacent to the river from further erosion. The Proposed Action, additive to other actions considered for cumulative effects, would beneficially contribute to the overall long-term effectiveness of restoration activities in this reach of the Big Wood River.

3.3 Water Quality

3.3.1 Affected Environment

The Big Wood River is 137 miles long and is located within the Big Wood River subbasin (17040219) in south-central Idaho. IDEQ, in their *TMDL 5-Year Review* document (2017), identified that the subbasin is made of three distinct ecological areas: the Sawtooth National Forest area, the central Wood River Valley, and the rangeland/agricultural area. The proposed project is within the central Wood River Valley area, IDEQ Assessment Unit (AU) ID17040219SK004_05 (Seamans Creek to Magic Reservoir). This area is characterized as somewhat urban, with the Big Wood River passing through both the cities of Hailey and Bellevue, and is influenced by the surrounding irrigated croplands (IDEQ 2017). IDEQ also noted that during the irrigation season, the Glendale Diversion south of Bellevue can divert the Big Wood River water in its entirety and dry up a segment of the riverbed, and that the water returns downstream due to spring seeps and perennial creeks (IDEQ 2017).

IDEQ's *2022 Integrated Report* identifies that the Big Wood River water quality is not supporting these beneficial uses:

- Cold Water Aquatic Life, due to flow regime modification, total phosphorus (TP), and sediment/siltation
- Primary Contact Recreation, due to Escherichia coli (E. coli)
- Salmonid Spawning, due to sedimentation/siltation (IDEQ 2022)

Other designated beneficial uses identified for the Big Wood River include aesthetics, agricultural-domestic-industrial water supplies, and wildlife habitat. These beneficial uses have not been assessed.

Total maximum daily loads (TMDLs) were developed for TP (0.05 mg/L) and sediment (measured as total suspended solids (TSS) of 25 mg/L and substrate fines of 35 percent) in 2002 and for E. coli (126 colony-forming units (CFU)/100mL as a 30-day geometric average) in 2012 (IDEQ 2017). The *5-Year TMDL Review* identified multiple exceedances in TP, TSS, and E. coli during the 2015 monitoring season, leading IDEQ to conclude that the pollutant problems are relatively minor; however, more work to improve water quality is necessary before the TMDLs are identified as successful (IDEQ 2017).

3.3.2 Environmental Consequences

Alternative A- No Action

Direct and Indirect Effects

The Big Wood River water quality would continue to change, directly and indirectly, from anthropogenic and natural upstream watershed inputs and snowpack/precipitation events. Water quality conditions would be similar to that described in the Affected Environment section. Recurring instream heavy equipment use would continue to be necessary (as a maintenance activity) to move sediment and gravel within the active river channel twice a year. This would likely temporarily create sediment-related increases in turbidity and TSS in the nearby river and downstream.

In the long term, due to continuing water quality improvements from BMPs in the watershed to meet TMDLs that limit pollution over time, water quality should slowly improve in the Big Wood River. Sediment impairments, TP, and E. coli in this reach of the Big Wood River should slowly decrease to acceptable levels and ultimately beneficial uses criteria should be met. Because the TMDLs have been ongoing since 2002 (for TP and sediment) and since 2012 (for E. coli) and there were still minor contaminant exceedances measured in 2015, it is estimated that it will take more than 10 years to meet state water quality standards.

Alternative B – Big Wood River Diversion Dam (Diversion 45) Remediation and Fish Passage Project (Proposed Action)

Effects to water quality in the Big Wood River are separated into two categories: short-term construction effects and long-term effects. Short-term effects include direct and indirect effects associated with temporary road construction and use, dam structure stabilization and modification, downstream rock ramp construction, and excavation and stabilization of the downstream bench. Long-term effects include direct and indirect effects after the Big Wood River channel has come to an equilibrium after construction has concluded. It is assumed that all requirements and procedures, including BMPs for water quality and ecological protection identified in the various city, state, and federal permits, will be followed by the proponent.

Construction Direct and Indirect Effects

Use of existing roads for construction equipment poses a minor potential source of sediment introduction due to proximity to the river. These existing access roads are somewhat established and hardened, decreasing the likelihood of sediment transport into the river, even with extensive heavy equipment traffic. However, the creation of a new access road would increase the potential for sediment movement into the river because of loose soil and unconsolidated material from new road construction and increased heavy equipment traffic. This would occur during the late summer to fall construction time, and the sedimentation effects would be temporary. To mitigate turbidity and sedimentation effects, BMPs may need to be implemented, including but not limited to occasionally watering the newly-established road to decrease dust during heavy vehicle traffic. This would limit the amount of sediment entering the river to very minor amounts and would not be expected to result in exceedances of Idaho water quality standards for turbidity or to affect TSS and substrate fines.

Dam structure stabilization and notch construction are not likely to directly affect the river water quality. Cutting the concrete cap off the top of the dam and cutting a notch into the diversion structure both have the potential to introduce slight amounts of concreate dust into the river. All larger pieces would be removed off-site for appropriate disposal. Filling the existing scour hole voids around the dam with compacted gravel could mobilize river bottom sediments and increase turbidity, TSS, and substrate fines momentarily as the gravel is being placed and compacted. There should be little to no sediment transported with the gravel because the gravel would be locally sourced and washed with clean water before placement. Pouring the concrete slab with rebar on the top of the dam is unlikely to cause any water quality concerns unless an accidental and unintended release of wet concreate were to occur in the river channel. The last step of this process, backfilling the downstream side up to the dam, could have similar water quality effects as placing and compacting the gravel. This fill material would also be locally sourced and washed, preventing any additional sediment to be transported into the river. The construction would be performed during low river flows, minimizing disturbance and transport of fine sediment material downstream. The sediment disturbance that would occur would be short in duration, localized, and not expected to appreciably affect turbidity or the TSS and substrate fines TMDLs.

Downstream rock ramp construction in the river channel would disturb the channel bottom and would cause a brief increase in sediment and turbidity. The resulting sediment plume would dissipate downstream within minutes of entering the channel and would be distributed downstream based on mass of the individual sediment particles and flow velocity. In channel areas that experience direct flows, the higher-velocity water has likely removed much of the lighter sediment and would experience less turbidity, while depositional areas that are protected from the direct current would experience more turbidity during the placement of fill. It is expected that turbidity during this construction period may exceed 25 nephelometric turbidity units (NTUs) over background, and TSS and substrate fines would increase. These effects would not persist for more than 10 consecutive days because of the small amount of sediment disturbed by fill placement and how quickly dissipation would occur with water flow downstream. By the same logic, turbidity should not exceed background by more than 50 NTUs

taken instantaneously and TSS and substrate fines would not be expected to exceed TMDLs. The fill material itself would not add to the sediment/turbidity because it would be cleaned before placement into the channel and any sediment on the fill would be very minor.

Excavation and stabilization of the downstream bench would have similar effects as those described for the downstream rock ramp construction. Excavation and bank stabilization could expose finer sediments to the channel, potentially increasing turbidity, TSS, and substrate fines during the construction period. Sedimentation effects are lessened by timing construction to occur during low flows. This would be a short-duration, localized disturbance that is not expected to affect turbidity or the TSS and substrate fines TMDLs overall.

The cumulation of the short-term construction effects described above are not expected to affect E. coli or TP concentrations below, at, or above the construction site. No direct inputs associated with these contaminants are known to occur or are likely to occur due to construction.

Post-Construction Direct and Indirect Effects

In the long term, geomorphology of this segment of the Big Wood River would be changed to a continuous river corridor of flowing water (see discussion in Section 3.2). The dam adjustments would allow for hydraulic transport of sediment at high flows and would improve low-flow fish passage. The newly created connectivity would reduce the likelihood of erosional effects such as those that currently occur from plunge-pool head-cutting. Boulders, dormant hardwood cuttings, and log jam structures that are incorporated into the downstream rock ramp would promote vertical channel stability and decrease erosion and sedimentation. Native riparian trees and shrub-plantings along the bench face and crest would improve bank stability as they spread through the riparian area and eventually provide shading of the elevated gravel bar along the right bank. The shading would help maintain cooler water temperatures more in line with beneficial uses criteria. Log jam structures would promote the longevity of the river bench, improve sediment sorting, and accumulate natural debris over time, creating a functional fluvial segment. This would improve sedimentation in the river segment and in downstream areas. Additionally, the periodic heavy equipment operation in the channel would no longer be a necessary maintenance activity, decreasing the periodic disturbance of bottom sediments. Overtime, sedimentation as measured by TSS and substrate fines would improve and move towards meeting Idaho water quality standards.

Cumulative Effects

Cumulative effects from the three projects identified in Section 2.6 (i.e., 2020 Big Wood River Bank Stabilization, 2021 Lower Howard Preserve Project, and 2023 Bellevue Side Channels Project), when added to the water quality effects from this project, would likely not add to short-term sedimentation issues attributed to construction. These projects have been completed, and any adverse short-term sedimentation effects (turbidity, TSS, excessive substrate fines) has likely been mitigated or dispersed to baseline levels, such that the minor short-term sedimentation effects described above would not be additive. However, the combination of these three projects with the long-term direct and indirect effects of the proposed project would result in improved water quality and overall watershed function of the subbasin. These projects (including the

proposed project) improve fluvial functions to areas of the Big Wood River subbasin, and collectively restore resiliency to riparian areas, allow sediment to pass/be deposited in appropriate geomorphological areas of the river, and stabilize areas to restore previously eroded areas of the river channel and prevent further future erosion. All these effects benefit the river continuum, which eventually improves water quality (e.g., reducing excess sedimentation, nutrients, etc.) (Vannote et al. 1980). The time necessary for these beneficial water quality effects to occur is unknown and would be purely speculative.

3.4 Biological Resources: Vegetation, Wildlife, and Fisheries

3.4.1 Affected Environment

Vegetation and Wildlife

The Big Wood River drainage primarily consists of three native vegetation cover types: riparian areas dominated by cottonwood; riparian shrub-scrub zones dominated by willows and alder with chokecherry and serviceberry; and sagebrush-dominated uplands. The latter habitat type does not occur in the action area, so is not discussed in this document. Descriptions of vegetation types, the habitat each provides, and wildlife species noted in each are included below by vegetation type.

Cottonwood-Dominated Forested Riparian Corridors

Cottonwood/willow-dominated forested riparian corridor is the most prevalent vegetation type in the project area, including near the existing diversion. The vegetation community is currently dominated by black cottonwood (*Populus balsamifera ssp. trichocarpa*) and willows (*Salix lasiandra*, *Salix lemmonii*, *Salix exigua* and *Salix lutea*). Other species found in cottonwood/willow-dominated riparian areas include red-osier dogwood (*Cornus sericea*), gray alder (*Alnus incana*), golden currant (*Ribes aureum*), chokecherry (*Prunus virginiana*), serviceberry (*Amelanchier alnifolia*), and silver sage (*Artemisia cana*) (Cowardin et al. 1979).

Black cottonwood is dependent on water in the natural channel of the Big Wood River and dispersed around the diversion dam, and on water seepage from the east lateral. Cottonwood and willow scrub-shrub habitat must be supported by adequate hydrology both to survive and to reproduce. These habitats have survived along the Big Wood River channel because enough water is available to support them early in the spring before irrigation demands are at their peak and water is diverted. They also occur as very linear habitat along adjacent irrigation channels in other areas. The primary reasons these habitats are limited in their extent involve: reduction of in-channel flows diverted for agriculture; drought conditions; and the naturally-occurring porous soils that facilitate rapid transfer of surface flows subsurface.

Cottonwood stands are high-value wildlife habitats that are essential for reproduction for many species and used for hiding cover by others. Songbird species documented to occur within the project area in this habitat include northern flicker (*Colaptes auratus*), Bullock's oriole (*Icterus bullockii*), mourning dove (*Zenaida macroura*), American robin (*Turdus migratorius*), western wood pewee (*Contopus sordidulus*), mountain chickadee (*Poecile gambeli*), house finch (*Carpodacus*

mexicanus), and American goldfinch (*Carduelis tristis*). Raptors, such as American kestrel (*Falco sparverius*), redtailed hawk (*Buteo jamaicensis*), and Swainson's hawk (*Buteo swainsoni*), can all be observed in this habitat (Ehrlich et. al. 1988). These raptors also likely use cottonwood stands for nesting substrate. Even relatively narrow cottonwood riparian corridors along irrigation canals can provide habitat for large numbers of birds, particularly orioles, mourning doves, western wood pewees, and robins (DeGraff et al. 1991). Mammals likely to inhabit this vegetation type include mule deer (*Odocoileus hemionus*), black bear (*Ursus americanus*), beaver (*Castor canadensis*), red fox (*Vulpes vulpes*), and river otter (*Lontra canadensis*) (IDFG 2023).

Willow-Dominated Shrub-Scrub Habitats

Willow-dominated riparian and shrub-scrub wetlands represent some of the most productive bird nesting habitat within the project area. This habitat typically includes a variety of other shrubs and a few large cottonwoods, which combine to make it particularly high-value bird habitat. A large variety of migratory songbirds are found in this habitat. The following species are known to utilize the willow-dominated habitat: song sparrow (*Melospiza melodia*), warbling vireo (*Vireo gilvus*), common yellowthroat (*Geothlypis trichas*), fox sparrow (*Passerella iliaca*), yellow warbler (*Dendroica petechia*), cedar waxwing (*Bombycilla cedrorum*), black-throated gray warbler (*Dendroica nigrescens*), Lincoln sparrow (*Melospiza lincolnii*), American robin, dark-eyed junco (*Junco hyemalis*), gray catbird (*Dumetella carolinensis*), and rufous-sided towhee (*Pipilo erythrophthalmus*) (IDFG 2023). Moose (*Alces alces*) also inhabit this vegetation type near the project area.

Noxious Weeds

The majority of high-quality wildlife habitats are associated with native vegetation communities; weed infestation impairs wildlife habitat value. Noxious weeds are not a major concern within the project area. Canada thistle (*Cirsium arvense*), a common weed that has been designated as legally noxious in Idaho, has historically been found throughout the area, but occurrences are primarily restricted to lateral and ditch banks and to intensively-used pasture. Other weeds, such as rough cocklebur (*Xanthium strumarium*), bittersweet nightshade (*Solanum dulcamara*), common burdock (*Arctium spp.*), tansy (*Tanacetum vulgare*), rush skeleton weed (*Chondrilla juncea*), and cheat grass (*Bromus tectorum*), can also be found near the project area.

Fisheries

The Big Wood River is a diverse trout fishery and is considered one of Idaho's most productive trout streams. Fish populations include game fish such as rainbow trout (*Oncorhynchus mykiss*), brown trout (*Salmo trutta*), brook trout (*Salvelinus fontinalis*), cutthroat trout (*Oncorhynchus clarkia*), and mountain whitefish (*Prosopium williamsoni*), as well as non-game species such as speckled dace (*Rhinichthys osculus*), bridgelip sucker (*Catostomus columbianus*), and Wood River sculpin (*Cottus leiopomus*), which is listed by the State of Idaho's Comprehensive Wildlife Conservation Strategy as a "Species of Greatest Conservation Need" (Maret 1997). Wood River sculpin are endemic to the Wood River drainage, and the U.S. Forest Service and Bureau of Land Management classify the Wood River sculpin as a "Sensitive" species, while it is classified by the Idaho Department of Fish and Game (IDFG) as a 'Species of Concern."

The Big Wood River is important socially and ecologically, which has made it a focus for individual anglers, angling groups, and biologists alike. In recent years, it has been subject to severe drawdowns in warm and dry years, which has caused high summer water temperatures and fish die-off events downstream of the Diversion 45 when fish are unable to move upstream past the diversion at low flows. For example, over 12,000 salmonids were captured downstream of the diversion and released upstream during a salvage event in 2021 (IDFG 2021). Wood River irrigators, WRLT, the Hemingway Chapter of TU, and IDFG have been working together to maintain sufficient water levels in the main river channel. However, with drought conditions continuing, flows above Diversion 45 have generally continued to rapidly decline, putting both irrigators and fish at risk.

3.4.2 Environmental Consequences

Alternative A- No Action

Direct and Indirect Effects

Vegetation and Wildlife

Under the No Action alternative, the terrestrial habitat conditions currently found in the project area, including vegetation species community and coverage, would continue to be affected by ongoing channel incision which impairs riparian function. Vegetation would be adversely affected (trampling, compaction, potential introduction of weeds) twice annually when BOC would access the project area with heavy equipment to perform in-channel maintenance work. Wildlife would continue to be affected by the continued impairment of riparian function, and would continue to exhibit temporary avoidance behavior during times of in-channel work.

Fisheries

Under the No Action alternative, aquatic habitat conditions in the project area would continue to experience direct effects from ongoing channel aggradation processes which impair riparian function, resulting in increased water temperatures due to lack of established overbank vegetation that would provide shading from solar radiation. The diversion structure would continue to pose a barrier to upstream fish migration during irrigation/summer months when flows are reduced, and fish mortality due to elevated water temperatures in years with low flow conditions would likely continue to sporadically occur at rates similar to the present conditions.

Alternative B – Big Wood River Diversion Dam (Diversion 45) Remediation and Fish Passage Project (Proposed Action)

Direct and Indirect Effects

Vegetation and Wildlife

During construction, existing vegetation at the construction sites and along the current river channel margins in the project area would be disturbed and, in some locations, removed permanently to facilitate heavy equipment and contouring work. The use of heavy equipment in the area would create the risk of introduction or spreading of noxious or invasive weeds in the

project area; this risk would be minimized by the implementation of weed-control BMPs by the contractor. Vegetation disturbance would be minimized because existing established roadways would be used, and reseeding practices would be followed at the conclusion of construction, which would result in a long-term increase in vegetation. During construction, wildlife would experience direct disturbance and would likely relocate and exhibit avoidance behavior due to the increased human activity. This effect would be temporary (limited to the duration of construction) and localized to the project area.

Post-construction, vegetation and wildlife would experience long-term beneficial effects from the remediation of the Diversion 45 structure, because of the subsequent establishment of a more natural stream gradient, reduced channel incision, and increased floodplain connectivity. Since the construction process would also include direct plantings of bank-stabilizing vegetation (dormant hardwood cuttings) at the newly contoured river margins in the rock ramp and bankfull bench areas, as well as reseeding of staging areas, there would be no net loss of vegetation or habitat in the long term. The project's correction of the detrimental channel aggradation and incision processes would allow for more successful natural long-term recruitment of riparian and floodplain vegetation that would establish over a period of years. This increase in vegetation recruitment would create more and higher quality riparian habitat for birds and wildlife in the area to utilize and occupy once vegetation, particularly overstory species, reaches maturity. This would result in a long-term increase in habitat availability. Overall, effects to vegetation and wildlife from the implementation of Alternative B would be beneficial, as the improvement in riparian function would lead to increased habitat quantity and quality.

Fisheries

During construction, there would be localized short-term detrimental effects to fisheries due to increased turbidity from equipment operation and general direct disturbance of the river channel in areas where work is occurring. These effects would be limited in size and duration, as the areas proposed for construction are small in the context of the surrounding landscape and Big Wood River watershed, and sediments released into the water during construction would be expected to dissipate rapidly downstream to background levels within a matter of days. This direct disturbance of fish in the project area would cease post-construction.

Following construction, fisheries would experience a direct long-term benefit from the removal of a barrier to upstream migration and the creation of a channel designed to provide fish passage even in low-flow conditions, which would enable fish to move upstream to escape warm summer water temperatures. There would additionally be indirect permanent beneficial effects to fish from the project through a long-term increase in riparian habitat quality and revitalized floodplain connectivity, which would contribute to improved water quality conditions (e.g., reduced water temperatures due to riparian shading) during the critical summer season.

Cumulative Effects

In combination with the other reach-wide watershed improvement projects enumerated in the *2019 Bellevue Project Area Conceptual Restoration Designs* (Appendix A)and described in Section 2.6 of this document, the proposed project would contribute to a holistically beneficial

improvement in the quality and quantity of vegetation, riparian, and aquatic habitat in both Howard Preserve and the broader reach of the Big Wood River in which it is situated. The reestablishment of upstream fish passage at the Diversion 45 site would provide beneficial aquatic habitat connectivity between the listed project areas. No detrimental cumulative impacts are expected.

3.5 ESA-Listed Species

The ESA establishes protections for fish, wildlife, and plants that are listed as Threatened or Endangered (T&E); provides for adding species to and removing them from the list of T&E species, and for preparing and implementing plans for their recovery; and provides for interagency cooperation to avoid take of listed species and for issuing permits for otherwise prohibited activities (16 U.S.C. 1531-1544).

3.5.1 Affected Environment

A corridor along the Big Wood River was delineated for analysis, all within the WRLT's 12.5-acre Howard Preserve, in Blaine County, Idaho. This area was identified as the area of potential effect because the major component actions of the proposed project all occur within this geographic area. Since the overall management of water diversions at the site of the current diversion structure would continue as it has historically been conducted, regardless of which alternative is selected, downstream riparian (terrestrial) habitat would not be expected to be affected and therefore was not analyzed.

A preliminary report generated through the U.S. Fish and Wildlife Service's (USFWS) Information and Planning and Consultation (IPaC) site indicated that one listed (Threatened) species (North American wolverine-*Gulo gulo luscus*) and one Candidate species (monarch butterfly-*Danaus plexippus*) could be present in the action area for this proposed project (USFWS 2023a). No proposed or designated critical habitats associated with any listed species overlap with the project's area of influence. Each species identified is discussed in further detail below and the full IPaC report is included as Appendix B.

Yellow-billed Cuckoo (Coccyzus americanus)

Species Life History and Distribution

The yellow-billed cuckoo (*Coccyzus americanus*) is a neo-tropical migrant bird that winters in South America and summers in North America, where breeding, nesting, and rearing occur from June through August. In the North American part of its range, the species is a riparian obligate, nesting exclusively in willow-cottonwood complexes greater than 50 acres (20 ha) in extent that occur adjacent to water. While the yellow-billed cuckoo is common east of the Continental Divide, biologists estimate that more than 90 percent of the bird's riparian habitat in the West has been lost or degraded as a result of conversion to agriculture, dams and river flow management, bank protection, overgrazing, and competition from exotic plants such as

tamarisk. It is currently listed as Threatened. Critical Habitat has been designated for this species, but does not intersect with the project area (USFWS 2023b).

Occurrence in Action Area

While this species is not included on the IPaC report and there are no data of confirmed observations of this species in the area of potential effect, a citizen comment was submitted during the public scoping period expressing concern for the existence of yellow-billed cuckoo (*Coccyzus americanus*) in the project area. IDFG's Idaho Fish and Wildlife Information System (IFWIS) contains the Idaho Species Catalog feature which acts as a repository for species specific data on Idaho's fish, wildlife and plant diversity. Repository data show that the nearest confirmed observations of yellow-billed cuckoo, including sightings and calls, are in close proximity to Magic Reservoir, approximately 20 miles from the project area. No confirmed yellow-billed cuckoo observations nearer than the area surrounding Magic Reservoir have been recorded over the last 20 years of surveys (IFWIS 2023). However, given the migratory nature of this species and the relatively short distance of Magic Reservoir from the project area, yellow-billed cuckoo could periodically use the project area as a migration corridor. Additionally, no habitat patches sizeable enough to be considered suitable for nesting exist within or adjacent to the project area. Nesting pairs are known to require a 50-acre (20 ha) minimum patch size of prime riparian habitat; smaller patches are rarely occupied (Hughes 1999).

North American Wolverine (Gulo gulo luscus)

Species Life History and Distribution

The North American wolverine (*Gulo gulo luscus*) is the largest member of the Mustelidae family. Wolverines occur in alpine, boreal, and arctic habitats including boreal forests, tundra, and western mountains. The wolverine has a relationship with persistent spring snow that is obligate and the den scale; that is, the wolverine requires deep (greater than 1.5 meters deep, stable, and persistent spring snow for successful denning and reproduction. Due to this habitat requirement for conditions cold enough to support persistent snow, the southern portion of their range (California, Colorado, Idaho, Montana, Washington, and Wyoming) is limited to high-elevation alpine habitats. In Idaho, natal den sites are known to occur only in locations above 2,500 meters (8,200 ft.). This species is currently listed as threatened (USFWS 2023c).

Occurrence in Action Area

Due to the relatively low elevation range of the action area (5,167 ft.) and the lack of suitable alpine or boreal habitat conditions required by this species, denning populations of wolverines would not be expected to be present. However, wolverines are known to occasionally travel long distances between patches of suitable habitat. Therefore, although unlikely, it is possible that individuals could infrequently utilize habitat in or adjacent to the action area as a migration corridor.

Monarch butterfly (Danaus plexippus)

Species Life History and Distribution

The Monarch butterfly is a butterfly species that is globally distributed, with the North American populations being well-known for long-distance migration. They are obligate to their larval host plant, milkweed (primarily *Asclepias spp.*), five species of which are widespread in Idaho (Kinter 2019), on which they lay eggs and larvae emerge in 2 to 5 days. Multiple generations of monarchs are produced in a breeding season; most individuals live approximately 2 to 5 weeks, but overwintering adults enter reproductive diapause (suspended reproduction) and may live 6 to 9 months.

Migratory individuals in western North America generally fly shorter distances south and west to overwintering groves along the California coast into northern Baja California. In the spring in western North America, monarchs migrate north and west over multiple generations from coastal California toward the Rockies and to the Pacific Northwest. Adult monarch butterflies during breeding and migration require a diversity of blooming nectar resources (or nectaring habitat), which they feed on throughout their migration routes and breeding grounds (spring through fall). Monarchs also need milkweed (for both oviposition and larval feeding) embedded within this diverse nectaring habitat. The correct phenology, or timing, of both monarch presence and nectar plants and milkweed is important for monarch survival. In western North America, nectar and milkweed resources are often associated with riparian corridors, and milkweed may function as the principal nectar source for monarchs in more arid regions (USFWS 2020). This species is currently listed as a candidate species (USFWS 2023d).

Occurrence in Action Area

The interagency Western Monarch Milkweed Mapper (www.monarchmilkweedmapper.org) does not show documentation of milkweed in the project area (Figure 11). Currently, only positive detections are listed on the website. It is unknown if the lack of detections shown is due to a lack of surveys or to a lack of milkweed and monarchs in areas that have been surveyed. The monarch butterfly, as a candidate species, has not yet been proposed for listing. There are no requirements under Section 7 of the ESA for candidate species, but agencies are encouraged to take advantage of opportunities for conservation. No Critical Habitat has been designated for this species.

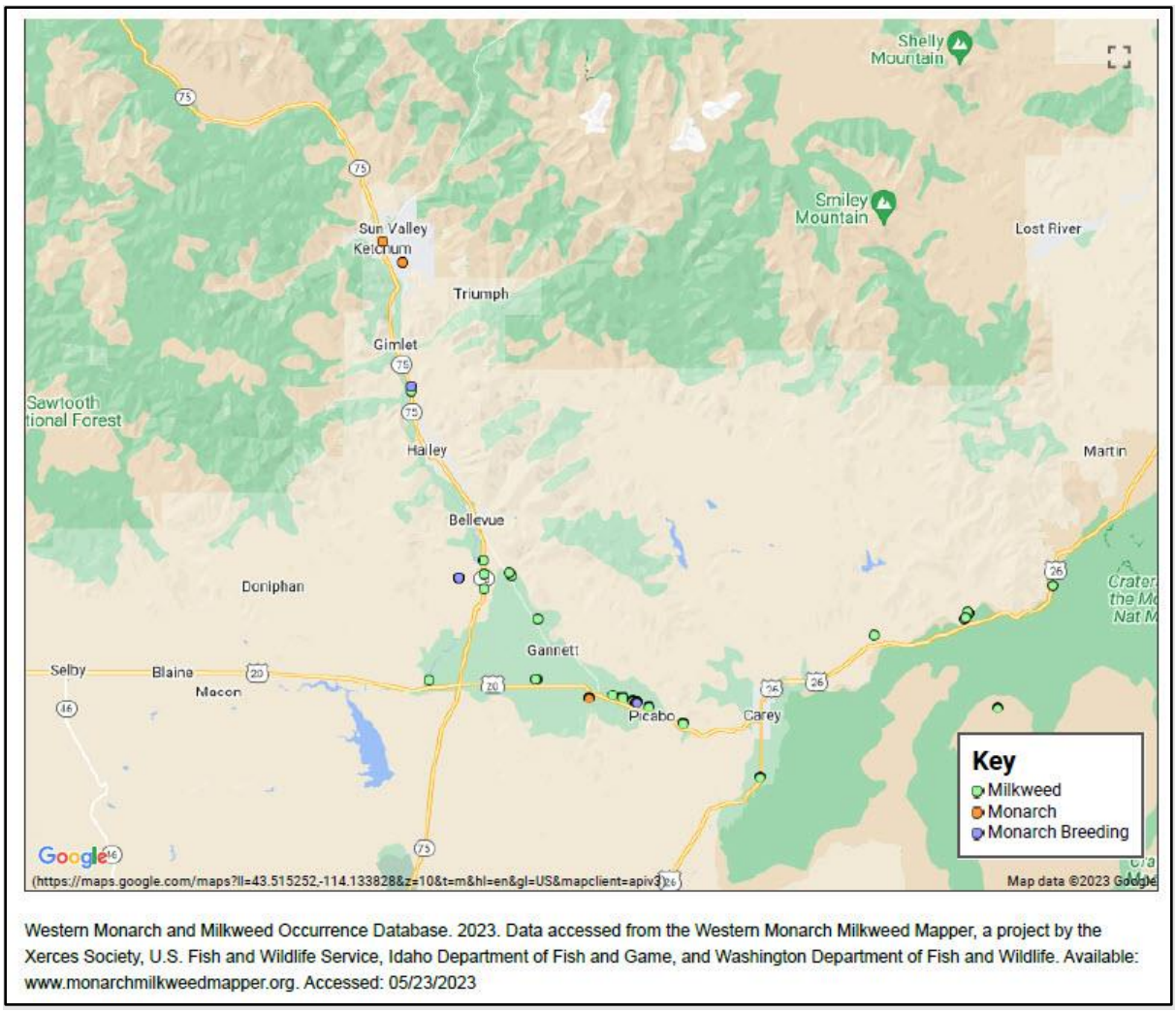


Figure 11. Map of documented monarch and milkweed occurrences nearest to the project, period of record 1900-present

3.5.2 Environmental Consequences

Alternative A- No Action

Direct and Indirect Effects

Current riparian habitat conditions in the area of potential effect would be minimally changed under the No-Action alternative due to the continuation of current management practices at the water diversion. Individual wolverines and yellow-billed cuckoo could continue to potentially utilize habitat in the area of potential effect for infrequent migratory passage. To the extent that milkweed and/or appropriate nectaring habitat for monarch butterflies exists in and adjacent to the project area along the Big Wood River, occupancy by this species would be unaffected by continued operation of the diversion in its current state. Short-term disturbance would continue to occur annually through the use of large equipment performing instream work to continue to keep gravels from blocking the water flow to the Bellevue Canal headgates. There would likely

be short-term effects to ESA-listed species from the No Action alternative due to periodic heavy equipment use; however, this would be minimal in the context of the larger surrounding landscape and would be temporary, as any trampled or disturbed vegetation would be expected to re-seed or regenerate in the following season. Equipment access would occur via existing roads, minimizing the potential for these effects.

Alternative B- Wood River Diversion 45 Stabilization and Fish Passage Remediation Project (Proposed Action)

Direct and Indirect Effects

Under the Proposed Action, any potential use of habitat in the action area by individual wolverines or yellow-billed cuckoo would likely be temporarily disrupted. The noise of heavy machinery and increased human activity inherent in the construction process would likely cause temporary displacement of mobile wildlife, including any ESA-listed species present, due to avoidant behavior. These behavioral changes would be limited to the duration of the construction timeframe. Alternative B would not significantly alter the overall character of habitat present in the action area, and infrequent periodic migratory use by ESA-listed species would be expected to resume after the conclusion of construction. Construction could overlap with yellow-billed cuckoo nesting and breeding season, which occurs in July to September in Idaho. However, while migratory individuals could be moving through at the same time as construction, this area is not considered suitable breeding/nesting habitat because of the minimum patch size the species requires. Therefore, there would be no appreciable effects to this species.

Disturbance via trampling to milkweed or monarch nectaring habitat, if present at this site, would be minimal in the context of the larger surrounding landscape, and would be temporary, as any trampled or disturbed vegetation would be expected to re-seed or re-generate in the following season. The expected seasonal timing of the proposed activities (late summer through fall) would also preclude impacts to monarch larvae, which would no longer be expected to be present at the site at that point in the year. Additionally, equipment access would occur via an existing road further minimizing any potential for impact to the species' habitat. Therefore, Alternative B would have no effect to ESA-listed species.

Cumulative Effects

The District 45 Big Wood River Bank Stabilization activities completed in February 2020, the Lower Howard Preserve Project activities completed in March 2021, and the Bellevue Side Channels Project completed in the spring of 2023 all would have temporarily disrupted the potential use of habitat in the action area for each project, respectively. The noise of heavy machinery and increased human activity inherent in the construction process would likely cause temporary displacement of mobile wildlife, including any ESA-listed species present, due to avoidant behavior. These behavioral changes would be limited to the brief (1-2 months) duration of each construction timeframe and therefore not directly compound on this proposed project due to temporally spaced-out nature of previous construction timeframes over several years. Any disturbance to milkweed or monarch nectaring habitat, if present at these sites, would be minimal and temporary as stated above.

3.6 Recreation and Aesthetics

3.6.1 Affected Environment

Recreational opportunities at Howard Preserve currently include activities such as hiking, bird watching, wildlife viewing, fishing, cross-country skiing, photography, snowshoeing, and off-leash dog walking. According to comments received in scoping, angling is particularly favorable at locations just below the dam due to the deeper habitat that currently exists. A limited parking area exists off Cedar Street in Bellevue, immediately east of the preserve; many terrestrial users access Howard Preserve by parking on Elm Street and walking into the preserve on the access road adjacent to the Bellevue Canal. Various short established walking trails exist within the 35-acre Howard Preserve, and numerous unofficial trails provide additional river access to anglers, waders, and other pedestrian users. Some online descriptions of the Preserve mention the diversion structure described as a "small waterfall" available for scenic viewing (Outdoor Project 2023). The reach of the Big Wood River flowing through Howard Preserve is dynamic, and channel migration creates changes in the aesthetic of the area year to year.

In the Bellevue area, the Big Wood River is well used for a number of leisure floater recreation activities, and users such as kayakers, tubers, and standup paddle boarders enjoy floating the waters in the area of the proposed project. During high flows, the drops created by the diversion structure can create an exceptionally dangerous submerged hydraulic jump in the tailwater below the structure, which can trap objects in the river in a powerful recirculating current – also sometimes referred to as a "keeper" or a "drowning machine" – immediately below the dam. This phenomenon has the potential to be deadly for boaters, recreators, pets, and wildlife in the water, either directly above or below the dam. Due to this, experienced river recreationists portage around the diversion structure utilizing pathways near the Bellevue Canal until they are able to return to the river below the structure. However, the hydraulics at the existing site could entrap unsuspecting people or pets who end up in the water at this site. Floater access through Howard Preserve, as well as overall recreationist users' experience, is also disrupted during the time periods when BOC is engaged in heavy equipment use in the river channel to direct flows to the canal.

3.6.2 Environmental Consequences

Alternative A- No Action

Direct and Indirect Effects

Under the No Action alternative, the safety concerns related to river recreation use would not be addressed, and the safety hazard that currently exists at the deteriorated structure would persist and could worsen over time as the structure continues to experience undercutting and increased instability, and as recreation user numbers grow with population increases in the area. Some recreation uses (e.g., hiking and birdwatching) would continue to be impacted twice annually by the presence and use of heavy equipment in Howard Preserve, and river recreation would continue to require a portage through some of the Preserve in order to avoid the hydraulic hazard of the low-head dam that currently exists. Aesthetically, the existing structure would

continue to deteriorate; this degradation would be increasingly visible at lower flow conditions. The presence of construction equipment operating in the Preserve would intermittently detract from users' aesthetic experience of a nature preserve. The river dynamics that cause ongoing channel incision would persist.

Alternative B – Big Wood River Diversion Dam (Diversion 45) Remediation and Fish Passage Project (Proposed Action)

Direct and Indirect Effects

Under the Proposed Action alternative, the removal of a structural hazard, the restoration of overall river function, and improvement of riparian vegetation conditions would all collectively result in long-term benefits to habitat for the wildlife that drives much of the recreation use in the proposed project area, in turn leading to improved quality and safety of recreation opportunities. The loss of established fishing holes that currently exist as a result of hydraulics directly below the dam structure would negatively impact angling; this localized permanent loss would be mitigated by a long-term overall enrichment in more dispersed angling opportunities attributable to the improvement of riparian habitat and aquatic conditions, and the reestablishment of upstream fish passage.

During construction, recreation access to the project area would be restricted. Some unofficial trails would be impacted due to their specific location in the project area, and users' aesthetic experience would be disrupted on a temporary basis due to a need to control entry into the construction area, and due to noise and the visual disturbance of heavy equipment usage that would be experienced by users even outside of the immediate construction area. This impact would be short in duration (limited to late summer through fall of a single construction season). Any potential damage to roads within Howard Preserve due to heavy equipment usage would be remediated at the conclusion of construction to return roads to pre-project or better conditions, resulting in a net-zero or slightly beneficial aesthetic impact.

On a longer-term basis, the Proposed Action would result in an overall improvement in recreational opportunities in terms of improved user safety and a reduced need for portaging by river recreationists who could safely pass through the proposed action area under most flow scenarios. In the long term, the natural aesthetic of Howard Preserve would be permanently improved by the removal of a deteriorating man-made structure and the establishment of a more natural river gradient profile, reconnection with the floodplain, and reestablishment of more abundant and complex riparian and aquatic wildlife habitat, with attendant beneficial outcomes for the health of fisheries and wildlife around which many recreational uses of Howard Preserve are based. The excavation and stabilization of the downstream bench would serve to minimize to some degree the aesthetic impacts of natural channel migration dynamics to adjacent property owners.

Cumulative Effects

In combination with the other reach-wide watershed improvement projects enumerated in the 2019 *Bellevue Project Area Conceptual Restoration Designs* and described in Section 2.6 of this document, the proposed project would contribute to a holistic overall improvement of

recreation uses in both Howard Preserve and the broader reach of the Big Wood River on which it is situated. The reestablishment of upstream fish passage would provide beneficial habitat connectivity between the project areas listed, and the removal of the hydraulic hazard would enable more straightforward floating recreation opportunities throughout this reach of the Big Wood River. No detrimental cumulative impacts are expected.

3.7 Tribal Interests

3.7.1 Indian Trust Assets

Indian Trust Assets (ITAs) are legal interests in property held in trust by the United States for Indian Tribes or individual Indian trust landowners. ITAs include trust lands, natural resources, trust funds, or other assets held by the federal government in trust. An ITA has three components: (1) the trustee, (2) the beneficiary, and (3) the trust asset. Treaty-reserved rights (e.g., fishing, hunting, and gathering rights on and off reservation) are usufructuary[1] rights that do not meet the Department of the Interior's (DOI) definition of an ITA. The United States does not own or otherwise hold these resources in trust. ITAs do not normally include usufructuary rights alone (i.e., rights to access for hunting or fishing). Rather, they require first a possessory interest; that is, the asset must be held or owned by the Federal Government as trustee.

The DOI requires that all impacts to trust assets, even those considered nonsignificant, must be discussed in a trust analysis in NEPA documents and appropriate compensation and/or mitigation implemented. Additionally, Reclamation's NEPA Handbook (2012) recommends a separate ITA section in all NEPA documents, including a Record of Decision. These sections should be prepared in consultation with potentially affected Tribal and other trust beneficiaries.

Affected Environment

No Indian trust land assets were identified in the Proposed Action area or staging areas during the scoping process, such as those held in trust by the Bureau of Indian Affairs for the benefit of Tribes or individual Indian trust landowners. As part of the scoping process, Reclamation researched Tessel, a federal Geographic Information System land database that includes federal lands held in trust for tribes and Individual Indian trust landowners. This research indicated there are no Indian trust land assets in the Proposed Action area or staging areas. The Proposed Action area, including staging areas, are not within a federally owned project. Results of this Tessel query are shown in Figure 12.

[1] A usufruct is the legal right to use and derive profit or benefit from property that belongs to another person.

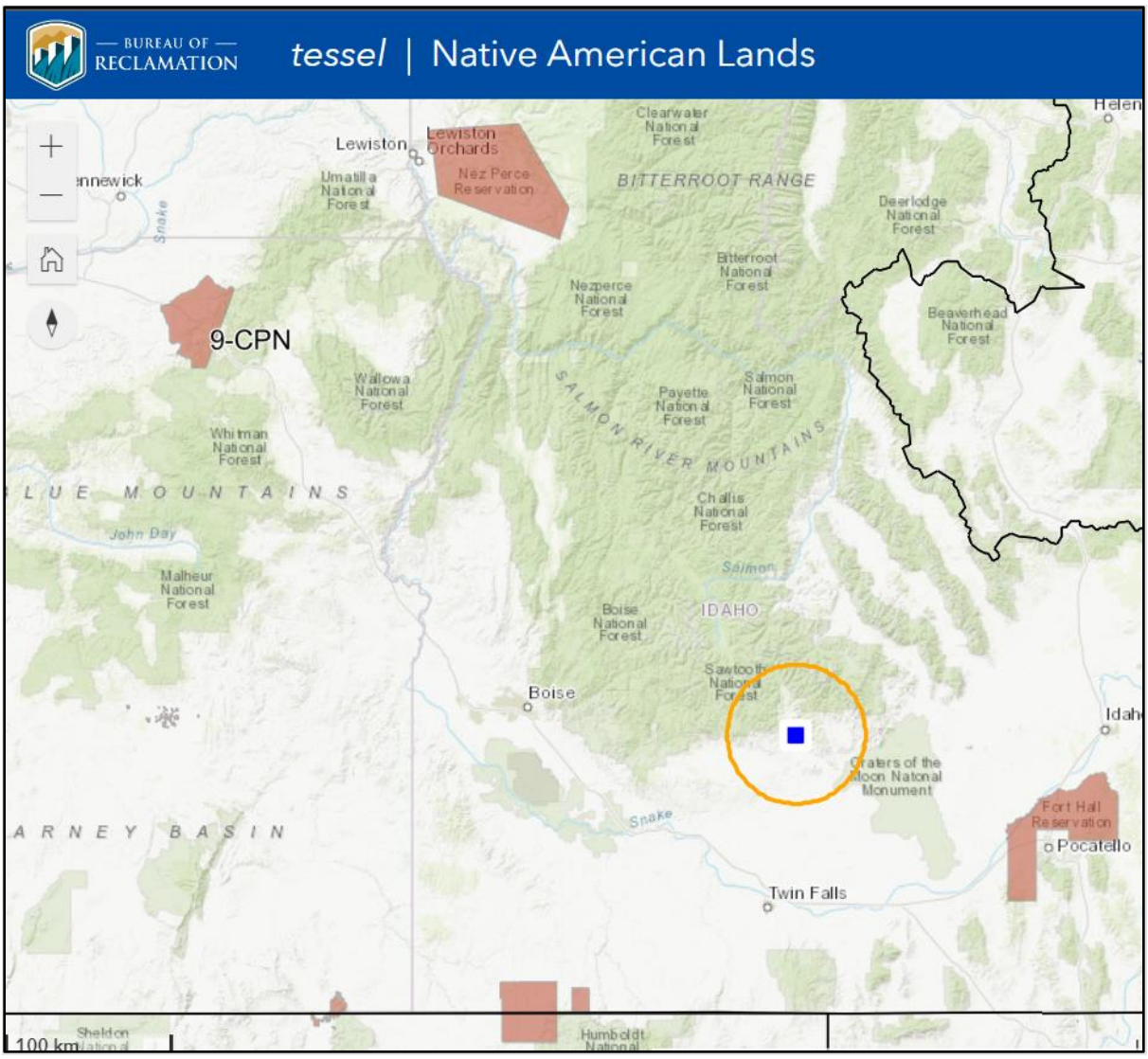


Figure 12. Mapped Tessel query results showing the geographic locations of the federal lands held in trust for Tribes and individual Indian trust landowners (shaded polygons) nearest to the proposed project area (circled)

ITAs in the closest proximity to the Proposed Action area are the Shoshone-Bannock Tribes of the Fort Hall Reservation, situated approximately 81 miles southeast of the Proposed Action area. The Shoshone-Bannock Tribes have a water right in that portion of the Snake River basin upstream from Hells Canyon Dam, the lowest of the three dams authorized as Federal Energy Regulatory Commission Project No. 1971 (Fort Hall Indian Water Rights Act of 1990; 104 Stat 3059 (1990)). The Shoshone-Bannock have water storage rights in Palisades Reservoir and American Falls Reservoir, which are reserved under the Michaud Flats Project for irrigation in the State of Idaho (68 Stat. 741 at 1027 (1954)).

ITAs in the second-closest proximity to the Proposed Action area are the Shoshone-Paiute Tribes of the Duck Valley Reservation, which is situated approximately 126 miles southwest of the Proposed Action area. The Shoshone-Paiute Tribes have a water right in the East Fork of

the Owyhee River, a tributary of the Snake River (Public Law 111-11 §10801; 123 Stat. 1411 (2009)).

Environmental Consequences

Alternative A – No Action

Under the No Action alternative, Reclamation would not approve the request to stabilize and restore the functionality of the dam, restore fish passage, improve sediment transport, ameliorate a safety hazard for recreationists, and restore channel dynamics in the vicinity of the dam by providing reimbursable funding through a WaterSMART Water and Energy Efficiency grant in order to fund rehabilitation of aging water delivery infrastructure. Existing short-term or long-term effects, either beneficial or adverse, or effects on public health and safety in relationship to nearby ITAs would remain unchanged.

Alternative B – Big Wood River Diversion Dam (Diversion 45) Remediation and Fish Passage Project (Proposed Action)

Under Alternative B, the Proposed Action, Reclamation would stabilize and notch the dam, build a rock ramp below the dam, create a bankfull bench, and replant with native seeds. If the Proposed Action occurs, there are no known beneficial or adverse effects to ITAs.

Reclamation requested information from the Shoshone-Bannock Tribes of the Fort Hall Reservation, the Burns Paiute Tribe, and the Shoshone-Paiute Tribes of the Duck Valley Indian Reservation, who traditionally or currently use the area under their reserved treaty rights; however, no responses were received. The lack of specific information about the area is not indicative of a lack of importance to Tribes. With no specific responses, Reclamation assumes that there would be no adverse effects to Indian Trust Assets, such as adverse impacts to water, water rights, or land held in trust for the Tribes.

3.7.2 Treaty Rights

Affected Environment

The United States has a fiduciary responsibility to protect and maintain rights reserved by Indian Tribes or Indian individuals by treaties, statues, executive orders, and allotments. These rights are sometimes further interpreted through court decisions and regulations.

The Proposed Action area is surrounded by areas historically used by many Tribes. Treaty rights at issue here are access and impacts to off-reservation hunting, fishing, gathering rights, and cultural or ceremonial use rights. Although the Proposed Action area is not situated within a federally owned project, courts have ruled that members of federally recognized Tribes with reserved treaty rights have the right to cross private or state lands in order to gain access to treaty areas (United States v. Winans 1905).

The Shoshone-Bannock Tribes of the Fort Hall Reservation are federally recognized Tribes in southeast Idaho; the reservation is situated approximately 81 miles southeast of the Proposed Action area.

On July 3, 1868, the Fort Bridger Treaty was signed and agreed to by the Eastern and Western Bands of the Northern Shoshone and the Bannock (or Northern Paiute Bands). Article IV of the treaty states that members of the Shoshone-Bannock Tribes, "…shall have the right to hunt on the unoccupied lands of the United States…" Courts interpreted this to mean "unoccupied federal lands."

In the case of State of Idaho v. Tinno, an off-reservation fishing case in Idaho, the Idaho Supreme Court interpreted the Fort Bridger Treaty of the Shoshone-Bannock Tribes. The Court determined that the Shoshone word for hunt also included to fish. Under Tinno, the Court affirmed the Tribal members' right to take fish off-reservation pursuant to the Fort Bridger Treaty. The Court also recognizes, "that treaty Indians have subsistence and cultural interests in hunting and fishing…" and, "The Fort Bridger Treaty … contains a unified hunting and fishing right, which…is unequivocal." The treaty did not grant a hunting, fishing, or gathering right; it reserved a right the Shoshone-Bannock Tribes have always exercised.

The Shoshone-Paiute Tribes of the Duck Valley Reservation are federally recognized Tribes in southern Idaho and northern Nevada; the reservation is situated approximately 126 miles southwest of the Proposed Action area. The reservation was established by EOs dated April 16, 1877; May 4, 1886; and July 1, 1910. The Shoshone-Paiute sometimes claim the interests of the Tribes that are reflected in the Bruneau, Boise, Fort Bridger, Box Elder, Ruby Valley, and other treaties and EOs that the Tribes' ancestors agreed to with the United States. The Tribes continue to observe these treaties and executive orders in good faith; however, the Federal Government did not ratify treaties that reserved off-reservation hunting and fishing rights. The Tribes assert they have aboriginal title and rights to those areas. All such treaties and executive orders recognize the need for the Tribes to continue to have access to off-reservation resources because most of the reservations established were and continue to be incapable of sustaining Tribal populations. This need continues and has not diminished from the time of the first treaties and EOs that established the Duck Valley Reservation (Cherokee Nation of Oklahoma and Shoshone-Paiute Tribes of the Duck Valley Reservation v. Leavitt 2005).

Environmental Consequences

The United States Supreme Court has ruled that treaties with Indian Tribes are to be construed liberally in favor of Tribes, as the Tribes would have understood the language of the treaty at the time the treaty was signed. It is likely that the ratified or unratified treaties listed above include areas surrounding Big Wood River the Proposed Action area.

Alternative A – No Action

Under the No Action alternative, Reclamation would not approve the request to stabilize and restore the functionality of the dam, restore fish passage, improve sediment transport, ameliorate a safety hazard for recreationists, and restore channel dynamics in the vicinity of the dam by providing reimbursable funding through a WaterSMART Water and Energy Efficiency grant in order to fund rehabilitation of aging water delivery infrastructure. There would be no short-term or long-term effects, either beneficial or adverse to existing reserved Treaty Rights for Tribal hunting, fishing, or gathering in traditional or customary places or for livestock grazing in the area.

Alternative B – Big Wood River Diversion Dam (Diversion 45) Remediation and Fish Passage Project (Proposed Action)

Under Alternative B, the Proposed Action, Reclamation would stabilize and notch the dam, build a rock ramp below the dam, create a bankfull bench, and replant with native seeds. The proposed project construction ingress and egress routes may cause a temporary, short-term adverse effect on access to traditional or customary hunting, fishing, or gathering sites during the construction periods.

Reclamation requested information from the Shoshone-Bannock Tribes of the Fort Hall Reservation, the Burns Paiute Tribe, and the Shoshone-Paiute Tribes of the Duck Valley Indian Reservation, who traditionally and currently use the area for hunting, fishing, and gathering of plants; however, no responses were received. The lack of specific information about the area is not indicative of a lack of importance to Tribes. With no specific response, Reclamation assumes that there would be no adverse effects to reserved Treaty Rights, such as access or impacts to areas for hunting, fishing, or gathering.

Mitigation Summary

Mitigation efforts may be required to reduce the effects of construction ingress and egress on Tribal access to hunting, fishing, or gathering should construction ingress and egress activity take place in the same location and at the same time of year as traditional or customary hunting, fishing, and gathering of plants. If this were to occur, Reclamation would meet with Tribes to formulate an appropriate mitigation measure.

3.8 Cultural Resources

3.8.1 Affected Environment

Reclamation completed a record search with the Idaho State Historic Society (ISHS) on May 31, 2023. A total of 51 cultural resources are located within one mile of the area of potential effects (APE). The biggest contributor to this number is the Bellevue Historic District (BHD) and 22 associated buildings, which was listed on the National Register of Historic Places (National Register) in 1982. Other resources include ten houses, a number of buildings, three canals, two city halls, two jails, two roads, two townsites, and one each block, bridge, church, historic trash scatter, office, precontact isolated scraper, and railroad. Two of these are located within the APE: the Bellevue Canal System (BCS) and precontact scraper. All resources can be seen in Table 1 and the two sites located within the APE are discussed in more detail below.

Table 1. Cultural resources within one mile of the APE

Site No.	Description	Age	Eligibility	In APE?
10BN1125/13-16404	Bellevue Canal System	Historic	Eligible	Yes
10BN1126	Cove Canal	Historic	Eligible	No
10BN1173	Historic Trash Scatter	Historic	Not Eligible	No
10BN1174	Isolated Knife or Scraper	Precontact	Eligible	Yes
10BN1191	Canal	Historic	Eligible	No
10BN306/13-16171	Galena Toll Road	Historic	Eligible	No
10BN498/13-16172	Oregon Short Line Railroad	Historic	Eligible	No
13-488	Broadford Townsite	Historic	Unevaluated	No
13-489	Bellevue Townsite	Historic	Unevaluated	No
13-1577	N.C. Larsen block	Historic	Unevaluated	No
13-1591	Bellevue City Hall (Main Street)	Historic	Unevaluated	No
13-2568	Bellevue Jailhouse	Historic	Unevaluated	No
13-2569	Woodcock Residence	Historic	Listed	No
13-2570	Johnson House	Historic	Listed	No
13-2572	Bellevue Community Church	Historic	Not Eligible	No
13-2573	Williams Bungalow	Historic	Eligible	No
13-2574	Desherrett House	Historic	Unevaluated	No
13-2575	House at 201 N 2nd Street	Historic	Not Eligible	No
13-2576	Davis and Bouschers Saloon	Historic	Listed	No
13-2577	Bellevue State Bank	Historic	Listed	No
13-2578	N.C. Larsen House	Historic	Listed	No
13-2579	N.C. Larsen Barn	Historic	Listed	No
13-2580	Dr. Allen House	Historic	Listed	No
13-2581	Queen Anne Cottages	Historic	Listed	No
13-2582	Clarence McNary Cabin	Historic	Listed	No
13-2583	Third Street Bungalow	Historic	Listed	No
13-4421	C.P. Larsen Building	Historic	Listed	No
13-4422	Third Street House	Historic	Listed	No
13-4423	Main Street Office Building	Historic	Listed	No
13-4424	I.O.O.F. Hall	Historic	Listed	No

Site No.	Description	Age	Eligibility	In APE?
13-4425	Second Street Log House	Historic	Listed	No
13-4426	Second Street Cottage	Historic	Listed	No
13-4427	Second Street House	Historic	Listed	No
13-4428	Second Street House	Historic	Listed	No
13-4430	House at 203 S. 3rd Street	Historic	Listed	No
13-8180	Bellevue Territorial Jail	Historic	Unevaluated	No
13-8182	Log House	Historic	Unevaluated	No
13-8186	Log House	Historic	Unevaluated	No
13-16197	Bellevue Canal Bridge	Historic	Not Eligible	No
13-16410	Second Street House	Historic	Listed	No
13-16411	Second Street House	Historic	Listed	No
13-16412	Oak Street House	Historic	Listed	No
13-16422	House at 217 Cedar Street	Historic	Not Eligible	No
13-16423	House at 509 Elm Street	Historic	Not Eligible	No
13-16424	House at 121 S. 5th Street	Historic	Not Eligible	No
13-16425	House at 416 N. 5th Street	Historic	Not Eligible	No
13-16426	House at 200 N. 4th Street	Historic	Not Eligible	No
13-16440	Bellevue Marshal's Office	Historic	Not Eligible	No
13-16441	Bellevue City Hall (Pine Street)	Historic	Not Eligible	No
13-16577	State Highway 75 (Blaine County)	Historic	Eligible	No
82002506	Bellevue Historic District	Historic	Listed	No

10BN1174

A single red chert 'knife' was found in 2003 as part of the original survey for the park area (Walsworth 2003a). The artifact was collected and turned over to the WRLT, who made arrangements to donate the artifact to the Bellevue Historical Museum.

Bellevue Canal System (13-16404)

The BCS diverts water from the Big Wood River on the west side of the town of Bellevue, Idaho. The system consists of the main or Bellevue Canal, the District Canal, and the District Canal No. 45. The BCS also includes ditches, laterals and associated features; it is estimated to be at least 40 miles long. The system is thought to have originated in the 1880s and has been in constant use and subject to alterations consistent with the needs of operation and maintenance.

3.8.2 Cultural Resources Field Investigations

An intensive archaeological survey of all non-inundated areas was completed within the APE on November 4, 2023. Given the narrow work areas, this generally consisted of a single transect; in any case, transects were spaced no more than 15 meters apart. A second site visit was completed on June 13, 2023, after the record search showed that a precontact site (10BN1174) was previously recorded within the APE. The purpose of the second site visit was to collect data to specifically inform the site record update and obtain photographs of the site location. Photographs of the APE and cultural resources were taken with a digital camera.

10BN1174

No additional artifacts were located at or near the location mapped for 10BN1174. The area has been developed into a graveled turnaround and staging area since the site was recorded in 2003. Although recorded as a site, only one artifact was ever recorded and is more properly classified as an isolate. Isolates are typically not considered significant. The development of the area has reduced the potential for additional artifacts or intact deposits, if they were ever present. Reclamation determined that 10BN1174 is not eligible for listing on the National Register.

Bellevue Canal System

The Bellevue Canal has been recorded multiple times at multiple locations along its length and includes the main canal, two primary laterals (District Canal and District Canal No. 45) and a tertiary lateral (Walker Ditch). This document only considers effects to the portion of the canal within the APE which includes the diversion dam, headgates, and Bellevue Canal. The BCS was previously determined eligible for listing in the National Register for its significance to local agriculture. Because this project proposes changes to the diversion dam, it was analyzed in more detail as described below.

Diversion Dam

The diversion dam of the BCS spans the Big Wood River just below the headgates for the canal. It is a hollow structure with two parallel concrete walls, wing walls, and concrete cap. Large logs form the foundation of the diversion structure. The superstructure of the dam has been removed over the years, but it is unclear when the diversion dam alterations occurred. Prior to removal, it consisted of hinge gates that helped control the flow of water and provide head for the canal. The structure is approximately 100 feet long and eight feet wide. The remaining portions of the dam are compromised and in poor condition. Considering these changes, the dam has lost integrity of workmanship, design, materials and feeling, while retaining location, setting, and association. Reclamation feels that the loss to the physical aspects of integrity of the diversion dam make the diversion dam a non-contributing element to the historic significance of the BCS.

3.8.3 Environmental Consequences

Alternative A- No Action

Direct and Indirect Effects

Reclamation has identified a single historic property within the project area, i.e., the BCS. The river will continue to erode the diversion dam in the absence of the Proposed Action. This may lead to failure of the dam. Without the dam, the river would not be able to maintain enough head to supply the canal with enough water, which may in turn require changes to the contributing elements of the BCS to continue to operate. Continued erosion could ultimately lead to adverse effects to the BCS.

Alternative B – Big Wood River Diversion Dam (Diversion 45) Remediation and Fish Passage Project (Proposed Action)

Direct and Indirect Effects

Reclamation has identified a single historic property within the project area, i.e., the BCS. The Proposed Action would make alterations to the diversion dam of the BCS. Reclamation has determined that the diversion dam does not contribute to the historic significance of the BCS due to loss of integrity. Alterations to the diversion dam would therefore have no adverse effects on historic properties.

Cumulative Effects

Reclamation identified a single historic property within the project area, i.e., the BCS. Reclamation has not identified any cumulative effects in the absence of modifications to contributing features of the BCS.

3.9 Indian Sacred Sites

3.9.1 Affected Environment

Evidence of human occupation in southcentral Idaho dates as early as 14,500 years before the present (BP). The three major prehistoric cultural periods that have been identified for southeastern Idaho also apply to south central Idaho:

- Early Prehistoric Period (16,500 to 7,500 BP)
- Middle Prehistoric Period (7,400 to 1,300 BP)
- Late Prehistoric Period (1,300 to 150 BP)

These periods reflect a shift over time from a highly mobile lifestyle involving hunting and gathering (such as seeds, roots, mammals, and fish) to reduced mobility and intensified use of certain highly productive resources (such as camas and salmon). The study area is within the Snake River basin, which was traditionally used by the Shoshone and Bannock Tribes for gathering plants for food and medicine, hunting, fishing, trading, and for ceremonial purposes.

Local to the APE, there is little physical evidence for the presence of precontact use. However, it is well known that prior to European contact, the Big Wood River Drainage was an important travel corridor linking the Snake River basin to the Sawtooth Mountain region and part of the ancestral homeland of the Northern Shoshone and Bannock Indians (Walsworth 2003b).

The Shoshone and Bannock Tribes of the Fort Hall Reservation, Idaho, represent two linguistically distinct populations of people. The length of time these Tribes have occupied southern Idaho is a subject of long-standing debate among scholars. Subsistence practices and lifestyles were similar to other Great Basin cultural groups. People moved from one resource to the next, relying on a wide variety of resources, including roots, berries, nuts, marmots, squirrels, rabbits, insects, large game, and fish, because the environment could not sustain large populations. By the time of the earliest Euroamerican contact in the early 1800s, the Shoshone and Bannock Tribes had acquired the horse, making it easier to procure bison and other resources and to trade.

No known Indian Sacred Sites are within or near the project area.

3.9.2 Environmental Consequences

Alternative A- No Action

Direct and Indirect Effects

As no Indian Sacred Sites have been identified in or near the project area, the No Action alternative will have no effect on these resources.

Alternative B – Big Wood River Diversion Dam (Diversion 45) Remediation and Fish Passage Project (Proposed Action)

Direct and Indirect Effects

As no Indian Sacred Sites have been identified in or near the project area, Alternative B will have no effect on these resources.

Cumulative Effects

As no Indian Sacred Sites have been identified in or near the project area, Alternative B will have no effect on these resources.

3.10 Environmental Justice

EO 12898 (59 FR 7629) requires each federal agency to achieve environmental justice by addressing disproportionately high and adverse human health and environmental effects on minority and low-income populations. The demographics of the action area are examined to determine whether minority populations, low-income populations, and/or Native American Tribes are present in the area impacted by a proposed action. If present, the agency must determine if implementation of the proposed action would cause disproportionately high and adverse human health or environmental effects on the populations.

3.10.1 Affected Environment

The project's area of potential effect is located in Blaine County. The general proportions of race and ethnicity in Blaine County are similar to Idaho as a whole, with a white population of more than 94 percent according to the Census Bureau's Quick Facts statistics as of July 1, 2021 (Table 2).

Table 2. Summary of racial and ethnic minority distribution in Idaho and Blaine County, July 1, 2021 (U.S. Census Bureau 2022)

Race or Ethnicity	Idaho	Blaine County
White	92.8%	94.4%
Black or African American	0.9%	0.7%
Asian	1.6%	1.4%
Native Hawaiian and Other Pacific Islander	0.2%	0.1%
American Indian and Alaska Native	1.7%	1.7%
Two or More Races	2.7%	1.7%
Hispanic or Latino (any race)[1]	13.3%	23.9%

[1] By definition (Federal Office of Management and Budget), race and Hispanic or Latino origin are two separate categories. People who report themselves as Hispanic or Latino can be of any race.

Low-Income Populations

Low-income populations are identified by several socioeconomic characteristics. As categorized by the 2000 Census, specific characteristics include income (median family and per capita), percentage of population below poverty (individuals), and unemployment rates. The Census Bureau's 2017-2021 American Community Survey shows a higher median household income of $71,749 for Blaine County compared to the $63,337 median household income reported for Idaho as a whole (2021 dollars) (U.S. Census Bureau 2022). The Census Bureau reports that about 7 percent of the population of Blaine County and 11 percent of the state of Idaho's population were living in poverty as of 2020 (U.S. Census Bureau 2022). Relevant data are summarized in Table 3.

Table 3. Summary of income and poverty status and unemployment status (July 2022 data) in Idaho and in Blaine County

Socioeconomic Statistic	Idaho	Blaine County
Median household income (in 2021 dollars), 2017-2021	$63,337	$71,749
Per capita income in past 12 months (in 2021 dollars), 2017-2021	$31,509	$40,739
Persons in poverty, percent[1]	11%	7.2%
Persons unemployed (Dec 2022[2]), percent	2.9%	2.1%[3]

[1] Source: 2020 Small Area Income and Poverty Estimates (U.S. Census Bureau 2022)

[2] Source: Idaho Department of Labor data: https://lmi.idaho.gov/oes

[3] Data from Idaho Department of Labor "Blaine County Labor Force and Economic Profile, January 2023 (IDOL 2023)

Other measures of low income, such as unemployment, characterize demographic data in relation to environmental justice. The 2.1 percent unemployment rate in Blaine County is slightly lower than the State of Idaho's unemployment rate of 2.9 percent (IDOL 2023).

3.10.2 Environmental Consequences

Alternative A- No Action

The No Action alternative would not alter the current regional environmental justice status based on the lack of action occurring and the information presented above. Trends identified in the Affected Environment section would continue. Therefore, the No Action alternative would have no additional environmental justice effects than those described in the Affected Environment section.

Alternative B – Big Wood River Diversion Dam (Diversion 45) Remediation and Fish Passage Project (Proposed Action)

No minority or low-income groups, as identified for further analysis by EO 12898, were identified that would be disproportionately affected by health or environmental effects as a result of the implementation of the Proposed Action. Because the Proposed Action is a localized action in an area available for public use, there would be no effect to the greater area's low-income or minority populations relative to the local populace as a whole.

3.11 Greenhouse Gas Emissions

EO 13990, Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis, states that scientific means will be followed to advance public health and the environment. As a result of the EO, the CEQ has issued interim NEPA guidance on

consideration of Greenhouse Gas Emissions and Climate Change. This guidance directs federal agencies to analyze greenhouse gas and climate change effects of their proposed actions under NEPA.

3.11.1 Affected Environment

Greenhouse gases are gases that trap heat in the Earth's atmosphere such as carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and ozone (O_3). These gases act similarly to the glass walls of a greenhouse (hence the name greenhouse gas) by retaining heat from solar radiation, and the emission of these gases within the Earth's atmosphere results in overall increases in air temperature. Larger quantities of greenhouse gases have been released into the atmosphere at a higher rate since the American industrial revolution. The largest source of greenhouse gases in the United States comes from human activities such as burning fossil fuels for electricity, heat and transportation (EPA 2023a). The most prominent of those gases and the ways they enter the atmosphere are as follows:

- Carbon dioxide: This gas enters the atmosphere naturally through processes like volcanic eruptions and wildfires. There are also processes such as burning fossil fuels (coal, natural gas, and oil), cement production, and burning solid waste that release carbon dioxide into the atmosphere.
- Methane: Emissions of methane are a result of raising livestock, land use, and the decay of organic waste in municipal solid waste landfills.
- Nitrous oxide: This gas is emitted in activities such as agriculture, land use, and industry, as well as treatment of wastewater and combustion of fossil fuels and solid waste.

For the Diversion 45 Remediation and Fish Passage Project, equipment use would be the only relevant greenhouse gas emissions considered to complete the project. Table 4 and Table 5 provide comparative estimates, for each type of equipment that would be used, of the duration of time and the amount of fuel used to maintain the structure annually and to complete the project.

Table 4. Equipment usage estimated for BOC dam construction

Equipment Type	Quantity	Hours of Use	Gallons per Hour	Total Fuel Use (gallons)
CAT 374F excavator	1	450	14	6,300
CAT CR306 mini-excavator	1	200	2.5	500
CAT D3 crawler dozer	1	100	3.5	350
CAT C9.3 articulated dump truck	3	450	6.2	8,370
Concrete pump truck	1	50	10	500
Water truck	1	50	3	150
Power trawls	1	50	1	50
Backhoe	2	275	3	1,650
F-250 pickups	5	400	2.5	5,000
			Total for Dam	22,870

Assumptions and sources: construction window 3 months; 50 workdays; 50 days with 9-hour shifts equals 450 hours of construction time; assumes all fuel consumed is diesel; https://www.jscole.com/fueltables

Table 5. Equipment usage estimated for BOC yearly in-river maintenance

Equipment Type	Quantity	Hours of Use	Gallons per Hour	Total Fuel Use (gallons)
CAT 374F excavator	1	4	14	56
Equipment transporter	1	4	4.5	18
F-250 pickups	2	4	2.5	20
			Total for BOC	94

Assumptions and sources: for 1 year of BOC maintenance; 4 times per year, 1 hour per instance; assumes all fuel consumed is diesel; https://www.jscole.com/fueltables

The EPAs Greenhouse Gas Equivalencies Calculator is a tool that converts emissions to an equivalent amount of carbon dioxide emissions. This tool aids in the explanation of abstract measurements into more understandable, standardized terms. The total amount of gallons of diesel fuel estimated to be used to complete the proposed project is approximately 22,870 gallons (Table 4). This would be equivalent to approximately 233 metric tons of carbon dioxide emitted, or enough energy to supply 30 homes' energy use for 1 year according to the GHG equivalencies calculator (EPA 2023b).

The total amount of diesel fuel estimated to be used to complete annual maintenance on the dam structure is approximate 94 gallons (Table 5). This would be equivalent to approximately 1 metric ton of carbon dioxide emitted, or enough energy to supply 0.12 homes' energy use for 1 year according to the GHG equivalencies calculator (EPA 2023c).

3.11.2 Environmental Consequences

Alternative A- No Action

Direct and Indirect Effects

The No Action alternative would result in annual maintenance by the BOC still being necessary in order to keep gravels from blocking the water flow to the Bellevue Canal headgates. This maintenance would continue to require heavy equipment to move sediment and gravel around in the active river channel at least twice a year. These greenhouse gas emissions would total approximately 1 metric ton of carbon dioxide emitted annually. Due to the incidental amount of emissions on a comparative basis, this effect is negligible.

Alternative B – Big Wood River Diversion Dam (Diversion 45) Remediation and Fish Passage Project (Proposed Action)

Direct and Indirect Effects

Under Alternative B, the dam structure would be stabilized and notched, the downstream rock ramp would be constructed, and the downstream bankfull bench would be excavated and stabilized. These actions cumulatively are estimated to emit approximately 233 metric tons of carbon dioxide, or the equivalent of the emissions of 51 passenger vehicles' use in one year.[2] The greenhouse gases emitted as a result of this project would be considered negligible due to the localized area in which the project would occur and short duration of the action, with October to April being the timeframe of construction. Given that the population in Blaine County was approximately 24,000 at the time of the 2020 Census, the energy use equivalent of 51 passenger vehicles per year being added to emission levels generated by a population this size would be minor.

Cumulative Effects

The District 45 Big Wood River Bank Stabilization activities completed in February 2020, the Lower Howard Preserve Project activities completed in March 2021, and the Bellevue Side Channels Project completed in spring of 2023 all are likely similar in size – and therefore emissions – for the area. Each project having occurred in separate years would allow for the dissipation of emissions between projects, ameliorating any compounding factor. Overall, the completion of these projects would be negligible in size relative to the emissions produced in the greater Blaine County area.

[2] According to the U.S. Environmental Protection Agency's published facts, every gallon of gasoline burned creates about 8,887 grams of CO_2, the average gasoline vehicle on the road today has a fuel economy of about 22.2 miles per gallon, and drives around 11,500 miles per year; therefore a typical passenger vehicle emits about 4.6 tons of CO_2 per year (https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle).

Chapter 4 Consultation and Coordination

On December 22, 2022, Reclamation mailed a scoping document including a letter, project information, and a map to agencies, Indian Tribes, members of Congress, organizations, and individuals, soliciting help in identifying any issues and concerns related to the proposed action. Reclamation received 15 comments from the scoping period, many of which were letters to express support for the proposed project. Topics of concern that were brought to Reclamation's attention by commenters included: the potential impacts of heavy equipment usage on existing and potential new access routes, including effects to adjacent landowners, existing roads in Howard Preserve, and vegetation; potential effects to both formal and informal trails in the vicinity of the proposed project area; the spread of noxious weeds; and the potential presence of an ESA-listed bird. Comments received from this scoping solicitation were addressed or incorporated into the Final EA. The mailing list, scoping letters, and comments received are included in Appendix C.

4.1 Agency Consultation and Coordination

4.1.1 National Historic Preservation Act

Reclamation initiated consultation with the Idaho State Historic Preservation Office (SHPO) on August 2, 2023. SHPO concurrence with Reclamation's finding of No Adverse Effect to Historic Properties for the project area was received on August 22, 2023. This concurrence was conditional, requiring that Reclamation develop an Inadvertent Discovery Plan which would provide direction for the immediate cessation of work in the event cultural material is inadvertently encountered during project implementation. Reclamation's finding, communications with the SHPO, and the Inadvertent Discovery Plan are included in Appendix D. The applicant will be required to sign the Inadvertent Discovery Plan document acknowledging receipt and ensuring appropriate implementation of the terms therein prior to Reclamation's disbursement of grant funds.

4.1.2 Endangered Species Act

Under Section 7 of the ESA, formal consultation with USFWS is required for any action that is determined likely to adversely affect any species listed as Threatened or Endangered, or whose status for listing is Proposed. Candidate species receive no statutory protection under the ESA; however, USFWS encourages cooperative conservation efforts for these species because they are, by definition, species that may warrant future protection under the ESA.

Pursuant to Reclamation's determination that the Proposed Action would not be likely to adversely affect any ESA-listed species, no formal Section 7 consultation was undertaken for this project.

4.1.3 Clean Water Act

The proponent would apply for all relevant city, state and federal permits necessary to working in a river before construction occurs. These include a 404 permit from the U.S. Army Corps of Engineers, a 401 Water Quality Certification from IDEQ, a stream channel alteration permit from IDWR, and others. Any other construction-related permits determined to be necessary, such as an Idaho Pollutant Discharge Elimination System Program permit from IDEQ for stormwater runoff, would also be obtained by the proponent.

4.2 Tribal Consultation and Coordination

On 22 December 2022, Reclamation mailed scoping letters to representatives of the Shoshone-Bannock Tribes of the Fort Hall Reservation, Burns Paiute Tribe, and the Shoshone-Paiute Tribes of the Duck Valley Indian Reservation, who traditionally and currently use the area for hunting; no responses were received. Reclamation sent a formal invitation to the Shoshone-Bannock Tribe on August 2, 2023, to join in consultation on the APE, Reclamation's determinations of eligibility, and finding of no adverse effects to historic properties, as well as requesting any information concerning cultural resources known to the Shoshone-Bannock Tribes that could be affected by the proposed project. No responses or concerns from the Tribes were brought forward during the scoping period or in response to Reclamation's invitation to consult. The invitation to consult, scoping information provided, and associated FedEx confirmations of mailing are included in Appendix E.

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Appendices

Appendix A – Biota Conceptual Restoration Design Report

Appendix B – IPaC Report (ESA)

Appendix C – Scoping Information and Comments Received

Appendix D – SHPO Correspondence and Inadvertent Discovery Plan

Appendix E – Record of Tribal Consultation and Coordination

Appendix A – Biota Conceptual Restoration Design Report

CONCEPTUAL RESTORATION DESIGN REPORT

BIG WOOD RIVER RESTORATION,

BELLEVUE PROJECT AREA

BLAINE COUNTY, IDAHO

Prepared For

WOOD RIVER LAND TRUST

Prepared By

research & consulting inc.
Biota

P. O. Box 8578, 140 E. Broadway, Suite 23, Jackson, Wyoming 83002

June 1, 2019

CONTENTS

FIGURES

TABLES

CONCEPTUAL RESTORATION DESIGN REPORT

BIG WOOD RIVER RESTORATION

BELLEVUE PROJECT AREA

BLAINE COUNTY, IDAHO

1.0 INTRODUCTION

Biota Research and Consulting, Inc. (Biota) was retained by the Wood River Land Trust and a collaborative group of project proponents to complete a reach-wide assessment and conceptual design plan for the Big Wood River from the Broadford Road Bridge in Bellevue downstream to the southern extent of the Riverside Subdivision (Bellevue Reach). The project is an effort to maximize ecological values of the fluvial system while protecting adjacent landowners and land uses from severe erosion. The primary strategy to meet project objectives is to restore function through application of in-channel treatments that enable the river to convey hydrologic and sediment inputs without severe erosion or deposition.

This report presents analyses completed during the conceptual design development process including hydrologic investigations, geomorphic assessment, hydraulic modeling, sediment transport analyses, and presentation of restoration treatments and strategies. These materials are intended to be used to inform collaboration with project proponents, design advancement, regulatory agency permitting, project implementation, and long-term assessment of project success. This conceptual design is the first phase of the design development process for the project area.

1.1 PROJECT AREA

The project area includes an approximately 1-mile reach of the Big Wood River near Bellevue, Idaho, that extends downstream from the Broadford Road Bridge, as shown on Sheet 1 of the Conceptual Design Drawings (Appendix A). The project area includes parcels located within the unincorporated Blaine County and within the city limits of Bellevue, Idaho. The project reach includes a mixture of public parcels (i.e. City of Bellevue and Blaine County), private residential, and agricultural properties.

The Diversion 45 Canal, owned and operated by the Wood River Valley Irrigation District, is located within the project area. The canal provides irrigation to the northern portion of the Bellevue Triangle. The diversion for the canal is located approximately 1,500 ft downstream of the Broadford Road Bridge in an area known as the Howard Preserve (owned by the City of Bellevue).

1.2 PROJECT BACKGROUND

The Big Wood River mainstem has been directly altered by anthropogenic activities that include development encroachment on the floodplain; clearing of riparian vegetation, removal of instream woody debris, construction and maintenance of flood control levees; installation of rip rap and bank armoring; establishment of transportation crossings; and operation of diversion structures. Sheet 2 of the Conceptual Design Drawings contains the 1943 aerial photography which depicts historic conditions in the project area.

The large magnitude flood experienced in the Big Wood River in 2017 resulted in widespread changes in the river corridor, and dramatic alteration of sub-reaches that were previously impaired by land use activities. The US Geological Survey (USGS) has maintained a stream gauge in Hailey (#13139510) for more than 100 years, and flow data obtained from the gauge reveal that The Big Wood River experienced a flood in 2017 that had a greater than 50-year return interval. Mean daily flow data recorded at the gauge indicate that 2017 peak flows were approximately 3 times higher than average, and that the 2017 runoff period experienced multiple distinct flood peaks (Figure 1). The multiple, prolonged, large peaks in flood waters caused extensive flooding, river bank and bed erosion, gravel deposition, and large wood recruitment within the Bellevue project reach. Private lands were impacted by erosion, flood protection levees were compromised, and residential structures were threatened.

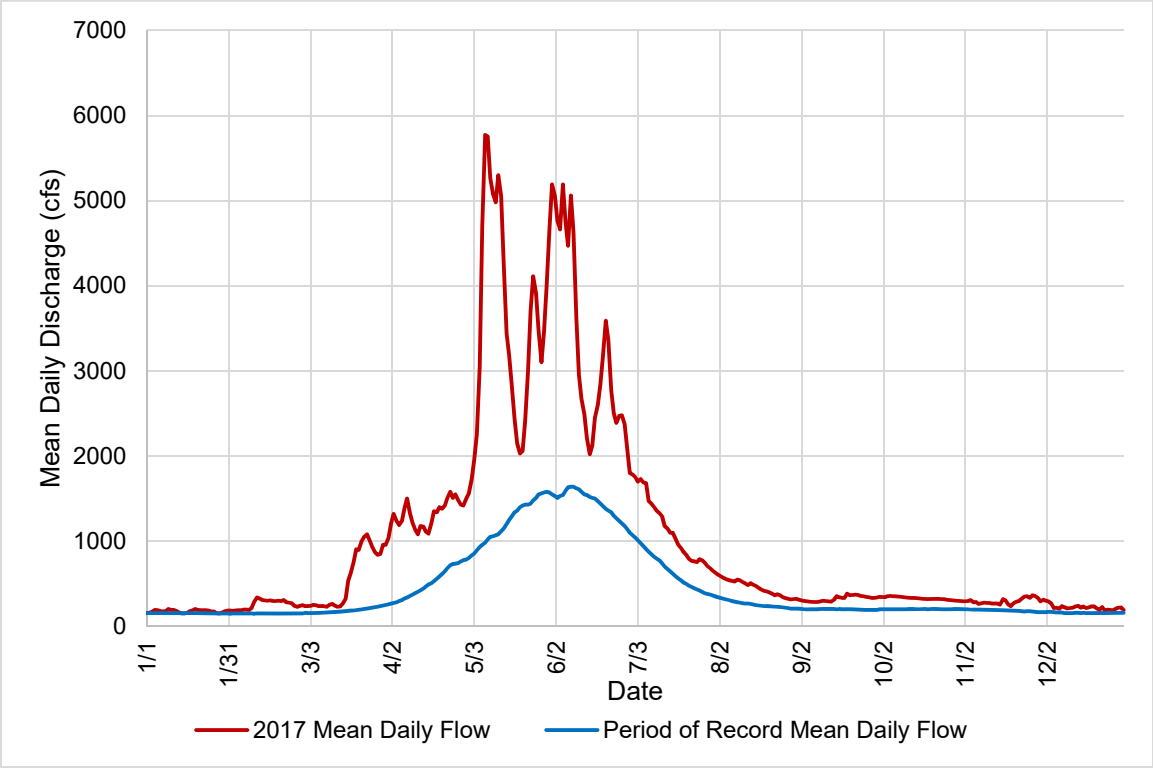

Figure 1. Mean daily flows from the period of record and from 2017 at the USGS Big Wood River gauge in Hailey (#13139510).

The existing channel configuration in the project reach does not provide important fluvial functions associated with sediment movement and floodwater conveyance. Resultant channel instabilities continue to threaten existing land uses and infrastructure. Pertinent river and floodplain conditions identified during site assessment include the following:

- The Broadford Road Bridge has a narrow span that restricts floodplain conveyance and maintains a bottleneck during peak flow conditions.
- The reach of river downstream of the bridge is homogeneous in profile and is confined by established bank treatments and flood control berms.
- The District 45 diversion includes a channel-spanning concrete sill that reduces upstream river slope and promotes sedimentation.
- The reach of river downstream of the sill is sediment starved, and is incised and disconnected from the floodplain.

- Berms and dikes on the Howard Preserve (East of the river) restrict floodplain inundation and the dispersal of flood waters.
- Sediment and debris accumulations on the floodplain (West of the river) restrict flood channel conveyance and the dispersal of high energy flood waters.
- The lower reaches of the project area lack capacity to convey the bedload, and have experienced widespread deposition, lateral migration, and bank erosion as a result.

The current project is an effort to develop conceptual level restoration design components within the project reach that could be implemented in part or in whole in order to protect infrastructure and facilities proximate to the river while restoring functionality of the river. The project was informed by site observation and assessment, local hydrologic and topographic data, including LiDAR flown in the fall of 2017 (QSI 2017), and the previously completed *Geomorphic Assessment Report, Big Wood River, Blaine County, Idaho* (Biota, 2016) which studied the project area sub-reach and presented localized predictions related to channel stability and sediment transport.

1.3 PROJECT GOALS AND OBJECTIVES

Project objectives were identified based upon existing site conditions, geomorphic assessment, land use constraints, and fluvial system potential. Project objectives include the following:

1. Identify the stable functional channel form appropriate under the current (anthropogenically altered) hydrologic regime;
2. Restore sufficient capacity to transport the sediment load while providing opportunities for storage of surplus sediment;
3. Increase lateral channel stability;
4. Increase vertical channel stability (balance aggradation and erosion);
5. Reduce channel enlargement potential;
6. Reduce the sediment supply contributed to the watershed from channel enlargement;
7. Reduce sediment input to the watershed through stabilization of severely eroding river banks;
8. Implement fluvial enhancement treatments that reduce, or leave unaltered, the flood hazard proximate to development;
9. Identify self-maintaining treatments that maximize the ecological and recreational values of the Big Wood River.

2.0 FLUVIAL CONDITIONS

The Bellevue project reach of the Big Wood River has a catchment, or watershed, characterized by the following: drainage area of 696 square miles, mean basin elevation of 7,550 ft, maximum basin elevation of 12,000 ft, average annual precipitation of 28.4 inches, about 42% forested land cover, and land slopes of 30% or greater across 71% of the basin. Hydrologic and geomorphic conditions within the project reach are summarized in the following sub-sections.

2.1 HYDROLOGIC REGIME

Bankfull discharge is the flow rate, and bankfull stage is the corresponding water surface elevation, at which instream water escapes the active channel and inundates the floodplain (when incipient flooding occurs). There is natural variability in the recurrence interval of bankfull discharge between sites that ranges from 1 to 2.5 years according to published literature. However, professional experience in the

region suggests that a reasonable estimation of bankfull discharge recurrence interval is 1.1-1.5 years. Bankfull discharge was selected as the primary hydrologic parameter for assessment purposes because it can be identified and corroborated through field investigations, as opposed to potential alternate parameters of dominant discharge (e.g., the flow rate responsible for the stable morphology) or effective discharge (e.g., the flow rate that transports the greatest fraction of the annual sediment load) that are primarily derived through analytical processes, without empirical corroboration.

Estimation of bankfull discharge was performed using hydraulic modeling of open channel flow conditions based upon field-measured morphologic and sediment data (floodplain elevation, bankfull indicators, channel dimension and profile, sediment size class distribution, hydraulic roughness). Analyses indicate that the bankfull discharge in the Bellevue project area is 1,458 cfs.

Peak flow characteristics within the Bellevue project reach were quantified in order to inform analysis of channel function and sediment transport. The closest USGS gauge on the Big Wood River is approximately 4.5 miles upstream of the project area at the Bullion Bridge in Hailey (#13139510). A geomorphic channel survey was conducted through the stream gauge reach, and included measurement of local gauge datum, riffle cross sectional geometry, bankfull indicators, and channel profile (slope). The active stage-discharge rating curve was obtained from the USGS and was used to determine the discharge corresponding to the local bankfull indicators. Analysis of the gauge period of record indicates that the bankfull discharge has a recurrence interval of 1.2 years within the project reach of the Big Wood River.

The USGS gage at Hailey (#13139510) was also used to calculate project area peak flows. There are more than 100 years of peak flow data collected at the Hailey gauge, which has been in operation since 1915. Peak flow recurrence intervals for the gauge were calculated using the Log-Pearson Type III technique and adjusted for drainage area differences between the gage location and project area following the methods recommended by the USGS (Wood et al. 2016). Table 1 contains the bankfull and peak flow discharges within the Bellevue project area.

Table 1. Peak flow recurrence intervals for the Bellevue project area.

Recurrence Interval	Discharge (cfs)
Bankfull	1,458
2-Year	2,608
5-Year	4,011
10-Year	4,949
50-Year	6,989
100-Year	7,835

2.2 GEOMORPHIC ASSESSMENT

A geomorphic assessment of the project reach was completed in order to establish baseline conditions and inform the conceptual design development process. The assessment included the following:

- Incorporation of previous geomorphic assessment results (Biota 2016);
- Historic and current aerial imagery interpretation;
- Sediment transport modeling;
- Stream stability analyses;
- LiDAR interpretation including relative elevation model; and
- Geomorphic change detection.

The Bellevue project reach is located in an alluvial valley with bounding features composed of alluvial deposits. The reach-wide average channel gradient within the project area is 0.51%. The channel spanning concrete sill at the District 45 diversion maintains a discontinuity in the channel profile and maintains upstream backwater conditions (Figure 2). The average channel gradient in the reach of river located downstream of the diversion is 0.55%.

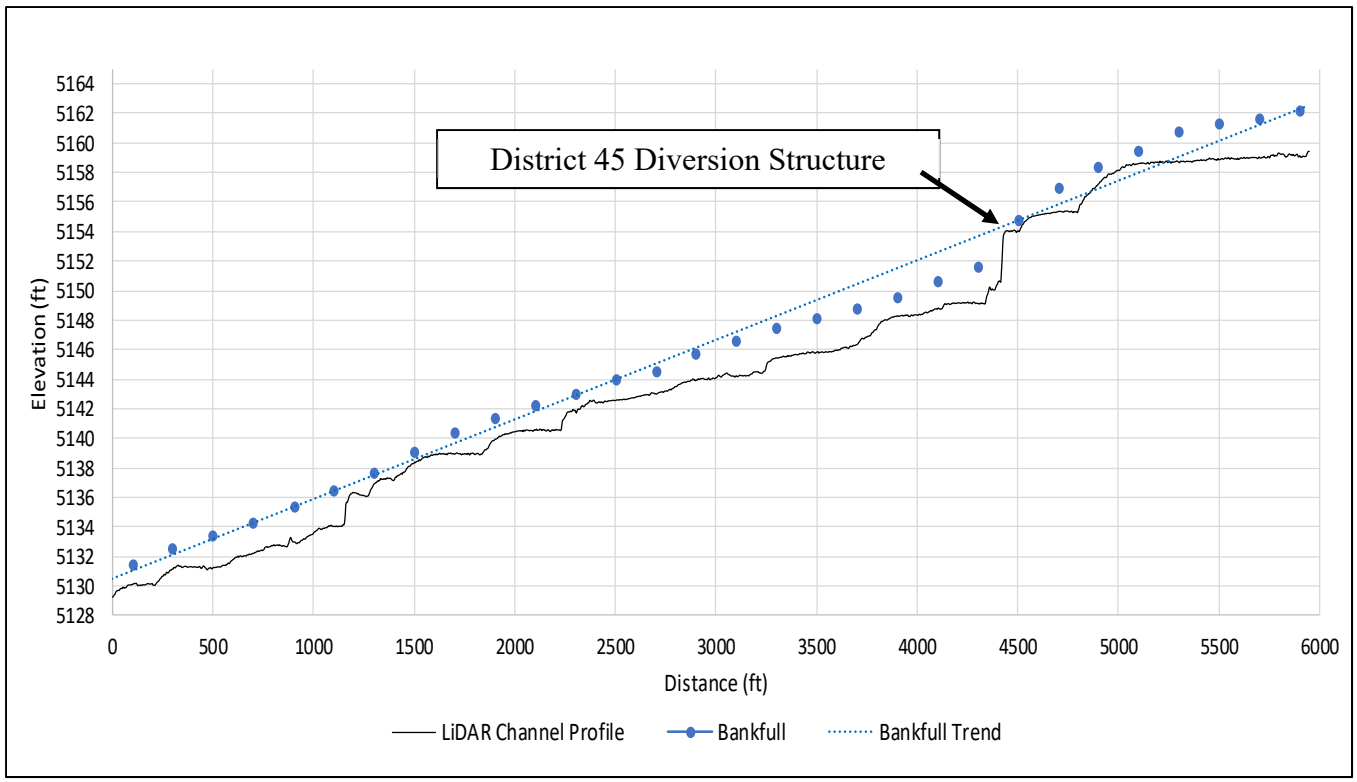

Figure 2. Longitudinal channel profile derived from 2017 LiDAR showing the profile discontinuity associated with the District 45 diversion structure.

The river planform is comprised of irregular meanders and sediment storage occurs in lateral bars, point bars, transverse bars, and mid-channel bars. Lateral channel migration occurs through irregular lateral activity and avulsion processes. Side channels are present, but side channel conveyance is limited by channel incision and debris blockages. The primary channel is locally braided with extensive sediment storage in active bars and floodplain bars in the downstream portion of the project area. The channel banks are comprised of alluvium (except in areas with bank protection) and are highly erodible. As exhibited in 2017, channel adjustments are frequent, rapid, and can result in complete realignment of the main channel.

The bank erosion rate within the Bellevue Reach is estimated to be 0.252 tons/year/foot (Biota, 2016), so the 5,946-ft long project reach contributes an estimated 1,498 tons of sediment to the watershed in an average year through bank erosion. Sediment inputs from bank erosion can be considerably higher during above average runoff events.

The average dimensional shear stress in the project reach is 0.556 lbs/ft^2. Bankfull hydraulic conditions result the mobilization of a 99 mm particle according to a modified Shields curve depicting the incipient motion of sediment particles based on shear stress (Rosgen 2010). Morphologic survey data indicate that the reach is capable of transporting the largest particles in the available bedload and is capable of mobilizing up to the D_{65} of the surface grains based upon material size class distribution (Figure 3). These

analyses indicate that the reach is competent to transport the available bedload, and that there are surface grains in the reach large enough to resist transport.

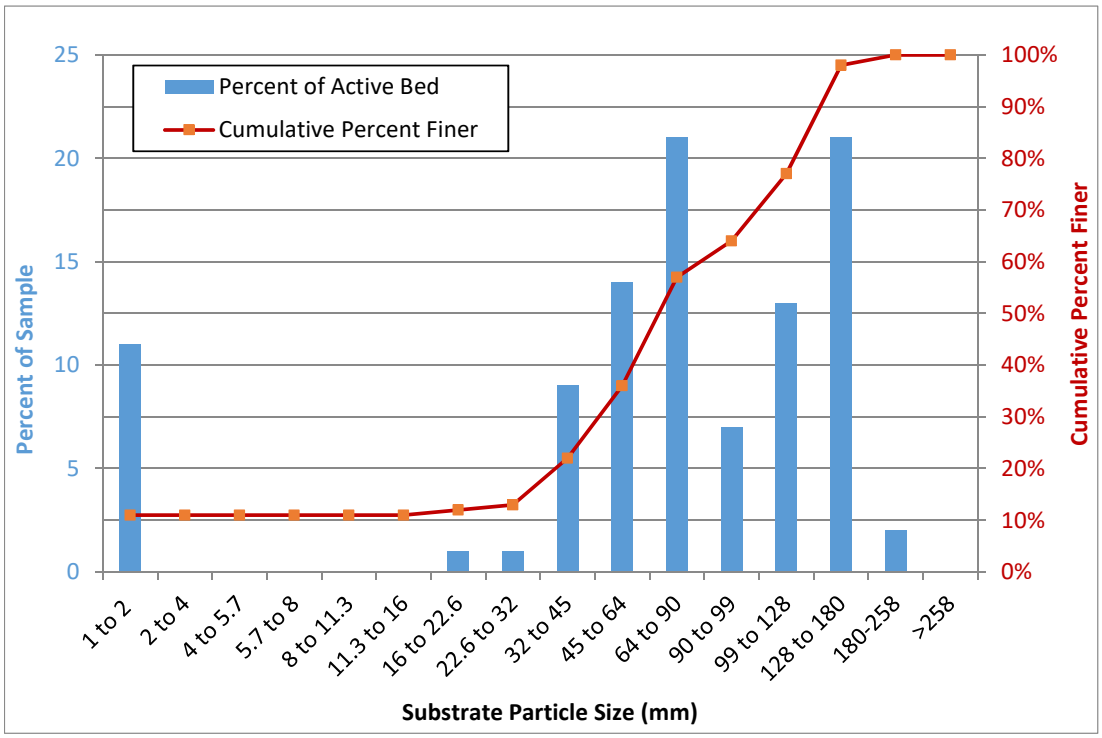

Figure 3. Surface particle size class distribution in the Bellevue Reach project area.

Sediment transport analyses completed using the regional curve for bankfull sediment transport rates and the FLOWSED/POWERSED model indicate that the average sediment supply at the Bellevue Reach is comprised of 705 tons/year of suspended sediment and 3,485 tons/year of bedload. Analysis indicates that the Bellevue Reach has capacity to transport the suspended sediment supply (705 tons/year) but lacks capacity to transport the bedload supply by about 25% (or about 950 tons/year). These sediment transport conditions result in excess sediment deposition and channel filling, which can be severe during above average runoff events.

Site conditions within the Bellevue project area are depicted below in Figures 4 to 17.

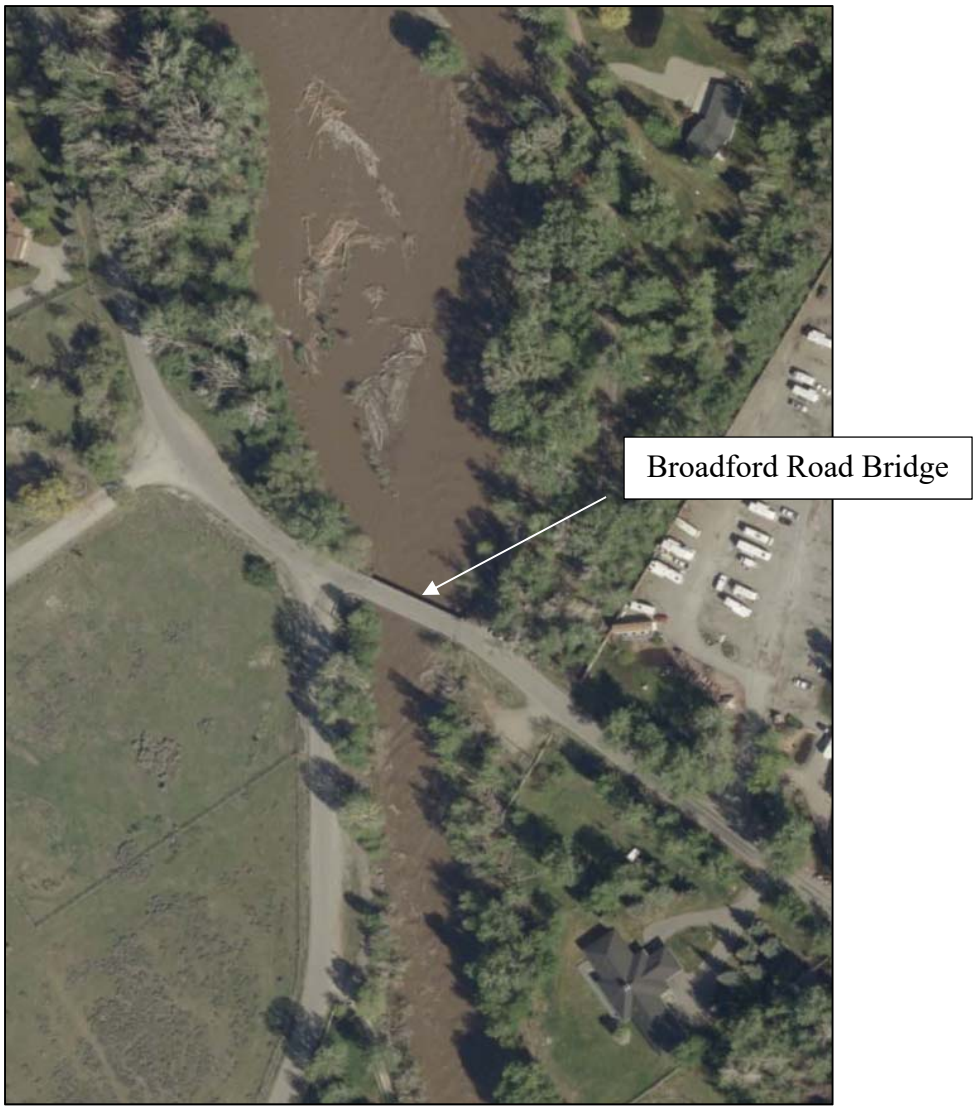

Figure 4. The narrow span of the Broadford Road Bridge restricts floodplain conveyance and maintains a bottleneck that constricts debris, sediment, and flood water conveyance.

Figure 5. Photograph depicting berms and dikes that limit floodplain inundation and floodwater dispersal downstream of the Broadford Road Bridge.

Figure 6. Photograph depicting flood control berm just upstream of District 45 diversion.

Figure 7. Photograph depicting channel-spanning concrete sill at District 45 diversion, spring of 2019.

Figure 8. Photograph depicting channel-spanning concrete sill at District 45 diversion, November of 2018.

Figure 9. Photograph depicting constructed berm that limits floodplain inundation and flood water dispersal in the Howard Preserve.

Figure 10. Photograph depicting constructed berm that limits floodplain inundation and flood water dispersal in the Howard Preserve.

Figure 11. Photograph depicting side channel inlet in the Howard Preserve that is filled with sediment and debris, which limits flood water access to the side channel.

Figure 12. Photograph depicting debris jam and gravel deposits that filled in excavated side channel on the west side of the river, in November 2018.

Figure 13. Photograph depicting debris jam and gravel deposits that filled in excavated side channel on the west side of the river, in spring of 2019.

Figure 14. Photograph depicting area of concern where the tight meander geometry of the river poses a threat to the District 45 canal upstream of the Riverside Subdivision, in the fall of 2018.

Figure 15. Photograph depicting area of concern where the tight meander geometry of the river poses a threat to the District 45 canal upstream of the Riverside Subdivision, in the spring of 2019.

Figure 16. Photograph depicting transverse depositional bar promoting high near bank shear stress and bank erosion upstream of the Riverside Subdivision.

Figure 17. Photograph depicting transverse depositional bar promoting high near bank shear stress, and rock rip rap treatment installed in response to severe land loss and bank erosion in 2017, Riverside Subdivision.

Historic Channel Mapping

Historic Big Wood River main channel and side channel locations were mapped from a series of georeferenced historic aerial images including 1943, 1970, 1992, 2004, 2013. Sheet 3 of the conceptual design drawings depicts the location of the 1943 main channel and side channels relative the current location. The 1943 channel form in the project area is characterized as anastomosing, or having multiple coexisting channels separated by vegetated floodplain islands. As shown in the 1943 aerial imagery, the Broadford Road Bridge crossings had active side channels and multiple crossing structures. There are portions of the project area that currently have a braided channel form, but channel braids meander through barren unconsolidated alluvium instead of through robustly vegetated floodplain islands that existed historically.

The historic aerial images document the process of development encroachment into the Big Wood River floodplain over time which has led to impaired fluvial functions and riverine services. The characteristics of channel form identified through analysis of historic aerial imagery may not comprehensively describe conditions typical of the historic unimpaired Big Wood River system given that development and encroachment in the project area had begun prior to 1943.

Relative Elevation Model

A relative elevation model was developed (with the slope of the valley removed, or with detrending) following the methods of Olsen et al. (2014) to reveal subtle changes in floodplain topography. Sheet 4 of the design drawings shows the post 2017 flood (LiDAR) surface topography and relative elevation model. The relative elevation model is colored by the difference in elevation compared to the water surface elevation at the time of the LiDAR survey, which occurred during river flows of about 339 cfs (September 28; October 1 and 14, 2017).

Geomorphic Change Detection

Field observations and previous assessments have demonstrated that the project reach of the Big Wood River is highly dynamic. Channel dynamics were quantified within the project area, in part, using Geomorphic Change Detection (GCD) software (Wheaton et al 2010). The GCD software was used to quantify erosion and deposition between the 2015 and 2017 LiDAR surveys (QSI 2016; 2017). The analysis provides detailed information used to evaluate sediment routing and sorting processes and evaluate potential restoration alternatives. Sheet 5 of the conceptual design drawings depicts the pattern of erosion and deposition in the project area, and quantifies associated elevation changes. Table 2 and Figure 18 summarize the erosion and deposition areas, depths, and volumes within the project area. The results indicate that geomorphic changes were widespread throughout the project area (54% of the total migration area). There was a considerable volume of sediment deposited within the project area in 2017 (approximately 20,221 cubic yards), but even greater volumes of erosion (41,401 cy). The average depth of deposition was 1.5 ft, and the average depth of erosion was 2.0 ft.

Table 2. Summary of erosion and deposition quantities in the project area from 2015 to 2017.

Attribute	Geomorphic Changes	Potential Error
Total Area of Erosion (acres)	12.6	--
Total Area of Deposition (acres)	8.2	--
Percent of Total Area with Detectable Change (%)	52%	--
Volume of Change		
Total Volume of Erosion (cy)	41,401	+/-14,356
Total Volume of Deposition (cy)	20,221	+/-9,373
Total Net Volume Difference (cy)	-21,180	--
Vertical Changes		
Average Depth of Erosion (ft)	2.0	+/-0.7
Maximum Depth of Erosion (ft)	8.9	--
Average Depth of Deposition (ft)	1.5	+/-0.7
Maximum Depth of Deposition (ft)	5.8	
Percentages (by volume)		
Percent Erosion (%)	67	--
Percent Deposition (%)	33	--

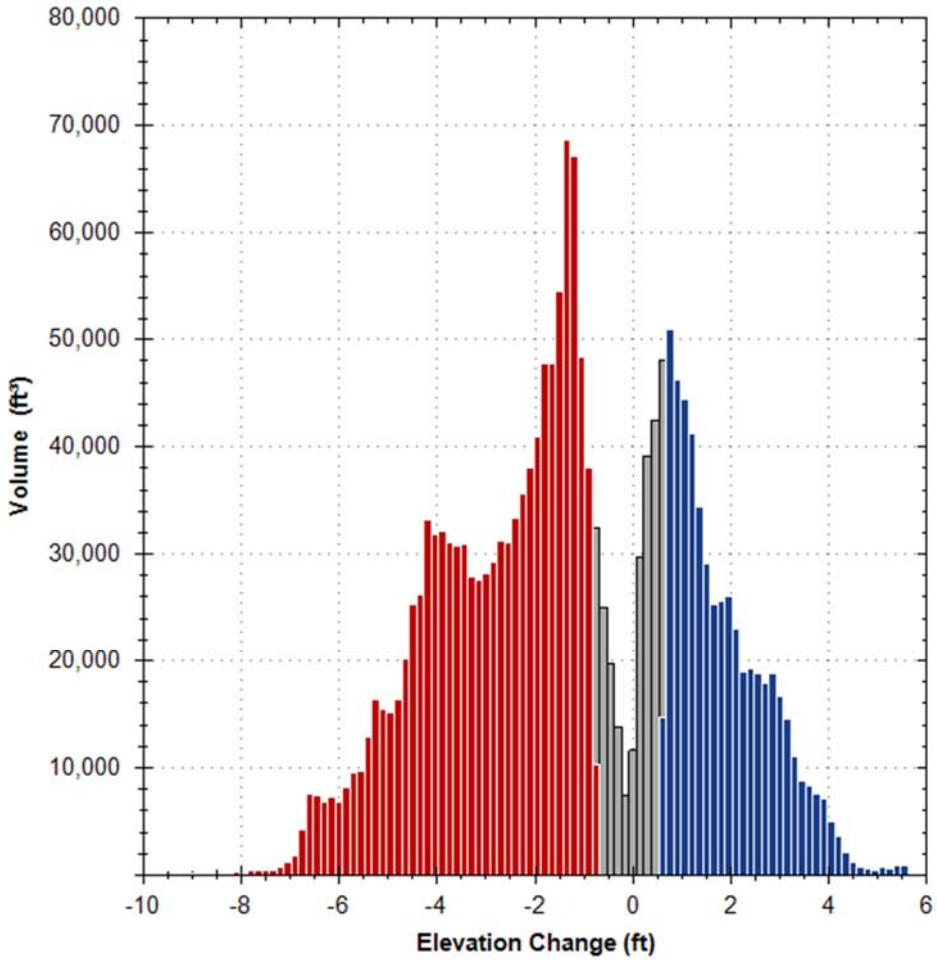

Figure 18. Erosion and deposition depth and volume for the project area from 2015 to 2017.

2.3 HYDRAULIC MODELING

A hydraulic model was developed to quantify flood inundation in the project area across a range of flood flows including the 10-year, 50-year, and 100-year flood events. The hydraulic model was developed with the Hydrologic Engineering Centers River Analysis System (HEC-RAS), which is a cross section–based one-dimensional model developed by the U.S. Army Corps of Engineers (USACE 2010) that computes velocity, flow depth, shears stress, and other hydraulic characteristics in riverine systems. Hydraulic model outputs were exported to HEC-GeoRAS (USACE 2009), which is a custom interface between HEC-RAS and GIS used for mapping water surface elevations, flow depths, and flood inundation boundaries. The flood inundation tool in HEC-GeoRAS interpolates the water surface elevations from HEC-RAS cross sections to two-dimensional geospatial data.

Sheet 6 of the conceptual design drawings depicts the flood inundation depth in the project area during the 50-year flood event. Existing channel incision and constructed roads, dikes, and levees in the project area confine the channel and limit floodplain connectivity and inundation. There are approximately 5,985 ft of floodplain berms restricting flood flows in the Bellevue Reach. These widespread river and floodplain manipulations restrict the dispersal and conveyance of peak flows across the floodplain as is characteristic of unaltered river systems. Flood flows are particularly restricted in the Howard Preserve area. Hydraulic modeling indicates this area is only inundated during extreme flood events (Sheet 6). The cross sections on Sheet 14 of the conceptual design drawings show the potential increase in floodplain inundation and floodwater conveyance that would result from proposed project actions.

3.0 RESTORATION STRATEGY

The Bellevue project reach of the Big Wood River is severely impaired. The consequences of recent flooding have highlighted the need for reach-wide systemic improvements that protect private property values, improve riverine conditions, and co-exist with the river system. The restoration strategy for the Bellevue reach of the Big Wood River needs to address the channel instabilities, severe bank erosion rates, disconnected floodplains, profile discontinuities, and discontinuity in sediment transport regime. Large-scale efforts to enhance fluvial conditions require holistic management actions. The following restoration strategy and conceptual restoration designs present an approach for holistic restoration that enhances fluvial system function and process while protecting adjacent landowners and land uses from severe erosion. This approach contrasts the traditional approach of installing riprap along local problem areas without regard for future changes in river conditions or the long-term management of the river system.

A major cause of the impairment in the project area is the presence of roads, floodplain berms, and bank armoring that confine the floodplain. In unimpaired systems, floodwater dispersal enables energy dissipation and reduces erosive potential in the river channel and near the river banks. The confinement of flood flows within the river channel results in excessive energy and erosive potential that can mobilize an exorbitant quantity of alluvium (sand, gravel, cobble). Downstream receiving areas can be overwhelmed by the delivery of excessive sediment, such that the river channel can become filled with sediment, can lose capacity to convey flood waters, and can promote severe flooding. In areas where adjacent land uses are conducive, the removal or modification of floodplain berms can restore dynamic fluvial processes and increase flood conveyance capacity.

The restoration strategy for the Bellevue reach of the Big Wood River builds on the findings of Biota's recent assessment reports (Biota 2016 and 2017) and the analyses described above. The strategy takes into consideration the behavior of the river during the recent flood event, and specifically accounts for the necessary processes of sediment and water conveyance through the reach. The strategy and action plan

also include tools and approaches for enabling landowners and resource managers to implement measures that would benefit both the river system and the land uses including residential properties, agricultural operations, and the District 45 Canal.

The objective of the restoration strategy is to reestablish dynamic river conditions including the establishment of anastomosing channel form, coexisting active side channels, flow convergence and divergence, and vegetated floodplain islands which can be expected to provide important fluvial functions related to flood water attenuation and sediment storage. Reconnecting floodplain side channels and flood inundation in the Howard Preserve is a central project objective. Restoration efforts should also incorporate a passive approach that enables natural river system recovery over time including the conservation of riparian lands to prevent development encroachment and to maintain sufficient connected floodplain width to support natural river processes.

A suite of treatments suitable to the restoration of dynamic riverine conditions is presented. Approaches to both passive and active restoration should fundamentally incorporate conservation of riverine and riparian lands. Active restoration efforts incorporate grading and earthwork to establish the desired channel form. Treatments include channel realignment, side channel establishment, floodplain creation, bridge and roadway modification, floodplain berm removal, and the installation of wood structures. The restoration of dynamic fluvial conditions could be expected to improve the ecological, hydrologic, and physical values of the Big Wood River. The restored channel form incorporates irregular and diverse meander patterns; channel alignment should utilize the entire width of the riparian corridor, should include both long and short meander wavelengths, and should incorporate meander bends with a wide range in radius of curvature. Specific wood structures, or designed log jams, are designed to establish specific components of channel form and function inherent to dynamic and historic river conditions. The use of large wood structures will help establish the desired channel form and riparian vegetation characteristics. Wood structures are also utilized to protect revegetation efforts designed to encroach on the active channels of the river, and to enable mature vegetation to establish on the margins of active channels.

4.0 CONCEPTUAL RESTORATION DESIGN

Conceptual project designs were developed using an iterative process that identified stable channel morphology based upon existing hydrologic regime, sediment inputs, and site conditions. A “Natural Channel Design” approach was applied to define appropriate morphology for the project area reach using analogy, empirical, and analytical design techniques.

A project stakeholder meeting was held on May 13, 2019 to gather observations and concerns related to conceptual design development. The meeting included diverse project proponents including project area landowners, Wood River Valley Irrigation District staff and members, and representatives from the City of Bellevue, the Howard Preserve, the Wood River Land Trust, and Trout Unlimited. Historical information, observations, concerns, and suggestions provided by stakeholders during the meeting were incorporated into the conceptual design development process.

Physical and operational constraints that could potentially inhibit restoration were identified, considered, and incorporated into project designs, where appropriate. Examples of constraints considered for the project area include flood risk, infrastructure (e.g. existing roads and bridges), diversions, and land use conflicts.

Project area land ownership is shown on Sheet 7 of the conceptual design drawings. The conceptual site plan is depicted on Sheet 8 (site plan index) and 9 to 13 (site plan drawings) of the conceptual design

drawings. Conceptual treatment typical cross sections are shown on Sheet 14 and detail drawings are presented on Sheets 15 to 22.

4.1 DESIGN CHANNEL GEOMETRY

The design channel geometry was derived based upon reference reach conditions. The Big Wood River design channel cross sections were scaled based upon hydraulic geometry to achieve the bankfull cross sectional area necessary to convey the bankfull discharge within the project area. Development of design cross sections from hydraulically scaled reference reach conditions preserves critical attributes of channel geometry including an inset channel to consolidate low flows; achievement of the proper ratio of maximum depth to mean depth; and establishment of proper relationship between local stage, stream power, and sediment transport. The project area design channel dimensions are shown in Table 3 and in Sheets 9 to 14 of the conceptual design drawings.

Table 3. Project area design channel geometry.

Bankfull Width (ft)	Mean Depth (ft)	Maximum Depth (ft)	Width/Depth Ratio	Slope (%)	Bankfull Area (sq ft)	Wetted Perimeter (ft)	Hydraulic Radius (ft)
82.5	3.3	5.1	25	0.55%	270	84	3.2

Hydraulic analyses (e.g. FLOWSED/POWERSED model) were used to confirm that the design channel geometry achieves sediment transport capacity sufficient to transport the supplied load. The sediment transport competence of design conditions was calculated for treatment areas based upon site specific design channel slope and hydraulic radius. The results were used to ensure the design promotes vertical channel stability.

The design channel (riffle) geometry was used to specify morphologic attributes of channel pattern and profile based upon dimensionless ratios obtained from reference reach conditions, regional empirical data, and professional experience. Channel dimension, pattern, and profile are designed using dimensionless ratios (below), which describe functional channel form based upon bankfull channel width and depth. For example, multiplication of the dimensionless ratio of riffle length to riffle width by the design bankfull channel width yields a value for suitable design riffle length. The dimensionless ratios presented in Table 4 below include the average value, and the range of observed values, for several important morphologic parameters. Inclusion of a range of values (and not just the average condition) within a restoration design prevents the pursuit of a homogeneous channel and ensures that the restored riverine system demonstrates a range of hydraulic and fluvial conditions reflective of natural functional systems. The conceptual design drawings contain detailed information describing the morphologic restoration and enhancement actions for the project area.

Table 4. Project area design criteria derived from dimensionless ratios

Parameter	Design Criteria		
	Mean Value	Min Value	Max Value
Meander Width Ratio	396	231	825
Riffle Length	264	206	404
Riffle Dmax	5.3	4.6	5.6
Inner Berm Width	38	32	44
Riffle Slope	1.21%	0.83%	1.76%
Pool Length	206	165	264
Pool Width	64	58	91
Pool Dmax	7.9	6.3	11.6
Pool Slope	0.02%	0.01%	0.03%
Pool-Pool Spacing	677	437	1196
Linear Wavelength	1172	825	1485
Stream Meander Length	1576	1304	2393
Radius of Curvature	347	256	512

4.2 FLOODPLAIN BERM MODIFICATION AND SETBACKS

Floodplain reconnection and re-establishment is an important component of river system restoration because it enables flood waters to escape the channel and disperse, which reduces erosive energy. Floodplain inundation promotes increased vigor of riparian vegetation and increases groundwater recharge to benefit the riparian and river systems. Floodplain berm modifications including removal or setback are proposed in the project area. In areas where adjacent land uses are conducive, floodplain berm removal is proposed to restore dynamic fluvial processes and allow for increased floodplain conveyance. Setback berms are proposed at locations where the existing land use requires flood protection. Sheets 9 to 12 of the conceptual design drawings show the location of proposed floodplain berm modifications in the project area.

4.3 DIVERSION STRUCTURE MODIFICATIONS

Proposed project treatments include the modification or removal of the existing low-head dam diversion structure at the District 45 diversion. The existing low-head dam has maintained a profile discontinuity that results in aggradation upstream of the structure and channel incision downstream. The proposed diversion structure modifications include the construction of a series of rock ramp and hardened riffles grade control structures upstream and downstream of the District 45 diversion designed to restore channel profile.

Proposed diversion area treatments also include replacement of the failing wood retaining wall upstream of the diversion on the east bank. The existing structure should be removed, the bank should be sloped back to eliminate the vertical slope, and a rock toe with bioengineering treatments should be installed to achieve desired lateral channel stability and flood protection (Sheet 13).

Rock Ramp with Boulder Rib Structures

Two rock ramp treatments are proposed to serve as grade control structures to provide reliable water delivery to the District 45 diversion while restoring the profile of the Big Wood River in the project area, to the maximum extent feasible. Rock ramps are relatively steep roughened hydraulic drops stabilized by large immobile material. The ramps consist of a low flow channel designed for biological benefits and a high flow channel designed to withstand flood flows without structural damage. Rock ramp design guidelines have been established by the U.S. Bureau of Reclamation (USBR 2007). The photograph in Figure 19 depicts an example rock ramp.

The upstream proposed rock ramp located near Station 49+00 is intended to direct flows into the east channel upstream of the diversion. The rock ramp structure at the District 45 diversion would serve as a weir and grade control to provide reliable water delivery. The structure would be channel-spanning and would be located from Station 43+00 to 44+00 near the existing low-head dam structure. This rock ramp would maintain diversion functionality while facilitating modifications to the existing dam such as lowering the dam invert elevation (for all or part of the width) or removing the dam partially or in its entirety.

Figure 19. Example photograph depicting a rock ramp boulder structure (Source: Paul Franklin).

The rock ramp final design refinement process would include a detailed hydraulic analysis and foundation stability assessment. The design process would evaluate site hydraulics, public safety, aesthetics, and maintenance considerations. Project stakeholders have also requested an evaluation of the potential for incorporating recreational hydraulic features into the proposed drop structures. A conceptual design study was completed to identify alternatives to retrofit the existing low-head dam into a recreational whitewater park (S2o 2014). The final design refinement process should consider the feasibility of incorporating such features into the design in a manner that achieves intended continuity in channel profile and sediment transport capacity.

The diversion structure modifications also include the installation of a sediment sluice gate into the existing diversion structure (Sheet 13). The intent of the sluice gate is to facility the transport of coarse

alluvium past the diversion in order to reduce the need for regular mechanical sediment removal and channel manipulation in the District 45 diversion bay.

Hardened Riffle with Boulder Clusters

Two hardened riffles with boulder clusters are proposed downstream of the District 45 diversion near Station 34+00 and 39+00 to restore the channel profile and address the incised conditions in this segment of the project area (Sheets 9 and 10). Hardened riffles are channel bed grade control features constructed of particles that are immobile under design hydraulic conditions (Sheet 15). Hardened riffles distribute gradient over a large area, are less prone to failure than vane structures, and maintain fish passage and other natural hydraulic conditions.

Typical installation of hardened riffle structures includes placing rock (with a specified size gradation) in a layer that is twice as thick as the maximum particle size. The hardened riffle is keyed into the bank at the corners of the treatment area to increase stability. The riffle crest invert elevation for the hardened riffles should be set based on the design slope of 0.55% based the downstream portion of the project area (Station 0+00 to 23+00) outside of the influence of the existing low-head dam structure (Figure 2).

Boulder clusters are incorporated into the proposed hardened riffles to increase vertical channel stability while increasing instream complexity and improving habitat quality (Sheet 16). Boulder clusters provide diverse water depths, substrate roughness, and velocity distribution in order to increase habitat diversity. A variety of boulder cluster configurations (e.g. bank clusters, upstream-V clusters, line clusters) would be utilized based on the local hydraulic conditions of treatment locations. Due to the highly dynamic characteristics of the Big Wood River, the boulder clusters should be considered deformable and may adjust over time.

4.4 FLOODPLAIN CHANNEL RECONNECTION

Floodplain channel enhancement treatments would increase hydrologic connectivity by reconnecting existing side channels and excavating material to create connected side channels, as needed. Side channel inlets would incorporate apex log jams and porous matrix jams to promote side channel flow dispersal while reducing the potential for severe erosion resulting from channel avulsion (e.g. main channel migration into a floodplain side channel treatment area). The project area contains a mix of floodplain channels that are designed to be connected at a range of flows (Sheets 9 to 12).

4.5 FLOODPLAIN BENCH CONSTRUCTION

An inset floodplain should be constructed within the project reach to reestablish channel geometry and address excessively wide channel conditions. The inset floodplain would be constructed at the local bankfull elevation (0.75 ft higher on the outside of meander bends) by placing native alluvial fill material (Figure 20). Establishment of a hydraulically connected floodplain with suitable width is paramount to site restoration. Floodplain width determines channel entrenchment ratio, which dictates channel form and processes associated with sediment transport, peak flow hydraulic conditions, and river bank stability. Suitable floodplain width also enables flood waters to disperse and dissipate energy while inundating riparian lands, which facilitates sediment deposition and recruitment of woody vegetation adjacent to the river channel. The location of proposed floodplain construction is shown on the design drawings (Sheets 9 to 12).

The floodplain bench construction involves placing consecutive lifts of native alluvium below the ordinary high water mark, compaction of lifts with excavator bucket or similar force, and installation of transplanted woody and herbaceous vegetation mats atop placed fill to achieve the design elevation.

The floodplain bench treatment includes a series of brush trenches located perpendicular to the flow path throughout the floodplain and floodplain wood structures. The intent of the woody material on the surface of the floodplain bench is to reduce the velocity of flow on the floodplain and to encourage deposition of fine sediments. Brush trenches should be constructed perpendicular to flow at a spacing of 1 per 2,000 sq ft. The excavated area for the brush trenches should be approximately 10 ft long by 2 ft wide and 5 feet deep. Woody Material and live dormant woody vegetation cuttings should be placed in the trenches.

Coarse available materials, or imported rock, should be placed on the river side of the fill to achieve increased bank stability. Fine sediments and unclassified fill materials are placed on the landward side of the channel banks. All implemented channel narrowing treatments are oriented and situated to achieve the functional bankfull channel width. Bioengineering techniques to stabilize the channel banks include willow stingers and vegetation bundles incorporated into the bank in order to increase the stability of treatments, enhance instream cover, and provide bank vegetation.

Rock Toe Treatment

At locations where bank erosion potential is high due to near bank shear stress or channel alignment, proposed river bank construction should incorporate a rock toe treatment and designed log jam structures in order to provide instantaneous bank stability (Sheets 9 to 12, and 17). The rock toe treatment was designed, and material sized using U.S. Army Corps of Engineers technical bulletins and methodologies that incorporated input parameters of design channel geometry, channel slope, mean and maximum channel depths, flow velocity, and radius of curvature.

The rock toe should have a median (D_{50}) size of 24 inches and a maximum (D_{100}) size of 36 inches with an appropriate gradation. A factor of safety of 1.2 was applied to size the rock because the treatment would protect a newly constructed river bank composed of recently placed unconsolidated alluvium. A gravel or geotextile filter may be required depending on the size class distribution of the material used to construct the channel bank (the material underneath the rock toe); the use of coarse alluvial fill instead of a fine sediment mixture may negate the need to incorporate an intermediate layer under the rock toe. The rock toe should extend from the adjacent floodplain bench (bankfull) elevation down to the local scour depth 3.4 feet below the channel bed elevation. The rock toe should have a horizontal to vertical slope of 2:1 with live woody vegetation bundles installed at a 4-5 ft spacing. The vegetation bundle installation elevations should alternate between the bankfull elevation and 1 ft below bankfull.

Figure 20. Photograph depicting an example of a constructed floodplain bench with vegetation plantings and a rock toe

4.6 BIOENGINEERED BANK STABILIZATION

Bioengineered bank stabilization treatments are proposed along the west bank of the side channel enhancement treatment approximately from Station 10+00 to 13+00 (Sheets 11 and 12). These treatments are less intensive than the bank treatments along the main channel since the hydraulic characteristics of the side channel are less erosive. Proposed bank stabilization treatments for this area in include regrading the bank to a 2:1 (horizontal to vertical) slope, installing an interwoven brush layer, and planting dormant hardwood cuttings.

4.7 LARGE WOODY DEBRIS (LWD) STRUCTURES

The presence of LWD influences both physical and biological processes and serves many functions. Some benefits of utilizing LWD in restoration plans include: increased erosion resistance; improved aquatic and riparian habitat; sediment sorting and retention; reduced near bank shear stress and erosive energy; and flood control. Log jam structures were designed to provide specific functions at identified treatment locations. Wood treatment designs are based upon professional experience and the principles established in published literature (NRCS Engineering Field Handbook, USFS Soil Bioengineering Guide, various Rosgen publications, etc.). The constructed LWD structures should generally follow the typical design drawing for optimal function and stability but may require field adjustments to address site specific conditions during implementation.

Several LWD structure types were identified for the project area including a channel margin structure, a meander bed structure, an apex jam structure, a bank deflector structure, and a porous jam structure. Each structure type, described below, was designed to provide specific functions at the selected locations. Sheets 9 to 13 of the conceptual design drawings depict the locations for all the proposed LWD structures.

Channel Margin Structure

The channel margin structures (Sheet 18) are designed to provide bank stability and protection for revegetation treatments, particularly in areas of floodplain construction as well as increase habitat

complexity and provide fish cover. These structures also cause flow convergence that maintains scour pools and reduces near bank shear stress. These structures are utilized along the channel margins particularly in areas of floodplain bench creation.

The channel margin structures are comprised of logs with root wads (greater than 18 inches diameter and 30 ft length), broken logs (greater than 12 inches diameter and 30 ft length), and boulders (greater than 24 in diameter). Structure logs are anchored into the river bank with root wads that protrude into the channel and include boulders for ballast to increase structure stability. Buried logs should be backfilled with native alluvium and capped with salvaged vegetation. Racking logs and slash should also be placed irregularly among the exposed root wads of the channel margin structure to provide complexity and fish cover.

Meander Bend Structure

Meander bend structures (Sheet 19) are intended to limit channel migration in the short term to enable establishment and maturation of woody vegetation installed along the channel margins, particularly in areas of inset floodplain creation. The structures tend to accumulate natural woody debris through time, maintain lateral scour pools, and reduce near bank shear stress. These structures are utilized along the outside of meander bends.

Meander bend structures are comprised of the same materials as channel margin structures but have more logs and are oriented to provide increased bank stability. These structures may also utilize a rock toe treatment for additional bank stability, where needed. The meander bend structures are also comprised of buried key logs anchored into the river bank with root wads that protrude into the channel. Buried logs should be backfilled with native alluvium and capped with salvaged vegetation. These structures should also incorporate racking logs and slash to provide increased complexity, hydraulic roughness, and fish cover.

The meander bend structures are combined with a rock toe treatment for additional bank stability in order to protect existing infrastructure from future erosion risk in areas with high erosion potential.

Apex Jam Structure

Apex jam structures (Sheet 20) are intended to create and/or maintain split flow conditions between the main channel and secondary channels. Apex jams promote the longevity of downstream vegetated islands, create and maintain scour pools, improve sediment sorting, and tend to accumulate natural debris through time. These structures are located at the head of islands or established channel divergences.

The apex jam structures are comprised of logs with root wads, broken logs, pinning logs, and boulders (greater than 24 inches diameter). The logs with root wads are placed as key members to provide stability, increase instream complexity, and provide fish cover. The key members are placed with root wads facing upstream and protruding into the bankfull channel. The key members are buried into the bankfull bench along with forward angled pinning logs to increase stability and promote natural racking of woody debris over time. The pinning logs should be buried below the local scour depth and backfilled with native alluvium. Broken logs and boulders are placed at the structure toe to provide scour protection and also on key members for ballast. Slash and small wood should be placed upstream of the pinning logs and key members as racking material.

Bank Deflector Structure

Bank deflector jam structures (Sheet 21) are intended to concentrate the main flow path in order to promote the formation of scour pools increase instream complexity. These structures are placed along the channel banks in straightened and simplified reaches that have minimal variation in channel bed form. The

orientation of structure logs is intended to replicate patterns typically observed in naturally occurring river bank log jams.

The bank deflector jam structure incorporates key logs with root wads, racking logs, and forward angled pinning logs for increased stability and promote natural racking of woody debris over time. Slash and small wood should be placed upstream of the pinning logs and key members as racking material. The structure logs are also buried into the channel banks and ballast boulders added for increased stability.

The bank deflector structures are combined with a rock toe treatment for additional bank stability in order to protect existing infrastructure from future erosion risk in areas with high erosion potential.

4.8 REVEGETATION/RECLAMATION

Revegetation of the project area would be accomplished via broadcast seeding and bioengineering with dormant hardwood cutting bundles and brush trenches.

Dormant Hardwood Cuttings

Dormant hardwood cuttings would be utilized to facilitate bioengineering efforts within the project area. In order to optimize establishment and long-term persistence, cuttings would be installed in appropriate locations within the riparian zone (i.e., bank zone, overbank zone, transitional zone, and upland zone) based on hydrologic tolerance of each species, and cuttings would be installed to a depth of 1 foot below the lowest water table of the year. Bioengineering techniques to be employed include: vertical bundles, 45-degree bundles, and brush trenches. The vertical bundles and 45-degree bundles would be installed on the constructed banks in conjunction with toe rock, and the brush trenches would be installed on the constructed floodplain benches. The species of hardwood cuttings utilized would be limited to black cottonwood, red osier dogwood, and willows native to the Big Wood River area. Cuttings would be collected from native riparian trees and shrubs, either onsite or at off-site locations approved by the design consultant within the Big Wood River Drainage. Sheet 22 of the design drawings contain preparation and installation procedures for vertical bundles, 45-degree bundles, and brush trenches.

Seeding

A native transitional seed mix would be dispersed throughout the treatment area after construction has been completed, including all temporary haul roads and equipment and material storage areas. Seed would be applied by hand, with a broadcast seeder, or via a hydroseeder after October 1 and prior to the onset of season-long snow cover. Seed would be applied to a properly prepared, firm seed bed, and would not be broadcast on snow-covered ground. Sterile triticale would be added to the seed mix as a nurse crop to provide fast-growing, short-term vegetative growth to assist with erosion control, add standing mulch, provide weed competition, and to facilitate establishment of the slower growing native perennial species. The triticale is sterile and will not produce viable seed. Therefore, it would only be present during the initial growing season.

4.9 PROJECT IMPLEMENTATION

Project implementation should occur in an environmentally sensitive manner, and any incidental damage to the site should be reclaimed. Construction activities should be performed by an experienced contractor under the supervision and direction of the design consultant. Every reasonable effort should be made to complete the proposed restoration and enhancement design plans in a manner that minimizes the potential for adverse impacts to water quality, fish, wildlife, and the environment. Construction activities should comply with all permit conditions and be conducted using industry standard Best Management Practices (BMPs).

The project design treatments described above have been identified for a number of specific locations shown in the design drawings (Sheets 9 to 13). Construction quantities and structure quantities associated with proposed design treatments are summarized in Table 5. Table 6 contains the log quantities for the LWD structure treatments. Table 7 contains the dormant hardwood cutting quantities.

Table 5. Proposed conceptual design treatment quantities.

Treatment	Quantity
Floodplain Berm Excavation Area (acres)	1.08
Setback Berm Construction (acres)	1.08
Floodplain Bench Construction Area (acres)	4.64
Side Channel Excavation (acres)	2.80
Side Channel Enhancement (acres)	0.86
Hardened Riffle Fill (acres)	0.69
Hardened Riffle Boulder Clusters (cy)	236
Rock Ramp Fill Material (acres)	0.54
Rock Ramp Boulder Rib Structures (cy)	984
Sediment Sluice Gate (# of locations)	1
Rock Toe (linear ft)	1,928
Bioengineered Bank Stabilization (lineal ft)	346
Channel Margin Structures (# of locations)	5
Meander Bend Structures (# of locations)	16
Apex Jam Structures (# of locations)	5
Bank Deflector Jam Structures (# of locations)	4

Table 6. Proposed conceptual design large wood structure treatment log quantities.

Logs and Ballast Boulders	Channel Margin Structures	Meander Bend Structures	Apex Jam Structures	Bank Deflector Structures	Total
Logs with root wads (>18 in diameter, 30 ft length)	20	96	20	16	152
Broken logs (>12 in diameter, 30 ft length)	5	80	10	16	111
Pinning logs (>8 in diameter, 20 ft length)	--	--	10	16	26
Ballast Boulders (>24 in diameter)[1]	20	96	50	24	190

[1]Ballast boulders may be sourced from on-site excavated materials, as available.

Table 7. Woody treatment quantities.

Treatment	Spacing	Quantity	Dormant Cuttings per Treatment	Total Dormant Cuttings
Brush Trenches	1,000 sq ft spacing	101	10	1,010
Vertical Bundles	8-ft spacing	541	3	1,623
45-Degree Bundles	8-ft spacing	541	3	1,623
Bioengineered Bank Stabilization	4-ft spacing	87	3	261
			Total	4,517

5.0 SUMMARY AND CONCLUSIONS

The reach-wide restoration of the Bellevue Reach of the Big Wood River provides an opportunity to pursue systemic improvements that directly benefit adjacent landowners and riverine conditions. River restoration and enhancement treatments appropriate for the project area have been described in this report and are shown in the conceptual design drawings (Appendix A). The emphasis for proposed project actions is placed on the importance of applying specified treatments to address underlying causes of fluvial system instability, as opposed to applying individual treatments to address symptoms of system degradation (the typical Band-Aid approach).

Appropriate application of the presented restoration treatments can achieve objectives of reduced flood hazard and improved flood attenuation, improved continuity of sediment movement, increased channel stability, and reduced severe bank erosion. Ensuing tasks associated with the Bellevue project need to include incorporation of feedback from engaged landowners and project stakeholders. Based upon any additional feedback, final design plans can be developed and used to refine project scope and scale. Subsequent tasks associated with project advancement may include local site surveys to precisely quantify existing conditions, additional hydraulic modeling to demonstrate regulatory compliance, finalization of design treatments, development of construction drawings, permitting through local and state agencies, and ultimately project implementation.

6.0 REFERENCES

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APPENDIX A: CONCEPTUAL DESIGN DRAWINGS
(PROVIDED SEPARATELY)

Bryan Dilworth
Flood Control District #9
305 Glendale Rd.
Bellevue, ID 83313

John Wright
Wood River Board of Control
P.O. Box 736
Bellevue, ID 83313

17 November 2021

Dear John,

On 7 June 2021, Jim Gregory, with Trout Unlimited, presented the Big Wood River diversion Dam Remediation Project plans to the board of Flood Control District #9, of which I am a commissioner. The project consists of constructing a 2% grade rock ramp/riffle downstream from the District 45 diversion dam near Bellevue Idaho. The ramp/riffle will be constructed as a roughened channel, that will eliminate the vertical drop downstream from the diversion. The work will also involve cutting a notch in the diversion apron which will create a lowered thalweg. This will function to help move bedload material downstream past the diversion, which will ultimately reduce vertical channel restriction upstream and contribute to alleviating flood risks upstream from the diversion. Construction of a bankfull bench and revegetation of the project area will also serve to spread flood flows and anchor stream banks, thereby reducing the effects of flooding.

Construction for this project was anticipated in late 2022 or early 2023, which was outside our current budget window and therefore funding was not provided for the project at that time. However, the project was well received by the board and Trout Unlimited was invited to present at a future meeting when our budget period overlapped with their implementation schedule. While I can not say, at this time, whether or not the project will receive funding from the Flood Control District, I can say that I support this project as beneficial to reduce flooding and enhance the natural processes and safety of the Big Wood River.

Sincerely,

(*wet signature*)

Bryan Dilworth

Flood Control District #9 Commissioner

IDAHO DEPARTMENT OF FISH AND GAME
MAGIC VALLEY REGION
324 South 417 East, Suite 1
Jerome, Idaho 83338

Brad Little / Governor
Ed Schriever / Director

November 22, 2021

Mr. John Wright, Project Manager
Board of Control
PO Box 736
Bellevue, ID 83313

RE: Letter of Support: Trout Unlimited, Diversion 45 Dam Remediation Project

Dear Mr. Wright,

The Idaho Department of Fish and Game (IDFG) is pleased to write in support of your grant application to help fund construction of the Diversion 45 Dam Remediation Project. Specifically, we understand you are applying to the U.S. Bureau of Reclamation for a WaterSMART Environmental Water Resources Project Grant.

We appreciate your efforts to restore fish passage and improve sediment transport at the dam while maintaining diversion functionality, stabilizing the exiting diversion, and improving riverine and floodplain conditions. The Big Wood River is a popular trout fishery that increasingly faces challenges associated with low water flows and degradation of trout habitat. Our understanding is that, upon completion, this project will improve fish passage and river connectivity during low flow conditions.

IDFG recognizes the importance of this project as one of several that are part of a broader effort, led by a diverse group of stakeholders, to restore a reach of the Big Wood River downstream of Diversion 45. Trout Unlimited is a conservation-focused group that has successfully collaborated with IDFG in the past for the goal of sustaining and improving fisheries-related recreation.

In the past, we have routinely supported projects that align with IDFG's mission to preserve, protect, perpetuate, and manage the fish and wildlife of Idaho. We would like to express our support for this effort to improve fish passage and river function in the Big Wood River watershed. Please contact Bradley Dawson (Environmental Staff Biologist; 208-644-6310) at the Magic Valley office for any questions.

Sincerely,

Craig A. White

Craig White
Regional Supervisor
Idaho Dep. Of Fish & Game

The Nature Conservancy
Protecting nature. Preserving life.™

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Tel (208) 343-8826
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nature.org

November 22, 2021

RE: WaterSMART Grant Proposal Letter of Support

Dear WaterSMART Program Administrators,

It is my pleasure to write this letter in support of the WaterSMART project proposal being submitted to the Bureau of Reclamation by Trout Unlimited.

At The Nature Conservancy (TNC) our mission is to conserve land and water upon which all life depends. The Idaho Chapter of TNC is working to create a more sustainable future for the state's water resources through our Resilient Water Supply program. As part of this effort TNC along with Trout Unlimited, The Wood River Land Trust, and Silver Creek Alliance have come together to form the Wood River Water Collaborative to collectively address river flow and water quality goals across the greater Big Wood River Watershed. Through this collaborative effort projects such as the one submitted for consideration by Trout Unlimited for WaterSMART grant funding will achieve scaled outcomes for the region's natural, agricultural, and community landscapes.

The Big Wood River watershed experienced significant drought conditions during the 2021 water year with the 6th driest spring on record, low soil moisture conditions, and continuous high temperatures. This confluence of climate driven conditions lead to insufficient flows, fish kills, and administrative curtailment of a significant number of water users in the Valley. The proposed canal improvement project by Trout Unlimited will enhance stream conditions for fish, while maintaining the canal delivery functions for farmers. The combination of enhanced habitat downstream from the dam and maintenance of the infrastructure will prevent the water from becoming disconnected during low flows, while ensuring irrigation delivery is not interrupted.

The project proposed by Trout Unlimited presents the opportunity to create a more resilient water supply for agricultural producers, communities, and aquatic ecosystems, which are necessary adaptations in the face of a changing climate. Adaptation of existing irrigation infrastructure will be a key element to improve the resiliency of the Wood River in the face of climate driven conditions such as those faced this year. The Nature Conservancy is fully supportive of the proposed project and believes that the investment will have a multiplier effect for the greater Big Wood River watershed.

I thank you for the opportunity to be involved in this process and to support such an impactful project.

Best Regards,

Neil Crescenti
Agriculture Program Manager
The Idaho Chapter of The Nature Conservancy

WOOD RIVER LAND TRUST

Board of Directors

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Sue Orb

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Scott Boettger

119 E. Bullion Street
Hailey, Idaho 83333
Phone: 208.788.3947

WoodRiverLandTrust.org
Federal ID: 82-0474191

Mr. John Wright, Project Manager
Board of Control
PO Box 736
Bellevue, ID 83313

Dear Mr. Wright,

The Wood River Land Trust is pleased to write in support of your grant application to help fund construction of the Diversion 45 Dam Remediation Project. Specifically, we understand you are applying to the U.S. Bureau of Reclamation for a WaterSMART Environmental Water Resources Project Grant. We appreciate your efforts to restore fish passage and sediment transport at the dam while maintaining diversion functionality, stabilizing the exiting diversion, and improving riverine and floodplain conditions.

Fish passage barriers is one of the most limiting factors in decreasing survival and productivity of trout populations in the Big Wood River basin. It was evident this year when extreme drought conditions, not observed in decades, caused the reach of river to go dry below the canal and caused a large fish kill. If this project was implemented prior to this year, trout would be able to survive by moving upstream to more and colder water.

Wood River Land Trust recognizes the importance of this project as one of several that are part of a broader effort, led by a diverse group of stakeholders, to restore a mile-long stretch of the Big Wood River in the City of Bellevue. We value our partnership with the irrigators of the Diversion 45 canal and look forward to this project to be implemented and further collaboration on future projects.

We strongly support your grant application and appreciate the advancements it will make to improve the health of the river and associated habitat.

Sincerely,

Ryan Santo
River Program Director

City of Bellevue
115 E Pine Street
PO Box 825
Bellevue, ID 83313
208-788-2128 Fax 208-788-2092
www.bellevueidaho.us

December 2, 2021

Mr. John Wright, Project Manager
Board of Control
PO Box 736
Bellevue, ID 83313

Dear Mr. Wright,

The City of Bellevue is pleased to write in support of your grant application to help fund construction of the Diversion 45 Dam Remediation Project. Specifically, we understand you are applying to the U.S. Bureau of Reclamation for a WaterSMART Environmental Water Resources Project Grant.

We appreciate your efforts to restore fish passage and sediment transport at the dam while maintaining diversion functionality, stabilizing the exiting diversion, and improving riverine and floodplain conditions.

The City of Bellevue recognizes the importance this project as one of several that are part of a broader effort, led by a diverse group of stakeholders, to restore a mile-long stretch of the Big Wood River in the City of Bellevue.

We strongly support your grant application and appreciate the advancements it will make to improve the health of the river and associated habitat.

Sincerely,

Ned Burns, Mayor
City of Bellevue

Diane Shay
Floodplain Administrator, City of Bellevue

Construction Plans and Technical Specifications for Big Wood River Diversion Dam Remediation Project

Blaine County, Idaho

Prepared by:
Biota Research & Consulting, Inc.

March 24, 2021

Prepared for:
Board of Controls for the Wood River Valley Irrigation District
45 and Triangle Irrigation District
and Trout Unlimited

TECHNICAL SPECIFICATIONS

These technical specifications address all anticipated construction and excavation activities to be completed during Big Wood River Diversion Dam Remediation Project construction activities.

INDEX TO TECHNICAL SPECIFICATIONS

SECTION 01000
SUMMARY OF WORK

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Related Documents
B. Summary Scope of Work
C. Measurement and Payment of Bid Items shown on Proposal

1.02 RELATED DOCUMENTS

A. Plans included in Appendix A

Sheet	Drawing Title
1	Title Sheet
1	General Notes
3	Existing Conditions
4	Proposed Condition Plan & Profile
5	Proposed Ramp Typical Sections
6	Proposed 2 Log Structure & Bench Rock Typical Details
7	Revegetation Plan
8	Revegetation Plan Typical Details
9	Access, Staging, & Dewatering Plan
10	DCI Structural Details

1.03 SUMMARY SCOPE OF WORK

The scope of work addressed by these plans and specifications consists of diversion dam rehabilitation improvements construction at Diversion 45 on the Big Wood River with dam notching and rehabilitation, rock ramp, bankfull bench, and revegetation. Construction access to the site will require transport of equipment and materials through the Howard Preserve Martin Lane access area. This portion of the Howard Preserve will be closed to public use for the duration of the project.

The Contractor or Contractors shall perform the following work per these specifications:

A. Construct dam notching per the plans and specifications.

B. Construct new rock ramp and bankfull bench and all associated erosion protection per plans and specifications.

1.04 ADDITIONAL RESPONSIBILITES

A. The Contractor is obligated to immediately notify the Engineer and Board of Controls of construction problems in order to facilitate practical, functional and cost-effective project modifications. These problems may be associated with differing site conditions, construction staking and measurements, conflicts between plans and specifications, defective materials or other issues.

1.05 MEASUREMENT AND PAYMENT

A. Work items for which specific unit prices are established will be measured to the nearest unit applicable. Payment for each pay item will be made at the agreed-to unit price for that item. For established lump sum work items, payment will be made at the lump sum price. Such payment will constitute full compensation for all materials, labor, equipment, tools and all other items necessary and incidental to completion of the work.

B. Compensation for any item of work shown on the Plans or described in these specifications will be considered incidental to and included in the pay items listed.

Bid Item 1 – Mobilization/Demobilization/Bonding & Insurance

Mobilization shall include all activities and associated costs for transportation of Contractor's personnel, equipment, and operating supplies to the site; establishment of offices, buildings, and other necessary general facilities for the Contractor's operations at the site; premiums paid for performance and payment bonds (if applicable), including coinsurance and reinsurance agreements, as applicable.

Demobilization shall include all activities and costs for transportation of personnel, equipment, and supplies not required or included in the contract from the site; including the disassembly, removal and site clean-up, of offices, buildings and other facilities assembled on the site specifically for this contract.

This work includes mobilization and demobilization required by the contract at the time of award. If additional mobilization and demobilization activities and costs are required during the performance of the contract as a result of changed, deleted, or added items of work for which the Contractor is entitled to an adjustment in contract price, compensation for such costs will be included in the price adjustment for the item or items of work changed or added.

Work under this item includes, but is not limited to:

- Mobilize and demobilize to and from the project area with all necessary equipment to complete the Work.
- Obtain all additional permits not already obtained (eg, SWPPP) and provide copies to Engineer.
- Prepare and submit all preconstruction submittals to Engineer for approval.
- Provide and remove temporary offices, storage and sanitation facilities.

- Provide site security.
- Dispose of all trash and debris generated by Contractor at a state-licensed solid waste management facility.
- Provide all labor, tools, equipment, materials, and incidentals necessary to complete the Work as specified.
- Construct and maintain all access and haul roads as required.
- Traffic Control.
- Re-grading of construction access and haul roads to pre-construction condition.
- Dust control during mob\demob operations

Measurement Bid Item 1

No measurement will be made for Bid Item 1.

Payment Bid Item 1

Payment for Bid Item 1 will be based on the lump sum amount. Fifty percent (50%) payment for this Bid Item will be allowed once Contractor submits Bond and Insurance Certificates, if necessary, fully mobilizes to the project area, and obtains approval on all submittals required prior to beginning Work. Full payment for this item will be allowed after Contractor completes the Work for the remainder of the Contract, completes final cleanup work, and fully demobilizes equipment and materials from the project area.

Bid Item 2 – Clearing and Grubbing

All costs including clearing, grubbing, and disposal of vegetation. All construction staking costs shall be included.

Work under this item includes:

- Clearing and grubbing in required areas for construction of project design plans.
- Salvage and stockpile vegetative debris.
- Separate large woody debris from A horizon material (top layer of the mineral soil horizons, also referred to as topsoil).
- Stockpile topsoil.
- Dispose of non-vegetative debris at landfill.
- Provide all labor, tools, equipment, materials, and incidentals necessary to complete the Work as specified.
- Dust control (Section 1.03c)

Measurement Bid Item 2

No measurement will be made for Bid Item 2.

Payment Bid Item 2

Payment for Bid Item 2 will be based on the lump sum amount. Full payment for this item will be allowed after Contractor completes the Work.

Bid Item 3 – Water Management and Erosion Control

Contractor responsible for all water management of site area including rerouting Big Wood River flows around project site area, and any stormwater flow rerouting required to conduct the work. Work under this bid item includes all erosion control and Best Management Practices (BMP's), described herein.

Measurement Bid Item 3

No measurement will be made for Bid Item 3.

Payment Bid Item 3

Payment for Bid Item 3 will be based on the lump sum amount. Fifty percent (50%) payment for this Bid Item will be allowed once Contractor submits plan and installs water management and erosion control items. Full payment for this item will be allowed after Contractor completes the Work for the remainder of the Contract, completes final cleanup work, and fully removes water management and erosion control items.

Bid Item 4 – Dam Notching

Contractor shall construct, form, and pour the dam notch per the plans and specifications. Work includes all concrete removal, gravel placement, and concrete replacement as shown on Plans. Work includes:

- Acquisition of materials
- Placement of materials

Measurement Bid Item 4

No measurement will be made for Bid Item 4. Quantities for installed materials shall be provided for record.

Payment Bid Item 4

Payment for Bid Item 4 will be based on the lump sum amount. Full payment for this item will be allowed after Contractor completes the Work.

Bid Item 5 – Rock Ramp

Contractor to construct the rock ramp as shown on Plans and per these specifications. Work includes:

- Excavation
- Obtaining and placing all required construction materials including proposed ramp rock, boulders, and salvaged alluvium.
- Design files uploaded and functioning within machine control GPS

Measurement Bid Item 5

No measurement will be made for Bid Item 5. Quantities for installed materials shall be provided for record.

Payment Bid Item 5

Payment for Bid Item 5 will be based on the lump sum amount. Full payment for this item will be allowed after Contractor completes the Work.

Bid Item 6 –Bench Construction

Contractor to construct bench construction as shown on Plans and per these specifications. Work includes:

- Excavation
- Obtaining and placing all materials
- Disposal of surplus material if necessary
- Installation of bench rock, including woody vegetation bundles and native alluvium to infill and mask riprap rock
- Installation of 2 log structures
- Design files uploaded and functioning within machine control GPS

Measurement Bid Item 6

No measurement will be made for Bid Item 6. Quantities for installed materials shall be provided for record.

Payment Bid Item 6

Payment for Bid Item 6 will be based on the lump sum amount. Full payment for this item will be allowed after Contractor completes the Work.

Bid item 7 – Final Grading and Revegetation

Contractor shall perform all final grading and revegetation as shown on the Plans and per these specifications. Work includes:

- Obtaining all required materials
- Placing salvaged topsoil
- Seeding
- Acquiring all cuttings and installing brush trenches
- Placing salvaged topsoil and seeding on all reclaimed haul roads and disturbed areas including stockpile areas and reclaimed access\haul roads.
- Spread large woody debris and other vegetative material.

Measurement Bid Item 7

No measurement will be made for Bid Item 7. Type and quantities for installed materials shall be provided for record.

Payment Bid Item 7

Payment for Bid Item 7 will be based on the lump sum amount. Full payment for this item will be allowed after Contractor completes the Work.

END OF SECTION 01000

DIVISION 1 – GENERAL REQUIREMENTS

SECTION 01010

GENERAL PROCEDURES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. PROGRESS MEETINGS AND SCHEDULES

B. TEMPORARY FACILITIES AND SITE CONTROL

C. SURVEYING

D. ESTIMATED QUANTITIES

E. SUBMITTALS

F. TRAFFIC CONTROL AND SITE SAFETY

G. CONSTRUCTION SEQUENCING AND OTHER CONTRACTORS

H. STORM WATER MANAGEMENT AND EROSION AND SEDIMENT CONTROL

I. EXISTING STRUCTURES

J. RECORD KEEPING REQUIREMENTS

1.02 PROGRESS MEETINGS AND SCHEDULES

A. Contractor shall prepare an initial project schedule and shall update and maintain the schedule appropriately as per Contract.

B. Contractor shall participate in weekly progress meetings with the Engineer and Board of Controls Project Manager.

1.03 TEMPORARY FACILITIES AND SITE CONTROL

A. Contractor shall implement an appropriate program to protect the work in progress and from theft, vandalism, and unauthorized entry.

B. Contractor shall construct temporary access roads necessary to provide unimpeded traffic for construction purposes. Contractor shall provide temporary parking areas for project personnel.

C. Contractor shall maintain all haul roads in good condition. Contractor shall provide comprehensive dust control to assure that dust levels are minimized, and to comply with stated performance standards.

D. Contractor shall notify and coordinate with all appropriate utility companies before conducting work proximate to overhead or buried utilities.

1.04 SURVEYING

A. Contractor shall provide all surveying, measurements and computations needed to complete the work as shown on the Plans and these specifications.

B. This specification contains requirements for grading construction using Global Positioning System (GPS) machine control grading techniques. Instead of providing grade control through construction stakes, the Contractor shall control grade with equipment that is controlled by a GPS machine control system. The Contractor may use any type of equipment and machine control system that produces results meeting the requirements of the Contract. Electronic data is provided for the Contractor's convenience, and is not a part of the Contract. No guarantee or warranty is made by the Project team that electronic data provided to the Contractor: is compatible with any of the systems that are used by the Contractor; is complete; is representative of actual conditions at the project site, or; accurately reflects the quantities and character of the actual Work required. Except as provided above, no corrections, additions, or updates of any kind will be made to electronic data provided to the Contractor. The Engineer may perform spot checks of the Contractor's machine control grading results, calculations, records, field procedures, and quality control measures. If the Engineer determines that the Work being performed is not achieving results that will meet the Contract requirements, the Contractor shall make corrections to the Work at no additional cost to the owner.

C. The baselines and installed benchmarks for primary control, necessary to establish lines and grades needed for construction will be provided by the Engineer and have been located on the Site.

D. The Engineer will supply Digital Elevation Model (DEM) electronic files, point files and alignments as needed to facilitate the construction staking and use of GPS controlled equipment.

E. These baselines and benchmarks shall be used as the origin of all surveys, layouts and measurements to establish construction lines and grades. The Contractor shall take all necessary precautions to prevent the loss or damage of primary control points. Any stakes or control points lost or damaged by construction activity will be reestablished by the Contractor at the Contractor expense.

F. Contractor performed survey shall consist of all work necessary for:

a. Establishing line and grade for all work from the Engineer established DEM electronic file, Engineer supplied coordinate and elevation electronic files and the coordinates and elevations shown on the Plans.
b. Setting slope for all work.
c. Checking any grading.
d. Establish final grade.

G. Contractor shall immediately notify the Engineer and Board of Controls of any survey conflicts between the Plans, DEM and site measurements which could result in conflicts with design quantities.

H. Construction surveying required for the work item shall be completed before work on any item starts.

I. Construction survey records shall be available at all times during the progress of the work for examination and use by the Engineer. Original field notebooks and other survey records shall be provided to and become the property of the Board of Controls before final payment and acceptance of all work.

J. Initiation of excavation or earthen fill on the project indirectly indicates that the original topographic surface, as defined in the Engineer provided DEM electronic files has been accepted as true and accurate.

K. Compensation for surveying will be incidental to the work and included in the pay items listed on the bid schedule.

L. As-built survey information substantiating quantities shall be used to verify invoices as appropriate and determined by the Engineer.

1.05 ESTIMATED QUANTITIES

A. All estimated quantities stipulated in the Contract Documents are approximate and are to be used only as a basis for estimating the probable cost of the Work and for the purpose of comparing the bids submitted for the Work. Actual quantities may differ from estimated quantities. Estimated quantities are provided in the Plans. Contractor is responsible to verify any quantities necessary to perform the work as outlined in the Plans and specifications.

1.06 SUBMITTALS

A. Contractor shall provide to Engineer complete product information and shop drawings where required for all materials and equipment proposed for incorporation into the project. Information shall include manufacturer, model or catalog designation, reference standards, complete installation instructions, and shop drawings that show dimensions and location of all parts. Information shall be submitted prior to ordering, and in a timely manner to provide Engineer time for review approval.

B. In connection with all of the activities described in these Technical Specifications, Contractor shall be responsible and shall notify appropriate representatives of any governmental laws or regulations in addition to those identified in these specifications, including those relating to environmental protection and zoning, that would regulate, prohibit or control the performance by Contractor under these Technical Specifications.

1.07 TRAFFIC CONTROL AND SITE SAFETY

A. Contractor shall provide all necessary temporary traffic control to complete the Work. Contractor shall develop a site-specific Traffic Control Plan in accordance with Section 01570 of these Technical Specifications.

B. Contractor shall be solely responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the Work.

C. Contractor shall hold daily safety meetings with workers, subcontractors and oversight staff to discuss work activities, construction traffic, potential hazards and mitigation.

D. Contractor shall install and maintain signage upstream of the work area on the Big Wood River that notifies river users that the District 45 facility is closed for construction. Signs shall be removed once construction is complete.

E. Contractor shall provide continual access to local homeowners during construction.

1.08 CONSTRUCTION SEQUENCING AND OTHER CONTRACTORS

Contractor shall coordinate construction activities with those of any and all other contractors that may be working on the site or adjacent sites. Contractor's work shall be conducted in a manner that will not impede the progress of other concurrent construction activities.

1.09 STORM WATER MANAGEMENT AND EROSION AND SEDIMENT CONTROL

A. Obtain all required permits for the Work prior to starting construction. All costs necessary to obtain and comply with all applicable permits is incidental to the Work.

B. Contractor shall plan and execute work to control and minimize surface runoff from cuts, fills, and other disturbed areas. Contractor shall prevent sediment and/or sediment-laden water from entering the Big Wood River and the flow in the channel to the extent practical.

1.10 EXISTING STRUCTURES

A. The Contractor shall notify and coordinate with all appropriate utility companies and with the Board of Controls to field-locate overhead or buried utilities, wells, and other existing structures prior to construction. Location, depth, size, and material of existing buried utilities within excavation limits shall be verified prior to beginning construction.

B. The Contractor shall be responsible for protecting existing structures within and external to the construction area. Any damage to existing structures, whether above or below ground level, shall be repaired to the Board of Control's satisfaction by the Contractor at no additional cost to Owner.

1.11 RECORD KEEPING REQUIREMENTS

A. Contractor shall maintain on-site, at all times, a complete set of all environmental health and safety documentation, design documents, addenda, and other modifications to the Work. The Contractor will be responsible for furnishing detailed survey notes and other working documents to Engineer if requested.

END OF SECTION

SECTION 01570

TEMPORARY TRAFFIC CONTROL

PART 1 GENERAL

1.01 SECTION INCLUDES

This section covers all labor, supplies, materials, equipment, and incidentals necessary for traffic control consisting of furnishing, installing, maintaining, and relocating traffic signs, barricades, lights, signals, pavement markings, and other traffic control devices necessary to ensure the safety of the general public and Project personnel in compliance with the Contract Documents. Work shall include flagging for the guidance of traffic through the Site and for public roadways.

REFERENCES

Publications listed below are incorporated into this specification by reference.

American Association of State Highway and Transportation Officials (AASHTO)

AASHTO The Green Book	(2018) A Policy on Geometric Design of Highways and Streets, 7th Edition

U.S. Federal Highway Administration (FHWA)

MUTCD	(2009) Manual on Uniform Traffic Control Devices (MUTCD)

1.02 SUBMITTALS

A. Prepare and submit a Traffic Control Plan for any Work involving public roadways no later than ten (10) days prior to the start of Work. The Traffic Control Plan will be subject to review and approval by any public entity having jurisdiction over public roadways (e.g., City of Bellevue, etc.). These approvals will be in addition to that provided by Engineer in accordance with the Submittals Section. No Work may commence until all approvals of the Traffic Control Plan have been secured.

PART 2 PRODUCTS

A. All traffic control devices and materials shall be in accordance with the most current editions of MUTCD for Streets and Highways.

PART 3 EXECUTION

3.01 GENERAL

A. Provide traffic control signage and flaggers as necessary to safely complete the Work while accommodating public traffic including pedestrian and equestrian

traffic. Traffic control shall conform to the standards set forth in MUTCD, current edition.

B. Schedule operations to minimize interruptions of the streets, roads, and highways involved and keep all public roads, streets, and highways open during normal working hours during the Work. Provide uninterrupted two-way traffic for public roads at all times during overnight and weekend periods. If any of the public roads are to be closed during construction operations, give at least 14 days advance notice. Unless otherwise provided, when construction activity is in progress and total closure has not been provided for herein, delays may not exceed 10 minutes, in order to reasonably accommodate traffic.

C. Schedule construction operations in a manner to ensure that: 1) the safety and convenience of motorists, bicyclists, and pedestrians, and the safety of all personnel, are adequately met at all times; and 2) the Project is completed in a manner most beneficial to the Project as a whole. Contractor shall notify the Engineer and the Board of Controls staff 24- hours prior to entering Diversion 45 with heavy trucks or equipment.

D. Observe posted speed limits on the roads leading to the Site as well as all other public roadways. Observe legal and posted weight limits for roadways and bridges in all hauling activities.

E. All construction and Project-related traffic shall come to a complete and full stop when exiting the Site and yield the right-of-way to traffic on the public roadways, unless flagging protection is approved and implemented.

3.02 TRAFFIC CONTROL PLAN

A. Prepare a Traffic Control Plan including, but not limited to, the following:

1. Itemization of signs including type, size, shape, color, and location.
2. Channelization (e.g., cones, barrels, barricades).
3. Flagging and location(s).
4. Lighting.
5. Communication.
6. Road closures and time of road closures.
7. Special traffic patterns (e.g., pilot cars, one-way traffic lanes, detours).
8. Signs during non-work hours.
9. Designated entrances to the Project area.
10. Map and descriptions of the anticipated routes.

11. Description of the anticipated haul equipment.
12. Traffic control measures for all public roads, haul routes, and Site access points.
13. Locations of all signs, markers, barricades, and other traffic control devices to be used.
14. Routing of any detours required.

3.03 CONSTRUCTION REQUIREMENTS

A. Provide traffic control in full compliance with MUTCD during materials hauling and equipment operation or transport along public roadways. No tracked equipment or roller/compactors shall be driven on public roadways, rubber wheels and trailers only. All equipment delivered to the site shall be free of invasive weeds.

B. Store or park construction equipment, vehicles, materials, and debris a minimum of 30 feet from the edge of the travelled way. When it is not feasible to park equipment or store materials a minimum of 30 feet from the edge of the travelled way or behind guardrail, utilize adequate warning devices and protective measures.

C. Maintain at least one-way traffic at all times with continuous passage for emergency vehicles from either direction. Delay to the public shall be no longer than 10 minutes.

D. At the conclusion of daily construction activities, ensure that necessary traffic control measures remain in effect overnight and through the weekend, including barricades around any open excavations or other hazards.

3.04 TRAFFIC CONTROL DEVICES

A. Before placement for any stage of construction, all traffic control devices required for that stage shall be on-hand at the Site. Properly place, install, and operate all traffic control devices necessary for construction. Obtain approval of the placement and operation from Engineer before starting construction.

B. Properly maintain, clean, and operate traffic control devices during the entire length of use.

C. Immediately remove all traffic devices no longer needed for traffic control.

D. For operations completed in stages, place only signage applicable to the present stage of construction. Remove, turn, or cover with opaque material any signage not applicable to the existing conditions, during shutdowns longer than two (2) hours, at night, when not needed on weather days, holidays, and weekends so as not to be readable to oncoming traffic.

E. Set, size, and locate signs in a manner that they are visible to the equipment operators and other vehicles as necessary.

F. All traffic control devices furnished by Contractor shall remain the property of Contractor. Repair or replace traffic control devices when damaged or destroyed by traffic or other activities, or when traffic control devices fail to function properly at no cost to the Owner.

END OF SECTION

DIVISION 2 – SITEWORK

SECTION 02051

MONITORING WELL DISPOSITION

(NOT USED)

END OF SECTION

SECTION 02110

SITE CLEARING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Removal of surface debris.

B. Clearing and grubbing of all vegetation including trees, shrubs, and grass.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.01 PROTECTION

A. Locate, identify, and protect existing utilities from damage.

B. Protect benchmarks, existing structures, and utilities from damage or displacement.

3.02 CLEARING

A. Clear all surface debris and vegetation, including the root zone, from all areas impacted by the Work and as required for access to site and execution of Work as shown on the Plans.

B. Remove identified trees, shrubs, stumps, roots, brush, rubbish, and other objectionable material within work areas and from the surfaces of all borrow areas and stockpile sites.

3.03 REMOVAL

A. Remove debris, rock, and extracted vegetation and dispose of materials.

B. Stockpile screened material to be used as topsoil for revegetation.

END OF SECTION

SECTION 02140

CONSTRUCTION DEWATERING

PART 1 GENERAL

1.01 SECTION INCLUDES

This Section includes a description of subsurface conditions and specifies dewatering requirements and procedures necessary during installation and use of the following:

A. Dewatering Pumps and Appurtenances

B. Coffer Dams

C. Dewatering Wells and/or Wellpoints

1.02 RELATED SECTIONS

A. Section 02220 - Excavating

1.03 SUBMITTALS

Contractor shall submit a dewatering plan no later than ten (10) days prior to the start of in-channel work to be reviewed and approved by the Board of Controls and Engineer. No Work may commence until all approvals of the dewatering plan have been secured.

1.04 DESCRIPTION OF SUBSURFACE CONDITIONS

A. The site condition description provided is based on surface observations conducted by Biota Research & Consulting (Biota). No subsurface exploration was conducted.

1. General: Within the project area, the Big Wood River flows in a southern direction and is split into two main channels. The channel bed is covered by a thick layer of alluvium with no obvious signs of bedrock. The channel has a wide floodplain which is inundated at events above the average annual peak flow.

2. Groundwater: No groundwater discharge points were observed during the field work. Therefore, it is anticipated that local groundwater levels are at or below the stream channel water surface elevations. The subsurface conditions at the site may lead to unstable excavations if proper dewatering controls are not implemented and maintained during construction.

B. Contractor may conduct field investigations, at their own cost with written approval from the Board of Controls.

PART 2 PRODUCTS

2.01 EQUIPMENT AND MATERIALS

A. Excavation Dewatering

1. Contractor shall provide and maintain on site: all equipment, piping, fittings, and appurtenances necessary to collect, pump, and convey discharge water to adequately dewater all open excavations; and spare fittings, pumps and other necessary materials to maintain the dewatering system for continuous operation.

2. Contractor shall provide and maintain primary and backup power supplies and power distribution systems as necessary to operate the dewatering system without significant interruption. All branch circuits shall be installed to a minimum burial depth of 24 inches (direct burial cable will be permissible as well as conductor in conduit). All grounding shall be provided per the NEC. The power plants and their appurtenances shall be protected from weather and other potentially detrimental conditions at the site (e.g., dust, impacts, etc.)

B. Contractor shall provide all necessary equipment and materials to collect and pump dewatering flows.

PART 3 EXECUTION

3.01 DEWATERING

A. The Contractor shall fully implement all measures and precautions necessary to ensure the safety of workers, and the protection of the Work (including maintenance of integrity against rupture and/or heave of the bottom of the excavation) during excavation and dewatering, including, but not limited to, full implementation of the requirements of this Section of the Specifications.

B. Contractor shall provide backup and spare equipment (as specified in Part 2.01), immediately available for installation and/or operation to minimize any interruption in the required pumping. In the event of pump failure for reasons beyond the Contractor's ability to control, all excavation below the water table or in locations that otherwise require active dewatering shall cease; Engineer shall be immediately notified; and Contractor shall implement repairs and resume pumping as soon as possible.

C. All water from the dewatering operations taken from open sumps or trenches shall be routed through a sediment control BMP prior to discharging to waters of the State.

END OF SECTION

SECTION 02200

EXCAVATING

PART 1 GENERAL

1.01 DESCRIPTION

A. Work Included: Work under this section includes over excavation of the rock ramp where necessary, bankfull bench, and 2 log structures as presented in the Plans.

1.02 RELATED SECTIONS

Section 02110 - Site Clearing
Section 02140 - Construction Dewatering
Section 02270 - Stream Channels and Diversions

1.03 REGULATORY REQUIREMENTS

A. Sheeting, Shoring, and Bracing: Except where trench banks are cut back on a stable slope, provide and maintain all sheeting, shoring, and bracing necessary to protect workers, and to protect adjoining grades and structures from caving, sliding, erosion or other damage in accordance with Occupational Safety and Health Standards 29 CFR Part 1926 - Construction Standards for Excavations; the Site Specific Health and Safety Plan; and other applicable codes and governing authorities.

1.04 FIELD MEASUREMENTS

A. Verify that survey benchmarks and intended reference elevations for the Work indicated on the Plans are accurate as indicated. Notify Engineer of any discrepancies.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.01 PREPARATION

A. Identify required lines, levels, contours, and datum.

B. Accurately locate, identify, and protect from damage all utilities, benchmarks and monitoring wells not designated for demolition. Contractor must verify that all

utilities and water lines through the work area have been accurately located prior to commencing any excavation activities.

C. Protect adjacent structures from damage by excavation work.

D. Contractor shall maintain the minimum utility offset, as required by the utility owner, between the utility and the excavation surface.

3.02 OTHER EXCAVATION

A. Grade top perimeter of excavation and other work areas to prevent surface runoff from draining into the excavation. Excavated areas shall be graded to promote surface drainage and discourage ponding prior to closure.

B. The use of explosive materials will not be permitted.

C. Excavation shall conform to the boundaries, elevations and excavation slopes shown on the Plans.

3.03 TOLERANCES

A. Excavate to within ± 0.3 feet of elevation and location as shown by the Plans.

B. Maintain excavation dewatering sufficiently to allow for visual inspection and as-built surveying, and to maintain stable side slopes.

C. Excavate channels to within +/- 0.3 feet of elevation and location and within +/- 0.1% of grade as shown on the Plans.

3.04 FIELD QUALITY CONTROL

A. Provide for access, visual inspection and surveying of excavation surfaces.

B. Contractor shall perform all initial control and grade staking during construction, if necessary. Final compliance data will be reviewed by the Engineer.

3.05 PROTECTION

A. Protect excavations as required to prevent cave-in or loose soil from falling into excavation.

B. Notify Engineer of conditions encountered which appear unsafe in maintaining excavation as designated on Plans.

END OF SECTION

SECTION 02210

FILL MATERIALS AND PLACEMENT REQUIREMENTS

PART 1 GENERAL

1.01 SECTION INCLUDES

This section specifies fill materials, borrow areas/sources of fill materials, and fill placement requirements for the following:

A. Diversion dam fill.

B. Rock ramp

1.02 RELATED SECTIONS

Section 02270 - Stream Channels and Diversions

PART 2 PRODUCTS

2.01 SOIL MATERIALS

A. Rock Ramp Alluvium: See Section 02270

B. Ramp Rock and Bench Rock: See Section 02270

2.02 SOURCE QUALITY CONTROL

A. Compliance testing will be requested by Engineer at their discretion.

PART 3 EXECUTION

3.01 SOURCE OF MATERIALS

A. Contractor shall be responsible for locating a suitable source of Ramp Rock and Bench Rock material.

3.02 PREPARATION FOR PLACEMENT

A. Identify required lines, levels, contours, and datum.

B. Stake and flag locations of known utilities.

C. Locate, identify, and protect utilities that remain from damage, including all monitoring wells not designated for demolition. Notify utility companies for utilities which may be affected by the work, or which cross the work area.

D. Protect benchmarks and existing structures from excavating equipment and vehicular traffic.

E. Compact subgrade or existing underlying fill to a minimum depth of 12 inches to meet density requirements for subsequent fill materials as specified in Part 3.04. This requirement does not apply to rock ramp or bankfull bench, dikes or roads placed over soft sediments. In the case of rock ramp and bankfull benches placed over soft sediments, compaction should be to the maximum attainable without degradation of the subgrade that would affect later fill placement. The Engineer shall be solely responsible for this determination.

F. Cut out soft areas of subgrade or existing underlying fill that cannot be compacted as specified in paragraph E, above, as approved by engineer. Backfill with material type specified for subsequent fill, and compact to minimum density requirements for subsequent fill material as specified in Part 3.04.

G. Dewater area as needed prior to fill placement. Unless directed by Engineer, fill may not be placed if groundwater or ponded surface water is present.

3.03 PLACEMENT

A. General Backfilling of Excavated Areas and Other General Non-Structural Fill

1. Place fill in lifts not to exceed 1 foot in loose thickness. Thinner lifts must be used if required to achieve compaction criteria presented in Part 3.04 paragraph A, below.

2. Finish grade to within $\pm$ 0.3 foot of line and $\pm$ 0.1 % of grade shown on the Plans.

3. Maintain positive surface drainage to minimize ponding of water on fill.

4. Material shall not be frozen when placed. Material shall not be placed on ice. Material shall not be placed on frozen material unless directed by Engineer. Frozen material shall be scarified, disked, or otherwise made suitable to receive subsequent fill and provide an acceptable bond between lifts, as approved by Engineer.

B. Bankfull Bench.

1. All surfaces upon or against which fill will be placed, including previously placed and compacted layers, shall be free of all objectionable materials in accordance with Section 02110 - Site Clearing, shall be relatively flat in

preparation for subsequent fill placement, shall be moist but free of standing or ponded water, unless otherwise approved by the Engineer, and shall be scarified as necessary so as to provide a suitable bond between the existing and subsequently placed material.

2. Place fill of type designated on Plans in lifts not to exceed 12 inches in loose thickness. This requirement may be waived by the Engineer and lifts up to 2 feet in loose thickness may be allowed for the first lift over soft subgrade. Finish grade to within ± 0.3 foot of line shown on the Plans for slopes, and within + 0.1 foot on crests.

3. Material shall not be frozen when placed. Material shall not be placed over ice. Material shall not be placed on frozen material unless directed by Engineer. Frozen material shall be thawed, scarified, disked or otherwise made suitable to receive subsequent fill and provide an acceptable bond between lifts, as approved by Engineer.

4. When the bench is constructed against a bank or where new fill is to be placed against an existing bank, all loose debris and materials must first be cleared and scraped from the existing surface. Bench or step the original bank by cutting into it horizontally a minimum distance of 12 inches or two (2) times the largest size particle in the fill being places, whichever is greater.

5. Add water to fill prior to compaction to obtain the Optimum Moisture Content required to achieve satisfactory compaction unless otherwise specified. Use moisture addition procedures, as approved by the Engineer. Moisture shall be evenly distributed throughout the fill material.

6. Provide hand-operated compaction equipment in areas closer than 2 feet from structures (for special compaction).

3.04 COMPACTION

A. General Backfilling of Excavated Areas and Other Non-Structural Fill Density: Materials shall be compacted sufficiently to support traffic by construction equipment, construction surveying, and inspection vehicles.

3.05 SITE GRADING

A. Grade all areas including excavated, filled, and transition areas to obtain the finished surface shown on Plans, to the tolerances specified in Part 3.03 above. Finished surface shall be reasonably smooth, compacted, and free from irregular surface changes. Finished surfaces shall have positive drainage to prevent ponding of water.

3.06 FIELD QUALITY CONTROL

A. Contractor shall perform all initial control and grade staking during construction the Contractor deems necessary in addition to the GPS controlled equipment requirement. Final compliance data will be collected and reviewed by Engineer. Contours and elevations not meeting the requirements of these specifications shall be corrected.

END OF SECTION

SECTION 02220
TRENCH EXCAVATION AND BACKFILL

(NOT USED)

END OF SECTION

SECTION 02270

STREAM CHANNELS AND DIVERSIONS

PART 1 GENERAL

1.01 SECTION INCLUDES

This Section includes all grading, excavation, and backfill required for all channel modification construction needed to complete the Work. This shall include furnishing, hauling and placing ramp rock and bench rock material; and furnishing, placing and constructing boulder clusters for rock ramp construction.

1.02 RELATED SECTIONS

Section 02210 - Fill Materials and Placement Requirements

1.03 SUBMITTALS

Submit the following to the Engineer:

A. Materials Source/Product Data: Submit material source and manufacturer specifications on items proposed for use and as specified herein.

B. Laboratory Test Results: Submit data sheets and test results from compliance testing of materials supplied by Contractor to the Engineer for review.

1.04 REFERENCES

Codes and Standards: Comply with provisions of following, except as otherwise indicated:

A. AASHTO - M147 - Materials for Aggregate and Soil-Aggregate.

B. AASHTO T11 and T27 or ASTM C136 - Methods for Sieve Analysis of Fine and Coarse Aggregates

C. ASTM D75 - Standard Practice for Sampling Aggregates.

D. ASTM D422 - Standard Method for Particle-Size Analysis of Soils.

E. For Backfill and Compaction - Reference standards as listed in Section 02210, Part 1.04.

PART 2 PRODUCTS

2.01 RAMP ROCK AND BENCH ROCK

Rock shall be installed at the locations and to the dimensions indicated on the Plans. The stone shall be hard, durable, subrounded to angular in shape, resistant to weathering to water and to ice action; free of excess amounts of thin flat, and elongated pieces, free from overburden, spoil, shale, structural defects, and organic material. Neither breadth nor thickness of a single stone shall be less than 1/3 its length. The smaller stone shall be uniformly distributed throughout the work. The rock shall be manipulated by hand or machine methods sufficiently to secure a uniform surface and mass stability. Bulk specific gravity, saturated surface dry (SSD) shall not be less than 2.64. Riprap shall conform to the following gradation:

ROCK CLASS GRADATIONS			
Class	**% Of Total Weight That Must Be Smaller Than Given Size**	**Lower Equivalent Spherical Diameter (in)**	**Higher Equivalent Spherical Diameter (in)**
III	100 85 50 15	21 15 11 8	27 19 14 10

2.02 RAMP BOULDERS

Ramp boulders include large rocks to roughen the proposed ramp surface and low flow channel. See Plans for number required and approximate location. Boulders shall be hard, sound, and durable. They shall be free from segregation, seams, cracks, and other defects tending to destroy resistance to weather. All Boulders shall be sub-angular or round in shape and come from a rock quarry close to the Project site or from an alluvial source. Nominal diameters refer to the intermediate axis of the boulder. Use of on-site boulders to be determined by the Owner's Representative. Excavated and cleaned riprap from onsite may be used in place of any boulders where size and weight requirements are satisfied.

BOULDER SIZE REQUIREMENTS		
Type	**Nominal Diameter (ft)**	**Average Weight (pounds)**
Ramp	3.0 – 4.0	2,300 – 5,500

2.03 RAMP ALLUVIUM

Streambed aggregate rock for the rock ramp alluvium shall be installed at the locations and to the dimensions indicated on the Plans. The stone shall be naturally occurring hard, durable, water-rounded in shape, resistant to weathering to water and to ice action; free of excess amounts of thin flat, and elongated pieces, free from overburden, spoil, shale, structural defects, and organic material. Neither breadth nor thickness of a single stone

shall be less than 1/3 its length. The smaller stone shall be uniformly distributed throughout the work. The rock shall be manipulated by hand or machine methods sufficiently to secure a uniform surface and mass stability. Bulk specific gravity, saturated surface dry (SSD) shall not be less than 2.64. Streambed aggregate shall have a well-graded distribution of cobble sizes. Unless otherwise directed by the Engineer, Rock Ramp Alluvium shall be obtained from the floodplain bench cut area and the material stockpile located south of the project area and east of the Diversion 45 Canal (as identified in the Plans).

2.04 SOURCE QUALITY CONTROL

A. Tests and analysis of rock materials will be performed in accordance with applicable ASTM test methods.

B. If tests indicate materials do not meet specified requirements, change material and retest.

C. Compliance testing will be as requested by Engineer.

PART 3 EXECUTION

3.01 SOURCE OF MATERIALS

A. Contractor is responsible for locating suitable sources of ramp rock, bench rock and ramp boulders.

B. Ramp alluvium shall come from alluvium stockpile located south of the project area and east of the Diversion 45 Canal (as identified in the Plans), or as directed by the Engineer.

3.02 OTHER STORM FLOW DIVERSIONS

A. Other storm flow diversions may be constructed as needed to trap sediment and direct flows using Best Management Practices (BMPs). BMPs may include, but are not limited to, construction of temporary berms, sediment basins, ditches and channels. Such diversions and BMPs must be adequate to meet the requirements of the Wyoming Construction General Permit. Temporary storm runoff control BMPs may include, but are not limited to, silt fencing, straw bales, straw mulch, hydroseeding, and erosion control matting. Such measures must be implemented prior to beginning work in areas which would be impacted by storm flows.

3.03 EXCAVATION

A. All excavation for diversions or stream channel modifications shall meet with the specifications of Section 02200.

3.04 BERM CONSTRUCTION

A. Construction of all dikes for diversions or ditches shall meet with the specifications of Section 02210 related to embankments and structural fills.

3.05 RAMP ROCK AND BENCH ROCK

A. Filter material of suitable size shall exist or be placed beneath the rock in accordance with the details shown in the Plans.

B. Placement of rock shall start at the toe and proceed up the slope. The rock shall be placed such that damage to the bedding layer does not occur.

C. Any placement position other than those described above shall not be executed without Engineer approval. During operation of the excavator, the operator and observers shall be looking for signs of bank instability. Such signs include but are not limited to: 1) tension cracks near working area; 2) signs of active bank slumping and bulging; and 3) changes in seepage around work pads and face of slope. If signs of instability are observed, work shall cease in the area of concern, until recommencement of work is approved by Engineer.

C. Bench Rock voids shall be covered with natural occurring alluvium material to fill voids and aesthetically mask the bench rock to appear like native gravel material.

3.06 RAMP BOULDERS

A. Filter material of suitable size shall exist or be placed beneath the boulders in accordance with the details shown in the Plans.

B. Placement of boulders shall start at the diversion dam and notch and proceed down the ramp. The boulders shall be placed such that damage to the bedding layer or diversion dam does not occur.

C. Final placement of ramp boulders shall be determined in the field by the Engineer.

3.07 RAMP ALLUVIUM

A. Ramp alluvium shall be placed at the locations and the dimensions indicated on the Plans.

B. Place ramp alluvium in one or more layers with a layer depth less than 1½ times the maximum dimension of the alluvium, but no greater than 1 foot. Placement shall be by methods that do not cause segregation or damage to the prepared surface. Place or rearrange individual cobbles to obtain a uniformly dense, compact, low permeability mass. Fill voids by machine or hand tamping before placing the next lift. Compact bed materials by mechanical means such as plate compactors, loaders, etc.

C. Fines shall be washed in until ponding occurs on the surface of each lift prior to placing next lift, if material placed in the dry. Once all the streambed aggregate has been placed and before the stream is open to stream flows, the Contractor shall wash in fines from selected on site materials approved by the Owner's Representative to seal the gravels to keep the introduced water on the surface and avoid having the stream go underground through the new bed material. If no on-site source available streambed sediment shall be imported for this purpose.

D. If streambed aggregate is placed in the dry, once fines have been washed in, the surface shall be flushed so flows coming off the new stream bed do not increase the turbidity by more than allowed by Idaho state water quality standards over existing levels in the upstream river, as approved by the Owner's Representative.

END OF SECTION

SECTION 02561

PIPE AND PIPE FITTINGS

(NOT USED)

END OF SECTION

SECTION 02710

GEOSYNTHETIC MATERIALS

(NOT USED)

END OF SECTION

SECTION 02910
SEEDING AND TILLAGE

PART 1 GENERAL

1.01 SECTION INCLUDES

A. This section includes ground surface preparation, furnishing all seeding, mulch, labor, equipment, and materials to revegetate the areas impacted during construction activities, temporary diversion channels, permanent stream channel alterations, and/or other areas shown on the Plans and described in the contract documents.

B. Unapproved areas of disturbance which are disturbed by the Contractor's operation will also require seeding and mulching. Any such disturbed areas will be considered as site damage and will not be measured or considered for payment.

1.02 RELATED SECTIONS

Section 02110 – Site Clearing
Section 02200 – Excavation
Section 02210 – Fill Materials and Placement Requirements
Section 02270 – Stream Channels and Diversions

1.03 SUBMITTALS

A. Submit the following to Engineer: Certificates of Compliance: Furnish certification that standards specified herein are met.

PART 2 PRODUCTS

2.01 SEED MIXTURES

A. Transitional reclamation seed mix shall be certified weed-free seed and meet the following criteria or an Engineer approved equivalent:

Common Name	Scientific Name	LBS/PLS per Acre*
Sandberg bluegrass	*Poa sandbergii*	0.6
Idaho fescue	*Festuca idahoensis*	1.8
Slender wheatgrass	*Elymus trachycaulus*	8.4
Blue flax	*Linum perenne*	0.6
Western yarrow	*Achillea millefolium*	0.1
Mountain brome	*Bromus carinatus*	6.0
Fowl bluegrass	*Poa palustris*	0.4
Rough bentgrass	*Agrostis scabra*	0.2
Artic rush	*Juncus arcticus*	0.1
Quickguard sterile triticale		30
	Total	**38.2**

* Drill Seed Rate - Double rate for broadcast seeding.

2.02 TOPSOIL

A. Use topsoil as specified in Section 02210. Topsoil shall be loose, friable, soil, free of excess acid and alkali. Assure topsoil does not contain objectionable amounts of sod, hard lumps, large rocks, or other undesirable material that would form a poor seedbed.

PART 3 EXECUTION

3.01 TOPSOIL

A. Place at least 6 – loose inches of topsoil in all areas to be seeded if underlying soil is not suitable to bed seed.

3.02 ALLOWABLE SEEDING MONTHS

A. Perform seeding when the temperature and moisture are favorable to germination and plant growth. Seed preferably before June 1 and after October 1 of each year.

3.03 SEEDBED PREPARATION, SOWING AND MULCHING

A. Clear the areas to be seeded of all debris, vegetation, and other material as determined by the Engineer to be detrimental to the preparation of the seedbed. The ground surface shall be brought to the lines and grades shown on the Plans to blend with the adjacent topography at the completion of grading. The cover soil shall be brought to a friable condition as directed by the Engineer. A disk, harrow or other implement approved by the Engineer shall be used. Assure the prepared seedbed surface is firm enough to prevent seed loss from high winds or normal rainfall. If rolling is required, perform rolling before seeding using a suitable roller, of a weight

appropriate to the soil conditions.

B. Sow seed in the areas described in these specifications and contract documents at the specified application rates.

C. Do not use wet, moldy or otherwise damaged seed in the work.

3.04 IRRIGATION

A. Supplemental sprinkler irrigation is recommended for the first 2 growing seasons to enhance germination rates and establishment. Supplemental irrigation is imperative if it is not feasible to seed in the fall. The project team will be responsible for all supplemental irrigation.

B. Irrigation should occur twice per week, or as needed, through the dry summer months (June – September). The specified species are native and adapted to the regional climate; therefore, no irrigation will be required after the stand has become established. The project team will be responsible for all supplemental irrigation.

END OF SECTION

SECTION 02920
PLANTING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Work in this section consists of furnishing all labor, equipment, and materials to establish trees, shrubs, vegetation removal, vegetation clumps, and hardwood cuttings in the plant list. Any substantive variance to this specification due to unforeseen conditions encountered on the site, weather conditions, plant availability, other construction activities, etc. must be approved by the Owner.

B. Areas outside the limit of disturbance shall be protected from damage by the Contractor. Any disturbance of trees, shrubs, or wetland areas outside the limit of disturbance shown on the Plans shall be restored by the Contractor at no additional expense to the Owner.

1.02 RELATED SECTIONS

Section 02110 – Site Clearing
Section 02200 – Excavation
Section 02210 – Fill Materials and Placement Requirements
Section 02270 – Stream Channels and Diversions

1.03 SUBMITTALS

A. Submit the following to Engineer: Certificates of Compliance: Furnish certification that standards specified herein are met.

PART 2 PRODUCTS

2.01 PLANT MATERIALS

A. Live Stakes

1. Dormant hardwood cuttings will be utilized to facilitate bioengineering techniques. Cuttings will be harvested from healthy vigorous plants during the dormant season (e.g., between dormancy/leaf abscission in the fall and bud break in the spring). Care will be taken to avoid harvesting cuttings from donor plants that exhibit signs of damage by disease or insects.

2. Cuttings will be comprised of willow, cottonwood, and dogwood stems that have a minimum bottom diameter of 1-inch, have a minimum length of 7 feet, and are relatively straight. Cuttings will be removed from the donor plant with a clean diagonal cut at the base of the stem using lopping shears,

bypass pruners, or a sharp saw. The diagonal surface will differentiate the bottom from the top and allow for easier installation.

3. The terminal buds and a few upper branches will be left intact until installation. All other branches will be removed by clipping them as close to the stem as possible. Caution will be used to avoid damaging the stem will trimming the lateral branches.

PART 3 EXECUTION

4.01 PLANT MATERIAL

A. Live Stakes/Bundles

1. Cuttings will be bundled by type (e.g., willow, dogwood, cottonwood) and kept cool, moist, and shaded during transportation and on-site storage. The cuttings will be soaked in water for 7-14 days prior to installation. At least half of the length of the cutting should be in contact with water while soaking, and cuttings should be weighted down when soaked. The treatment will utilize bundles of 3 cuttings; therefore, it will be necessary to break down any larger bundles into bundles of 3 for these treatments. Bundles will be installed on 4-foot spacing throughout the treatment area.

2. Bundles of dormant cuttings will be installed at a 45-degree angle to the bank, so the top of the bundle hangs out over the water. The preparation and installation procedure for the bundles will be as follows:

   a. Bundle 3 cuttings together in the same orientation (tops up and butts on the ground). Bundles will be as uniform as possible, and the butts of the cuttings will be at the same level to ensure that no butts will be out of the water when installed. Tie bundles one foot from the top end and one foot from the butt end with pre-stretch cotton string, sisal rope, cord or non-galvanized tie wire.

   b. Place toe rock (if called for in design specifications) in key trench and continue placing rock up the bank.

   c. Place track hoe bucket immediately above laid rock pointed down toward the base of the streambank at a 45-degree angle. Push the bucket down at a 45-degree angle until the teeth reach an elevation that is at least 4 feet below bankfull elevation and 1-foot below the groundwater level. Stop pushing down and lift the bucket enough to create a small opening between the bucket and the substrate beneath it.

d. Push the bundle into the hole by hand until the butt end is seated on the bottom of the hole. The butt end of the bundle must be 1 foot below the low-flow water table when installed.

e. Pull the bucket out of the hole dropping remaining soil/alluvium on the bundle. Ensure that the top of the bundle protrudes at least 1 foot above the rock ensuring that a minimum of 3 or 4 auxiliary buds remain on the above ground portion, and trim off any excess.

B. Brush Trenches

1. Brush trenches will be constructed on the bench and oriented perpendicular to the flow. The preparation and construction procedure for the brush trenches will be as follows:

a. Trenches will be excavated to the design specification of 10 feet by 2 feet (bottom dimensions) and will be excavated to a depth of 6 feet.
b. Install 10 pre-soaked cuttings along with other live/dead branches into each trench, ensuring that the butts of the cuttings are on the bottom of the trench and into the low-flow water table.
c. Add a small amount of fill into the bottom of the trench while holding the cuttings to ensure they remain upright and will not fall over while backfilling.
d. Carefully backfill the trench with a 50/50 mix of topsoil and native alluvium. Alternate dumping buckets of topsoil/alluvium and buckets of water into the trench or utilize a water pump to fully saturate the backfill after the trench has been backfilled to alleviate air pockets and maximize soil to stem contact.
e. Ensure that the top of the live cuttings protrude at least 1 foot above the floodplain ensuring that a minimum of 3 or 4 auxiliary buds remain on the above ground portion, and trim off any excess.
f. Trenches shall be arranged in a non-uniform pattern on the floodplain, as indicated on the plans.

END OF SECTION

DIVISION 3 - CONCRETE
SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 - GENERAL

1.01 SUMMARY

A. Section includes cast-in-place concrete, including formwork, reinforcement, concrete materials, mixture design, placement procedures, and finishes.

B. Related Requirements:

1. Section 03210 Reinforcing Steel

1.02 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Design Mixtures: For each concrete mixture.

C. Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement.

1.03 INFORMATIONAL SUBMITTALS

A. Material certificates.

B. Material test reports.

C. Formwork Shop Drawings: Prepared by or under the supervision of a qualified professional engineer, detailing fabrication, assembly, and support of formwork.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

B. Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

C. Codes and Standards: Comply with provisions of following codes, specifications, and standards, except where more stringent requirements are shown or specified:

1. ACI 318: Building Code Requirements for Reinforced Concrete.

2. ACI 301: Standard Specifications for Structural Concrete.

3. Concrete Reinforcing Steel Institute (CRSI): Manual of Standard Practice.

1.05 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified testing agency to perform preconstruction testing on concrete mixtures.

1.06 FIELD CONDITIONS

A. Cold-Weather Placement: Comply with ACI 306.1.

1. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in mixture designs.

B. Hot-Weather Placement: Comply with ACI 305.1.

PART 2 - PRODUCTS

2.01 CONCRETE, GENERAL

A. ACI Publications: Comply with the following unless modified by requirements in the Contract Documents:

1. ACI 301
2. ACI 117

2.02 FORM-FACING MATERIALS

A. Smooth-Formed Finished Concrete: Form-facing panels that provide continuous, true, and smooth concrete surfaces. Furnish in largest practicable sizes to minimize number of joints.

B. Rough-Formed Finished Concrete: Plywood, lumber, metal, or another approved material. Provide lumber dressed on at least two edges and one side for tight fit.

2.03 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A615/A615M, Grade 60 (Grade 420), deformed.

B. Plain-Steel Welded-Wire Reinforcement: ASTM A1064/A1064M, plain, fabricated from as-drawn steel wire into flat sheets.

C. Deformed-Steel Welded-Wire Reinforcement: ASTM A1064/A1064M, flat sheet.

D. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars and welded-wire reinforcement in place. Manufacture bar supports from steel wire, plastic, or precast concrete according to CRSI's "Manual of Standard Practice."

2.04 CONCRETE MATERIALS

A. Cementitious Materials:

1. Portland Cement: ASTM C150/C150M, Type I/II.
2. Fly Ash: ASTM C618, Class C or Type F

B. Normal-Weight Aggregates: ASTM C33/C33M, graded.

1. Maximum Coarse-Aggregate Size: 1- inch (19 mm) nominal.
2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Air-Entraining Admixture: ASTM C260/C260M.

D. Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

1. Water-Reducing Admixture: ASTM C494/C494M, Type A.
2. Retarding Admixture: ASTM C494/C494M, Type B.
3. Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type D.
4. High-Range, Water-Reducing Admixture: ASTM C494/C494M, Type F.
5. High-Range, Water-Reducing and Retarding Admixture: ASTM C494/C494M, Type G.
6. Plasticizing and Retarding Admixture: ASTM C1017/C1017M, Type II.

E. Water: ASTM C94/C94M.

2.05 RELATED MATERIALS

A. Expansion- and Isolation-Joint-Filler Strips: ASTM D1751, asphalt-saturated cellulosic fiber.

2.06 CONCRETE MIXTURES, GENERAL

A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301 (ACI 301M).

B. Cementitious Materials: Limit use of fly ash to not exceed 25 percent of cement content by weight.

C. Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing or plasticizing admixture in concrete, as required, for placement and workability.
2. Use water-reducing and -retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions.
3. Use water-reducing admixture in pumped concrete, concrete for heavy-use industrial slabs and parking structure slabs, concrete required to be watertight, and concrete with a w/c ratio below 0.50.

2.07 CONCRETE MIXTURES FOR BUILDING ELEMENTS

A. Normal-Weight Concrete:

1. Minimum Compressive Strength: 4500 psi (31 MPa) at 28 days.
2. Maximum W/C Ratio: 0.45.
3. Slump Limit: 3” for slabs and footings, 4 inches (100 mm) for walls, columns, and beams, before adding high-range water-reducing admixture or plasticizing admixture, plus or minus 1 inch (25 mm).
4. Air Content: 6 percent, plus or minus 1.5 percent at point of delivery for 1--inch (38-mm) nominal maximum aggregate size.

2.08 FABRICATING REINFORCEMENT

A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.09 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C94/C94M, and furnish batch ticket information.

1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.01 FORMWORK INSTALLATION

A. Design, erect, shore, brace, and maintain formwork, according to ACI 301 (ACI 301M), to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads.

B. Construct formwork so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117 (ACI 117M).

C. Chamfer exterior corners and edges of permanently exposed concrete.

3.02 EMBEDDED ITEM INSTALLATION

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.

3.03 STEEL REINFORCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

1. Do not cut or puncture vapor retarder. Repair damage and reseal vapor retarder before placing concrete.

3.04 JOINTS

A. General: Construct joints true to line with faces perpendicular to surface plane of concrete.

B. Construction Joints: Install so strength and appearance of concrete are not impaired, at locations indicated or as approved by Engineer.

C. Isolation Joints in Slabs-on-Grade: After removing formwork, install joint-filler strips at slab junctions with vertical surfaces, such as column pedestals, foundation walls, grade beams, and other locations, as indicated.

3.05 WATERSTOP INSTALLATION

A. Waterstops: Install in construction joints and at other locations indicated, according to manufacturer's written instructions.

3.06 CONCRETE PLACEMENT

A. Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.

B. Deposit concrete continuously in one layer or in horizontal layers of such thickness that no new concrete is placed on concrete that has hardened enough to cause seams or planes of weakness. If a section cannot be placed continuously, provide construction joints as indicated. Deposit concrete to avoid segregation.

1. Consolidate placed concrete with mechanical vibrating equipment according to ACI 309 (ACI 301M).

C. Do not use vibrators to transport concrete inside forms. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than visible effectiveness of machine. Place vibrators to rapidly penetrate placed layer and at least 6 inches into preceding layer. Do not insert vibrators into lower layers of concrete that have begun to set. At each insertion limit duration of vibration to time necessary to consolidate concrete and complete embedment of reinforcement and other embedded items without causing segregation of mix.

D. Cold-Weather Placing: Comply with provisions of ACI 306 and as follows:

1. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.

2. Do not use frozen materials or materials containing ice or snow.

3. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

4. Do not use calcium chloride, salt, and other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.

E. Hot-Weather Placing: When hot weather conditions exist that would seriously impair quality and strength of concrete, place concrete in compliance with ACI 305 and the following:

1. Cool reinforcing steel so steel temperature will not exceed the ambient air temperature immediately before embedment in concrete.

2. Fog spray forms, reinforcing steel, and subgrade just before concrete is placed.

3. Upon prior approval by the Engineer, use water-reducing retarding admixture as needed due to high temperatures, low humidity, or other adverse placing conditions.

3.07 FINISHING FORMED SURFACES

A. Rough-Formed Finish: As-cast concrete texture imparted by form-facing material with tie holes and defects repaired and patched. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces not exposed to public view.

B. Smooth-Formed Finish: As-cast concrete texture imparted by form-facing material, arranged in an orderly and symmetrical manner with a minimum of seams. Repair and patch tie holes and defects. Remove fins and other projections that exceed specified limits on formed-surface irregularities.

1. Apply to concrete surfaces exposed to public view.

C. Rubbed Finish: Apply the following to smooth-formed-finished as-cast concrete where indicated:

1. Smooth-Rubbed Finish: Not later than one day after form removal, moisten concrete surfaces and rub with carborundum brick or another abrasive until producing a uniform color and texture. Do not apply cement grout other than that created by the rubbing process.
2. Grout-Cleaned Finish: Wet concrete surfaces and apply grout of a consistency of thick paint to coat surfaces and fill small holes. Mix 1 part portland cement to 1-1/2 parts fine sand with a 1:1 mixture of bonding admixture and water. Add white portland cement in amounts determined by trial patches, so color of dry grout matches adjacent surfaces. Scrub grout into voids and remove excess grout. When grout whitens, rub surface with clean burlap and keep surface damp by fog spray for at least 36 hours.
3. Cork-Floated Finish: Wet concrete surfaces and apply a stiff grout. Mix 1 part portland cement and 1 part fine sand with a 1:1 mixture of bonding agent and water. Add white portland cement in amounts determined by trial patches, so color of dry grout matches adjacent surfaces. Compress grout into voids by grinding surface. In a swirling motion, finish surface with a cork float.

D. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces adjacent to formed surfaces, strike off smooth and finish with a texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise indicated.

3.08 CONCRETE PROTECTING AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with ACI 306.1 for cold-weather protection and ACI 301 (ACI 301M) for hot-weather protection during curing.

B. Evaporation Retarder: Apply evaporation retarder to unformed concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h (1 kg/sq. m x h) before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.

C. Formed Surfaces: Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces. If forms remain during curing period, moist cure after loosening forms. If removing forms before end of curing period, continue curing for remainder of curing period.

D. Cure concrete according to ACI 308.1, by one or a combination of the following methods:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days.
2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover for curing concrete, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Cure for not less than seven days. Immediately repair any holes or tears during curing period, using cover material and waterproof tape.
3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating and repair damage during curing period.

    a. Removal: After curing period has elapsed, remove curing compound without damaging concrete surfaces by method recommended by curing compound manufacturer unless manufacturer certifies curing compound does not interfere with bonding of floor covering used on Project.

4. Curing and Sealing Compound: Apply uniformly to floors and slabs indicated in a continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall

within three hours after initial application. Repeat process 24 hours later and apply a second coat. Maintain continuity of coating and repair damage during curing period.

E. Structure wall shall cure for a minimum of 3 days and until achieving a required compressive strength of 3500 psi prior to backfilling. Backfilling of structure wall shall be conducted to avoid or minimize the potential for unbalanced stresses against the structure wall.

3.09 CONCRETE SURFACE REPAIRS

A. Defective Concrete: Repair and patch defective areas when approved by Engineer. Remove and replace concrete that cannot be repaired and patched to Engineer's approval.

3.010 QUALITY CONTROL TESTING DURING CONSTRUCTION

A. General: Contractor shall conduct sampling and testing for quality control during placement of concrete. Testing shall be conducted by an ACI certified concrete technician. Results of the testing shall be submitted to the Engineer. Testing shall include the following:

1. Sampling Fresh Concrete: ASTM C 172, except modified for slump to comply with ASTM C 94.

2. Slump: ASTM C 143. Conduct test every day of placement for every 25 cy and more frequently if batching appears inconsistent. Conduct with strength tests.

3. Air Content: ASTM C 231 pressure method. Conduct with slump test.

4. Concrete Temperature. Conduct with slump tests.

5. Compression Test Specimen: ASTM C 31. One set of 4 cylinders per day and every 100 cy for each class of structural concrete.

6. Compressive Strength Tests: ASTM C 31. Test one cylinder at 3 days or 7 days and two at 28 days. One additional field cure cylinder test shall be made when in-situ strengths are desired at a different time period. One cylinder shall be used as a duplicate.

7. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted but shall not be used as the sole basis for acceptance or rejection.

8. Additional Tests: When test results indicate specified concrete strengths and other characteristics do not conform with those specified herein, the Engineer may require additional tests of in-place concrete. The Contractor shall pay for such additional tests. Additional tests may include tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42.

END OF SECTION

DIVISION 5 – METALS

SECTION 05110

SHEET PILING

(NOT USED)

END OF SECTION

SECTION 05120

STRUCTURAL STEEL FRAMING

(NOT USED)

END OF SECTION

Appendix A Construction Plans

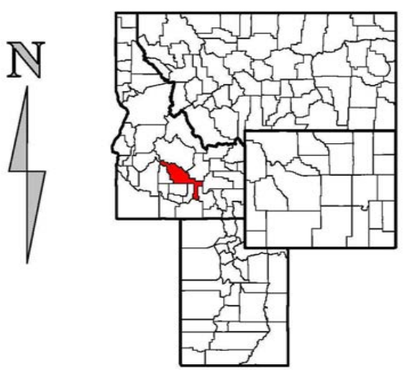
BIG WOOD RIVER DIVERSION DAM REMEDIATION PROJECT
DIVERSION 45 - CITY OF BELLEVUE PROPERTY, IDAHO
100% DESIGN PLANS

PROFESSIONAL ENGINEER LICENSED 17328 STATE OF IDAHO CHAD E BAILEY

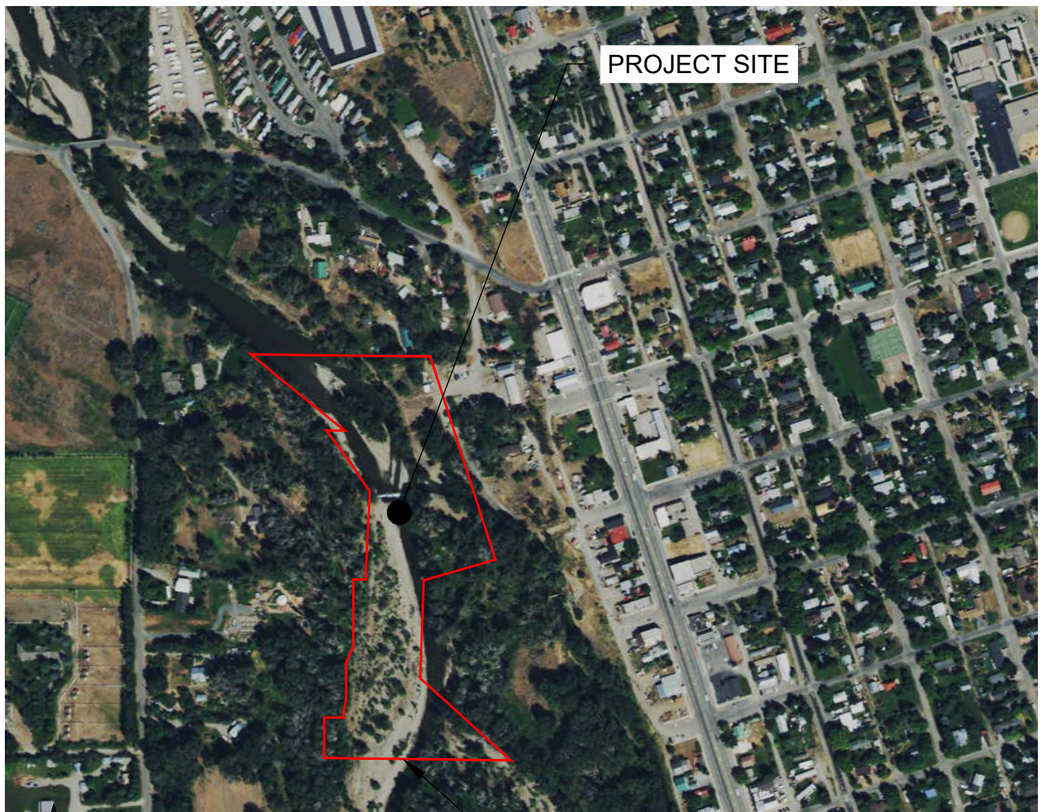
PREPARED FOR:
BOARD OF CONTROLS FOR THE WOOD RIVER VALLEY
IRRIGATION DISTRICT 45 AND TRIANGLE IRRIGATION DISTRICT
PO BOX 736, BELLEVUE, ID 83313
AND TROUT UNLIMITED: 910 W. MAIN ST., SUITE 342, BOISE, ID 83702

DRAWING INDEX

Project Locator Map



Blaine County, Idaho



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TITLE SHEET

BIG WOOD RIVER DIVERSION DAM REMEDIATION PROJECT
CITY OF BELLEVUE, IDAHO

REV.	DATE	BY	DESC
0	3-16-2021	CB	100% DESIGN

SCALE: 1" = 500'

UNITS: US FOOT

BASEMAP SOURCE: AERIAL IMAGERY - JUNE 2017

SHEET 1

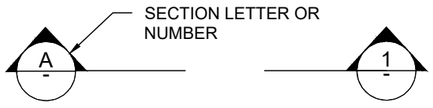
F:\PROJECTS\TU_BWR_DIVERSION\CAD\SHEET\1_COVER.DWG

ABBREVIATIONS

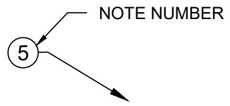
1H:1V	HORIZONTAL TO VERTICAL EXAGGERATION	PSI	POUNDS PER SQUARE INCH
%	PERCENT	RD	ROAD
APPROX.	APPROXIMATE	REV	REVISION #
DESC	DESCRIPTION	STA	STATION
DWG	DRAWING	TBD	TO BE DETERMINED
EG	EXEMPLI GRATIA, FOR EXAMPLE	TYP	TYPICAL
ELEV	ELEVATION	US	UNITED STATES
ESC	EROSION & SEDIMENT CONTROL	WSE	WATER SURFACE ELEVATION
EX.	EXISTING	XS	CROSS SECTION
FEMA	FEDERAL EMERGENCY MANAGEMENT AGENCY	YD	YARD
FT, '	FOOT	YR	YEAR
ID	IDAHO		
IDWR	IDAHO DEPARTMENT OF WATER RESOURCES		
IE	INVERT ELEVATION		
IN, "	INCH		
LBS	POUNDS		
LIDAR	LIGHT DETECTION AND RANGING		
MAINT.	MAINTENANCE		
NAD83	NORTH AMERICAN DATUM 1983		
NAVD88	NORTH AMERICAN VERTICAL DATUM 1988		
NTS	NOT TO SCALE		
PCF	POUNDS PER CUBIC FOOT		
PLS	PURE LIVE SEED		

SYMBOLS

SECTIONS ARE REFERENCED IN THE FOLLOWING MANNER:



NOTES ARE REFERENCED IN THE FOLLOWING MANNER:



PROPOSED PROJECT SEQUENCING:

1. PLACE STANDARD TEMPORARY EROSION AND SEDIMENT CONTROL (TESC) MEASURES.
2. INSTALL COFFERDAM TO PUSH PRIMARY FLOW PATH AWAY FROM PROPOSED DIVERSION NOTCH LOCATION.
7. NOTCH EXISTING DIVERSION STRUCTURE AND SEAL AS NECESSARY.
8. PLACE SALVAGED ALLUVIUM FROM DOWNSTREAM PROJECT, RAMP ROCK, AND BOULDERS TO CONSTRUCT ROUGHENED RAMP.
9. CUT EXISTING BAR TO CONSTRUCT BENCH SURFACE.
10. INSTALL SALVAGED LWD WITHIN BENCH AND INSTALL WOOD VEGETATION CUTTINGS.
11. INSTALL BENCH ROCK FROM TOP OF BENCH DOWN TO RAMP ROCK. INSTALL RAMP ROCK ON LEFT BANK UP TO BANKFULL.
12. RESTORE AND RE-VEGETATE WORK AREAS.
13. REMOVE TESC.

GENERAL NOTES:

1. HORIZONTAL PROJECTION: NAD83 IDAHO STATE PLANE, CENTRAL ZONE, US FOOT.
2. VERTICAL DATUM: NAVD88.
3. PROPOSED PROJECT DESIGN, CONSTRUCTION ACTIVITIES, AND MATERIALS SUBJECT TO APPROVAL BY OWNER.

GENERAL CONSTRUCTION NOTES:

1. THE CONTRACTOR SHALL CONSTRUCT THE DESIGN ELEMENTS IN ACCORDANCE WITH THE PLANS STAMPED "ISSUED FOR CONSTRUCTION". THESE PLANS WILL BE PROVIDED TO THE CONTRACTOR BY THE OWNER PRIOR TO CONSTRUCTION. WORK SHALL NOT BE DONE WITHOUT THE CURRENT SET OF APPROVED CONSTRUCTION PLANS.
2. CONTRACTOR SHALL CONTACT THE ONECALL OF IDAHO 1-800-342-1585 (OR 811) AND LOCAL UTILITY LOCATES BEFORE ANY EXCAVATION WORK BEGINS.
3. THE CONTRACTOR SHALL PURSUE WORK IN A CONTINUOUS AND EFFICIENT MANNER TO ENSURE TIMELY COMPLETION OF THE PROJECT.
4. ANY DELETERIOUS MATERIALS FOUND ON SITE ARE THE RESPONSIBILITY OF THE CONTRACTOR TO DISPOSE OF AT AN APPROPRIATE LOCATION.

GRADING & EROSION CONTROL NOTES:

1. CONSTRUCTION TO BE COMPLETED UNDER THE SUPERVISION OF DESIGN CONSULTANT.
2. CONSTRUCTION IMPLEMENTATION WILL BE DURING PERIOD OF LOW FLOW AND SHALL ADHERE TO IDWR AND USACE PERMIT REQUIREMENTS, IF APPLICABLE.
3. CONTRACTOR SHALL LIMIT DISTURBANCE TO THE BANK, ACCESS, AND STOCKPILE LOCATIONS AS SHOWN ON THE PLANS.
4. STOCKPILES OF EXCAVATED MATERIAL, IF THERE ARE ANY, WILL BE SURROUNDED WITH A SILT FENCE ON SIDES ADJACENT TO THE CHANNEL. ALL STOCKPILE AND ACCESS ROADS SHALL BE RECLAIMED AND REVEGETATED PRIOR TO DEMOBILIZATION.
5. TO THE EXTENT PRACTICABLE, EROSION AND SEDIMENT CONTROL (ESC) MEASURES SHALL BE INSTALLED PRIOR TO GRADING ACTIVITIES. AT ALL TIMES DURING PROJECT CONSTRUCTION, ALL TEMPORARY AND PERMANENT ESC MEASURES SHALL BE MAINTAINED AND REPAIRED AS NEEDED TO PREVENT ACCELERATED EROSION ON THE SITE AND ANY ADJACENT PROPERTIES. KEEP LAND DISTURBANCE TO A MINIMUM. PLAN THE PHASES OF CONSTRUCTION SO THAT ONLY THE AREAS ACTIVELY BEING DEVELOPED ARE EXPOSED. ALL OTHER AREAS SHOULD HAVE NATURAL VEGETATION PRESERVED, HAVE GOOD TEMPORARY COVER, OR PERMANENT VEGETATION ESTABLISHED.
6. ALL ESC MEASURES SHALL BE INSPECTED BY THE OWNER, OR OWNER APPROVED AGENT, AFTER ALL STORM EVENTS. ANY ESC MEASURES WHICH ARE DAMAGED PRIOR TO RE-ESTABLISHMENT OF VEGETATIVE COVER SHALL BE REPLACED IMMEDIATELY.
7. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE REMOVAL OF ALL TESC DEVICES AFTER THE ESTABLISHMENT OF FULL VEGETATION.
8. IF NECESSARY, IT IS THE CONTRACTORS RESPONSIBILITY TO OBTAIN NPDES STORMWATER PERMIT PRIOR TO START OF CONSTRUCTION.
9. PROTECTION OF ADJACENT WORK, UTILITIES, AND OTHER IMPROVEMENTS MUST BE ACCOMPLISHED. PROPERLY SLOPE CUTS TO PROVIDE STABILITY. TEMPORARY CUTS SHOULD BE NO STEEPER THAN ONE VERTICAL TO ONE HORIZONTAL. PERMANENT SLOPES SHOULD BE NO STEEPER THAN ONE VERTICAL TO TWO HORIZONTAL. COVER EXPOSED SLOPES IF EROSION OR RAVELING THREATENS.
10. UNLESS OTHERWISE SPECIFIED, ANY APPROPRIATE METHOD OF EXCAVATION WITHIN THE WORK LIMITS SHOWN MAY BE EMPLOYED WHICH, IN THE OPINION OF THE CONTRACTOR, IS CONSIDERED BEST, AND MEETS APPLICABLE SAFETY STANDARDS. THE CONTRACTOR SHALL TAKE WHATEVER PRECAUTIONS ARE NECESSARY TO MAINTAIN THE UNDISTURBED STATE OF THE NATURAL SOILS AT AND BELOW THE BOTTOM OF THE EXCAVATION. EXCAVATION AND GRADING WITHIN FLOODPLAIN AREAS SHALL BE COMPLETED TO THE LINES, GRADES, AND DIMENSIONS SHOWN ON THE DRAWINGS, OR AS DIRECTED IN THE FIELD BY THE OWNER'S REPRESENTATIVE. EXCAVATION SHALL CONFORM TO THE BOUNDARIES, ELEVATIONS, AND EXCAVATION SLOPES SHOWN ON THE DRAWINGS. LIMITS OF EXCAVATION SHALL BE THE MINIMUM REQUIRED TO COMPLETE THE WORK. GRADED AREAS SHALL BE SLOPED TO PROMOTE SURFACE DRAINAGE.

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GENERAL NOTES

BIG WOOD RIVER DIVERSION DAM REMEDIATION PROJECT
CITY OF BELLEVUE, IDAHO

REV.	DATE	BY	DESC
0	3-16-2021	CB	100% DESIGN

SHEET 2

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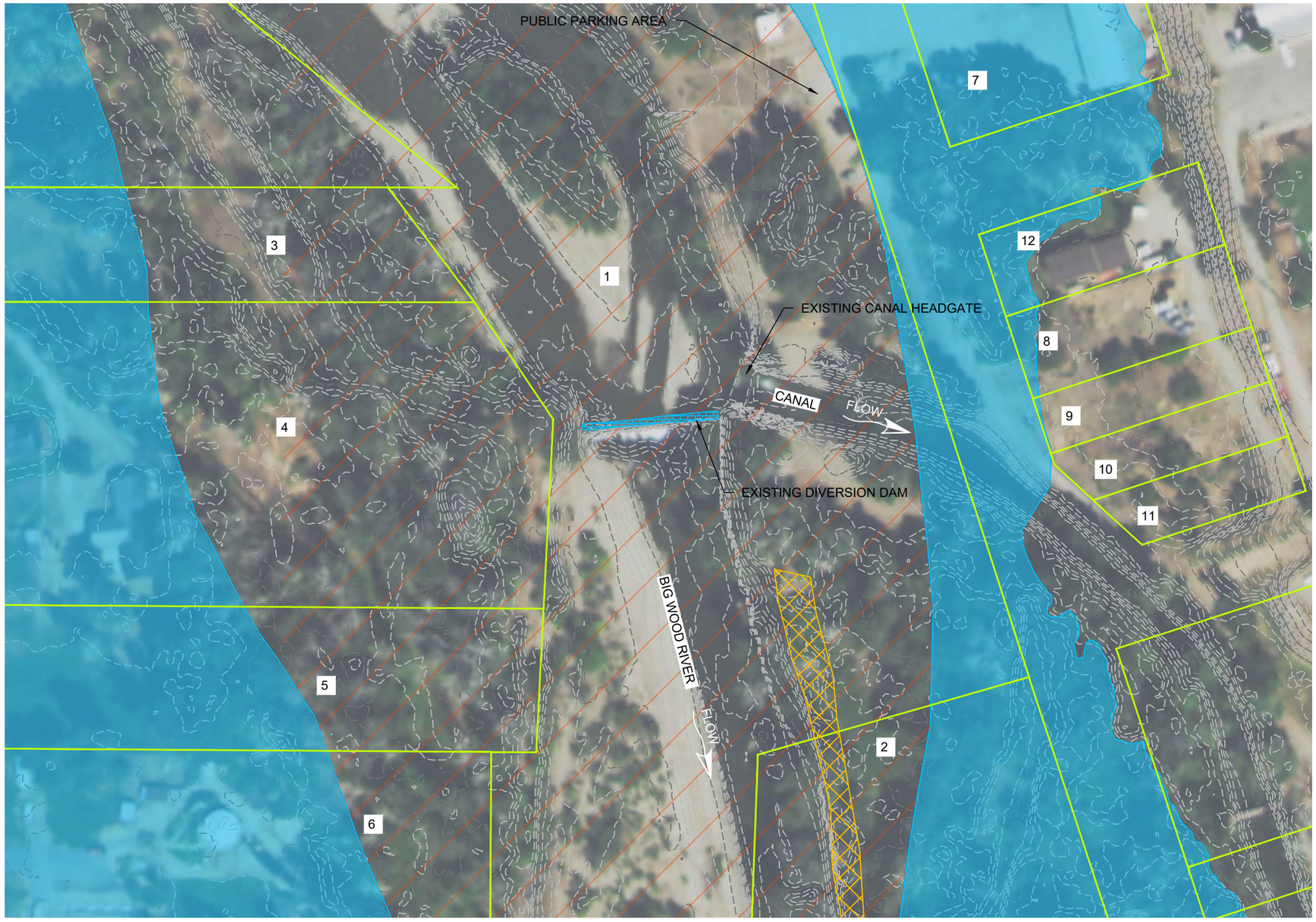

LEGEND

- EXISTING PARCEL BOUNDARY
- EXISTING CONTOUR MAJOR (5')
- EXISTING CONTOUR MINOR (1')
- EXISTING FEMA 1% FLOODPLAIN
- EXISTING FEMA FLOODWAY
- EXISTING LEVEE AREA
- EXISTING DIVERSION DAM

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EXISTING CONDITIONS PLAN

BIG WOOD RIVER DIVERSION DAM REMEDIATION PROJECT
CITY OF BELLEVUE, IDAHO

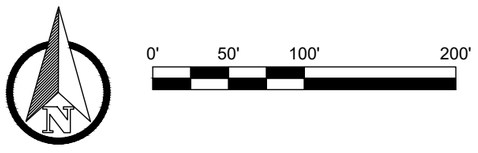
REV.	DATE	BY	DESC
0	3-16-2021	CB	100% DESIGN

SCALE: 1" = 100'

UNITS: US FOOT

BASEMAP SOURCE: AERIAL IMAGERY & LIDAR JUNE 2017; 7-2020 TOPO SURVEY

SHEET 3



PARCEL OWNERSHIP

	PARCEL #	OWNER 1	OWNER 2
1	RPB2N180360400	BELLEVUE CITY OF	
2	RPB2N180360470	BOUTTIER ROBERT F TRUSTE	DRINKERS OF THE WIND TRUST
3, 4, 5	RPB04210010010, 020, 030	PLOTT LARRY B	PLOTT MARILYN
6	RPB0420000002A	SCOTT CARRIE THOMAS	SCOTT TRAVIS WILLIAM
7	RPB0000090001A	BELLEVUE CITY OF	
8, 9, 10, 11	RPB0000091004A, 030, 02A, 01A	BELLEVUE CITY OF	
12	RPB0000091005A	MAZZOCCHI NEIL	MAZZOCCHI MARGARET

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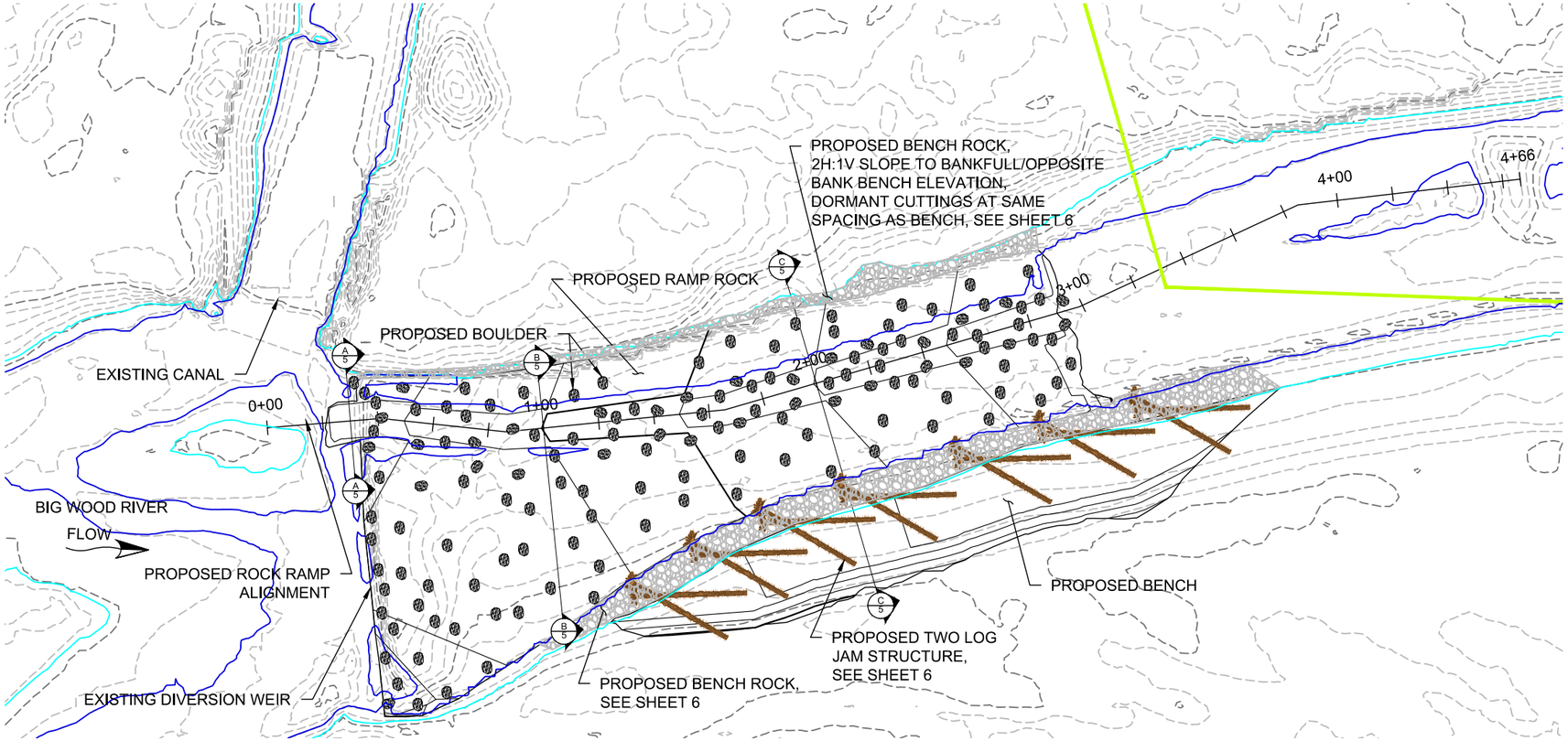
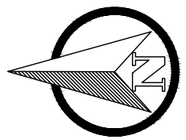
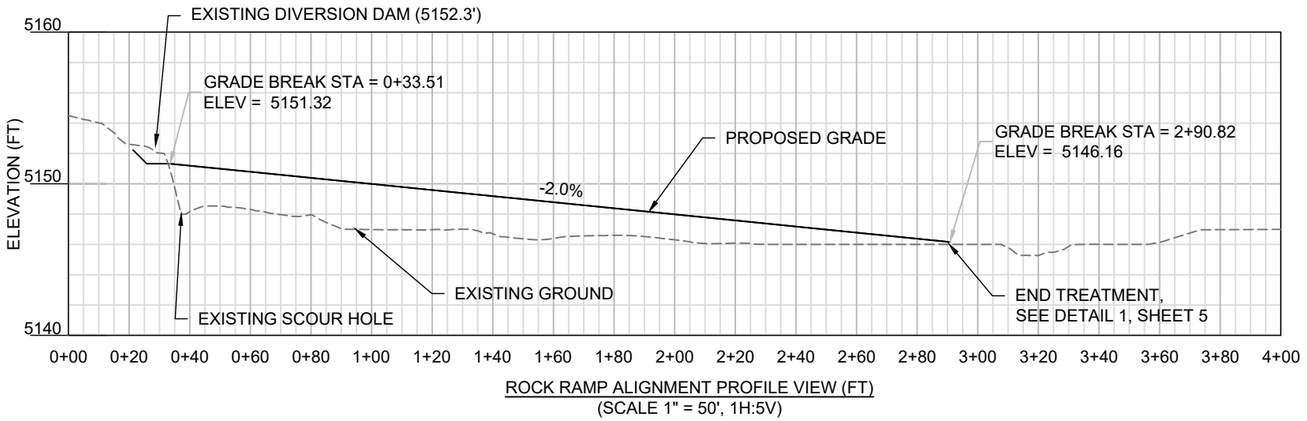




0' 25' 50' 100'

LEGEND

- EXISTING PARCEL BOUNDARY
- EXISTING CONTOUR MAJOR (5')
- EXISTING CONTOUR MINOR (1')
- PROPOSED CONTOUR MAJOR (5')
- PROPOSED CONTOUR MINOR (1')
- PROPOSED BANKFULL
- PROPOSED LOW FLOW



ROCK RAMP ALIGNMENT PROFILE VIEW (FT)
(SCALE 1" = 50', 1H:5V)

ROCK RAMP NOTES:

1. FINAL PLACEMENT OF BOULDER CLUSTERS SHALL BE DETERMINED IN THE FIELD BY THE ENGINEER.
2. BOULDERS SHALL HAVE A MINIMUM WEIGHT OF 3,700 LBS (3.5' DIA.), SEE SHEET 6 AND SPECIFICATIONS FOR DETAILS.
3. BOULDERS SHALL BE EMBEDDED A MINIMUM OF $\frac{1}{3}$ BOULDER HEIGHT INTO THE ROCK RAMP SUBSTRATE.
4. BOULDERS SHALL BE ANGULAR TO SUB-ROUNDED.

ROCK RAMP & BENCH		
CONST. ITEMS	**UNITS**	
RAMP ROCK	CY	1,167
ROCK RAMP ALLUVIUM	CY	639
CUT - BENCH	CY	258
BENCH ROCK	CY	290
LARGE WOOD (ROOTWAD)	EA	14
ROCK RAMP BOULDERS (42")	EA	141
TEMP. COFFERDAM	LF	350

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PROPOSED ROCK RAMP PLAN & PROFILE

BIG WOOD RIVER DIVERSION DAM REMEDIATION PROJECT
CITY OF BELLEVUE, IDAHO

REV.	DATE	BY	DESC
0	3-16-2021	CB	100% DESIGN

SCALE: 1" = 50'

UNITS: US FOOT

BASEMAP SOURCE: LIDAR JUNE 2017; 7-2020 TOPO SURVEY

SHEET 4

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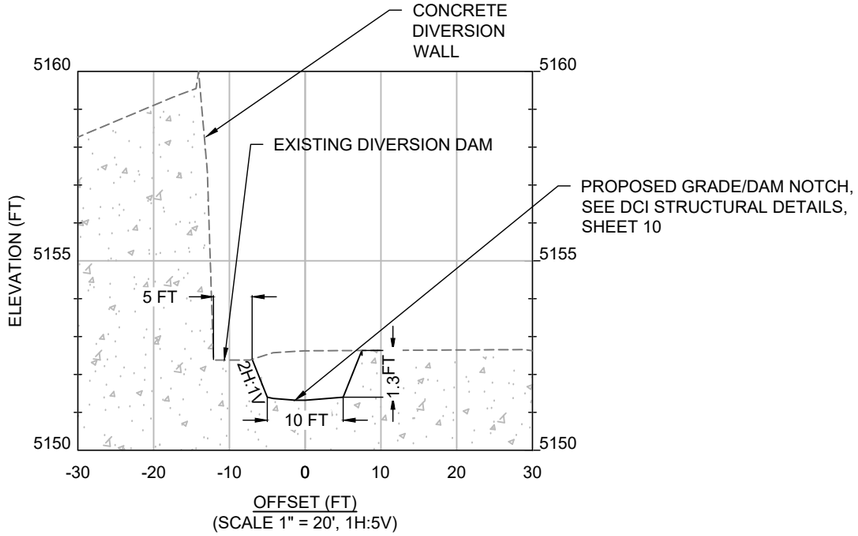
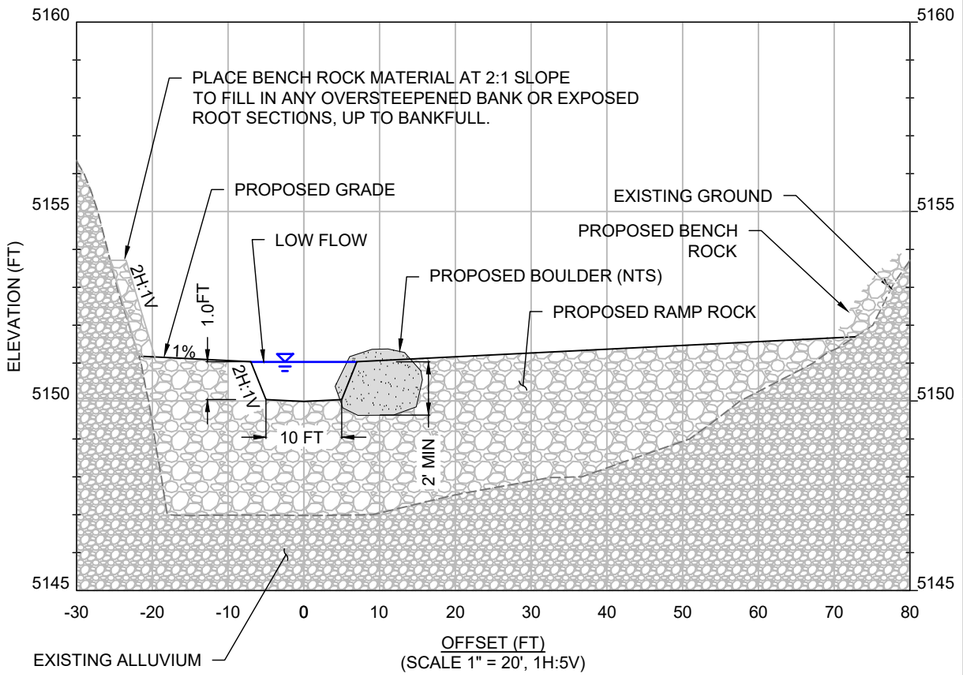
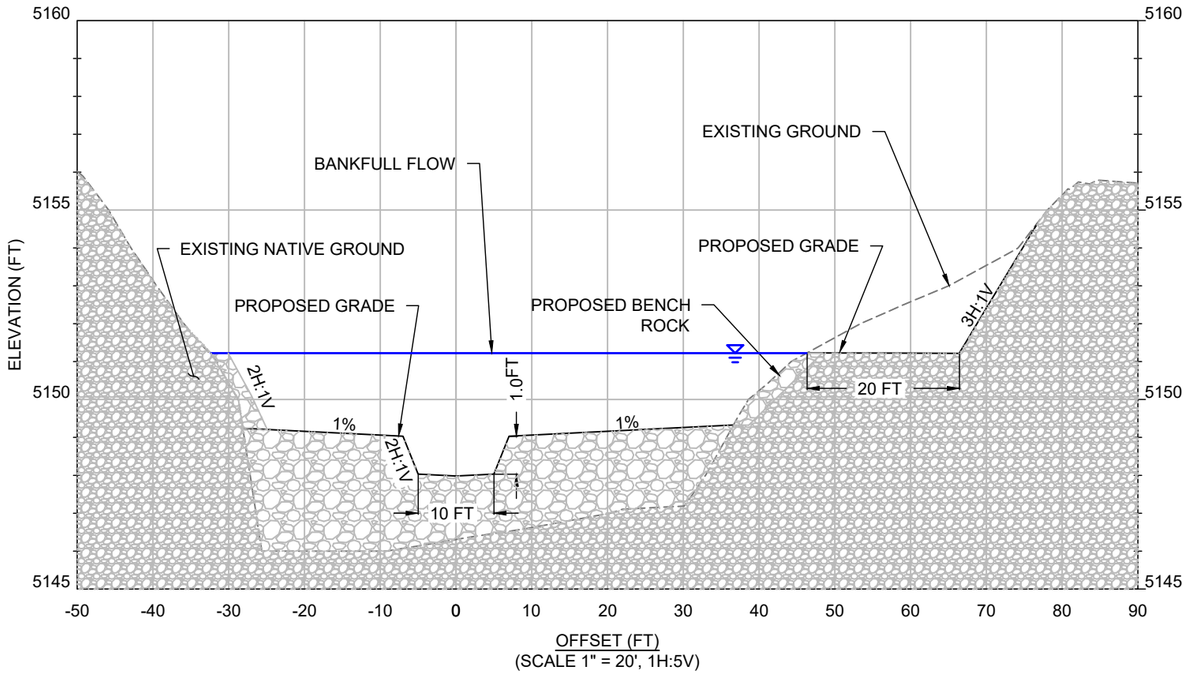


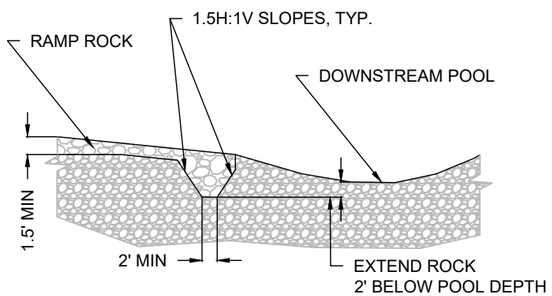
A/4 DAM NOTCH - TYPICAL SECTION



B/4 ROCK RAMP - TYPICAL SECTION



C/4 ROCK RAMP AND BENCH - TYPICAL SECTION



1/4 ROCK RAMP END TREATMENT - TYPICAL DETAIL
1" = 20'

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PROPOSED ROCK RAMP TYPICAL SECTIONS

BIG WOOD RIVER DIVERSION DAM REMEDIATION PROJECT
CITY OF BELLEVUE, IDAHO

REV.	DATE	BY	DESC
0	3-16-2021	CB	100% DESIGN

SCALE: 1" = 20'

UNITS: US FOOT

BASEMAP SOURCE: LIDAR JUNE 2017; 7-2020 TOPO SURVEY

SHEET 5

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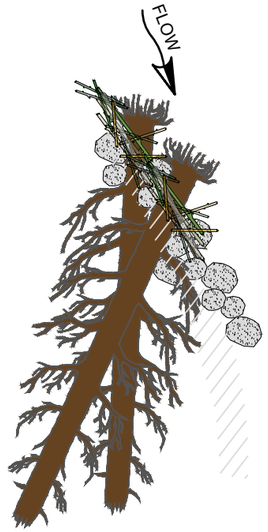
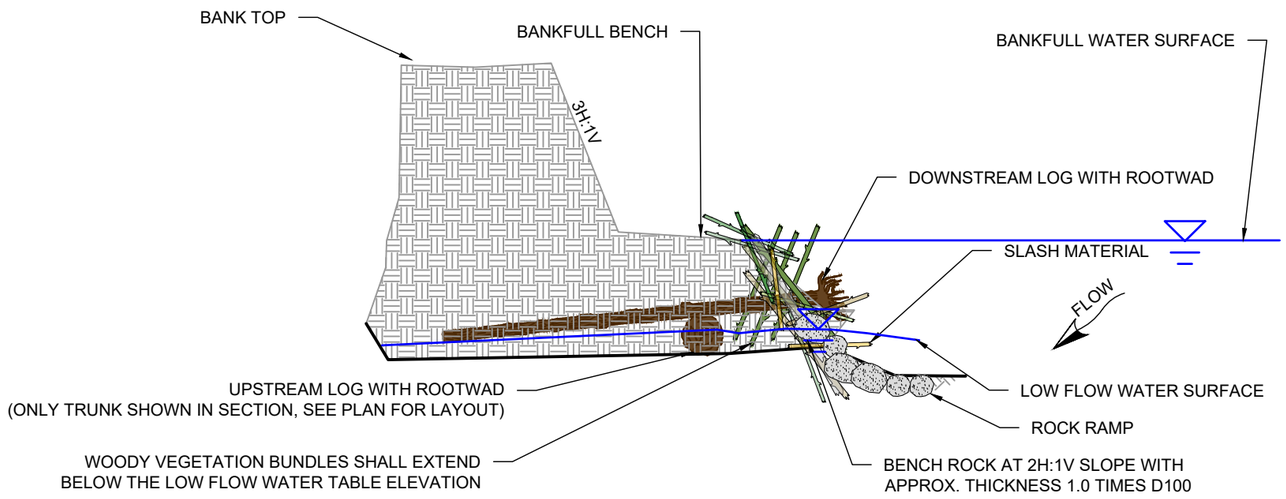


2 LOG STRUCTURE - PLAN VIEW

NTS



BANK JAM STRUCTURE - SECTION VIEW

NTS

CONSTRUCTION QUANTITIES:

COMPONENT	DESCRIPTION	QUANTITY
LOG WITH ROOTWAD	18"+ DBH, 30 FT MIN	2
BENCH ROCK (RIGHT BANK)	TOTAL CY	155
BENCH ROCK (LEFT BANK)	TOTAL CY	135

RAMP ROCK & BENCH ROCK GRADATION		
SIZE	LOWER (IN)	HIGHER (IN)
D15	8	10
D50	11	14
D85	15	19
D100	21	27

RAMP BOULDER GRADATION		
SIZE	LOWER (IN)	HIGHER (IN)
D50	22	28
D100	30	38

BANK JAM STRUCTURE NOTES:

1. INSTALL TEMPORARY COFFERDAM TO ISOLATE WORK AREA AS SHOWN ON PLAN.
2. CONTRACTOR SHALL UTILIZE EXISTING LARGE TREES IDENTIFIED ONSITE AS DIRECTED BY OWNER AND IMPORTED TREES AS NECESSARY.
3. PLACE LOGS WITH ROOTWADS WITH TRUNKS ANGLED DOWN INTO BANKFULL BENCH.
4. BACKFILL LOGS AND COMPACT WITH EXCAVATOR BUCKET TO A FIRM AND UNYIELDING SURFACE BUT USING CARE TO NOT DAMAGE THE INTEGRITY OF THE LOGS.
5. INSTALL 15 TO 25 WILLOW STAKES, PLUGS OR CLUMPS INTO JAM WITH STEM END PROTRUDING FORWARD. CONTRACTOR SHALL BE RESPONSIBLE FOR PLANTING WILLOW STAKES. PLACE DORMANT HARDWOOD VEGETATION BUNDLES ALONG THE BENCH ROCK USING THE INSTALLATION PROCEDURE SHOWN IN THE LIVE STAKE PLANTING DETAIL AND DESCRIBED ON THE REVEGETATION DETAIL SHEET (SHEET 7).
6. PLACE RACKING MATERIAL IN FRONT OF STRUCTURE TO PROMOTE A SEAL AT THE FACE OF THE JAM.
7. THE BNECH ROCK SHOULD HAVE A SLOPE OF 2H:1V AND EXTEND FROM JUST BELOW THE BANKFULL ELEVATION TO THE TOP OF RAMP ROCK.
8. CONTINUE BENCH FACE SLOPING AS SHOWN IN THE PLAN AND TREAT BENCH WITH SEEDING AND BRUSH TRENCHES AS DIRECTED.
9. FINAL CONFIGURATION OF STRUCTURE AND BENCH ROCK SHALL BE AS DIRECTED IN FIELD.

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PROPOSED 2 LOG STRUCTURE & BENCH ROCK TYPICAL DETAILS

BIG WOOD RIVER DIVERSION DAM REMEDIATION PROJECT
CITY OF BELLEVUE, IDAHO

REV.	DATE	BY	DESC
0	3-16-2021	CB	100% DESIGN

SHEET 6

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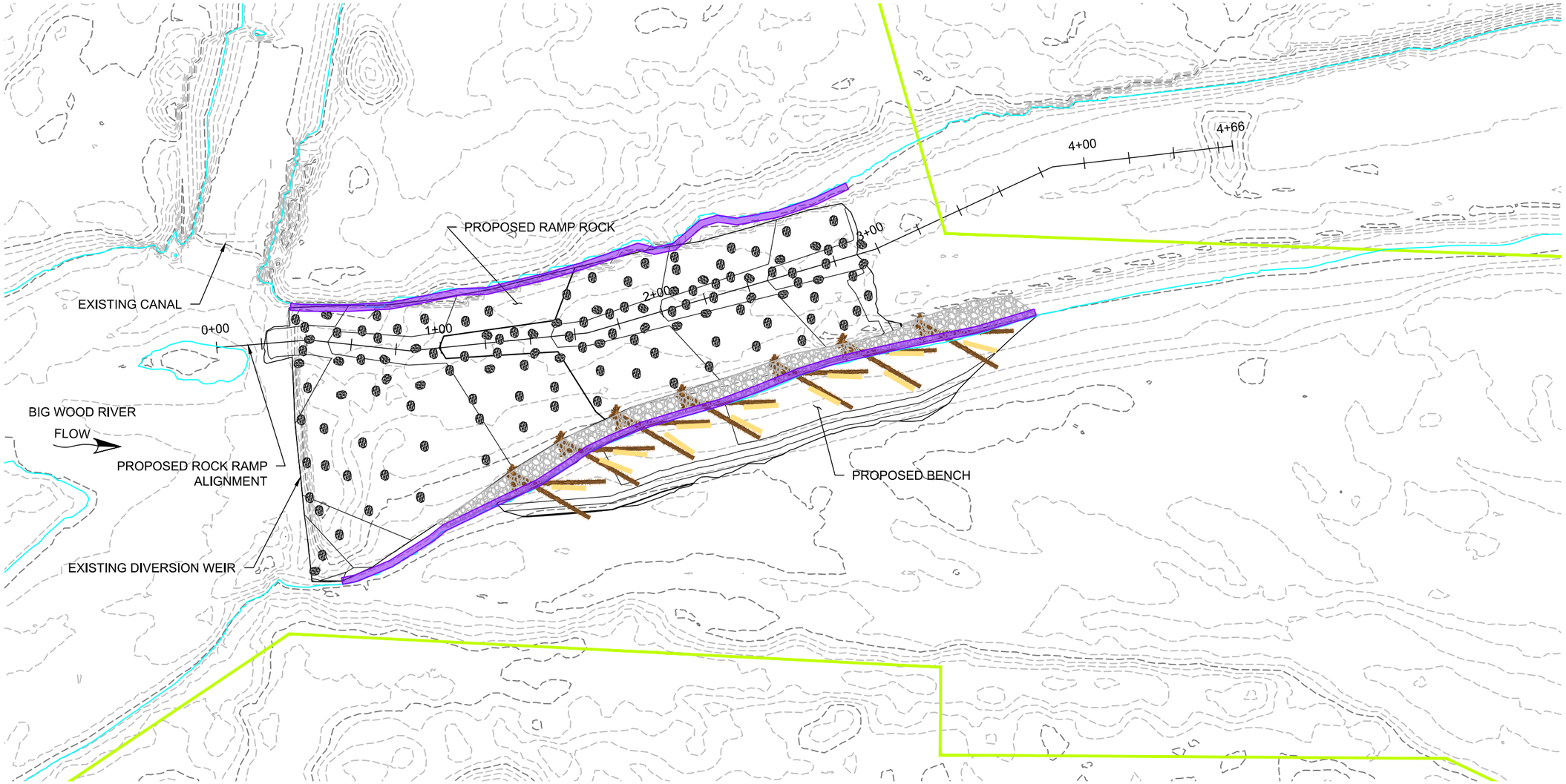

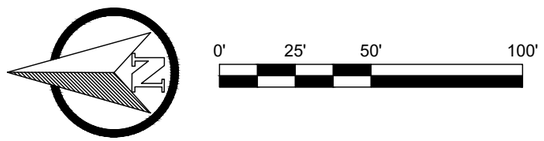

RIPARIAN REVEGETATION PLANTING QUANTITIES				
PLANTING ITEMS	**SPACING**	**QTY**	**CUTTINGS PER TREATMENT**	**TOTAL # CUTTINGS**
OVERBANK/TRANSITIONAL ZONE				
BRUSH TRENCHES	500 SQ FT	12	10	120
BANK BUNDLES	4 FT	140	3	420
SPECIES/QUANTITY/SIZE SUBJECT TO NURSERY AND/OR CUTTING AVAILABILITY				

LEGEND

- EXISTING PARCEL BOUNDARY
- EXISTING CONTOUR MAJOR (5')
- EXISTING CONTOUR MINOR (1')
- PROPOSED CONTOUR MAJOR (5')
- PROPOSED CONTOUR MINOR (1')
- PROPOSED BRUSH TRENCH
- PROPOSED CUTTINGS
- PROPOSED BANKFULL

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PROPOSED REVEGETATION PLAN

BIG WOOD RIVER DIVERSION DAM REMEDIATION PROJECT
CITY OF BELLEVUE, IDAHO

REV.	DATE	BY	DESC
0	3-16-2021	CB	100% DESIGN

SCALE: 1" = 50'

UNITS: US FOOT

BASEMAP SOURCE: LIDAR JUNE 2017; 7-2020 TOPO SURVEY

SHEET 7

F:\PROJECTS\TU_BWR_DIVERSION\CAD\SHEET\5_REVEG.DWG

REVEGETATION NOTES:

WOODY VEGETATION BUNDLES/STAKES

DORMANT HARDWOOD CUTTINGS WILL BE UTILIZED TO FACILITATE BIOENGINEERING TECHNIQUES. CUTTINGS WILL BE HARVESTED FROM HEALTHY VIGOROUS PLANTS DURING THE DORMANT SEASON (I.E., BETWEEN DORMANCY/LEAF ABSCISSION IN THE FALL AND BUD BREAK IN THE SPRING). CARE WILL BE TAKEN TO AVOID HARVESTING CUTTINGS FROM DONOR PLANTS THAT EXHIBIT SIGNS OF DAMAGE BY DISEASE OR INSECTS. CUTTINGS WILL BE COMPRISED OF WILLOW, COTTONWOOD, AND DOGWOOD STEMS THAT HAVE A MINIMUM BOTTOM DIAMETER OF 1-INCH, HAVE A MINIMUM LENGTH OF 7 FEET, AND ARE RELATIVELY STRAIGHT. CUTTINGS WILL BE REMOVED FROM THE DONOR PLANT WITH A CLEAN DIAGONAL CUT AT THE BASE OF THE STEM USING LOPPING SHEARS, BYPASS PRUNERS, OR A SHARP SAW. THE DIAGONAL SURFACE WILL DIFFERENTIATE THE BOTTOM (I.E., ROOTING END) FROM THE TOP (I.E., ABOVE GROUND PORTION), AND ALLOW FOR EASIER INSTALLATION. THE TERMINAL BUDS AND A FEW UPPER BRANCHES WILL BE LEFT INTACT UNTIL INSTALLATION. ALL OTHER BRANCHES WILL BE REMOVED BY CLIPPING THEM AS CLOSE TO THE STEM AS POSSIBLE. CAUTION WILL BE USED TO AVOID DAMAGING THE STEM WHILE TRIMMING THE LATERAL BRANCHES. CUTTINGS WILL BE BUNDLED BY TYPE (I.E., WILLOW, DOGWOOD, COTTONWOOD) AND KEPT COOL, MOIST, AND SHADED DURING TRANSPORTATION AND ON-SITE STORAGE. THE CUTTINGS WILL BE SOAKED IN WATER FOR 7-14 DAYS PRIOR TO INSTALLATION. AT LEAST HALF OF THE LENGTH OF THE CUTTING SHOULD BE IN CONTACT WITH WATER WHILE SOAKING, AND CUTTINGS SHOULD BE WEIGHTED DOWN WHEN SOAKED. THE TREATMENTS WILL UTILIZE BUNDLES OF 3 WILLOW AND/OR DOGWOOD CUTTINGS; THEREFORE, IT WILL BE NECESSARY TO BREAK DOWN ANY LARGER BUNDLES INTO BUNDLES OF 3 FOR THESE TREATMENTS. BUNDLES AND WILL BE INSTALLED ON 3-FOOT SPACING THROUGHOUT THE TREATMENT AREA,

BUNDLES OF DORMANT WILLOW AND DOGWOOD CUTTINGS WILL BE INSTALLED AT A 45-DEGREE ANGLE TO THE BANK SO THE TOP OF THE BUNDLE HANGS OUT OVER THE WATER. THE PREPARATION AND INSTALLATION PROCEDURE FOR THE BUNDLES WILL BE AS FOLLOWS:

1. BUNDLE 3 WILLOW, COTTONWOOD, AND/OR DOGWOOD CUTTINGS TOGETHER IN THE SAME ORIENTATION (TOPS UP AND BUTTS ON THE GROUND). BUNDLES WILL BE AS UNIFORM AS POSSIBLE, AND THE BUTTS OF THE CUTTINGS WILL BE AT THE SAME LEVEL TO ENSURE THAT NO BUTTS WILL BE OUT OF THE WATER WHEN INSTALLED. TIE BUNDLES ONE FOOT FROM THE TOP END AND ONE FOOT FROM THE BUTT END WITH PRE-STRETCHED COTTON STRING, SISAL ROPE, CORD OR NON-GALVANIZED TIE WIRE (NO JUTE OR PLASTIC TWINE WILL BE UTILIZED).
2. PLACE TOE ROCK (IF CALLED FOR IN DESIGN SPECIFICATIONS) IN KEY TRENCH AND CONTINUE PLACING ROCK UP THE BANK TO 1 FOOT ABOVE EXISTING WATER LEVEL ELEVATION.
3. PLACE TRACK HOE BUCKET IMMEDIATELY ABOVE LAID ROCK POINTED DOWN TOWARD THE BASE OF THE STREAMBANK AT A 45-DEGREE ANGLE.
4. PUSH THE BUCKET DOWN AT A 45-DEGREE ANGLE UNTIL THE TEETH REACH AN ELEVATION THAT IS AT LEAST 4 FEET BELOW BANKFULL ELEVATION AND 1-FOOT BELOW THE EXISTING WATER LEVEL.
5. STOP PUSHING DOWN AND LIFT THE BUCKET ENOUGH TO CREATE A SMALL OPENING BETWEEN THE BUCKET AND THE SUBSTRATE UNDERNEATH IT.
6. PUSH THE BUNDLE INTO THE HOLE BY HAND UNTIL THE BUTT END IS SEATED ON THE BOTTOM OF THE HOLE. THE BUTT END OF THE BUNDLE MUST BE 1 FOOT BELOW THE LOW-FLOW WATER TABLE WHEN INSTALLED.
7. PULL THE BUCKET OUT OF THE HOLE DROPPING REMAINING SOIL/ALLUVIUM ON THE BUNDLE.
8. ENSURE THAT THE TOP OF THE BUNDLE PROTRUDES AT LEAST 1 FOOT ABOVE THE ROCK ENSURING THAT A MINIMUM OF 3 OR 4 AUXILIARY BUDS REMAIN ON THE ABOVE-GROUND PORTION, AND TRIM OFF ANY EXCESS.

GRADING AND TOPSOIL APPLICATION

PROVIDE ROUGH GRADING TO A SUBGRADE ELEVATION THAT IS 6" LOWER THAN THE PLANNED FINISHED GRADE IN ALL AREAS EXCEPT FOR THE BOTTOM OF THE CHANNEL. AFTER ROUGH GRADING, PLACE 6 INCHES OF SALVAGED TOPSOIL IN ALL DISTURBED AREAS TO ACHIEVE THE FINISHED GRADE AND PROVIDE FOR A SMOOTH TRANSITION TO SURROUNDING GRADE.

SEED BED PREPARATION

ONCE APPLIED, TOPSOIL SHALL BE ROLLED OR LIGHTLY TAMPED WITH AN EXCAVATOR BUCKET TO FIRM THE SEEDBED. CAUTION SHALL BE TAKEN IF THE TOPSOIL IS TRACK-WALKED WITH HEAVY EQUIPMENT DUE THE POTENTIAL FOR SOIL COMPACTION AND DETRIMENTAL EFFECTS ON GROWING CONDITIONS. PROPER SOIL FIRMNESS IS ESSENTIAL TO OPTIMIZING GERMINATION AND ESTABLISHMENT OF SEEDED VEGETATION. THE TARGET FIRMNESS IS MEASURED BY AN ADULT FOOTPRINT BEING ONLY SLIGHTLY VISIBLE (1/4" DEEP PRINT) AFTER WALKING ON IT.

SEEDING

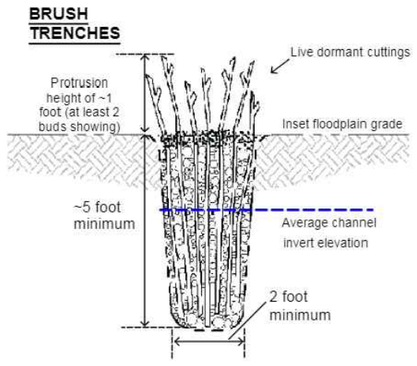
AFTER FINISH GRADING AND SEEDBED PREP HAS BEEN COMPLETED, ALL DISTURBED AREAS SHALL BE SEEDED WITH THE RECLAMATION SEED MIX PROVIDED BELOW. ANY SPECIES SUBSTITUTIONS MUST BE APPROVED BY THE DESIGN CONSULTANT. SEED SHALL ME MEASURED IN POUNDS OF PURE LIVE SEED (PLS) AND APPLIED AT THE RATE SPECIFIED BELOW. SEED SHALL BE CLEAN, DRY, NEW-CROP SEED DELIVERED TO THE PROJECT SITE IN ORIGINAL SEALED, LABELED AND UNDAMAGED CONTAINER(S). SEED CONTAINERS SHALL BE LABELED IN ACCORDANCE WITH THE REQUIREMENTS AND STANDARDS OF THE ASSOCIATION OF OFFICIAL SEED CERTIFICATION AGENCIES (AOSCA). SEED SHALL HAVE BEEN TESTED FOR, AND CERTIFIED FREE OF, NOXIOUS WEEDS SEED IN ACCORDANCE WITH THE IDAHO PURE SEED LAW (IS 22-414), AND SHALL BE SO LABELED. COPIES OF SEED TAGS AND CERTIFICATION LABELS SHALL BE MAINTAINED ON THE JOB SITE AND PROVIDED TO THE DESIGN CONSULTANT FOR REVIEW AND APPROVAL PRIOR TO SOWING THE SEED.

SEED SHALL BE BROADCAST OR APPLIED WITH A HYDROSEEDER IN THE FALL PRIOR TO THE ONSET OF WINTER AND THE PRESENCE OF SEASON-LONG SNOW COVER. SEED SHALL NOT BE BROADCAST ON SNOW-COVERED GROUND. AFTER SEEDING, THE SEED SHOULD BE ROLLED, HARROWED, OR RAKED TO ENSURE MAXIMUM SEED-TO-SOIL CONTACT.

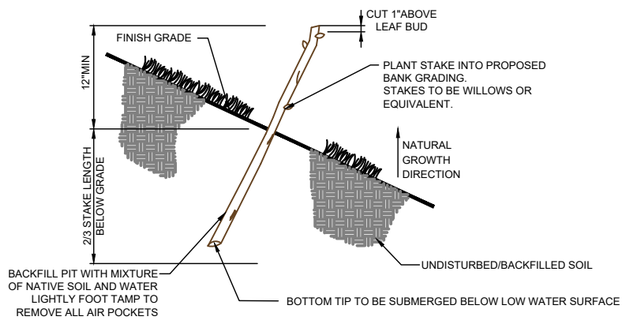
IRRIGATION

SUPPLEMENTAL IRRIGATION IS RECOMMENDED FOR THE FIRST 2 GROWING SEASONS TO ENHANCE GERMINATION RATES AND ESTABLISHMENT. SUPPLEMENTAL IRRIGATION IS IMPERATIVE IF IT IS NOT FEASIBLE TO SEED IN THE FALL. IRRIGATION SHOULD OCCUR TWICE PER WEEK WITH WATER TRUCK, OR AS NEEDED, THROUGH THE DRY SUMMER MONTHS (JUNE-SEPTEMBER). THE SPECIFIED SPECIES ARE NATIVE AND ADAPTED TO THE REGIONAL CLIMATE; THEREFORE, NO IRRIGATION WILL BE REQUIRED AFTER THE STAND HAS BECOME ESTABLISHED.

TRANSITIONAL RECLAMATION SEED MIX		
COMMON NAME	SCIENTIFIC NAME	LBS PLS PER ACRE
Sandberg bluegrass	*Poa sandbergii*	0.6
Idaho fescue	*Festuca idahoensis*	1.8
Slender wheatgrass	*Elymus trachycaulus*	8.4
Blue flax	*Linum perenne*	0.6
Western yarrow	*Achillea millefolium*	0.1
Mountain brome	*Bromus carinatus*	6.0
Fowl bluegrass	*Poa palustris*	0.4
Rough bentgrass	*Agrostis scabra*	0.2
Artic rush	*Juncus arcticus*	0.1
Quickguard sterile triticale		20.0
	TOTAL	38.2



A -- TYPICAL DETAIL - BRUSH TRENCH
NTS



B -- TYPICAL DETAIL - LIVE STAKING
NTS

research & consulting inc.
Biota
PO Box 8578. 140 E. Broadway, Suite 23 Jackson, WY 83002

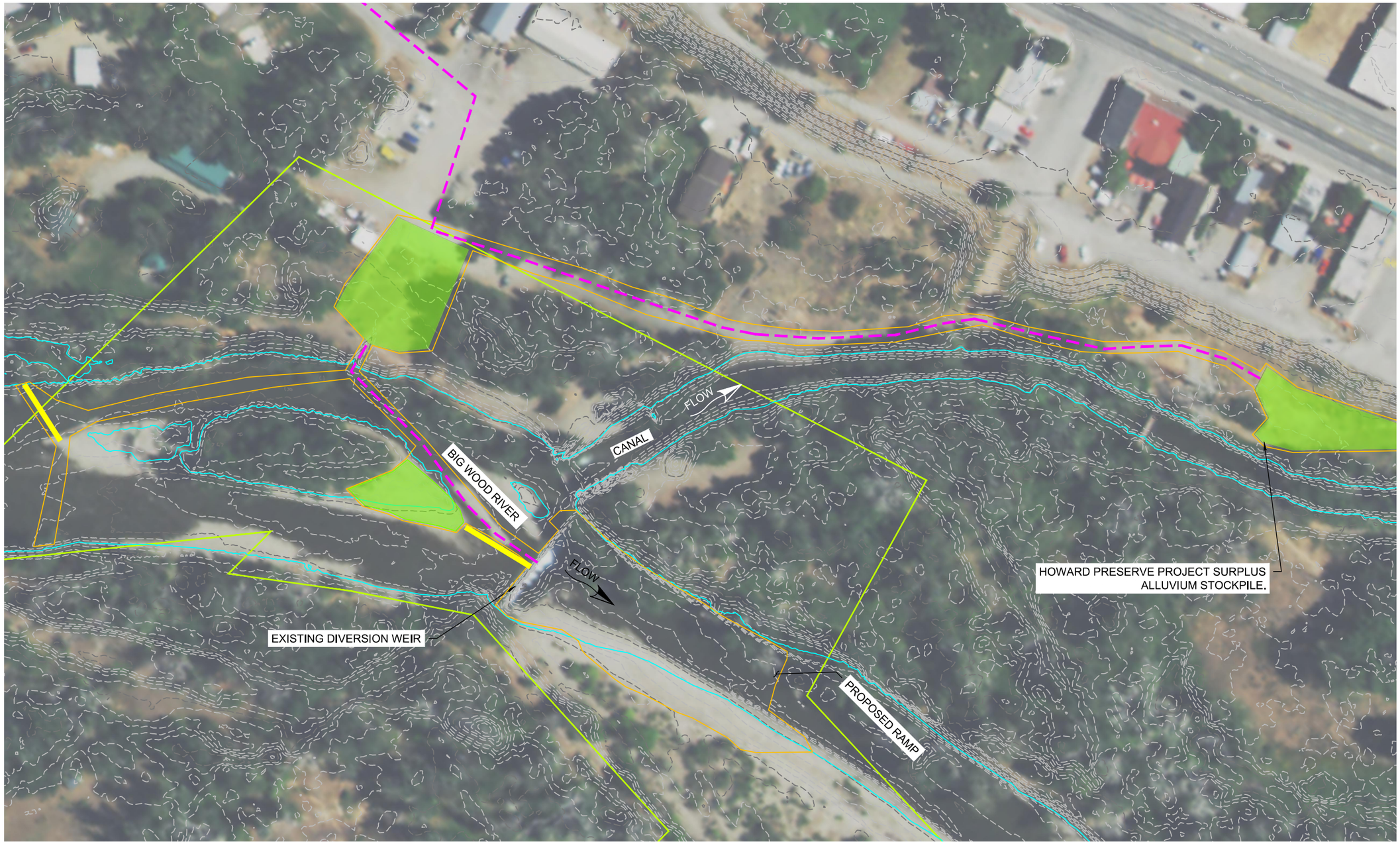
REVEGETATION PLAN
TYPICAL DETAILS

BIG WOOD RIVER DIVERSION DAM REMEDIATION PROJECT
CITY OF BELLEVUE, IDAHO

REV.	DATE	BY	DESC
0	3-16-2021	CB	100% DESIGN

SHEET 8

F:\PROJECTS\TU_BWR_DIVERSION\CAD\SHEET\6_REVEG_NOTES.DWG



0' 50' 100' 200'

SEQUENCING NOTES:

1. EQUIPMENT ACCESS FROM MARTIN LANE.
2. ESTABLISH EQUIPMENT ACCESS ROUTES TO THE NORTHERN SIDE OF THE DIVERSION.
3. INSTREAM WORK TO OCCUR BETWEEN JULY 15 AND MARCH 15.
4. INSTALL COFFER DAM TO ROUTE RIVER FLOWS ON WEST SIDE OF EXISTING ISLAND AND PROPOSED NOTCH LOCATION.
5. INSTALL DAM NOTCH, LOW FLOW CHANNEL AND EASTERN SIDE OF RAMP ALONG WITH WILLOW STAKES ON LEFT BANK.
6. MOVE COFFER DAM TO ROUTE FLOWS ON EAST SIDE OF ISLAND. ROUTE LOW FLOWS IN CONSTRUCTED LOW FLOW CHANNEL.
7. COMPLETE FINISH GRADING OF ROCK RAMP, BANKFULL BENCH, AND BENCH ROCK.
8. RIPARIAN AREAS ALONG THE ACCESS ROUTE ARE FULLY RECLAIMED AND REVEGETATED DURING EGRESS USING BRUSH TRENCHES, BROADCAST SEEDING, AND WOODY MATERIAL DISPERSAL.
9. UPON EQUIPMENT EGRESS, THE STAGING AREA IS FULLY RECLAIMED VIA SMOOTH GRADING AND BROADCAST SEEDING.

LEGEND

- EXISTING PARCEL BOUNDARY
- EXISTING CONTOUR MAJOR (5')
- EXISTING CONTOUR MINOR (1')
- PROPOSED BANKFULL
- PROPOSED ACCESS ROUTE
- PROPOSED STAGING AREA
- LIMITS OF DISTURBANCE
- PROPOSED TEMPORARY COFFERDAM

research & consulting inc.
Biota
PO Box 8578. 140 E. Broadway, Suite 23 Jackson, WY 83002

ACCESS, STAGING, & DEWATERING PLAN

BIG WOOD RIVER DIVERSION REMEDIATION PROJECT
CITY OF BELLEVUE, IDAHO

REV.	DATE	BY	DESC
0	3-16-2021	CB	100% DESIGN

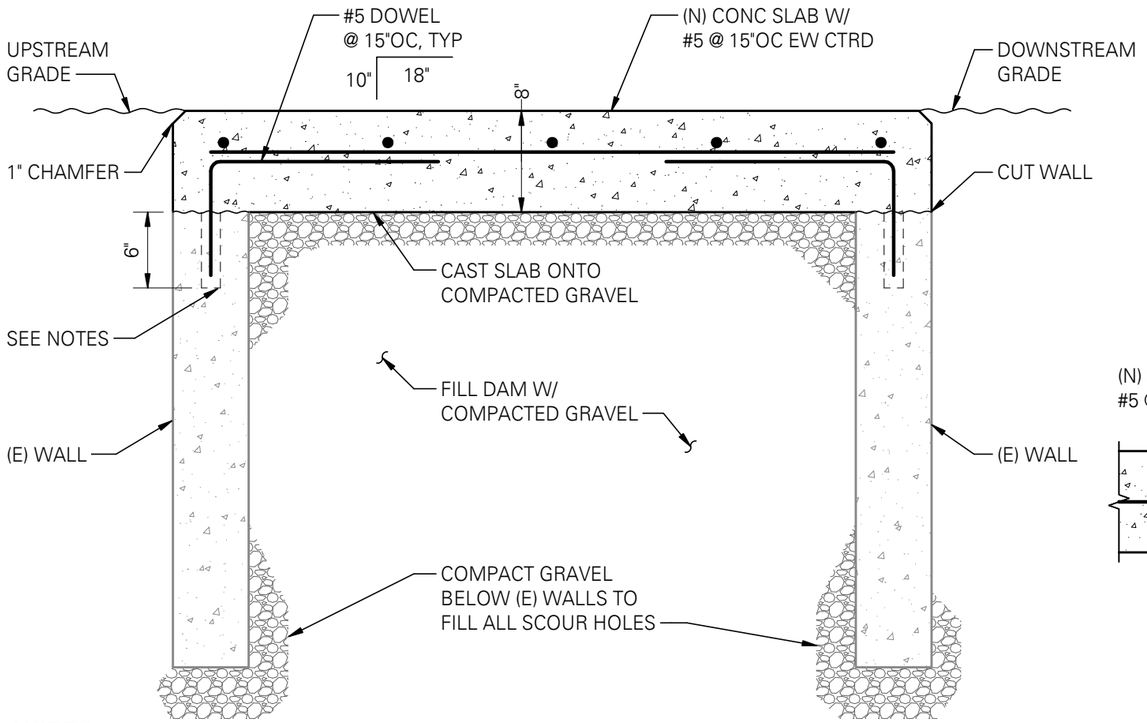
SCALE: 1" = 100'

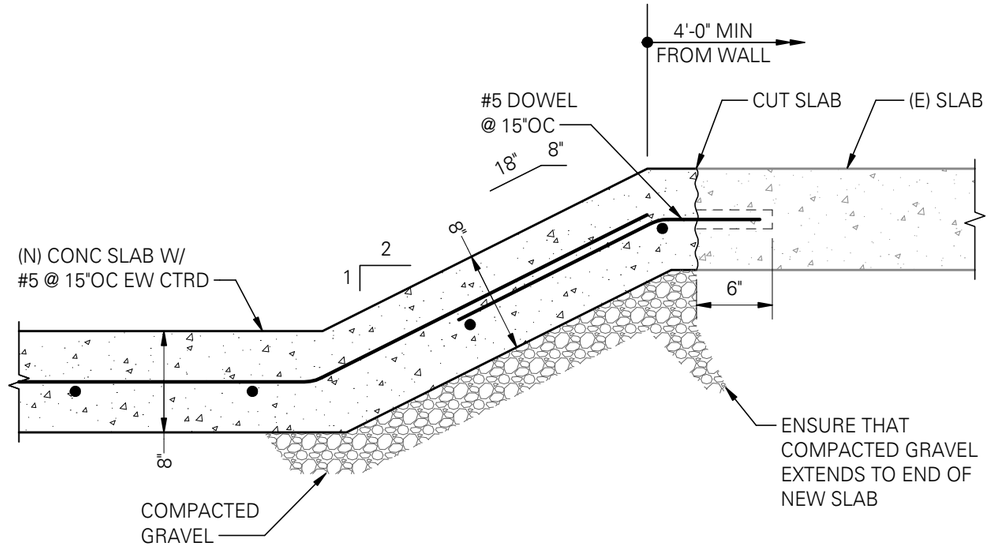
UNITS: US FOOT

BASEMAP SOURCE: LIDAR JUNE 2017; 7-2020 TOPO SURVEY; 2017 AERIAL

SHEET 9

F:\PROJECTS\T\U_BWR_DIVERSION\CAD\SHEET\7_ACCESS.DWG





NOTES:

1. ANCHOR DOWELS TO (E) WALLS W/ HILTI HIT-RE 100 ADHESIVE. CENTER DOWELS IN (E) WALLS.

2. PROVIDE CONCRETE WITH:
   f'c = 4500 PSI
   w/c = 0.
   6% +

*SEE NOTES ON LONG. SECTION.

LONG. SECTION AT NEW NOTCH

SCALE: 1" = 1'-0"

2 TRANSVERSE SECTION AT END OF NOTCH

SCALE: 1" = 1'-0"

DCI ENGINEERS®
1060 Fowler Ave, Suite 202
Bozeman, Montana 59718
P: (406) 556-8600
www.dci-engineers.com
CIVIL / STRUCTURAL

STRUCTURAL DETAILS

BIG WOOD RIVER DIVERSION DAM REMEDIATION PROJECT
CITY OF BELLEVUE, IDAHO

REV.	DATE	BY	DESC
0	3-16-2021	CS	100% DESIGN

SCALE: AS NOTED

SHEET 10

CRAIG T. CROWLEY PROFESSIONAL ENGINEER STATE OF IDAHO 12827

Y:\1510-BOZEMAN\2021\2151-0018 DIVERSION 45 DAM\PROJECT SPECIFIC FAMILIES\11X17 TITLE BLOCK TU_BWR_DIVERSION_NOLOGO.DWG

Appendix B – IPaC Report (ESA)

IPaC **U.S. Fish & Wildlife Service**

IPaC resource list

This report is an automatically generated list of species and other resources such as critical habitat (collectively referred to as *trust resources*) under the U.S. Fish and Wildlife Service's (USFWS) jurisdiction that are known or expected to be on or near the project area referenced below. The list may also include trust resources that occur outside of the project area, but that could potentially be directly or indirectly affected by activities in the project area. However, determining the likelihood and extent of effects a project may have on trust resources typically requires gathering additional site-specific (e.g., vegetation/species surveys) and project-specific (e.g., magnitude and timing of proposed activities) information.

Below is a summary of the project information you provided and contact information for the USFWS office(s) with jurisdiction in the defined project area. Please read the introduction to each section that follows (Endangered Species, Migratory Birds, USFWS Facilities, and NWI Wetlands) for additional information applicable to the trust resources addressed in that section.

NOT FOR CONSULTATION

Project information

NAME

Diversion 45 Stabilization and Fish Passage Improvement Project

LOCATION

Blaine County, Idaho

DESCRIPTION

None

Local office

Idaho Fish And Wildlife O ce

(208) 378-5243
(208) 378-5262

1387 South Vinnell Way, Suite 368
Boise, ID 83709-1657

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Endangered species

This resource list is for informational purposes only and does not constitute an analysis of project level impacts.

The primary information used to generate this list is the known or expected range of each species. Additional areas of in uence (AOI) for species are also considered. An AOI includes areas outside of the species range if the species could be indirectly a ected by activities in that area (e.g., placing a dam upstream of a sh population even if that sh does not occur at the dam site, may indirectly impact the species by reducing or eliminating water ow downstream). Because species can move, and site conditions can change, the species on this list are not guaranteed to be found on or near the project area. To fully determine any potential e ects to species, additional site-speci c and project-speci c information is often required.

Section 7 of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency. A letter from the local o ce and a species list which ful lls this requirement can **only** be obtained by requesting an o cial species list from either the Regulatory Review section in IPaC (see directions below) or from the local eld o ce directly.

For project evaluations that require USFWS concurrence/review, please return to the IPaC website and request an o cial species list by doing the following:

1. Log in to IPaC.
2. Go to your My Projects list.
3. Click PROJECT HOME for this project.
4. Click REQUEST SPECIES LIST.

Listed species[1] and their critical habitats are managed by the Ecological Services Program of the U.S. Fish and Wildlife Service (USFWS) and the sheries division of the National Oceanic and Atmospheric Administration (NOAA Fisheries[2]).

Species and critical habitats under the sole responsibility of NOAA Fisheries are **not** shown on this list. Please contact NOAA Fisheries for species under their jurisdiction.

---

1. Species listed under the Endangered Species Act are threatened or endangered; IPaC also shows species that are candidates, or proposed, for listing. See the listing status page for more information. IPaC only shows species that are regulated by USFWS (see FAQ).
2. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an o ce of the National Oceanic and Atmospheric Administration within the Department of

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Commerce.

The following species are potentially a ected by activities in this location:

Mammals

NAME	STATUS
North American Wolverine Gulo gulo luscus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/5123	Proposed Threatened

Insects

NAME	STATUS
Monarch Butter y Danaus plexippus Wherever found No critical habitat has been designated for this species. https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

Potential e ects to critical habitat(s) in this location must be analyzed along with the endangered species themselves.

There are no critical habitats at this location.

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Migratory birds

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

Any person or organization who plans or conducts activities that may result in impacts to migratory birds, eagles, and their habitats should follow appropriate regulations and consider implementing appropriate conservation measures, as described below.

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.

Additional information can be found using the following links:

- Birds of Conservation Concern https://www.fws.gov/program/migratory-birds/species

- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide conservation measures for birds https://www.fws.gov/sites/default/ les/documents/nationwide-standard-conservation-measures.pdf

The birds listed below are birds of particular concern either because they occur on the USFWS Birds of Conservation Concern (BCC) list or warrant special attention in your project location. To learn more about the levels of concern for birds on your list and how this list is generated, see the FAQ below. This is not a list of every bird you may nd in this location, nor a guarantee that every bird on this list will be found in your project area. To see exact locations of where birders and the general public have sighted birds in and around your project area, visit the E-bird data mapping tool (Tip: enter your location, desired date range and a species on your list). For projects that occur o the Atlantic Coast, additional maps and models detailing the relative occurrence and abundance of bird species on your list are available. Links to additional information about Atlantic Coast birds, and other important information about your migratory bird list, including how to properly interpret and use your migratory bird report, can be found below.

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

NAME	BREEDING SEASON
American White Pelican pelecanus erythrorhynchos This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/6886	Breeds Apr 1 to Aug 31
Bald Eagle Haliaeetus leucocephalus This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in o shore areas from certain types of development or activities.	Breeds Jan 1 to Aug 31
Black Rosy- nch Leucosticte atrata This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9460	Breeds Jun 15 to Aug 31

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California Gull Larus californicus — Breeds Mar 1 to Jul 31
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Cassin's Finch Carpodacus cassinii — Breeds May 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9462

Evening Grosbeak Coccothraustes vespertinus — Breeds May 15 to Aug 10
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.

Golden Eagle Aquila chrysaetos — Breeds Jan 1 to Aug 31
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 o shore areas from certain types of development or activities.
https://ecos.fws.gov/ecp/species/1680

Lewis's Woodpecker Melanerpes lewis — Breeds Apr 20 to Sep 30
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/9408

Rufous Hummingbird selasphorus rufus — Breeds Apr 15 to Jul 15
This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska.
https://ecos.fws.gov/ecp/species/8002

Sage Thrasher Oreoscoptes montanus — Breeds Apr 15 to Aug 10
This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA
https://ecos.fws.gov/ecp/species/9433

NOT FOR CONSULTATION

Probability of Presence Summary

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

Probability of Presence (■)

Each green bar represents the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during a particular week of the year. (A year is represented as 12 4-week months.) A taller bar indicates a higher probability of species presence. The survey e ort (see below) can be used to establish a level of con dence in the presence score. One can have higher con dence in the presence score if the corresponding survey e ort is also high.

How is the probability of presence score calculated? The calculation is done in three steps:

1. The probability of presence for each week is calculated as the number of survey events in the week where the species was detected divided by the total number of survey events for that week. For example, if in week 12 there were 20 survey events and the Spotted Towhee was found in 5 of them, the probability of presence of the Spotted Towhee in week 12 is 0.25.
2. To properly present the pattern of presence across the year, the relative probability of presence is calculated. This is the probability of presence divided by the maximum probability of presence across all weeks. For example, imagine the probability of presence in week 20 for the Spotted Towhee is 0.05, and that the probability of presence at week 12 (0.25) is the maximum of any week of the year. The relative probability of presence on week 12 is 0.25/0.25 = 1; at week 20 it is 0.05/0.25 = 0.2.
3. The relative probability of presence calculated in the previous step undergoes a statistical conversion so that all possible values fall between 0 and 10, inclusive. This is the probability of presence score.

To see a bar's probability of presence score, simply hover your mouse cursor over the bar.

Breeding Season (▪)
Yellow bars denote a very liberal estimate of the time-frame inside which the bird breeds across its entire range. If there are no yellow bars shown for a bird, it does not breed in your project area.

Survey Effort (|)
Vertical black lines superimposed on probability of presence bars indicate the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps. The number of surveys is expressed as a range, for example, 33 to 64 surveys.

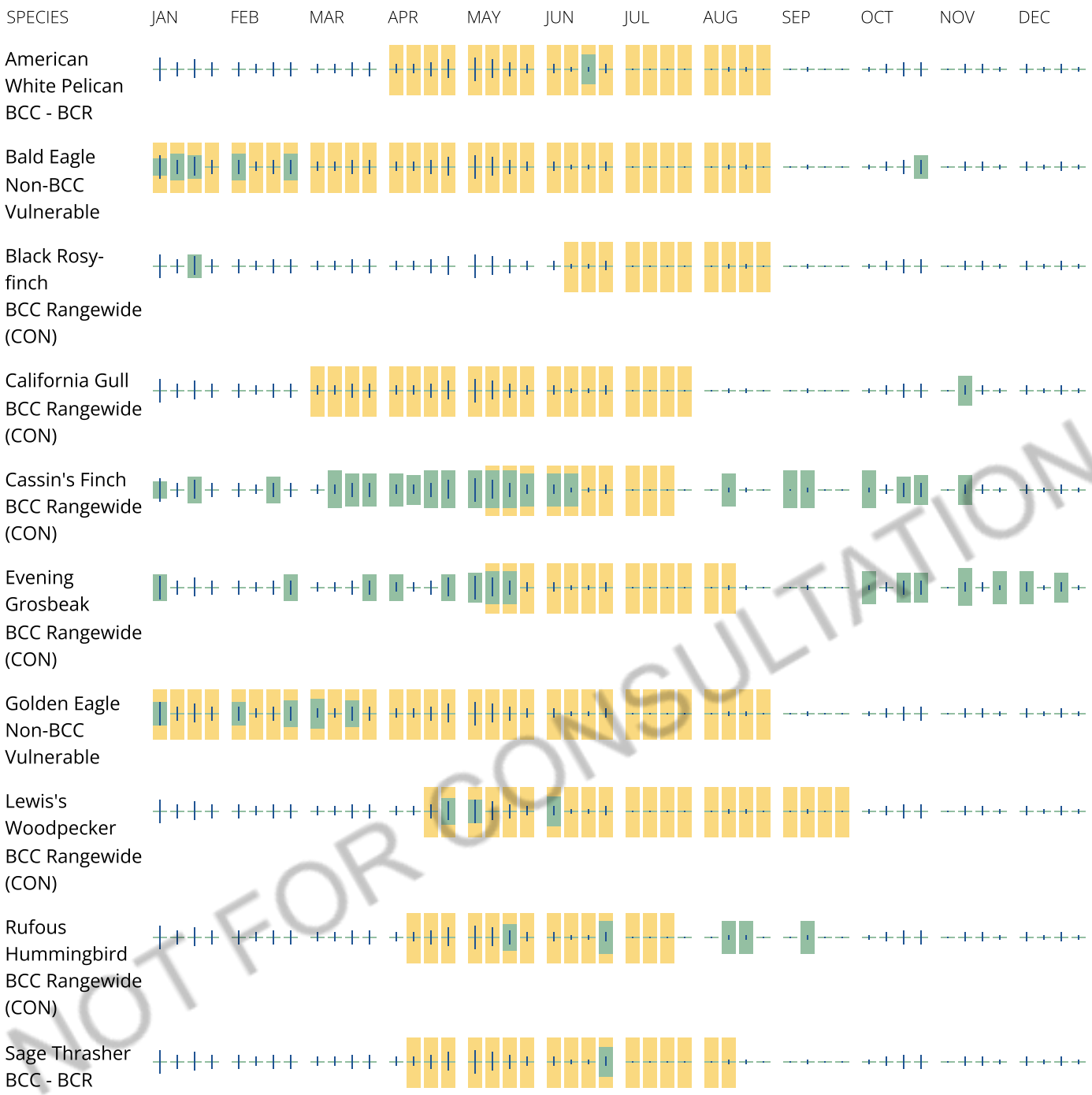
To see a bar's survey e ort range, simply hover your mouse cursor over the bar.

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

Survey Timeframe
Surveys from only the last 10 years are used in order to ensure delivery of currently relevant information. The exception to this is areas o the Atlantic coast, where bird returns are based on all years of available data, since data in these areas is currently much more sparse.

NOT FOR CONSULTATION

▪ probability of presence ▪ breeding season | survey e ort – no data



NOT FOR CONSULTATION

Tell me more about conservation measures I can implement to avoid or minimize impacts to migratory birds.

Nationwide Conservation Measures describes measures that can help avoid and minimize impacts to all birds at any location year round. Implementation of these measures is particularly important when birds are most likely to occur in the project area. When birds may be breeding in the area, identifying the locations of any active nests and avoiding their destruction is a very helpful impact minimization measure. To see when birds are most likely to occur and be breeding in your project area, view the Probability of Presence Summary. Additional measures or permits may be advisable depending on the type of activity you are conducting and the type of infrastructure or bird species present on your project site.

What does IPaC use to generate the list of migratory birds that potentially occur in my speci ed location?

The Migratory Bird Resource List is comprised of USFWS Birds of Conservation Concern (BCC) and other species that may warrant special attention in your project location.

The migratory bird list generated for your project is derived from data provided by the Avian Knowledge Network (AKN). The AKN data is based on a growing collection of survey, banding, and citizen science datasets and is queried and ltered to return a list of those birds reported as occurring in the 10km grid cell(s) which your project intersects, and that have been identi ed as warranting special attention because they are a BCC species in that area, an eagle (Eagle Act requirements may apply), or a species that has a particular vulnerability to o shore activities or development.

Again, the Migratory Bird Resource list includes only a subset of birds that may occur in your project area. It is not representative of all birds that may occur in your project area. To get a list of all birds potentially present in your project area, please visit the Rapid Avian Information Locator (RAIL) Tool.

What does IPaC use to generate the probability of presence graphs for the migratory birds potentially occurring in my speci ed location?

The probability of presence graphs associated with your migratory bird list are based on data provided by the Avian Knowledge Network (AKN). This data is derived from a growing collection of survey, banding, and citizen science datasets.

Probability of presence data is continuously being updated as new and better information becomes available. To learn more about how the probability of presence graphs are produced and how to interpret them, go the Probability of Presence Summary and then click on the "Tell me about these graphs" link.

How do I know if a bird is breeding, wintering or migrating in my area?

To see what part of a particular bird's range your project area falls within (i.e. breeding, wintering, migrating or year-round), you may query your location using the RAIL Tool and look at the range maps provided for birds in your area at the bottom of the pro les provided for each bird in your results. If a bird on your migratory bird species list has a breeding season associated with it, if that bird does occur in your project area, there may be nests present at some point within the timeframe speci ed. If "Breeds elsewhere" is indicated, then the bird likely does not breed in your project area.

What are the levels of concern for migratory birds?

Migratory birds delivered through IPaC fall into the following distinct categories of concern:

1. "BCC Rangewide" birds are Birds of Conservation Concern (BCC) that are of concern throughout their range anywhere within the USA (including Hawaii, the Paci c Islands, Puerto Rico, and the Virgin Islands);
2. "BCC - BCR" birds are BCCs that are of concern only in particular Bird Conservation Regions (BCRs) in the continental USA; and
3. "Non-BCC - Vulnerable" birds are not BCC species in your project area, but appear on your list either because of the Eagle Act requirements (for eagles) or (for non-eagles) potential susceptibilities in o shore areas from certain types of development or activities (e.g. o shore energy development or longline shing).

NOT FOR CONSULTATION

Although it is important to try to avoid and minimize impacts to all birds, e orts should be made, in particular, to avoid and minimize impacts to the birds on this list, especially eagles and BCC species of rangewide concern. For more information on conservation measures you can implement to help avoid and minimize migratory bird impacts and requirements for eagles, please see the FAQs for these topics.

Details about birds that are potentially a ected by o shore projects

For additional details about the relative occurrence and abundance of both individual bird species and groups of bird species within your project area o the Atlantic Coast, please visit the Northeast Ocean Data Portal. The Portal also o ers data and information about other taxa besides birds that may be helpful to you in your project review. Alternately, you may download the bird model results les underlying the portal maps through the NOAA NCCOS Integrative Statistical Modeling and Predictive Mapping of Marine Bird Distributions and Abundance on the Atlantic Outer Continental Shelf project webpage.

Bird tracking data can also provide additional details about occurrence and habitat use throughout the year, including migration. Models relying on survey data may not include this information. For additional information on marine bird tracking data, see the Diving Bird Study and the nanotag studies or contact Caleb Spiegel or Pam Loring.

What if I have eagles on my list?

If your project has the potential to disturb or kill eagles, you may need to obtain a permit to avoid violating the Eagle Act should such impacts occur.

Proper Interpretation and Use of Your Migratory Bird Report

The migratory bird list generated is not a list of all birds in your project area, only a subset of birds of priority concern. To learn more about how your list is generated, and see options for identifying what other birds may be in your project area, please see the FAQ "What does IPaC use to generate the migratory birds potentially occurring in my speci ed location". Please be aware this report provides the "probability of presence" of birds within the 10 km grid cell(s) that overlap your project; not your exact project footprint. On the graphs provided, please also look carefully at the survey e ort (indicated by the black vertical bar) and for the existence of the "no data" indicator (a red horizontal bar). A high survey e ort is the key component. If the survey e ort is high, then the probability of presence score can be viewed as more dependable. In contrast, a low survey e ort bar or no data bar means a lack of data and, therefore, a lack of certainty about presence of the species. This list is not perfect; it is simply a starting point for identifying what birds of concern have the potential to be in your project area, when they might be there, and if they might be breeding (which means nests might be present). The list helps you know what to look for to con rm presence, and helps guide you in knowing when to implement conservation measures to avoid or minimize potential impacts from your project activities, should presence be con rmed. To learn more about conservation measures, visit the FAQ "Tell me about conservation measures I can implement to avoid or minimize impacts to migratory birds" at the bottom of your migratory bird trust resources page.

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Facilities

National Wildlife Refuge lands

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 at this location.

Fish hatcheries

There are no fish hatcheries at this location.

Wetlands in the National Wetlands Inventory (NWI)

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.

This location overlaps the following wetlands:

FRESHWATER FORESTED/SHRUB WETLAND

PFOA

RIVERINE

R3UBH

R3USC

NOT FOR CONSULTATION

A full description for each wetland code can be found at the National Wetlands Inventory website

NOTE: This initial screening does **not** replace an on-site delineation to determine whether wetlands occur. Additional information on the NWI data is provided below.

Data limitations

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identi ed based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classi cation established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth veri cation work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or eld work. There may be occasional di erences in polygon boundaries or classi cations between the information depicted on the map and the actual conditions on site.

Data exclusions

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tuber cid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

Data precautions

Federal, state, and local regulatory agencies with jurisdiction over wetlands may de ne and describe wetlands in a di erent manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to de ne the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modi cations within or adjacent to wetland areas should seek the advice of appropriate Federal, state, or local agencies concerning speci ed agency regulatory programs and proprietary jurisdictions that may a ect such activities.

NOT FOR CONSULTATION

Appendix C – Scoping Information and Comments Received

United States Department of the Interior
BUREAU OF RECLAMATION
Snake River Area Office
230 Collins Road
Boise, ID 83702-4520

IN REPLY REFER TO:

SRA-1212
2.1.4.17

Subject: Request for Public Comments Regarding the Proposed Wood River Diversion 45 Stabilization and Fish Passage Remediation Project in Blaine County, Idaho

Dear Interested Party:

The Bureau of Reclamation has received a proposal from the Wood River Board of Control (BOC) for a WaterSMART (Sustain and Manage America's Resources for Tomorrow) grant to stabilize and improve an existing diversion structure on the Big Wood River in Bellevue, Idaho. The BOC manages this infrastructure for the Wood River Valley Irrigation District No. 45 and Triangle Irrigation District in Blaine County. Over time, the existing structure has caused sediment to accumulate upstream of the diversion and scour away downstream. This has created an unstable structure that is a passage barrier for fish and boaters. This project would improve passage conditions for fish and boaters while improving diversion functionality. The stream gradient at the diversion would be returned to a more natural 2 percent slope by filling the downstream area in with gravel and boulders. This would create a rock ramp approximately 300-feet long. The existing concrete cap on the structure itself would be replaced with a new concrete cap. This new cap would be bolted and epoxied to the existing vertical wall structures that span the river. A 10-foot-wide low flow channel would be created in the rock ramp. This low flow channel would be connected to a 10-foot-wide notch in the diversion structure itself. More details on the proposed project can be found in the enclosed scoping information package.

Scoping is a public involvement process used to determine the scope of issues to be addressed and identify issues related to a proposed action. Comments received in response to this solicitation will be used to identify potential environmental issues related to the proposed action and to identify alternatives to the proposed action that meet the purpose of and need for the project.

Please send your written comments electronically to sra-nepa-comments@usbr.gov by **January 31, 2023**, or mail or hand-deliver to:

Mr. Anthony Prisciandaro
Fisheries Biologist
Bureau of Reclamation
Snake River Area Office
230 Collins Road
Boise, ID 83702

Before including your address, phone number, email address, or other personal identifying information in your comment, please be advised that your entire comment, including your personal identifying information, may be made publicly available at any time. While you may request that we withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so.

The primary contact for questions or comments for this analysis, accessibility needs, or other information is Mr. Prisciandaro, and he can be reached at (208) 383-2233.

If you are deaf, hard of hearing, or have a speech disability, please dial 7-1-1 to access telecommunications relay services.

Sincerely,

BRYAN HORSBURGH

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Date: 2022.12.29 11:19:52 -07'00'

Acting for Melanie Paquin
Area Manager

Enclosure

Scoping Information Package

Proposed Wood River Diversion 45 Stabilization and Fish Passage Remediation Project in Blaine County, Idaho

This information package summarizes a U.S. Department of the Interior's WaterSMART (Sustain and Manage America's Resources for Tomorrow) program project proposal from the Board of Control (BOC) for Wood River Valley Irrigation District No. 45 (WRID45) and Triangle Irrigation District (TID) to stabilize and modify the existing irrigation diversion to provide fish passage and improve sediment transport. The project is located on the Big Wood River in the city of Bellevue, in Blaine County, Idaho. The associated canal serves both WRID45 and TID who jointly own and manage the diversion structure as the BOC.

The WaterSMART program establishes a framework to provide Federal leadership and assistance on the efficient use of water; integrate water and energy policies to support the sustainable use of all natural resources; form strong diverse partnerships with states, tribes and local entities; and coordinate with other Department bureaus and offices on water conservation activities. Through the WaterSMART grants program, the Bureau of Reclamation provides cost-share funding to entities promoting the sustainable use of water resources, improving the ecological resilience of rivers and streams, and conserving water for multiple uses through collaborative conservation efforts.

Federal actions are analyzed in accordance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations to determine potential environmental consequences. Reclamation is asking for comments to better identify issues and concerns associated with this proposal.

Purpose and Need of Action

Reclamation's purpose for the Proposed Action is to fulfill the WaterSMART grant proposing to rehabilitate aging water delivery infrastructure. This project would improve safety for boaters, restore fish passage and improve sediment transport at the diversion dam while improving diversion functionality and stabilizing the existing structure. A low flow channel would be notched into the existing structure to allow for fish, sediment, and boater passage. Currently the structure is undercut and unstable. Scour immediately downstream of the structure has created a drop that acts as a fish barrier and is a danger to boaters. Recent warm and dry years have caused high summer water temperatures and fish die off events downstream of the diversion. Over 12,000 salmonids were captured downstream of the diversion and released upstream during a salvage event in 2021. Due to sediment trapped upstream of the structure, BOC has to conduct instream work annually to move gravel to provide water to the canal. Overall, the project would improve public safety, water reliability, and fish passage while reducing maintenance.

Proposed Action

The existing dam has created and maintained a profile discontinuity, resulting in upstream aggradation and downstream channel incision (Figure 1). The instream portion of the work is proposed for the low flow period of late summer through fall 2023. The diversion structure is shaped like an upside down "U" (Figure 2). The proposed project actions include removing the existing horizontal cap, stabilizing the vertical walls with compacted gravel, and pouring a new concrete cap (Figure 2). The compacted gravel would be extended below the structure walls to fill

the scour holes. The downstream side of the dam would be backfilled up to the dam crest to help prevent subsurface flows and associated scour issues. A 1.3-feet-deep and 10-feet-wide notch would be cut into the existing downstream wall within the diversion structure. A 300-foot roughened rock ramp would be built to transition the stream bed above the dam through the notch to the stream bed below the dam (Figure 3). This would allow for sediment transport past the top of the canal and facilitate fish migration. This notch and channel would act as the low flow channel enabling fish to move up to higher elevation cooler water. Riprap, planting, and log jam structures would be included to offer diversion and channel stabilization.

Figure 1. Existing condition of Diversion 45 on the Big Wood River, Bellevue, Idaho.

Downstream of the diversion, the existing channel is entrenched and confined. A bankfull bench is proposed to be excavated in the unvegetated right bank along the rock ramp. The bench would maintain conveyance width along the ramp to reduce stress during flood conditions. In addition, plantings would be installed along the bench face and crest to improve stability and shading of the elevated gravel bar along the right bank, which is a consequence of the historic downcutting that has resulted from the diversion dam profile discontinuity. Included in the bench are ballasted 2-log structures (wood jams). Wood jams promote the longevity of the proposed bench, improve sediment sorting, and tend to accumulate natural debris over time. A native transitional seed mix would be dispersed throughout the treatment area after construction has been completed, including all temporary haul roads and equipment and material storage areas.

Location and Background

The project is located on the Big Wood River in the city of Bellevue, Blaine County, Idaho (Figure 4). The associated canal serves both WRID45 and TID who jointly own the diversion structure. In 2015, legislation divided the original Wood River Valley Irrigation District into two subdistricts: WRID45 and the TID. With some exceptions, the WRID45 now includes the smaller acreage properties generally located in the northern section of the Bellevue Triangle, while the TID consists

of the larger acreage properties generally located in the southern section. The same legislation allowing the WRID to be partitioned into two subdistricts also created a third entity: the BOC, which is the applicant for this grant. The BOC facilitates the operation and management of the mutually owned infrastructure (Diversion 45). The BOC Board is comprised of members from both irrigation districts and operates and maintains the structures and personnel to deliver water through the canals to each private diversion.

The water delivery system (canals and diversion structure) was constructed around 1915-1925. A major upgrade on Diversion 45 was done in the early 1960s. The structure currently diverts up to 380 cubic feet per second to serve approximately 9,000 acres of land and roughly 200 users.

Preliminary Alternative Development

The environmental assessment would include consideration of the Proposed Action Alternative and the No Action Alternative. Additionally, alternatives could be developed with the identified issues throughout the NEPA scoping process.

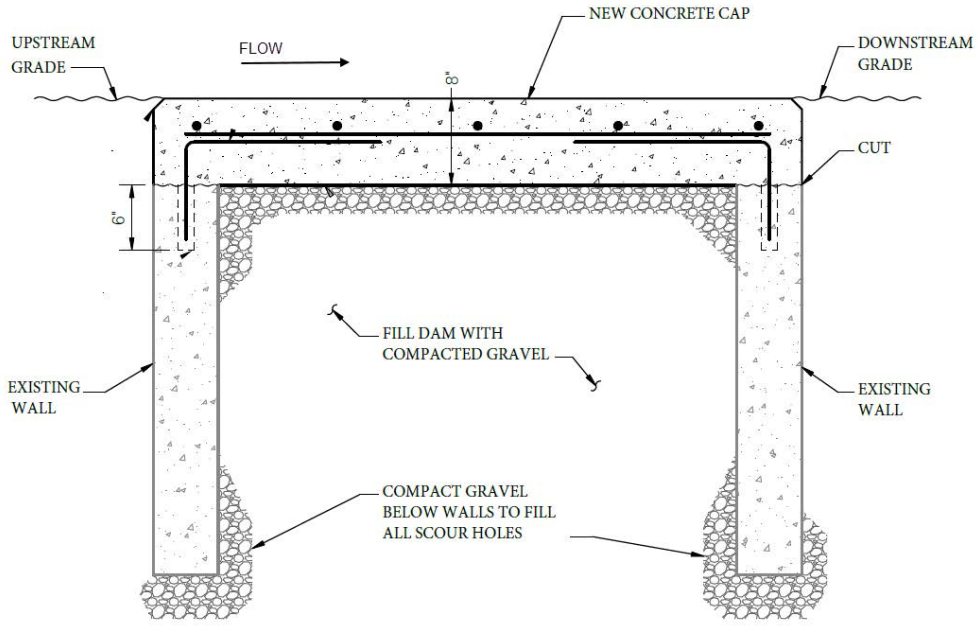

Figure 2. Proposed modifications to the concrete diversion structure.

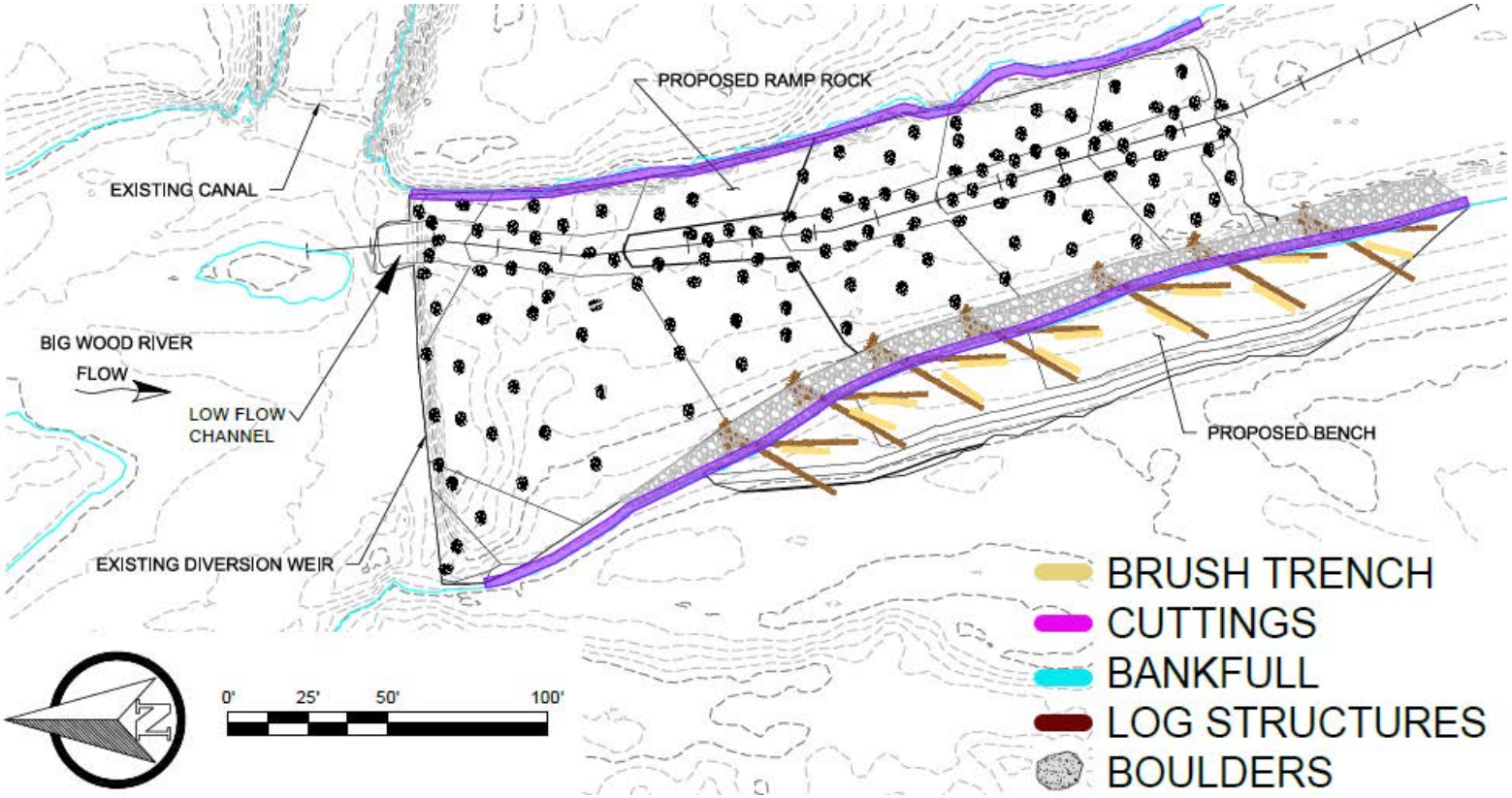

Figure 3. Drawing of the proposed modification to the stream channel at Diversion 45.

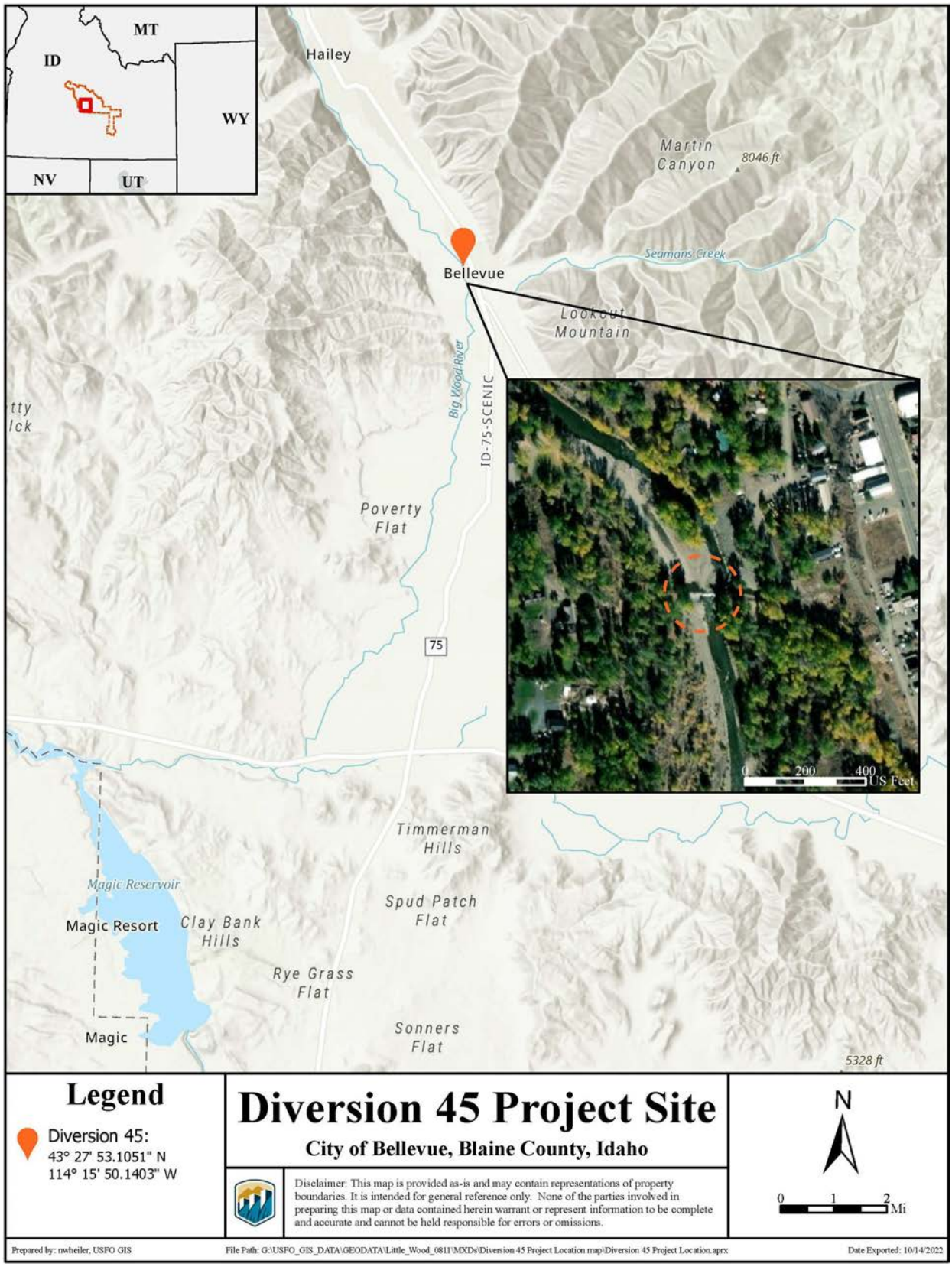

Figure 4. Project Location.

Departamento del Interior de los Estados Unidos
OFICINA DE RECUPERACIÓN
Oficina del Área del Snake River
230 Collins Road
Boise, ID 83702-4520

IN REPLY REFER TO:

SRA-1212
2.1.4.17

Tema: Solicitud de Comentarios Públicos sobre el Proyecto Propuesto de Estabilización del Desvío 45 del Wood River y la Remediación del Paso de Peces en el Condado de Blaine, Idaho

A los interesados:

La Oficina de Recuperación recibió una propuesta de la Junta de Control de Wood River (BOC, por sus siglas en inglés) para una subvención WaterSMART (Mantener y Administrar los Recursos de Estados Unidos para el Mañana) para estabilizar y mejorar una estructura de desvío existente en Big Wood River en Bellevue, Idaho. El BOC administra esta infraestructura para el distrito de riego No. 45 de Wood River Valley y el distrito del Triángulo de Riego en el condado de Blaine. Con el tiempo, la estructura existente ha causado que los sedimentos se acumulen río arriba del desvío y que se arrastren río abajo. Esto ha creado una estructura inestable que es una barrera de paso para los peces y los navegantes. Este proyecto mejoraría las condiciones de paso para los peces y los navegantes al mismo tiempo que mejoraría el funcionamiento del desvío. El gradiente de la corriente en el desvío regresaría a una pendiente más natural del 2 por ciento al llenar el área río abajo del desvío con grava y piedras. Esto crearía una rampa de roca de aproximadamente 300 pies de largo. La tapa de concreto existente en la estructura misma sería reemplazada por una nueva tapa de concreto. Esta nueva tapa se atornillaría y se pegaría con resina epóxica a las paredes verticales existentes que atraviesan el río. Se crearía un canal de flujo bajo de 10 pies de ancho en la rampa de roca. Este canal de flujo bajo estaría conectado a una muesca de 10 pies de ancho en la estructura del desvío. Puede encontrar más detalles sobre el proyecto propuesto en el paquete adjunto con información de determinación de alcance del proyecto.

La determinación de alcance del proyecto es un proceso de participación pública utilizado para determinar el alcance de los problemas que se abordarán e identificar problemas relacionados con una acción propuesta. Los comentarios recibidos en respuesta a esta solicitud se utilizarán para identificar posibles problemas ambientales relacionados con la acción propuesta y para identificar alternativas a la acción propuesta que cumplan con el propósito y las necesidades del proyecto.

Por favor envíe electrónicamente sus comentarios a sra-nepa-comments@usbr.gov hasta el **31 de enero del 2023**, o envíelos por correo o entréguelos a mano a:

Sr. Anthony Prisciandaro
Biólogo Pesquero
Oficina de Recuperación
Oficina del Área del Snake River
230 Collins Road
Boise, ID 83702

Antes de incluir su dirección, número de teléfono, dirección de correo electrónico u otra información de identificación personal en su comentario, tenga en cuenta que todo su comentario, incluida su información de identificación personal, puede hacerse disponible públicamente en cualquier momento. Si bien puede solicitar que retengamos su información de identificación personal de la revisión pública, no podemos garantizar que podamos hacerlo.

El contacto principal para preguntas o comentarios para este análisis, necesidades de accesibilidad u otra información es el Sr. Prisciandaro y se le puede contactar en el teléfono (208) 383-2233.

Si es sordo, tiene problemas de audición o tiene una discapacidad del habla, marque 7-1-1 para acceder a los servicios de retransmisión de telecomunicaciones.

Atentamente,

BRYAN HORSBURGH

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Date: 2022.12.29 11:20:43 -07'00'

Acting for Melanie Paquin
Gerente de Área

Adjunto

Paquete de Información de Alcance del Proyecto

Proyecto Propuesto de Estabilización del Desvío 45 del Wood River y la Remediación del Paso de Peces en el Condado de Blaine, Idaho

Este paquete de información resume una propuesta de proyecto para el programa WaterSMART (Mantener y Administrar los Recursos de Estados Unidos para el Mañana) del Departamento del Interior de EE. UU. sometido por la Junta de Control (BOC, por sus siglas en inglés) para el Distrito de Irrigación No. 45 de Wood River Valley (WRID45) y el Distrito de Triángulo de Riego (TID), para estabilizar y modificar el desvío de riego existente y permitir el paso de peces y mejorar el transporte de sedimentos. El proyecto está ubicado en el río Big Wood en la ciudad de Bellevue, en el condado de Blaine, Idaho. El canal asociado sirve tanto a WRID45 como a TID, quienes poseen y administran conjuntamente la estructura de desvío como el BOC.

El programa WaterSMART ofrece un marco para brindar liderazgo y asistencia federal en el uso eficiente del agua; integrar políticas de agua y energía para apoyar el uso sostenible de todos los recursos naturales; crear colaboraciones sólidas y diversas con estados, tribus y entidades locales; y coordinar con otros departamentos y oficinas en actividades de conservación del agua. A través del programa de subvenciones WaterSMART, la Oficina de Recuperación brinda financiamiento para costos compartidos a entidades que promueven el uso sostenible de los recursos hídricos, mejoran la resiliencia ecológica de los ríos y arroyos y conservan el agua para múltiples usos a través de esfuerzos colaborativos de conservación.

Las acciones federales se analizan de acuerdo con la Ley Nacional de Política Ambiental (NEPA, por sus siglas en inglés) y otras leyes y reglamentos federales y estatales pertinentes para determinar las posibles consecuencias ambientales. La Oficina de Recuperación solicita comentarios para poder identificar mejor los problemas e inquietudes asociadas con esta propuesta.

Propósito y Necesidad de Acción

El propósito de la Oficina de Recuperación para la Acción Propuesta es cumplir con la subvención WaterSMART que propone rehabilitar la infraestructura obsoleta de suministro de agua. Este proyecto mejoraría la seguridad de los navegantes, restablecería el paso de los peces y mejoraría el transporte de sedimentos en la presa del desvío, mientras que mejoraría la funcionalidad del desvío y estabilizaría la estructura existente. Se abriría un canal de flujo bajo en la estructura existente para permitir el paso de peces, sedimentos y navegantes. Actualmente, la estructura está socavada y es inestable. La socavación inmediatamente río abajo de la estructura, ha creado un declive que actúa como una barrera para peces y es un peligro para los navegantes. Los últimos años cálidos y secos han creado altas temperaturas en el agua durante el verano y eventos de muerte de peces río abajo del desvío. Se capturaron más de 12,000 salmónidos río abajo del desvío los cuales se liberaron río arriba durante un evento de salvamento en el 2021. Debido a los sedimentos atrapados río arriba de la estructura, el BOC debe realizar anualmente trabajos dentro del agua para mover grava y así proporcionar agua al canal. En general, este proyecto mejoraría la seguridad pública, la fiabilidad del agua, el paso de peces y al mismo tiempo reduciría el mantenimiento.

Acción Propuesta

La presa existente ha creado y mantenido una discontinuidad en el perfil, lo que ha resultado en una agradación río arriba y una incisión en el canal río abajo (Figura 1). Se propone trabajar en la parte interna durante el período de flujo bajo desde finales del verano hasta el otoño de 2023. La estructura del desvío tiene forma de "U" invertida (Figura 2). Las acciones del proyecto propuesto incluyen la eliminación de la tapa horizontal existente, la estabilización de las paredes verticales con grava compactada y el vertido de una nueva tapa de concreto (Figura 2). La grava compactada se extendería por debajo de las paredes de la estructura para llenar los huecos de socavación. El lado río abajo de la presa se rellenaría hasta la cima de la presa para ayudar a prevenir flujos subterráneos y los problemas de socavación asociados a estos. Se cortaría una muesca de 1.3 pies de profundidad y de 10 pies de ancho en el muro existente río abajo dentro de la estructura de desvío. Se construiría una rampa de roca rugosa de 300 pies para hacer la transición del lecho del río arriba de la presa, a través de la muesca, y al lecho del río debajo de la presa (Figura 3). Esto permitiría el transporte de sedimentos más allá de la parte superior del canal y facilitaría la migración de los peces. Esta muesca y el canal actuarían como el canal de flujo bajo que permitiría a los peces moverse hacia mayores alturas con aguas más frías. Se incluirían estructuras de escollera, plantación y atasco de troncos para ofrecer desvío y estabilización del canal.

Figura 1. Condición actual del desvío 45 en Big Wood River, Bellevue, Idaho.

Río abajo del desvío, el canal existente está atrincherado y confinado. Se propone excavar un banco lleno en el banco derecho que no tiene vegetación a lo largo de la rampa de roca. El banco mantendría el ancho para el transporte a lo largo de la rampa, reduciendo el estrés durante las condiciones de inundación. Además, se plantarían esquejes a lo largo de la cara y la cresta del banco para mejorar la estabilidad y crear sombra en la barra elevada de grava a lo largo de la orilla derecha, esto es una consecuencia de la reducción histórica que ha resultado por la discontinuidad del perfil de la presa de desvío. En el banco se incluyen estructuras de dos troncos lastrados (atascos de madera). Los atascos de madera promueven la longevidad del banco propuesto, mejoran la

clasificación de sedimentos y tienden a acumular desechos naturales con el tiempo. Una mezcla de semillas nativas de transición se dispersaría por toda el área de trabajo después de que se haya completado la construcción, incluyendo todos los caminos de acarreo temporales y las áreas de almacenamiento de equipos y materiales.

Ubicación y Contexto

El proyecto está ubicado en el río Big Wood en la ciudad de Bellevue, condado de Blaine, Idaho (Figura 4). El canal asociado sirve tanto a WRID45 como a TID, quienes son propietarios conjuntos de la estructura de desvío. En el 2015, la legislación dividió el distrito de riego original de Wood River Valley en dos subdistritos: WRID45 y TID. Con algunas excepciones, el WRID45 ahora incluye las propiedades de menor área generalmente ubicadas en la sección norte del Triángulo de Bellevue, mientras que el TID consiste en las propiedades de mayor área generalmente ubicadas en la sección sur. La misma legislación que permitió dividir el WRID en dos subdistritos también creó una tercera entidad: el BOC, que es el solicitante de esta subvención. El BOC facilita la operación y gestión de la infraestructura de propiedad mutua (Desvío 45). La Junta del BOC está compuesta por miembros de ambos distritos de riego y opera y mantiene las estructuras y el personal para suministrar agua a través de los canales a cada desvío privado.

El sistema de suministro de agua (canales y estructura de desvío) se construyó alrededor de 1915-1925. A principios de la década de 1960 se realizó una actualización importante en el Desvío 45. La estructura actualmente desvía hasta 380 pies cúbicos por segundo para servir a aproximadamente 9,000 acres de tierra y aproximadamente a 200 usuarios.

Desarrollo Alternativo Preliminar

La evaluación ambiental incluiría la consideración de la Alternativa de Acción Propuesta y la Alternativa de No Acción. Además, se podrían desarrollar alternativas con los problemas identificados a lo largo del proceso de determinación del alcance de la NEPA.

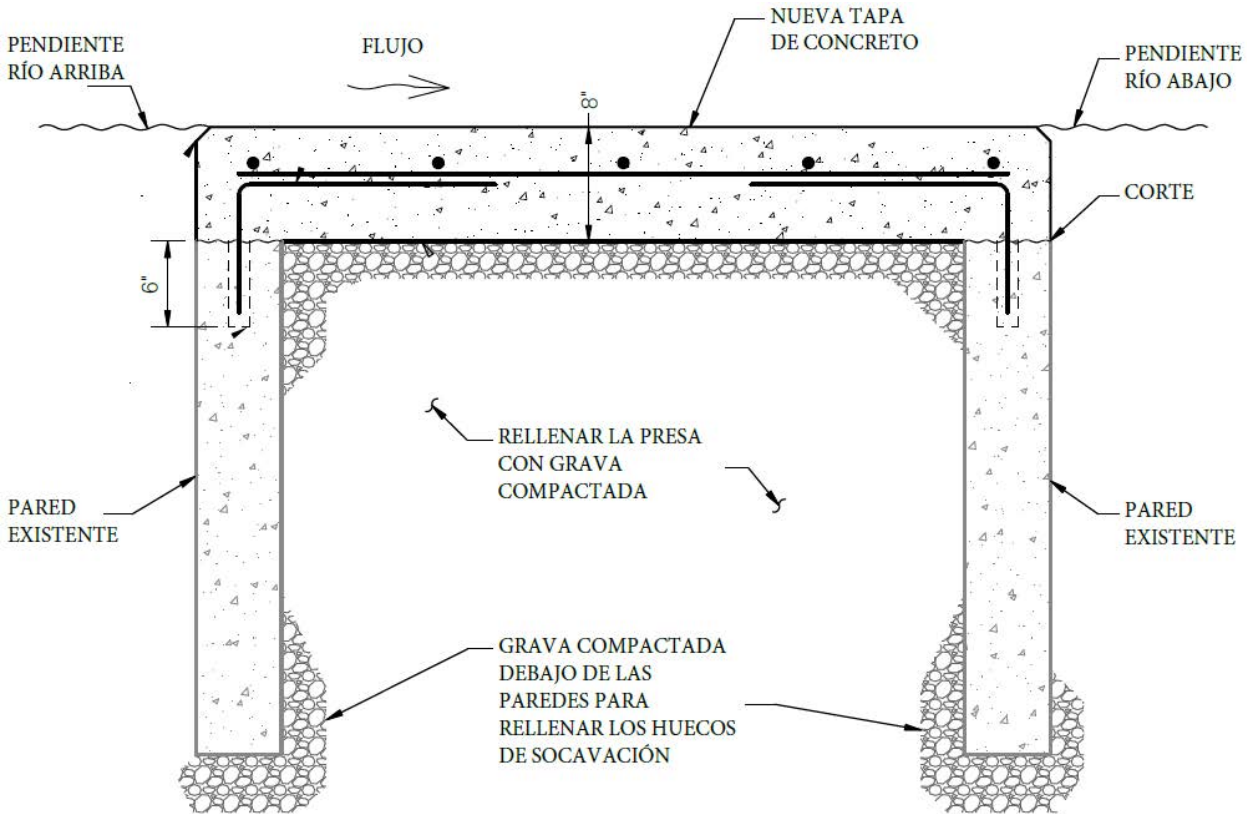

Figura 2. Modificaciones propuestas a la estructura de desvío de concreto.

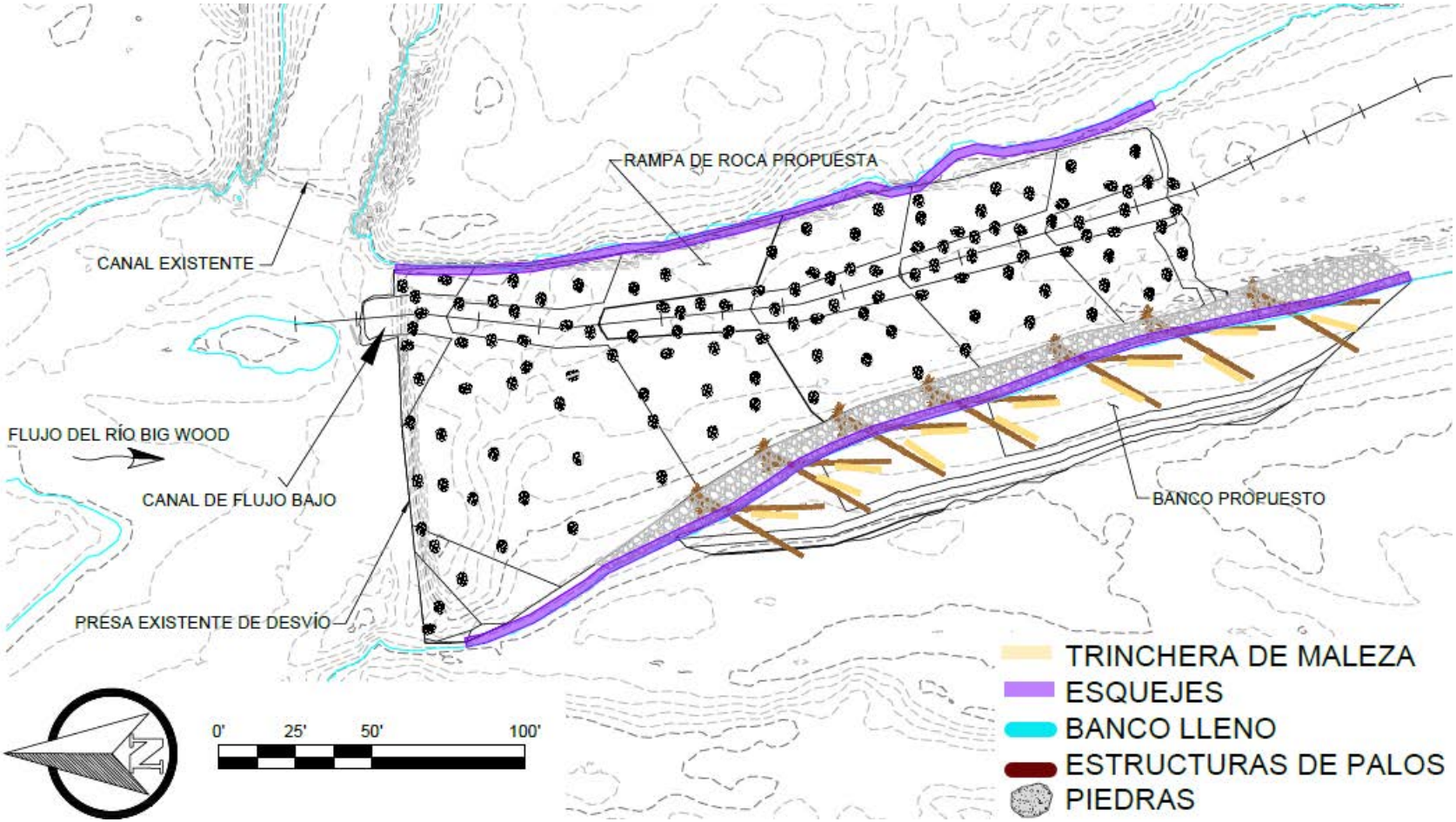

Figura 3. Dibujo de la modificación propuesta al cauce del arroyo en el Desvío 45.

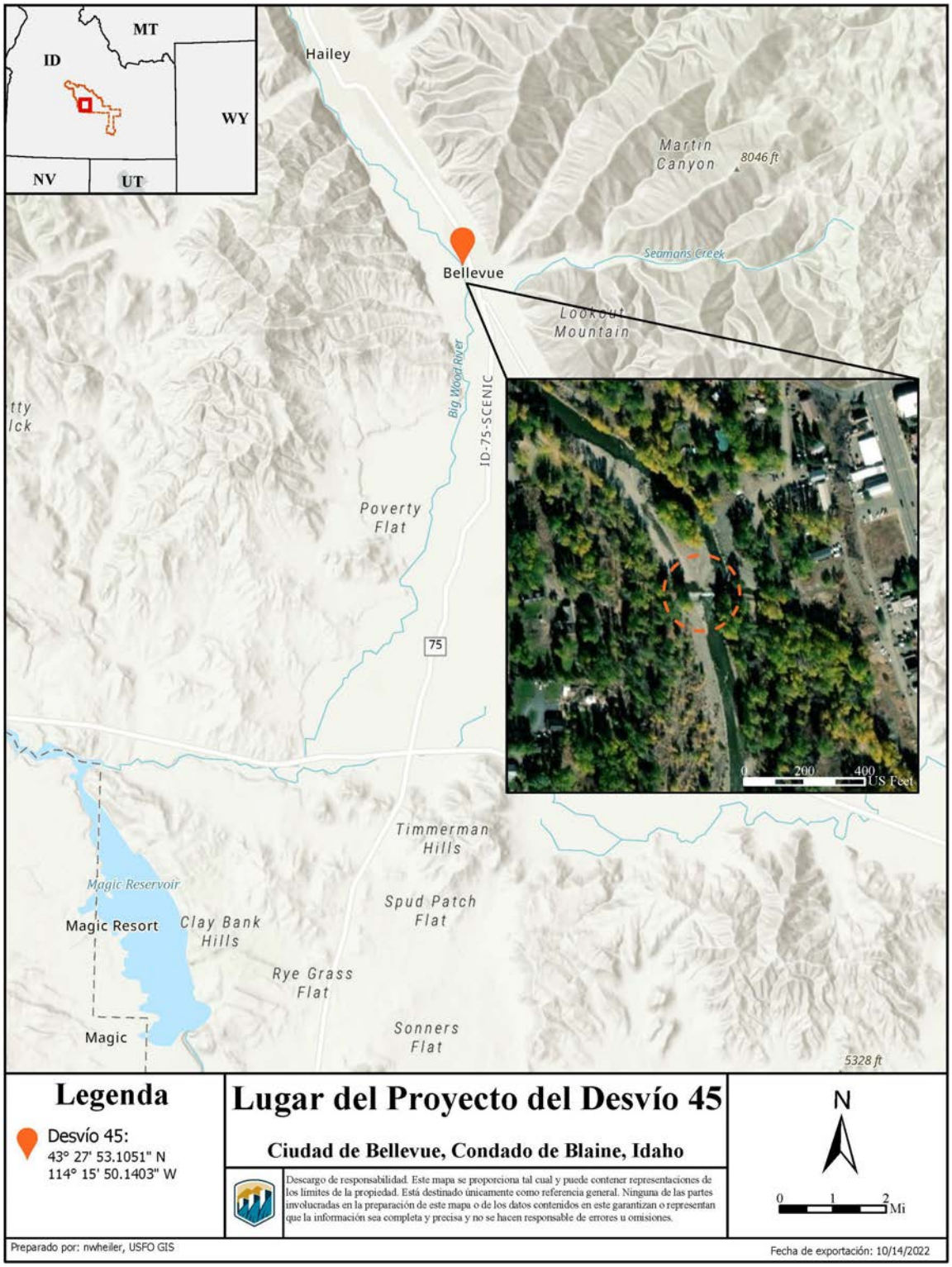

Figura 4. Ubicación del proyecto.

[EXTERNAL] Wood River Diversion 45 Stabilization and Fish Remediation Project

Kristine Hilt <khilt@co.blaine.id.us>

Tue 1/31/2023 8:03 AM

To: NEPA Mailbox, BOR SRA <sra-nepa-comments@usbr.gov>
Cc: Dick Fosbury <dfosbury@co.blaine.id.us>;Angenie McCleary <amccleary@co.blaine.id.us>;Muffy Davis <mdavis@co.blaine.id.us>;Tom Bergin <tbergin@co.blaine.id.us>;Mandy Pomeroy <mpomeroy@co.blaine.id.us>

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Mr. Anthony Prisciandaro,

Please accept this email as public comment in support of the Wood River Diversion 45 Stabilization and Fish Passage Remediation Project in Blaine County, Idaho. Blaine County supports projects of this nature that balance the needs of water users, recreationalists, property owners and anglers. There is critical need in this location to remove the existing barrier to fish passage while also allowing for the improvement of sediment transport through the reach. The adverse impacts of the existing infrastructure is well documented and we hope you consider funding this project as a mitigation measure to offset these impacts.

Regards,

Kristine Hilt **CFM**
Certified Floodplain Manager
Code Compliance Specialist
Blaine Co. Land Use & Building Services
219 1st Ave South, Suite 208
Hailey, Idaho 83333 I o: (208) 788-5570 I c: (208) 481-0433

Riparian plant buffers are a symbol of nature's thought process in protecting its streams, rivers, & lakes.
DISCLOSURE NOTICE: Messages to and from this email address may be subject to Public Records Law.

[EXTERNAL] digital access to scoping document

Tom Blanchard <tjblanchard@svskylan.net>

Mon 1/9/2023 11:49 AM

To: NEPA Mailbox, BOR SRA <sra-nepa-comments@usbr.gov>

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Hi Anthony….I left you a voicemail and am hoping this note finds you. I would like to have digital access to the document to work and pass around to interested individuals. I looked on line but did not see where the doc was digitally available.

Tom Blanchard,
208-788-4450

[EXTERNAL]

Tom Blanchard <tjblanchard@svskylan.net>

Mon 1/30/2023 5:21 PM

To: NEPA Mailbox, BOR SRA <sra-nepa-comments@usbr.gov>

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January 25, 2023

Mr. Anthony Prisciandaro
BOR Fisheries Biologist
Snake River Area Office
230 Collins Road
Boise, Idaho 83702
Mr. Prisciandaro,

The following are my comment on the proposed Wood River Diversion Stabilization and Fish Passage Remediation:

1. Under purpose and need, I understand that the salvage of 12,000 salmonids down stream from the diversion dam was triggered by the cutoff of water over the dam by diversion to junior users in the triangle and was not related to the dam stabilization project being proposed. If so, the comment should be removed as a justification of the proposed action.
2. Under purpose and need, it is not clear how the dam contributes to the higher water temperature cited and should be removed from the justification.
3. The ramp construction will require significant base material and large boulders being transported to the site prior to placement. There is nothing in the scoping notice about the travel route of that material. One suggestion has been offered that it would be trucked to the west side of the river and downstream from there. That will have a significant impact on the temporary road to access the river from the west. At the same time there appears to be ample storage area on the southern tip of the upstream island to accommodate the amount of material needed to construct the west side ramp.
4. The area immediately adjacent to the proposed project is highly infested with noxious weed which will be disturbed during construction. A weed management plan is needed in the proposal for multiple year weed control, which should include follow up post construction treatment as necessary.
5. There is a fisherman's trail closely adjacent to the river that will be destroyed by the placement of the log diversion structures which should be replaced at the end of the project.
6. The material storage area was formally an agriculture field that had a native grass cover. This area will be significantly disturbed from that grass environment and needs careful restoration using locally identified native plants.

Thank you for the opportunity to comment.

Tom Blanchard
33 Lower Broadford Road
Box 225
Bellevue, Idaho 83313

WOOD RIVER LAND TRUST

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Phone: 208.788.3947

WoodRiverLandTrust.org
Federal ID: 82-0474191

January 25, 2023

Mr. Anthony Prisciandaro, Fisheries Biologist
Bureau of Reclamation Snake River Area Office
230 Collins Road
Boise, ID 83702
sra-nepa-comments@usbr.gov

Sent via email

RE: Request for Public Comments Regarding the Proposed Wood River Diversion 45 Stabilization and Fish Passage Project in Blaine County, Idaho

Dear Mr. Prisciandaro,

Thank you for the opportunity to review and comment on the *Wood River Diversion 45 Stabilization and Fish Passage Remediation Project*. The Wood River Land Trust is a 501(c)(3) non-profit organization location in central Idaho, whose mission is to protect and sustain the life-giving waters of the Wood River Valley and inspire love of this special place for generations to come. Since 1994, the Wood River Land Trust has been a growing dynamic presence in the Wood River Valley, preserving and protecting the Big Wood River, its tributaries, and treasured landscapes in the region.

The Big Wood River has a history of degradation from mining, agriculture, ranching, and the development of infrastructure along its waterways. The result has been significant channelization of the Big Wood River for the purposes of protecting the expansion of agricultural and municipal areas into historical floodplain. Like many areas in the west, a changing climate has also limited water quantity and produced flashier peaks in the hydrograph. The river has gone dry below Bellevue, which is a new phenomenon, and has stakeholders concerned about fish passage to more and cooler water upstream of the proposed project area.

The Wood River Land Trust recognizes the importance of this project as one of several that are part of a broader effort, led by a diverse group of stakeholders, to restore a mile-long stretch of the Big Wood River near the City of Bellevue, Idaho. This project is timely and addresses many of the limiting factors in the Big Wood basin, namely fish passage and sediment transport processes. The proposed project aligns with our mission and the Bureau of Reclamations WaterSMART goals, to improve ecological resilience of rivers and streams.

We strongly support the proposed project and appreciate the applicant's effort to balance needs of water users with the needs of the river.

Thank you for your time and consideration. Please let us know if you have any questions.

Sincerely,

Cory McCaffrey
River Restoration Specialist
Wood River Land Trust

[EXTERNAL] Big Wood River low-flow diversion dam remediation

Melanie Dahl <melanie1dahl@gmail.com>

Fri 1/27/2023 8:44 AM

To: NEPA Mailbox, BOR SRA <sra-nepa-comments@usbr.gov>

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Mr. Prisciandaro:

I am pleased to learn that remediation work is planned for the old diversion structure at the headgates of the District 45 canal in Bellevue. It's long been a hazard and impediment to fish passage. Unfortunately, fish rescue is common in that part of the river in low water.

I hope the ramp and notch are sufficient for fish passage. A couple questions: Will the notch eventually be filled in by the action of the river, and will the ramp also be affected in its usefulness by the river's flow? In any case. I am in favor of these structural improvements.

We understand that the pile of rock and gravel that now sits on the Howard Preserve just south of the Elm Street bridge was earmarked for this project or one similar. I hope this is the situation as it has presented an unsightly aspect to the Preserve and damaged a vegetated area since river restoration work was done a few years ago.

Our river and the Preserve are critical to the riverine environment upstream, downstream, and here in Bellevue. Thank you for your plans for this remediation.

Melanie Dahl
409 S. Second, Bellevue

[EXTERNAL] Big Wood River diversion dam renovation project

Timothy Frazier <timothyfrazier@isu.edu>

Mon 1/23/2023 8:37 PM

To: NEPA Mailbox, BOR SRA <sra-nepa-comments@usbr.gov>

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Mr. Anthony Prisciandaro
Fisheries Biologist
Bureau of Reclamation
Snake River Area Office
230 Collins Road
Boise, ID 83702

Dear Mr. Prisciandaro,

I am writing in response to your request for input regarding the proposed renovation of an existing diversion structure on the Big Wood River in Bellevue, Idaho. As a resident of Bellevue and a frequent visitor to the affected area of the Howard Preserve, I am pleased to read of the reclamation as the current structure is in desperate need of repair. Also, the inclusion of the low flow channel and the gentle slope of the stream gradient will greatly improve the stream flow and river access for both fish and recreational boaters.

However, I do have some concerns. The area affected by this proposed construction is a delicate and beautiful riparian environment that is home to a number of animals including the threatened yellow billed coocoo. Additionally, the trails are used daily by locals and is a treasured recreational area for residents and visitors alike. I note that although restoration plans for the areas disturbed by the construction include reseeding, nothing is mentioned regarding the treatment of the damage done by heavy equipment to the existing vegetation and the wide swath their treads will cut into the land. This is more than simply a question of aesthetics; it is the restoration of the small but important buffer zone east of the canal that abuts the steep incline at the back of businesses along Main St. (Hwy 75) and the affected areas west of the diversion area along the banks of the Big Wood River. It would be tragic if the needed improvements of the structure left scars in this unique preserve.

I feel sure that more than reseeding is a part of this plan but would like to see those specific actions noted in some detail as an integral part of this proposal. Particularly the above-mentioned area east of the canal that is currently completely covered by large piles of rock removed from a previous project to improve the flow of the river. The using this material to construct the 300-foot slope downstream of the diversion is an excellent recycling of this rock but its transport would cut through currently undisturbed sections of the Howard Preserve. It is critical this damage be remediated.

The completion of this project will certainly improve the river's flow characteristics and help the fish population survive future droughts. I look forward to its completion with all restoration necessary to return the area to its natural beauty.

Respectfully,

Tim H. Frazier
PO Box 429, 217 Cottonwood St.
Bellevue, ID 83313
fraztimo@gmail.com, 208-252-0816

[EXTERNAL] Diversion 45 Fish Passage Project

Florence Blanchard <fkblanchard@gmail.com>

Sat 1/21/2023 6:11 PM

To: NEPA Mailbox, BOR SRA <sra-nepa-comments@usbr.gov>

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Dear Mr. Prisciandaro,

I have reviewed the scoping document for this project. I think that improving and stabilizing this diversion dam is long overdue, but I have three main concerns.

1) For the past two years, Irrigation District 45 has been storing all the river rock needed for this project on the Howard Preserve. Doing so covered a a large area that was previously covered with tall grasses like blue bunch wheat grass and orchard grass and others. This area needs to be restored with a combination of local native grasses.

2) I am concerned about the impact of the large trucks needed to move the river rock from storage to the project area based on damage that occurred during the previous project moving the rocks to where they are now. The road needs to be reconstructed and graveled to handle this heavy equipment as well as the fire trucks and other emergency vehicles that must use this road which also serves as a walking trail.

3) My third concern is the environmental disturbance that might be caused to the riparian area on the west side of the river. If possible, the project should try to work from the east side and use the island to store materials to avoid crossing the Bellevue bridge and working from the west side.

Thank you for your consideration. I look forward to a successful project.

Florence Blanchard
Chairman
Friends of the Howard Preserve
33 Lower Broadford Road
Bellevue, ID 83313
208 788 4450

Sent from my iPad

[EXTERNAL] Request for Public Comments Regarding the Proposed Wood River Diversion 45 Stabilization and Fish Passage Remediation Project in Blaine County, Idaho

Sean Woodhead <Sean.Woodhead@deq.idaho.gov>

Tue 1/10/2023 3:28 PM

To: NEPA Mailbox, BOR SRA <sra-nepa-comments@usbr.gov>

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Dear Mr. Prisciandara,

Thank you for giving DEQ the opportunity to comment on BOR's proposed Diversion 45 stabilization and fish passage remediation project on the Big Wood River. The segment of the Big Wood River (Assessment Unit ID17040219SK004_05) where the project is proposed has been listed as impaired in DEQ's Assessment Unit Status Report (2018/2019) for the following pollutants/pollution: E. coli, flow regime modification, total phosphorous, and sediment/siltation. The pollutant of concern for this project is sediment/siltation. DEQ requests that the guidelines listed below are used during the construction of this project.

Fill Material

Fill material subject to suspension will be free of easily suspended fine material. Only clean material may be placed as fill. If dredged material is proposed for use as fill material and there is a possibility the material may be contaminated, then the permittee must assess and characterize sediment to determine the suitability of dredge material for unconfined-aquatic placement; determine the suitability of post-dredge surfaces; and predict the effect on water quality during dredging. Sediment assessment and characterization following the procedures in the *Sediment Evaluation Framework for the Pacific Northwest* (RSET 2018) satisfies this requirement. A different assessment and characterization methodology may be used if the DEQ approves the methodology in writing.
Temporary fills will be removed in their entirety on or before construction completion.
Excavated or staged fill material must be placed so it is isolated from the water edge or wetlands and not placed where it could re-enter waters of the state.

Erosion and Sediment Control

The following conditions protect beneficial uses in accordance with Idaho's water quality standards, including without limitation IDAPA 58.01.02.051, IDAPA 58.01.02.200, IDAPA 58.01.02.250, IDAPA 58.01.02.253, and IDAPA 58.01.02.400.

BMPs for sediment and erosion control suitable to prevent exceedances of Idaho's water quality standards and TMDLs will be selected and installed before starting construction at the site. One resource to evaluate appropriate BMPs is the *Idaho Catalog of Storm Water Best Management Practices* (DEQ 2020). Other resources may also be used for selecting appropriate BMPs.
Permanent erosion and sediment control measures will be installed to provide long-term sediment and erosion control and prevent excess sediment from entering waters of the state.
Permanent erosion and sediment control measures will be installed at the earliest practicable time consistent with good construction practices and will be maintained as necessary throughout project operation.
Structural fill or bank protection will consist of materials that are placed and maintained to withstand predictable high flows in the waters of the state.

A BMP inspection and maintenance plan must be developed and implemented. At a minimum, BMPs must be inspected and maintained daily during project implementation and replaced or augmented if they are not effective.
All construction debris, scraps, particles, and other associated materials will be captured and properly disposed of so they cannot enter waters of the state or cause water quality degradation.
Disturbed areas suitable for vegetation will be seeded or revegetated to prevent subsequent soil erosion (EPA 2000).
Maximum fill slopes will be material that is structurally stable once placed and does not slough into the stream channel during construction, during periods before revegetation, or after vegetation is established.

Pollutants and Toxins

In conformance with IDAPA 58.01.02.200, the use of chemicals such as soil stabilizers, dust palliatives, sterilants, growth inhibitors, fertilizers, and deicing salts during construction and operation should be limited to the best estimate of optimum application rates. All reasonable measures must be taken to avoid excess application and introduction of chemicals into waters of the state.

Sediment from disturbed areas or sediment that can be tracked by vehicles onto pavement must not leave the site in amounts reasonably expected to enter waters of the state. Placement of clean aggregate at all construction entrances or exits and other BMPs such as truck or wheel washes, if needed, must be used when earth-moving equipment will be leaving the site and traveling on paved surfaces to prevent track-out.

Turbidity

Sediment resulting from this activity must be mitigated to prevent violations of the turbidity standards stipulated in Idaho's water quality standards. Any violation of this standard must be reported to the DEQ regional office immediately.
Containment measures such as silt curtains, geotextile fabrics, and silt fences must be implemented and properly maintained to minimize instream sediment suspension and resulting turbidity. One resource to evaluate appropriate BMPs is the *Idaho Catalog of Storm Water Best Management Practices* (DEQ 2020). Other resources may also be used for selecting appropriate BMPs.
All practical BMPs on disturbed banks and within the waters of the state must be implemented to minimize turbidity. Visual observation is acceptable to determine whether BMPs are functioning properly. If a sediment plume is observed, the project may be causing an exceedance of water quality standards, and the permittee must inspect the condition of the project BMPs. If the BMPs appear to be functioning improperly, then corrective action must be taken, and the permittee must modify the activity or implement additional BMPs (this may also include modifying existing BMPs).
If the project continues to have a visual sediment plume after BMPs have been inspected and modified, turbidity monitoring consistent with Table 1, is required.
A properly and regularly calibrated turbidimeter is required for sample collection measurements to be analyzed in the field. The turbidimeter should be calibrated before each use or according to the manufacturer's recommendations. The calibration log should be maintained and made available to DEQ upon request.
Instantaneous grab samples may be collected for field analysis and taken to a laboratory for analysis as needed.
When turbidity monitoring is required, a grab sample must be collected at an undisturbed area immediately upstream from the in-water disturbance or discharge to establish background turbidity levels. Background turbidity, latitude/longitude, date, and time must be recorded before monitoring downstream. A sample must be collected immediately downstream from the in-water disturbance or point of discharge and within the visible sediment plume. The turbidity, latitude/longitude, date, and time must be recorded for each sample. The downstream sample must be taken immediately following the upstream sample to obtain meaningful and representative results.
Results from the downstream sampling location must be compared to the upstream sample location or background turbidity to determine whether project activities are causing an exceedance of Idaho's water quality standards. If the downstream turbidity is 50 nephelometric turbidity units (NTUs) or greater than the upstream turbidity, then the project is causing an exceedance of the water quality standards. Any exceedance of the turbidity standard must be reported to the appropriate DEQ regional office within 24-hours of the sample event.

Earth-disturbing activities may continue once turbidity readings return to within 50 NTU over background instantaneously, or if turbidity has exceeded 25 NTU over background for more than 10 consecutive days, once turbidity readings have no longer exceeded 25 NTU over background for at least 24 consecutive hours.
Copies of daily logs for turbidity monitoring must be available to DEQ upon request. The report must describe all exceedances and subsequent corrective actions taken, including the effectiveness of the action.

Table 1. Turbidimeter monitoring and sampling when a plume is observed.

Turbidity Above Background[a]	Monitoring/Sampling Frequency[a]	Additional Actions Required
0 to 24 NTU	Visual monitoring every 2 hours	None
25 to 49 NTU	Sample every 2 hours	STOP work after 8 hours in every 24-hour period
25 NTU for 10 or more consecutive days	Sample before and after following instructions[b]	STOP work and follow instructions[b]; notify DEQ regional office
50 NTU or more	Sample before and after following instructions[c]	STOP work and follow instructions[c]; notify DEQ regional office

a. Sample and report turbidity three times at each location. Use the maximum value of three samples to determine compliance following Table 1 directions.
b. Instructions: If BMPs appear to be functioning properly, then the permittee must modify the activity or implement corrective action such as installing additional BMPs (this may include modifying existing BMPs) until additional sampling indicates turbidity standards are met. Sampling can cease when a sediment plume is no longer observed. Work can commence when a sediment plume is no longer observed, and measurements are consecutively below 25 NTU.
c. Instructions: If BMPs appear to be functioning properly, then the permittee must modify the activity or implement corrective action such as installing additional BMPs (this may include modifying existing BMPs) until additional sampling indicates turbidity standards are met. Sampling can cease when a sediment plume is no longer observed. Work can commence when a sediment plume is no longer observed, and measurements are below 50 NTU.

In-Water Work
Work in open water must be kept at a minimum and only when necessary. Equipment must work from an upland site to minimize disturbance of waters of the state. If this is not practicable, take appropriate measures to ensure disturbance to the waters of the state is minimized.
Construction affecting the bed or banks must occur only during periods of low flow.
Fording the channel is not permitted. Build temporary bridges or other structures if crossings are necessary.
Temporary crossings must be perpendicular to channels and located in areas with the least impact. The temporary crossings must be supplemented with clean gravel or treated with other mitigation methods at least as effective in reducing impacts. Temporary crossings must be removed as soon as possible after the project is completed or the crossing is no longer needed.
Heavy equipment working in wetlands must be placed on mats or suitably designed pads to prevent damage to the wetlands.
Activities in spawning areas must be avoided to the maximum extent practicable.
Work in waters of the state is restricted to areas specified in the application.
Measures must be taken to prevent wet concrete from entering waters of the state when placed in forms and/or from truck washing.
Activities that construct and maintain intake structures must include adequate fish screening devices to prevent fish entrainment or capture.
Stranded fish found in dewatered segments should be moved to a location (preferably downstream) with water.
To minimize sediment transport, stream channel or streambank stabilization must be completed before returning water to a dewatered segment.

Vegetation Protection and Restoration

The following conditions protect beneficial uses according to Idaho's water quality standards, including without limitation IDAPA 58.01.02.051, IDAPA 58.01.02.200, IDAPA 58.01.02.250, IDAPA 58.01.02.253, and IDAPA 58.01.02.400.
To the maximum extent practical, staging areas and access points should be placed in open, upland areas.
Fencing and other protective barriers should be used to mark the construction areas.
Where possible, alternative equipment should be used (e.g., spider hoe or crane).
If authorized work results in unavoidable vegetative disturbance, native riparian and wetland vegetation must be successfully reestablished to benefit water quality at pre-project levels or improved at the completion of authorized work.

Management of Hazardous or Deleterious Materials
The following conditions protect beneficial uses according to Idaho's water quality standards, including without limitation IDAPA 58.01.02.051, IDAPA 58.01.02.080, IDAPA 58.01.02.200, IDAPA 58.01.02.400, IDAPA 58.01.02.800, and IDAPA 58.01.02.850.
Petroleum products and hazardous, toxic, and/or deleterious materials must not be stored, disposed of, or accumulated adjacent to or in the immediate vicinity of waters of the state. Adequate measures and controls must ensure that those materials will not enter waters of the state because of high water, precipitation runoff, wind, storage facility failure, accidents in operation, or unauthorized third-party activities.
Secondary containment is required for chemical materials.
Vegetable-based hydraulic fluid should be used on equipment operating in or directly adjacent to the channel if this fluid is available.
Daily inspections of all fluid systems on equipment to be used in or near waters of the state must ensure no leaks or potential leaks exist before equipment use. A logbook of daily equipment inspections must be kept on site and provided to DEQ upon request.
Equipment and machinery must be removed from the vicinity of the waters of the state before refueling, repair, and/or maintenance.
Equipment and machinery must be steam cleaned of oils and grease in an upland location or staging area with appropriate wastewater controls and treatment capability before entering waters of the state. Any wastewater or wash water must not enter waters of the state.
Emergency spill response procedures must be in place and include a spill response kit (e.g., oil absorbent booms or other equipment).
If an unauthorized release of hazardous material to state waters or to land occurs and there is a likelihood it will enter state waters, the responsible persons in charge must:
Make every reasonable effort to abate and stop a continuing spill.
Make every reasonable effort to contain spilled material so it will not reach surface or ground waters of the state.
Call 911 if immediate assistance is required to control, contain, or clean up the spill. If no assistance is needed in cleaning up the spill, contact the appropriate DEQ regional office during normal working hours or Idaho State Communications Center after normal working hours (1-800-632-8000). If the spilled volume is above federal reportable quantities, contact the National Response Center (1-800-424-8802).

Dredge Material Management
Upland disposal of dredged material must prevent the material from reentering waters of the state.
This condition ensures that there is no unauthorized discharge from upland disposal sites according to 33 U.S.C. § 1311(a) and Idaho's water quality requirements, including without limitation Idaho Code § 39-108, IDAPA 58.01.02.080, and IDAPA 58.01.02.400.

Sincerely,

Sean Woodhead | Water Quality Manager
Idaho Department of Environmental Quality
650 Addison Avenue West, Suite 110
Office: (208) 736-2190
http://www.deq.idaho.gov/

Sean.woodhead@deq.idaho.gov

Our mission is to protect human health and the quality of Idaho's air, land, and water.

IDAHO DEPARTMENT OF FISH AND GAME
MAGIC VALLEY REGION
324 South 417 East, Suite 1
Jerome, Idaho 83338

Brad Little / Governor
Ed Schriever / Director

January 11, 2023

Mr. Anthony Prisciandaro
Bureau of Reclamation
230 Collins Road
Boise, ID 83702

RE: Letter of Support - Diversion 45 Dam Remediation Project

Dear Mr. Prisciandaro,

In January 2023, the Idaho Department of Fish and Game (IDFG) received your request for comment regarding the grant proposal from the Wood River Board of Control to improve the existing Diversion 45 on the Big Wood River near Bellevue, Idaho.

In December 2021, IDFG was pleased to write in support of a grant application by Trout Unlimited to fund initial construction of the Diversion 45 Dam Remediation Project. We appreciate the ongoing efforts to restore fish passage and improve sediment transport at the dam while maintaining diversion functionality, stabilizing the exiting diversion, and improving riverine and floodplain conditions. The Big Wood River is a popular trout fishery that increasingly faces challenges associated with low water flows and degradation of trout habitat. Our understanding is that, upon completion, this project will improve fish passage and river connectivity during low flow conditions.

IDFG recognizes the importance of this project as one of several that are part of a broader effort, led by a diverse group of stakeholders, to restore a reach of the Big Wood River downstream of Diversion 45. In the past, we have routinely supported projects that align with IDFG's mission to preserve, protect, perpetuate, and manage the fish and wildlife of Idaho. We would like to express our support for this effort to improve fish passage and river function in the Big Wood River watershed. Please contact Bradley Dawson (Environmental Staff Biologist; 208-644-6310) at the Magic Valley office for any questions.

Sincerely,

Craig A. White

Craig White
Regional Supervisor
Idaho Dep. Of Fish & Game

[EXTERNAL] Proposed Wood River Diversion 45 Fish Passage Project Comments

Jeanne Liston <jeanne.liston@gmail.com>

Sun 1/29/2023 8:38 PM

To: NEPA Mailbox, BOR SRA <sra-nepa-comments@usbr.gov>

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Dear Mr. Prisciandaro,
I am writing regarding the proposed project from the Wood River Board of Control for Irrigation Diversion 45 that is intended to improve passage for both fish and boaters. Overall I appreciate the concept of this proposal if it can, in fact, improve water reliability and fish passage. As someone who lives in the neighborhood directly south of the Howard Preserve, it was heartbreaking to see the river completely dry up there two years ago and to see the toll on fish and local plants and animals.

As a member of the Friends of the Howard Preserve, I ask that any damage to the preserve resulting from this project gets remediated. I understand there is rock that has been stored in an area that was originally filled with lush grasses and other riparian plants. I request that this area is completely restored at the end of the project. In addition, whatever damage takes place during the removal of the rock or the completion of the project should be properly rectified, including the road and the area on the west side of the river.

Thank you for taking into consideration all public comments for this project.

Sincerely,
Jeanne Liston
1171 Glen Aspen Drive
Bellevue, ID 83313

Diversion 45 Comments

Prisciandaro, Anthony F <APrisciandaro@usbr.gov>

Mon 1/9/2023 3:44 PM

To: lynnclarke@cox.net <lynnclarke@cox.net>
Cc: Goodrich, Amy C <agoodrich@usbr.gov>

Lynn,

Thank you for your call today. I have summarized your concerns the best that I can below. Please let me know if this captures what your concerns are and if there is anything else that comes up.

1. The river has recently been confined mainly to a channel on the east side of the island just upstream of the diversion. This has caused a loss of riverfront for property owners on the west side of the river. There is concern that this project may increase the frequency and duration that there is no flow on the west side of the island.
2. Access for machinery/equipment to the site is a concern. If any machinery or equipment has to access the site from the west side of the river there is concern about the access route. No existing route is known that would accommodate large equipment. If a road has to be cleared or developed it may disturb vegetation and increase noise for property owners on the west side of the river.
3. Currently there are many non-native or noxious weeds in the project area. Disturbing the existing weeds and sediment may promote new growth and distribute seeds downstream. Consider treating weeds prior to any ground disturbance in addition to the planting and seeding planned for post construction.

Thanks,

-Anthony

Anthony Prisciandaro
U.S. Bureau of Reclamation
Fish Biologist/AIS Coordinator
Snake River Area Office
Boise, Idaho
Office (208)383-2233
Cell (208)871-3529

U.S. Department of Interior
Bureau of Reclamation Snake River Area office
230 Collins Road Boise, Idaho 83702-4520

Date: January 18th 2023

Mr. Anthony Prisciandaro

Dear Sir,

The property adjacent to the Diversion Dam bordering on the West side of the Wood River is owned by Larry & Marilyn Plott. We purchased the property 1967.

First, We want to thank you for sending out the detailed proposal. We noticed in the proposal Under Purpose and Need of Action that the existing dam was a danger to boaters! We have lived and owned this property for 55 years and walk the bank often and we have never seen anyone with a motor boat, rowing, kayaking or even tubing down this river during those years. So I don't understand where and how the present diversion dam is a hazard and dangerous for boaters! If taken out it will effect the many fisherman who fish these holes throughout the year.

You mentioned sediments trapped upstream of the structure. The island that grew up and diverts the water to the west is the reason that Keith Myers has to enter the river with his crane each year to dig a trench and build a temporary rock and gravel pathway so the water can be diverted to the east bank and flow into the diversion canal for irrigation.

Please consider a project to reinforce the west bank from the bridge to the diversion canal as the bank behind Lynn Clark's property about 800 feet north of diversion dam on the west bank is almost non existent. The Island that has formed in the river to the east causes the water to push to the west during run off and flows into the secondary bank. This secondary bank on the west side is very weak and if it breaks **all of south Broadford will be flooded.** . Removal of the island would alleviate the problem to the west bank and make it unnecessary for anyone having to enter the river bed to get water into the diversion canal during low water.

Bank stabilization: A few years ago the Corp of Engineers came in and lined the east bank on the river with rip rap and other material North of the Bellevue Broadford bridge to protect the Cantrell housing development and trailer park from flooding. This was a great improvement and has been successful. The same bank reinforcement needs to be done from the bridge to the diversion canal on the west bank.

If you would like to discuss any of the above information or come by and visit you are welcome.

Thanks you
Respectfully submitted

Larry & Marilyn Plott 208 928 4193
23 Lower Broadford, road
Bellevue, Idaho 83313

[EXTERNAL] Wood River diversion remediation project

Scott Schnebly <scott@lostriveroutfitters.com>

Fri 2/17/2023 2:35 PM

To: NEPA Mailbox, BOR SRA <sra-nepa-comments@usbr.gov>

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Dear Anthony,

This is probably too late to affect any decision making, but here is my feeling on the proposed project on the 45 diversion dam. It seems with all our ability to engineer and build structures to perform a variety of complicated tasks and needs, that a gravel dam to shunt water in different directions is very old school. We know of the damage it does to fish and wildlife and there should be a better way. I have participated and organized a number of fish salvage operations with the F & G to save trapped fish after the shut downs.

Probably 25 or 30 years ago, Lee Frost, our local C.O. at the time, came to me and said the state F&G had allocated $75,000 to our area to help improve our local fisheries. He asked me how I thought it might be spent. I responded that reconstruction of the 45 diversion would be a good start with fish passage abilities, and should be high on the list. I am glad to see consideration of this project and hope it comes to fruition. I am very much in favor of the project.

Now can we get 25 cfs flows below Magic Reservoir year round to make the entire system somewhat healthier?

Sincerely,
Scott Schnebly
Lost River Outfitters
Ketchum
208-720-3813

--
Scott Schnebly
Lost River Outfitters, Inc
371 N Main St,Ste 101
Box 3445

Ketchum, ID 83340
208.720.3813

Hemingway Chapter
Trout Unlimited
1340 Northridge Drive
Hailey, ID 83333
202-256-0163
Nickpmiller2011@gmail.com
www.hemingwaytu.org

JANUARY 30, 2023

Bryan Horsburgh
Acting Area Manager
Bureau of Reclamation
Snake River Area Office
230 Colins Road
Boise, ID 83702

Sent electronically to
Mr. Anthony Prisciandaro
Fisheries Biologist
sra-nepa-comments@usbr.gov

Dear Area Manager,

These Comments are submitted by Trout Unlimited, Hemingway Chapter (Chapter) in support of the proposal from the Wood River Board of Control (BOC) for a WaterSMART grant to stabilize and improve the existing irrigation diversion structure on the Big Wood River (Big Wood) in Bellevue, Idaho.

The Big Wood is TU Hemingway Chapter's "homewaters". The Chapter has over 200 active members, almost all of whom are full-time or part-time residents of the Big Wood River Valley. The Chapter is deeply committed to the enhancement and rehabilitation of the Big Wood. One major Chapter goal is to create fish passage around the Diversion 45 Dam.

Historically, the Big Wood above Magic Reservoir has been one of the premier trout streams in the state of Idaho. The fishery has deteriorated in recent decades. We believe one major cause has been the fish passage barrier created by the Diversion 45 dam. The dam blocks any fish migration between the Magic Reservoir and the entire Big Wood basin from north of Bellevue to the Galena Summit. This deprives the entire basin and related habitat of access by the large wild brood stock in the Magic Reservoir as well as access by juvenile fish to the food sources in the Magic Reservoir.

The proposed restructuring of the Diversion 45 Dam promises to solve a substantial portion of this fish passage problem, both in high and low water conditions. It will also improve downstream safety as the current diversion dam is nearing failure which could result in catastrophic flash flooding.

The broad Wood River Valley Community supports the proposed restructuring. Trout Unlimited, the Wood River Land Trust, and the local governments have all been working cooperatively with the BOC to solve the fish passage problem. Trout Unlimited staff assisted in preparation of the WaterSMART application **and helped raise funds for the design and to assist with construction**.

Our Chapter's preferred alternative to the current proposal is the full removal of the diversion structure. However, we recognize the ongoing need of local farmers to access the Big Wood's surface water for irrigation purposes. The current proposed modification to the diversion structure will support both the need for fish passage and continued access to the water for agricultural purposes.

Please accept these comments in support of the WaterSMART grant proposal.

Sincerely,

Nicholas Miller

PRESIDENT, HEMINGWAY CHAPTER, TROUT UNLIMITED

[EXTERNAL] new water diversion plan - Bellevue

John Vorzimer <john@theclhgroup.com>

Mon 1/23/2023 5:48 PM

To: NEPA Mailbox, BOR SRA <sra-nepa-comments@usbr.gov>

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

To whom it may concern:

I am a property owner on the Bigwood River south of Bellevue off Glendale Road. The cement diversion is near my property. Is this the area you are planning to create a new diversion plan? If so, can you send me details of what the plan is and what the benefits are to all parties. Thanks.

John Vorzimer
Managing Director
The CLH Group
310-990-4051
www.theclhgroup.com

Re: [EXTERNAL] Bellevue water diversion plan

Prisciandaro, Anthony F <APrisciandaro@usbr.gov>

Mon 1/30/2023 12:45 PM

To: Matthew W <wildhagenmatt@gmail.com>

1 attachments (2 MB)

Div45_LimitsOfDisturbance_JUB_Update.pdf;

Matt,

The attached map is the best thing we have at this point. The grant applicant is working with contractors for final engineering design as well as construction itself. The contractors have some details to figure out on specific access routes within the area of impact.

Thanks,

-Anthony

Anthony Prisciandaro
U.S. Bureau of Reclamation
Fish Biologist/AIS Coordinator
Snake River Area Office
Boise, Idaho
Office (208)383-2233
Cell (208)871-3529

From: Matthew W <wildhagenmatt@gmail.com>
Sent: Monday, January 23, 2023 9:14 PM
To: NEPA Mailbox, BOR SRA <sra-nepa-comments@usbr.gov>
Subject: [EXTERNAL] Bellevue water diversion plan

This email has been received from outside of DOI - Use caution before clicking on links, opening attachments, or responding.

Hello,

I appreciate all that you do! May I please see a map of the proposed project?

Thank you,

Matt Wildhagen

First Name	Last Name	Owner 2	Organization	Position	C/O	Email	Mailing Address	City	State	Zip	Type	Source	Notes
John	Wright		Wood River BOC	WATERMASTER		jandmw@icloud.com	Wood River Board of Control (WRBOC), PO Box 736	Bellevue	ID	83313	PROPONENT		
Terry	Ring		Silver Creek Outfitters	Owner		info@silver-creek.com	P.O. Box 418	Ketchum	ID	83340	Recreation user group		
Scott	Schnebly		Lost River Outfitters	Owner		scott@lostriveroutfitters.com	PO Box 3445	Ketchum	ID	83340	Recreation user group		Mail Returned; re-mailed to PO Box
			Sun Valley Outfitters	Owner		info@sunvalleyoutfitters.com					Recreation user group		Mail Returned; unable to find address
Mark	Davidson		Blaine County Rec District	Director		mdavidson@bcrd.org	1050 Fox Acres Rd. Suite 107	Hailey	ID	83333	LOCAL AGENCY		
Sarah	Gardner		Triangle Irrigation District	DIRECTOR		sarag@svskylan.net	Triangle Irrigation District, PO Box 424	Bellevue	ID	83313	PROPONENT		
Bryan	Dilworth		Idaho Flood Control District #9	Commissioner			305 Glendale Rd.	Bellevue	ID	83313	Project Supporter		
Neil	Crescenti		The Nature Conservancy	Agriculture Program Manager			950 W. Bannock St. Suite 210	Boise	ID	83702	Project Supporter		
David	Woodward		Wood River Land Trust	Chair			119 E. Bullion Street	Hailey	ID	83333	Project Supporter		
Scott	Boettger		Wood River Land Trust	Director		sboettger@woodriverlandtrust.org	119 E. Bullion Street	Hailey	ID	83333	LOCAL AGENCY		
Kevin	Lakey		Water District 37	Watermaster			107 West 1st St	Shoshone	ID	83352	Watermaster		
Peter	Van der Meulen		IDAHO WATER RESOURCES BOARD	Local Member at large		vandermeulenpete@yahoo.com		Hailey	ID	83333	IDWR		
HONORABLE MIKE	SIMPSON		UNITED STATES HOUSE OF REPRESENTATIVES	Representative			802 West Bannock, Suite 600	Boise	ID	83702	CONGRESSIONAL		
HONORABLE JIM	RISCH		UNITED STATES SENATE	Senator			350 N. 9th St., Suite 302	Boise	ID	83702	CONGRESSIONAL		
HONORABLE MIKE	CRAPO		UNITED STATES SENTATE	Senator			251 E. Front st., Suite 205	Boise	ID	83702	CONGRESSIONAL		
Michelle	Stennett		Idaho State Senate	Senator		MStennett@senate.idaho.gov	PO Box 475	Ketchum	ID	83340	CONGRESSIONAL	https://legislature.idaho.gov/legislators/membership/?yr=2022spcl&district=26	
Ned	Burns		Idaho State House	Representative		NBurns@house.idaho.gov	PO Box 693	Bellevue	ID	83313	CONGRESSIONAL	https://legislature.idaho.gov/legislators/membership/?yr=2022spcl&district=26	
Sally	Toone		Idaho State House	Representative		SToone@house.idaho.gov	2096 E 1500 S	Gooding	ID	83330	CONGRESSIONAL	https://legislature.idaho.gov/legislators/membership/?yr=2022spcl&district=26	
Kathleen	Hendricks		US FISH AND WILDLIFE SERVICE	ASSISTANT STATE SUPERVISOR		kathleen_hendricks@fws.gov	1387 S. Vinnell Way, Suite 368	Boise	ID	83709	FEDERAL AGENCY	https://www.fws.gov/office/idaho-fish-and-wildlife/contact-us	
Sandi	Fisher		US FISH AND WILDLIFE SERVICE	Acting STATE SUPERVISOR		sandi_fisher@fws.gov	4425 Burley Dr., Suite A	CHUBBUCK	ID	83202	FEDERAL AGENCY	https://www.fws.gov/office/idaho-fish-and-wildlife/contact-us	
Jess	Byrne		IDAHO DEPARTMENT OF ENVIRONMENTAL Q	Director		jess.byrne@deq.idaho.gov	1410 N. Hilton St	Boise	ID	83706	STATE AGENCY	https://www.deq.idaho.gov/about-us/	
						egion							
													o.gov/contact-us/
Doug	Brown		City Council of Bellevue	President		dbrown@bellevueidaho.us	PO Box 825	Bellevue	ID	83313	LOCAL AGENCY		
Kathryn	Goldman		City of Bellevue	Mayor		kgoldman@bellevueidaho.us	PO Box 825	Bellevue	ID	83313	LOCAL AGENCY		
Martha	Burke		City of Hailey	Mayor		martha.burke@haileycityhall.org	115 Main Street South, Suite H	Hailey	ID	83333	LOCAL AGENCY		
Neil	Bradshaw		CITY OF Ketchum	Mayor		nbradshaw@ketchumidaho.org	P.O. Box 2315	Ketchum	ID	83340	LOCAL AGENCY		
Peter	Hendricks		CITY OF Sun Valley	Mayor		phendricks@sunvalleyidaho.gov	P.O. Box 416	Sun Valley	ID	83353	LOCAL AGENCY		
Dick	Fosbury		Blaine COUNTY COMMISSIONER				Physical Address-206 South 1st Avenue, Suite 300	Hailey	ID	83333	LOCAL AGENCY		
ROGER	BATT		IDAHO GROUND WATER ASSOCI				55 S SW 5TH AVE, SUITE 100	MERIDIAN	ID	83642	ASSOCIATION	https://igwa.info/contact/	
Paul	Arrington		IDAHO WATER USERS ASSOCIAT				1010 W JEFFERSON ST, SUITE 101	BOISE	ID	83702	ASSOCIATION	https://www.iwua.org/About	
Jeff	Raybould		IDAHO WATER RESOURCES BOARD	CHAIRMAN		jeff@raybouldbros.com		Saint Anthony	ID		STATE AGENCY	https://idwr.idaho.gov/iwrb/about-the-iwrb/board-members/	
Nicholas	Miller		Trout Unlimited Hemingway Chapter	President			1340 Northridge Drive	Hailey	ID	83333	Partner	https://tuidaho.org/chapters/	
Mike	Mckenna		The Valley Chamber			mike@valleychamber.org	781 S Main St	HAILEY	ID	83333	Chamber of Commerce		
Honorable Nathan	Small		Shoshone-Bannock Tribal Council	Chairman			85 W. Agency Rd., Building #82	Fort Hall	ID	83203-0306	TRIBE		
Candon	Tanaka		Shoshone-Bannock Tribes	Tribal Water Engineer			85 W. Agency Rd., Building #82	Fort Hall	ID	83203-0306	TRIBE		
Lester	Galloway		Shoshone-Bannock Tribes	Tribal Water Resources Commissioner			85 W. Agency Rd., Building #82	Fort Hall	ID	83203-0307	TRIBE		
Gail	Martin		Shoshone-Bannock Tribes	Tribal Water Resources			85 W. Agency Rd., Building #82	Fort Hall	ID	83203-0308	TRIBE		
Frances	Roy		Shoshone-Bannock Tribes	Tribal Water Resources Sergeant At Arms			85 W. Agency Rd., Building #82	Fort Hall	ID	83203-0309	TRIBE		
Claudeo	Broncho		Shoshone-Bannock Tribes	Supervisor, Natural Resources and Fish and Wildlife Policy Representative			85 W. Agency Rd., Building #82	Fort Hall	ID	83203-0310	TRIBE		
Christina	Cutler		Shoshone-Bannock Tribes	Environmental Specialist			85 W. Agency Rd., Building #82	Fort Hall	ID	83203-0311	TRIBE		
Yvette	Tuell		Shoshone-Bannock Tribes	Tribal Policy Analyst			85 W. Agency Rd., Building #82	Fort Hall	ID	83203-0311	TRIBE		
Carolyn B.	Smith		Shoshone-Bannock Tribes	Cultural Resources Coordinator			85 W. Agency Rd., Building #82	Fort Hall	ID	83203-0312	TRIBE		
Wes	Jones		Shoshone-Bannock Tribes	Emergency Manager			85 W. Agency Rd., Building #82	Fort Hall	ID	83203-0311	TRIBE		
Chad	Colter		Shoshone-Bannock Tribes	Fish and Wildlife Director			85 W. Agency Rd., Building #82	Fort Hall	ID	83203-0311	TRIBE		
Cleve	Davis		Shoshone-Bannock Tribes	Environmental Program Manager			85 W. Agency Rd., Building #82	Fort Hall	ID	83203-0311	TRIBE		
Honorable Diane	Teeman		Burns Paiute Tribes	Chairperson			100 Pasigo Street	Burns	OR	97720	TRIBE		
Calla	Hagle		Burns Paiute Tribes	Natural Resources Director			71210 Foley Drive	Burns	OR	97720	TRIBE		
Brandon	Haslick		Burns Paiute Tribes	Fishery Program Manager			71210 Foley Drive	Burns	OR	97720	TRIBE		
Brandon	Palmer		Burns Paiute Tribes	Wildlife Program Manager			71210 Foley Drive	Burns	OR	97720	TRIBE		
Jason	Fenton		Burns Paiute Tribes	Environmental Manager			71210 Foley Drive	Burns	OR	97720	TRIBE		
Honorable Brian	Mason		Shoshone-Paiute Tribes	Chairman			1036 Idaho State Highway 51	Owyhee	NV	89832	TRIBE		
Marissa	Snapp		Shoshone-Paiute Tribes	Environmental Director			1036 Idaho State Highway 51	Owyhee	NV	89832	TRIBE		
Buster	Gibson		Shoshone-Paiute Tribes	Fish, Wildlife & Parks Director			1036 Idaho State Highway 51	Owyhee	NV	89832	TRIBE		
Nancy	Egan		Shoshone-Paiute Tribes	Interim Chief Executive Officer			1036 Idaho State Highway 51	Owyhee	NV	89832	TRIBE		
Pawan	Upadhyay, PhD		Shoshone-Paiute Tribes	Water Resources Director			1036 Idaho State Highway 51	Owyhee	NV	89832	TRIBE		
			Shoshone-Paiute Tribes	Acting Cultural Resources Director			1036 Idaho State Highway 51	Owyhee	NV	89832	TRIBE		
Maurissa	Bigjohn		Shoshone-Paiute Tribes	Tribal Administrator			1036 Idaho State Highway 51	Owyhee	NV	89832	TRIBE		
	ACKER LLC		Adjacent Landowner				PO BOX 177	KETCHUM	ID	83340-0177	Adjacent Landowner		
	15 LBR LLC		Adjacent Landowner				PO BOX 6263	KETCHUM	ID	83340	Adjacent Landowner		
Brett	Roth	RAMIREZ-ROTH REBE	Adjacent Landowner				1805 FOXBOROUGH TRAIL	Flower Mound	TX	75028	Adjacent Landowner		
THOMAS J	BLANCHARD	BLANCHARD FLOREN	Adjacent Landowner				BOX 225	BELLEVUE	ID	83313	Adjacent Landowner		
ROBERT F	BOUTTIER, TRUSTEE	DRINKERS OF THE WI	Adjacent Landowner				PO BOX 476	BELLEVUE	ID	83313	Adjacent Landowner		
	BROADFORD MINING		Adjacent Landowner				129 CABRILLO ST SUITE 202	COSTA MESA	CA	92627	Adjacent Landowner		
RON R	BRYAN, TRUSTEE	BRYAN CARLA P TRUS	Adjacent Landowner				2320 CALLE LA SERNA	SAN CLEMENTE	CA	92672	Adjacent Landowner		
JASON R	CALHOUN		Adjacent Landowner				406 BROADFORD RD	BELLEVUE	ID	83313	Adjacent Landowner		
WILLIAM B	COLLINS	COLLINS WENDY B	Adjacent Landowner				574 EAST FORK RD	HAILEY	ID	83333	Adjacent Landowner		
KEVIN B	CRONIN		Adjacent Landowner				PO Box 6027	Sun Valley	ID	83354	Adjacent Landowner	Mail Returned; unable to find address	
WAYNE H	DOUTHIT		Adjacent Landowner				PO BOX 81	NORTH FORK	ID	83466	Adjacent Landowner		
RANDALL L	EDGAR	SHAUGHNESSY MARG	Adjacent Landowner				88 MARTIN LN	BELLEVUE	ID	83313	Adjacent Landowner		
	FARMERS BANK		Adjacent Landowner				PO BOX 392	BUHL	ID	83316	Adjacent Landowner		
GARY	HADDEN	HADDEN EDITH	Adjacent Landowner				521 DEERTRAIL DR	HAILEY	ID	83333	Adjacent Landowner		
	I'M FINE LLC		Adjacent Landowner				BOX 128	BELLEVUE	ID	83313	Adjacent Landowner		
DAVID	JOHNSON		Adjacent Landowner				BOX 1742	HAILEY	ID	83333	Adjacent Landowner		
LINDA B	JOHNSTON	HOPFENBECK PAUL	Adjacent Landowner				PO BOX 158	BELLEVUE	ID	83313-0158	Adjacent Landowner		
ROBERT L	JONES III	JONES BRANDON W	Adjacent Landowner				4706 S THISTLE ST	SEATTLE	WA	98118	Adjacent Landowner		
DARLENE F	KUEHN		Adjacent Landowner				86 MARTIN LN	BELLEVUE	ID	83313	Adjacent Landowner		
MICHELLE	KUKURIN		Adjacent Landowner				PO BOX 686	BELLEVUE	ID	83313-0686	Adjacent Landowner		
MARGARET	MAZZOCCHI		Adjacent Landowner				PO BOX 1159	BELLEVUE	ID	83313	Adjacent Landowner		
ANDREA	MINNICK	MINNICK RANDY	Adjacent Landowner				81 MARTIN LN	BELLEVUE	ID	83313	Adjacent Landowner		
LYNN BENNETT	MOORE		Adjacent Landowner		C/O LYNN CLARKE		17 LOWER BROADFORD RD	BELLEVUE	ID	83313-5005	Adjacent Landowner		
LARRY B	PLOTT	PLOTT MARILYN	Adjacent Landowner				23 LOWER BROADFORD RD	BELLEVUE	ID	83313	Adjacent Landowner		
BRUCE E	SCHROCK	SCHROCK SHARON	Adjacent Landowner				PO BOX 308	BELLEVUE	ID	83313	Adjacent Landowner		
TRAVIS WILLIAM	SCOTT, TRUSTEE	SCOTT CARRIE THOM	Adjacent Landowner				PO BOX 1121	HAILEY	ID	83333	Adjacent Landowner		
DANIEL R	SMITH	SMITH STEPHANY M	Adjacent Landowner				109 W CROY ST	HAILEY	ID	83333	Adjacent Landowner		
KENNETH B	TRAGER		Adjacent Landowner				326 BAYHORSE RD	BELLEVUE	ID	83313	Adjacent Landowner		
VIRGINIA	WHALEN	WORTLEY EARL	Adjacent Landowner		C/O VIRGINIA WHALEN		PO BOX 356	BELLEVUE	ID	83313	Adjacent Landowner		
MATTHEW A	WILCOX		Adjacent Landowner				BOX 1969	KETCHUM	ID	83340	Adjacent Landowner		

	WOOD RIVER WELDII	Adjacent Landowner	BOX 72	BELLEVUE	ID	83313 Adjacent Landowner						
ALDEN G	YATES	Adjacent Landowner	BOX 373	BELLEVUE	ID	83313 Adjacent Landowner						

Appendix D – SHPO Correspondence
Inadvertent Discovery Plan

United States Department of the Interior
BUREAU OF RECLAMATION
Snake River Area Office
230 Collins Road
Boise, ID 83702-4520

IN REPLY REFER TO:

USF-1219
2.1.1.04

VIA ELECTRONIC MAIL ONLY

Ms. Ashley Molloy
Historical Review Officer
State Historic Preservation Office
210 Main Street
Boise, ID 83702

Subject: Invitation to Consult on the Proposed Big Wood River Diversion Dam Remediation and Fish Passage Project, Blaine County, Idaho

Dear Ms. Molloy:

The Bureau of Reclamation received a grant application from the Board of Control (BOC) for Wood River Valley Irrigation District No. 45 (WRVID45) and Triangle Irrigation District (TID) to complete ecosystem restoration actions located on the Big Wood River in Bellevue, Blaine County, Idaho. The changes are intended to restore fish passage and improve sediment transport at the diversion dam (Diversion 45), while maintaining its functionality, stabilizing the existing diversion and improving riverine and flood plain conditions. The project is located in Township 2 North, Range 18 East, Section 36. At this time, Reclamation is consulting on the area of potential effects (APE), determinations of eligibility and finding of no adverse effects to historic properties.

Reclamation identified the APE as those areas that would be used to complete the project including areas of ground disturbance, access and staging, approximately 10 acres. No visual or other direct or indirect effects are anticipated outside of this area. A cultural resources inventory of the entire APE was completed, and two previously recorded sites have been updated.

An isolated find, 10BN1174, was recorded as a site in 2003 and collected. No additional artifacts were found in the vicinity of the recorded site location. Reclamation reviewed the available information and the disturbed condition of the site location and determined that as a single artifact it is not eligible for listing in the National Register of Historic Places (National Register) as it does not significantly contribute to a historic theme (Criterion A), person (Criterion B), is not unique or the work of a master (Criterion C), nor does it have the potential to yield significant information about the past (Criterion D).

The second site is the historic Bellevue Canal System (BCS), 13-6404, which has been evaluated multiple times and found eligible for listing in the National Register. Reclamation concurs with this determination as the canal was integral to the development of agriculture in the Bellevue

area. Since part of the BCS is proposed to be modified, Reclamation evaluated the integrity of the diversion dam which spans the Big Wood River immediately downstream of the headgates. The remaining elements of the dam include the foundation within the river and the wingwalls on either side of the river. The superstructure of the dam was removed entirely prior to 2003. The remaining portions of the dam are compromised and in poor condition. Considering these changes, the dam has lost integrity of workmanship, design, materials and feeling, while retaining location, setting, and association. Reclamation feels that the loss to the physical aspects of integrity of the diversion dam make it a non-contributing element to the historic significance of the BCS.

Reclamation identified one historic property within the APE based on this analysis, the BCS. Reviewing the potential effects on the BCS, a diversion dam would still be in place performing its function within the system and the proposed modifications would not visually distract from the other contributing elements of the BCS. Reclamation finds that the proposed project would result in a no adverse effect to historic properties based on this analysis.

In accordance with procedures specified in 36 CFR § 800, Reclamation requests your concurrence with our APE, eligibility determinations and finding that this project will result in no adverse effects to historic properties. Please direct any questions to Ms. Nikki Polson, Upper Snake Field Office Archaeologist, at (208) 678-0461, extension 13, or by email at npolson@usbr.gov.

If you are deaf, hard of hearing, or have a speech disability, please dial 7-1-1 to access telecommunications relay services.

Sincerely,

MELANIE PAQUIN

Digitally signed by MELANIE PAQUIN
Date: 2023.08.02 15:39:11 -06'00'

Melanie Paquin
Area Manager

Enclosures

IDAHO STATE HISTORICAL SOCIETY

22 August 2023

Brad Little
Governor of Idaho

Janet Gallimore
Executive Director
State Historic
Preservation Officer

Administration:
2205 Old Penitentiary Rd.
Boise, Idaho 83712
208.334.2682
Fax: 208.334.2774

Idaho State Museum:
610 Julia Davis Dr.
Boise, Idaho 83702
208.334.2120

Idaho State Archives and State Records Center:
2205 Old Penitentiary Rd.
Boise, Idaho 83712
208.334.2620

State Historic Preservation Office:
210 Main St.
Boise, Idaho 83702
208.334.3861

Old Idaho Penitentiary and Historic Sites:
2445 Old Penitentiary Rd.
Boise, Idaho 83712
208.334.2844

HISTORY.IDAHO.GOV

Melanie Paquin
Bureau of Reclamation
npolson@usbr.gov

Via Email

RE: Invitation to Consult on the Proposed Big Wood River Diversion Dam Remediation and Fish Passage Project, Blaine County, Idaho / SRA-1219 / 2.1.1.04 / SHPO Rev. No. 2023-751

Dear M. Paquin:

Thank you for consulting with our office on the above-referenced project. The Idaho State Historic Preservation Office (SHPO) is providing comments to the Bureau of Reclamation pursuant to Section 106 of the National Historic Preservation Act and its implementing regulations, 36 CFR § 800. Consultation with the SHPO is not a substitution for consultation with Tribal Historic Preservation Offices, other Native American tribes, local governments, or the public.

It is our understanding that the scope of the undertaking will include Reclamation funding a grant to the Wood River Valley Irrigation District No. 45 and the Triangle Irrigation District to complete ecosystem restoration action located on the Big Wood River in Bellevue, Blaine County, Idaho.

After review of the documentation provided, we concur with the following proposed eligibility determinations: Bellevue Canal System is eligible for listing in the National Register of Historic Places (NRHP), and that 10BN1174 is not eligible for listing in the NRHP.

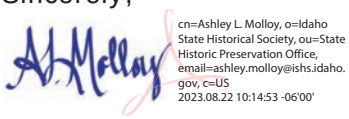
Pursuant to 36 CFR § 800.5, we have applied the criteria of effect to the proposed undertaking. Based on the information received 4 August 2023, we concur the proposed project actions will have no adverse effect to historic properties with the stipulation that an Inadvertent Discovery Plan (IDP) be developed.

If cultural material is inadvertently encountered during the implementation of this project, work shall be halted in the vicinity of the finds until they can be inspected and assessed by the appropriate consulting parties.

Thank you for the opportunity to comment. Please note that our response does not affect the review timelines afforded to other consulting parties. Additionally, the information provided by other consulting parties may cause us to revise our comments. If you have any questions or the scope

of work changes, please contact me via phone or email at 208.488.7463 or ashley.molloy@ishs.idaho.gov.

Sincerely,



Ashley L. Molloy, M.A.
Historical Review Officer
Idaho State Historic Preservation Office

Attachment: IDP Template

BUREAU OF RECLAMATION

Inadvertent Discovery Plan

The Inadvertent Discovery Plan (IDP) protocol must be adhered to if cultural materials, including human remains, are encountered during construction

Project: Diversion 45
SHPO Review No.: 2023-751
Reclamation GOTR: Kavian Koleini
Location: Bellevue, Idaho

Cultural Resources

Construction work may uncover previously unidentified Native American or Euro-American artifacts. This could occur for a variety of reasons, but may be associated with deeply buried cultural material, access restrictions during project development, or if the area contains impervious surfaces throughout most of the project area which would have prevented standard archaeological site discovery methods. Work must stop and the IDP protocol followed when archaeological artifacts and/or features are encountered.

Native American artifacts may include (but are not limited to):

- Flaked stone tools (e.g. arrowheads, knives scrapers etc.);
- Waste flakes that resulted from the construction of flaked stone tools;
- Modified, shaped, or perforated stones like net anchors, pendants;
- Ground stone tools like mortars and pestles;
- Layers (strata) of discolored earth resulting from fire hearths. May be black, red or mottled brown and often contain discolored cracked rocks or dark soil in association with other artifacts;
- Human remains; and/or
- Structural remains (e.g. wooden beams, post holes, fish weirs).

Euro-American artifacts may include (but are not limited to):

- Glass (e.g. bottles, vessels, windows etc.);
- Ceramic (e.g. dinnerware, vessels etc.);
- Metal (e.g. nails, drink/food cans, tobacco tins, industrial parts etc.);
- Building materials (e.g. bricks, shingles etc.);
- Building remains (e.g. foundations, architectural components etc.);
- Old wooden posts, pilings, or planks (these may be encountered above or below water);
- Old farm equipment may indicate historic resources in the area.

Even what looks to be old garbage could very well be an important archaeological resource.

Protocol

I. Stop Work Immediately

In the event of an inadvertent discovery of possible cultural materials, including human remains, all work will stop immediately in the vicinity of the find. The area will then be secured and protected with a 100-foot buffer around the discovery. Work can proceed outside of this buffered area unless additional cultural materials are encountered.

Special Procedures for the Discovery of Human Skeletal Material

Any human skeletal remains, regardless of antiquity or ethnic origin, will always be treated with dignity and respect. Cover the remains with a tarp or other materials (not soil or rocks) for temporary protection and to shield them from being photographed. **Do not call 911 or speak with the media. Do not take pictures.**

II. Notify Appropriate Parties

The Reclamation GOTR, NEPA Specialist and Archaeologist must be notified immediately, who will then notify the Reclamation archaeologist, who will coordinate with the State Historic Preservation Office (SHPO), as appropriate.

If potential human remains are encountered, the local police or sheriff's department must be notified and they will coordinate with the Idaho State Police (ISP), the local Medical Examiner/Coroner, and appropriate Tribal Governments. Call the non-emergency line and request the Watch Commander or Officer-In-Charge.

Reclamation GOTR Name: Kavian Koleini Phone: 208-378-5358 Email: kkoleini@usbr.gov	**Reclamation Archaeologist** Name: Nikki Polson Phone: 208-678-0461 ext. 13 Email: npolson@usbr.gov
Reclamation NEPA Specialist Name: Amy Goodrich Phone: 208-383-2250 Email: agoodrich@usbr.gov	**Local Law Enforcement** Name: Bellevue Marshal's Office Phone: 208-788-3692 Email: n/a
State Historic Preservation Office Name: Lindsay Johansson Phone: 208-334-3861 Email: shsshpo@ishs.idaho.gov	**Local Medical Examiner/Coroner** Name: Blaine County Coroner Phone: 208-678-1000 Email: n/a

III. Wait for Guidance

No work in the buffered area may resume until consultation has occurred. An archaeologist will assess the find and the Reclamation Archaeologist will consult with the SHPO and appropriate Tribal Governments to facilitate determination of an appropriate course of action, as appropriate. Archaeological investigation or excavations may be required. Until a formal determination can be made, archaeological deposits discovered during construction will be assumed eligible for listing in the National Register of Historic Places and should be protected. The Reclamation Archaeologist, in consultation with SHPO and Tribal Governments, handles this on a case-by-case basis.

IV. Proceed with Construction

Construction can proceed only after the proper archaeological inspections have occurred and environmental clearances are obtained if necessary and clearance has been received from all parties involved. This requires close coordination with SHPO and the Tribal Governments.

After an inadvertent discovery, some areas may be specified for close monitoring or 'no work zones.' Any such areas will be identified by the Reclamation Archaeologist to the applicant. In coordination with the SHPO, the Project Manager will verify these identified areas and be sure that the areas are clearly demarcated in the field.

Confidentiality

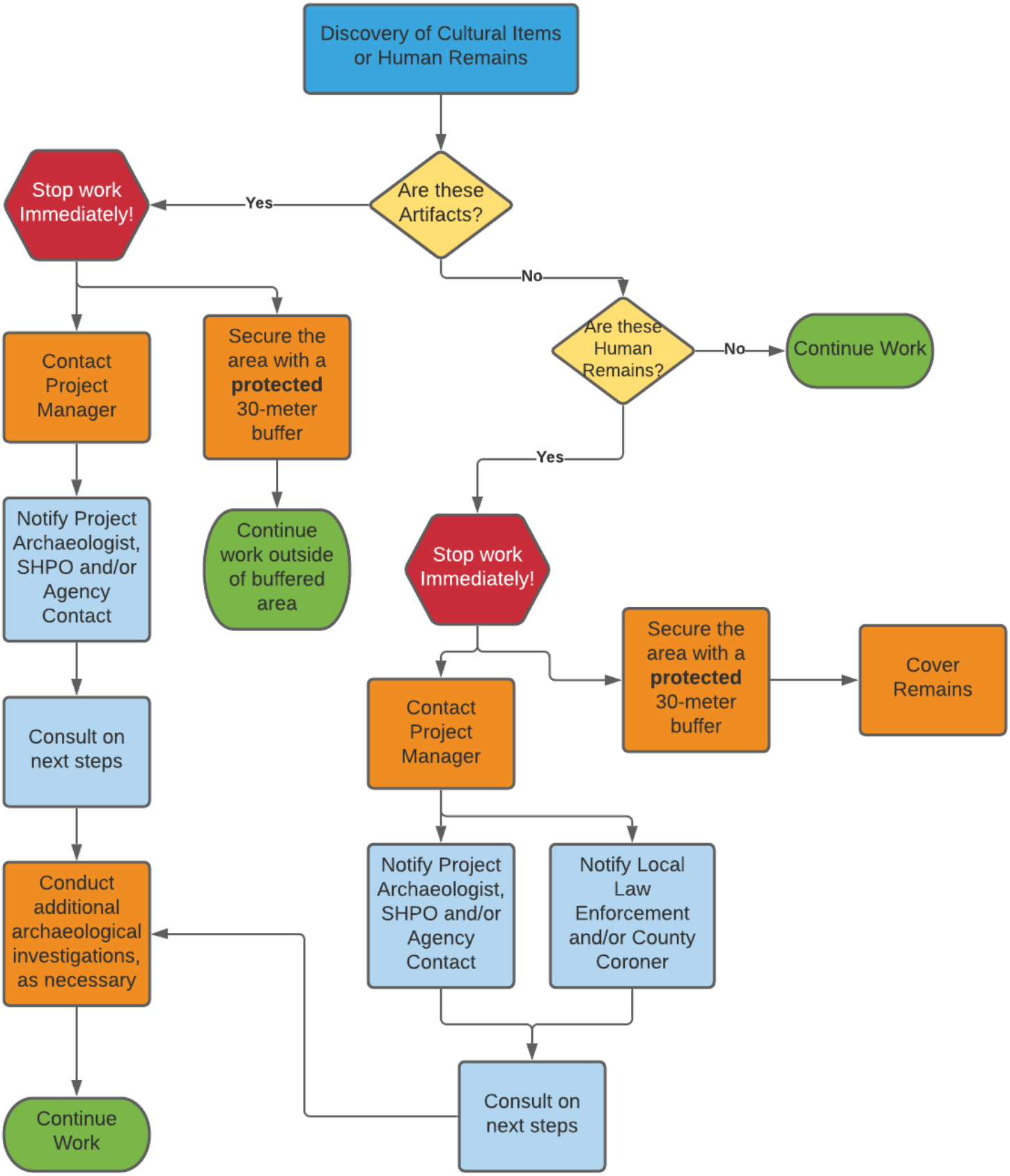
This project and its employees, contractors, and subcontractors shall make their best efforts, in accordance with federal and state law, to ensure that its personnel keep the discovery confidential. The media, or any third-party member or members of the public are not to be contacted or have information regarding the discovery, and any public or media inquiry is to be reported to the Nikki Polson, Reclamation Archaeologist. Prior to any release, the responsible agencies and Tribes shall consult on the amount of information, if any, to be released to the public.

As the designated representative for the project, I acknowledge that I have received this inadvertent discovery plan and will, to the best of my abilities, ensure that it is implemented appropriately.

_____

Name: Date

Appendix A: Process Flow Chart



Appendix B: Visual References and Examples of Potential Discoveries

Implement the IDP if …

You see chipped stone artifacts.

- Glass-like material
- Angular
- "Unusual" material for area
- "Unusual" shape
- Regularity of flaking
- Variability of size

Implement the IDP if …

You see ground or pecked stone artifacts.

Stone Artifacts from Oregon

- Striations or scratching
- Unusual or unnatural shapes
- Unusual stone
- Etching
- Perforations
- Pecking
- Regularity in modifications
- Variability of size, function, and complexity

Implement the IDP if …

You see bone or shell artifacts.

Bone Awls from Oregon and Bone Wedge from California

- Often smooth
- Unusual shape
- Carved
- Often pointed if used as a tool
- Often wedge shaped like a "shoehorn"

Implement the IDP if …

You see bone or shell artifacts.

- Often smooth
- Unusual shape
- Perforated
- Variability of size

Tooth Pendant and Bone Pendants from Oregon and Washington

Implement the IDP if …

You see fiber or wood artifacts.

- Wet environments needed for preservation
- Variability of size, function, and complexity
- Rare

Artifacts by Mud Bay, Olympia, Washington

Implement the IDP if …

You see historic period artifacts.

Artifacts from Downtown Seattle, Alaskan Way Viaduct (Upper Left and Lower) and Unknown Site (Upper Right)

Implement the IDP if …

You see strange, different, or interesting looking dirt, rocks, or shells.

Unknown Sites

- Human activities leave traces in the ground that may or may not have artifacts associated with them
- "Unusual" accumulations of rock (especially fire-cracked rock)
- "Unusual" shaped accumulations of rock (e.g., similar to a fire ring)
- Charcoal or charcoal-stained soils
- Oxidized or burnt-looking soils
- Accumulations of shell
- Accumulations of bones or artifacts
- Look for the "unusual" or out of place (e.g., rock piles or accumulations in areas with few rock)

Implement the IDP if …

You see strange, different or interesting looking dirt, rocks, or shells.

Site of Muckleshoot Indian Reservation, near WSDOT ROW along SR 164

- "Unusual" accumulations of rock (especially fire-cracked rock)
- "Unusual" shaped accumulations of rock (e.g., similar to a fire ring)
- Look for the "unusual" or out of place (e.g., rock piles or accumulations in areas with few rock)

Implement the IDP if …

You see strange, different or interesting looking dirt, rocks, or shells.

- Often have a layered or "layer cake" appearance
- Often associated with black or blackish soil
- Often have very crushed and compacted shells

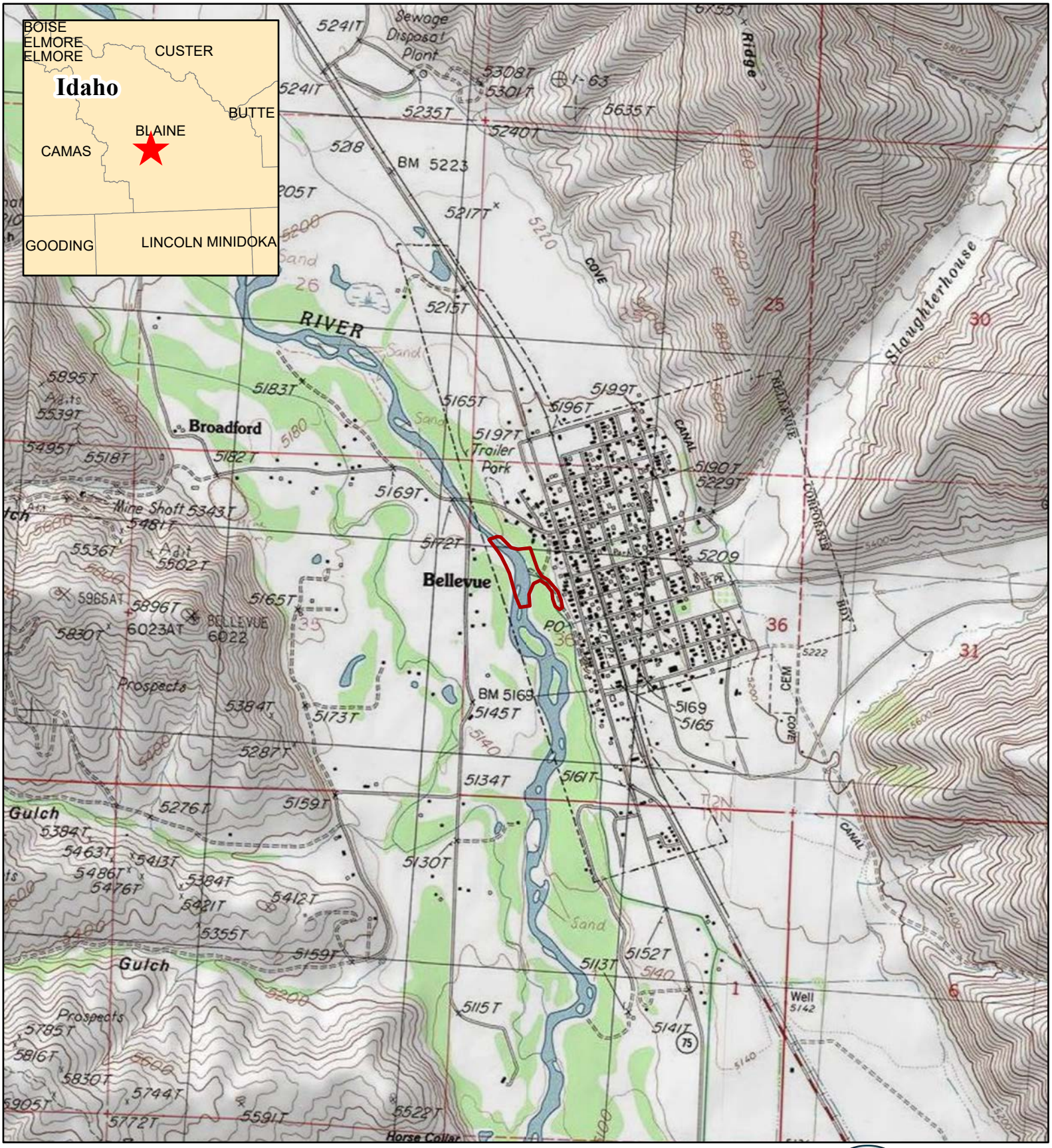
Site located within WSDOT ROW near Anacortes Ferry Terminal

Implement the IDP if …

You see historic foundations or buried structures.

45KI1924, In WSDOT ROW for SR 99 Tunnel

Appendix C: Map of Project Area



Appendix C. Project Area Map

APE

N

0 250 500 1,000

Meters

BUREAU OF RECLAMATION

This map is provided as-is and may contain representations of property boundaries. It is intended for general reference only. None of the parties involved in preparing this map or data contained herein warrant or represent information to be complete and accurate and cannot be held responsible for errors or omissions.

Prepared by: npolson

Date Exported: 6/26/2023 10:59 AM

Appendix E – Record of Tribal Consultation and Coordination

United States Department of the Interior
BUREAU OF RECLAMATION
Snake River Area Office
230 Collins Road
Boise, ID 83702-4520

IN REPLY REFER TO:
USF-1219
2.1.1.04

VIA FEDERAL EXPRESS

Honorable Lee Juan Tyler
Chairman
Fort Hall Business Council
Shoshone-Bannock Tribes
85 W. Agency Rd., Building #82
Fort Hall, ID 83203-0306

Subject: Invitation to Consult on the Proposed Big Wood River Diversion Dam Remediation and Fish Passage Project, Blaine County, Idaho

Dear Chairman Tyler:

The Bureau of Reclamation received a grant application from the Board of Control (BOC) for Wood River Valley Irrigation District No. 45 (WRVID45) and Triangle Irrigation District (TID) to complete ecosystem restoration actions located on the Big Wood River in Bellevue, Blaine County, Idaho. The changes are intended to restore fish passage and improve sediment transport at the diversion dam (Diversion 45), while maintaining its functionality, stabilizing the existing diversion and improving riverine and flood plain conditions. The project is located in Township 2 North, Range 18 East, Section 36. At this time, Reclamation is consulting on the area of potential effects (APE), determinations of eligibility, finding of no adverse effects to historic properties and requesting any information concerning cultural resources known to the Shoshone-Bannock Tribes that may be affected by this project.

Reclamation identified the APE as those areas that would be used to complete the project including areas of ground disturbance, access and staging, approximately 10 acres. No visual or other direct or indirect effects are anticipated outside of this area. A cultural resources inventory of the entire APE was completed, and two previously recorded sites have been updated.

An isolated find, 10BN1174, was recorded as a site in 2003 and collected. No additional artifacts were found in the vicinity of the recorded site location. Reclamation reviewed the available information and the disturbed condition of the site location and determined that as a single artifact it is not eligible for listing in the National Register of Historic Places (National Register) as it does not significantly contribute to a historic theme (Criterion A), person (Criterion B), is not unique or the work of a master (Criterion C), nor does it have the potential to yield significant information about the past (Criterion D).

The second site is the historic Bellevue Canal System (BCS), 13-6404, which has been evaluated multiple times and found eligible for listing in the National Register. Reclamation concurs with

this determination as the canal was integral to the development of agriculture in the Bellevue area. Since part of the BCS is proposed to be modified, Reclamation evaluated the integrity of the diversion dam which spans the Big Wood River immediately downstream of the headgates. The remaining elements of the dam include the foundation within the river and the wingwalls on either side of the river. The superstructure of the dam was removed entirely prior to 2003. The remaining portions of the dam are compromised and in poor condition. Considering these changes, the dam has lost integrity of workmanship, design, materials and feeling, while retaining location, setting, and association. Reclamation feels that the loss to the physical aspects of integrity of the diversion dam make it a non-contributing element to the historic significance of the BCS.

Reclamation identified one historic property within the APE based on this analysis, the BCS. Reviewing the potential effects on the BCS, a diversion dam would still be in place performing its function within the system and the proposed modifications would not visually distract from the other contributing elements of the BCS. Reclamation finds that the proposed project would result in a no adverse effect to historic properties based on this analysis.

Please advise this office as to whether the Shoshone-Bannock Tribes wish to join in this consultation by contacting me directly at (208) 383-2246 or via email at mpaquin@usbr.gov. You may also contact my staff archaeologist, Ms. Nikki Polson, by phone at (208) 678-0461, extension 13, or by email at npolson@usbr.gov with any project-related questions regarding this letter or report. Please direct any other concerns to Ms. Jessica Asbill-Case, Native American Affairs Advisor, by phone at (208) 383-2282 or by email at jasbillcase@usbr.gov.

If you are deaf, hard of hearing, or have a speech disability, please dial 7-1-1 to access telecommunications relay services.

Sincerely,

MELANIE PAQUIN

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Date: 2023.08.02 15:39:37 -06'00'

Melanie Paquin
Area Manager

Enclosure

cc: Ms. Carolyn Smith
Cultural Resources Coordinator
Cultural Resources/Heritage Tribal Office (HeTO)
Shoshone-Bannock Tribes
85 W. Agency Rd, Building #82
Fort Hall, ID 83203

Continued on next page.

Continued from previous page.

Ms. Christina Cutler
Environmental Coordinator
Shoshone-Bannock Tribes
85 W. Agency Rd, Building #82
Fort Hall, ID 83203
(w/encl to each above)

Scoping Information Package

Proposed Wood River Diversion 45 Stabilization and Fish Passage Remediation Project in Blaine County, Idaho

This information package summarizes a U.S. Department of the Interior's WaterSMART (Sustain and Manage America's Resources for Tomorrow) program project proposal from the Board of Control (BOC) for Wood River Valley Irrigation District No. 45 (WRID45) and Triangle Irrigation District (TID) to stabilize and modify the existing irrigation diversion to provide fish passage and improve sediment transport. The project is located on the Big Wood River in the city of Bellevue, in Blaine County, Idaho. The associated canal serves both WRID45 and TID who jointly own and manage the diversion structure as the BOC.

The WaterSMART program establishes a framework to provide Federal leadership and assistance on the efficient use of water; integrate water and energy policies to support the sustainable use of all natural resources; form strong diverse partnerships with states, tribes and local entities; and coordinate with other Department bureaus and offices on water conservation activities. Through the WaterSMART grants program, the Bureau of Reclamation provides cost-share funding to entities promoting the sustainable use of water resources, improving the ecological resilience of rivers and streams, and conserving water for multiple uses through collaborative conservation efforts.

Federal actions are analyzed in accordance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations to determine potential environmental consequences. Reclamation is asking for comments to better identify issues and concerns associated with this proposal.

Purpose and Need of Action

Reclamation's purpose for the Proposed Action is to fulfill the WaterSMART grant proposing to rehabilitate aging water delivery infrastructure. This project would improve safety for boaters, restore fish passage and improve sediment transport at the diversion dam while improving diversion functionality and stabilizing the existing structure. A low flow channel would be notched into the existing structure to allow for fish, sediment, and boater passage. Currently the structure is undercut and unstable. Scour immediately downstream of the structure has created a drop that acts as a fish barrier and is a danger to boaters. Recent warm and dry years have caused high summer water temperatures and fish die off events downstream of the diversion. Over 12,000 salmonids were captured downstream of the diversion and released upstream during a salvage event in 2021. Due to sediment trapped upstream of the structure, BOC has to conduct instream work annually to move gravel to provide water to the canal. Overall, the project would improve public safety, water reliability, and fish passage while reducing maintenance.

Proposed Action

The existing dam has created and maintained a profile discontinuity, resulting in upstream aggradation and downstream channel incision (Figure 1). The instream portion of the work is proposed for the low flow period of late summer through fall 2023. The diversion structure is shaped like an upside down "U" (Figure 2). The proposed project actions include removing the existing horizontal cap, stabilizing the vertical walls with compacted gravel, and pouring a new concrete cap (Figure 2). The compacted gravel would be extended below the structure walls to fill

the scour holes. The downstream side of the dam would be backfilled up to the dam crest to help prevent subsurface flows and associated scour issues. A 1.3-feet-deep and 10-feet-wide notch would be cut into the existing downstream wall within the diversion structure. A 300-foot roughened rock ramp would be built to transition the stream bed above the dam through the notch to the stream bed below the dam (Figure 3). This would allow for sediment transport past the top of the canal and facilitate fish migration. This notch and channel would act as the low flow channel enabling fish to move up to higher elevation cooler water. Riprap, planting, and log jam structures would be included to offer diversion and channel stabilization.

Figure 1. Existing condition of Diversion 45 on the Big Wood River, Bellevue, Idaho.

Downstream of the diversion, the existing channel is entrenched and confined. A bankfull bench is proposed to be excavated in the unvegetated right bank along the rock ramp. The bench would maintain conveyance width along the ramp to reduce stress during flood conditions. In addition, plantings would be installed along the bench face and crest to improve stability and shading of the elevated gravel bar along the right bank, which is a consequence of the historic downcutting that has resulted from the diversion dam profile discontinuity. Included in the bench are ballasted 2-log structures (wood jams). Wood jams promote the longevity of the proposed bench, improve sediment sorting, and tend to accumulate natural debris over time. A native transitional seed mix would be dispersed throughout the treatment area after construction has been completed, including all temporary haul roads and equipment and material storage areas.

Location and Background

The project is located on the Big Wood River in the city of Bellevue, Blaine County, Idaho (Figure 4). The associated canal serves both WRID45 and TID who jointly own the diversion structure. In 2015, legislation divided the original Wood River Valley Irrigation District into two subdistricts: WRID45 and the TID. With some exceptions, the WRID45 now includes the smaller acreage properties generally located in the northern section of the Bellevue Triangle, while the TID consists

of the larger acreage properties generally located in the southern section. The same legislation allowing the WRID to be partitioned into two subdistricts also created a third entity: the BOC, which is the applicant for this grant. The BOC facilitates the operation and management of the mutually owned infrastructure (Diversion 45). The BOC Board is comprised of members from both irrigation districts and operates and maintains the structures and personnel to deliver water through the canals to each private diversion.

The water delivery system (canals and diversion structure) was constructed around 1915-1925. A major upgrade on Diversion 45 was done in the early 1960s. The structure currently diverts up to 380 cubic feet per second to serve approximately 9,000 acres of land and roughly 200 users.

Preliminary Alternative Development

The environmental assessment would include consideration of the Proposed Action Alternative and the No Action Alternative. Additionally, alternatives could be developed with the identified issues throughout the NEPA scoping process.

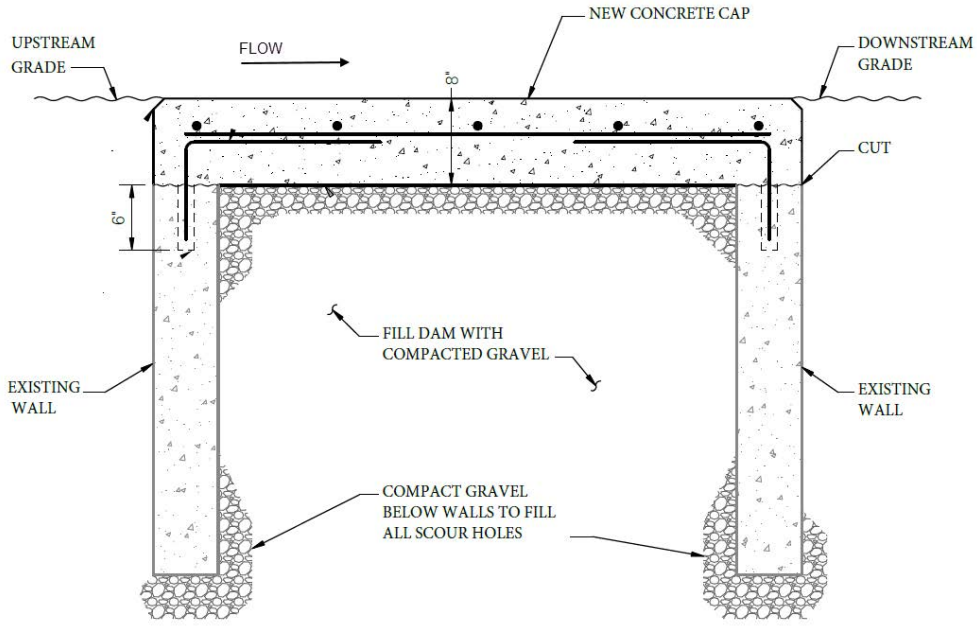

Figure 2. Proposed modifications to the concrete diversion structure.

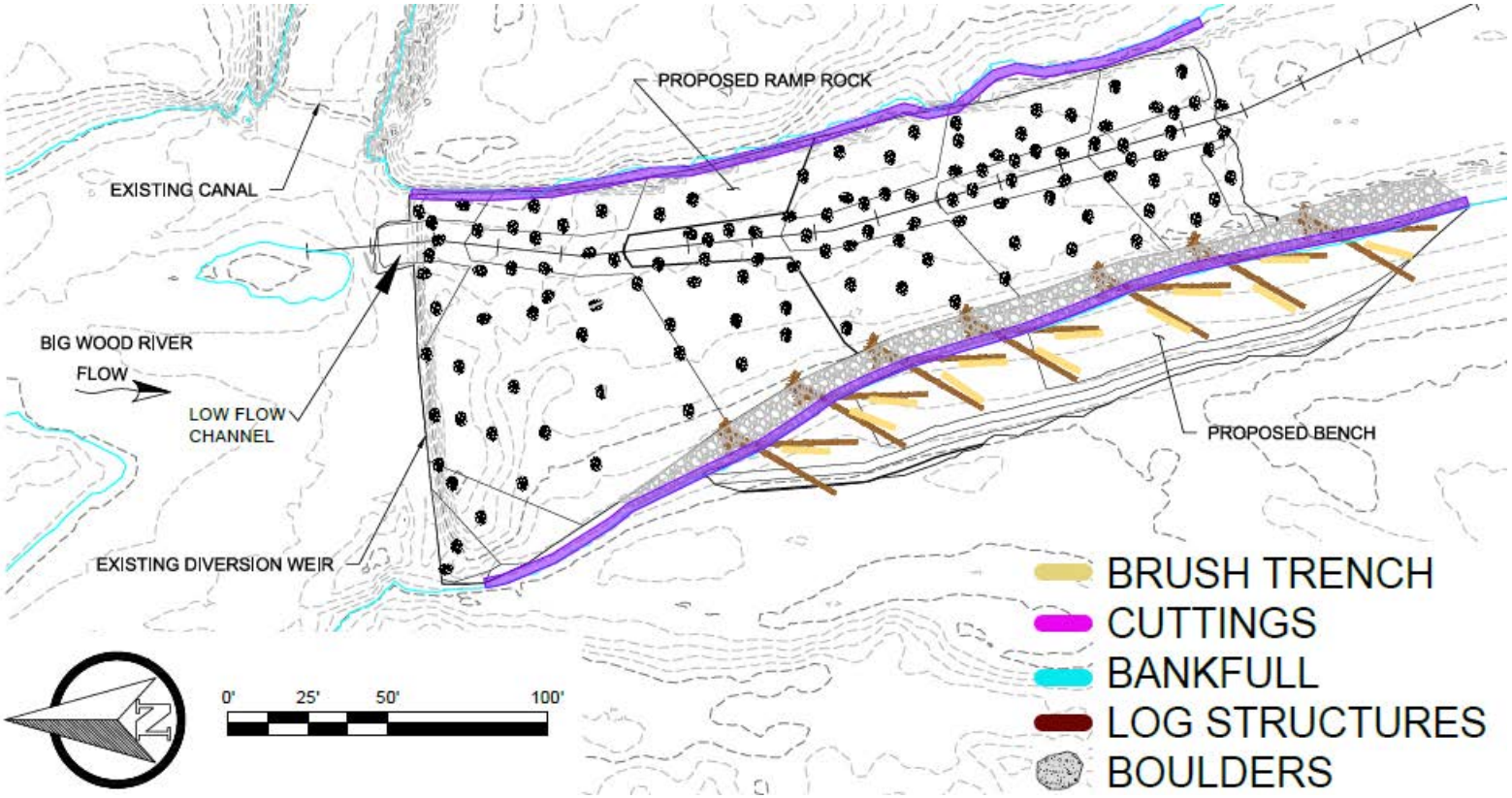

Figure 3. Drawing of the proposed modification to the stream channel at Diversion 45.

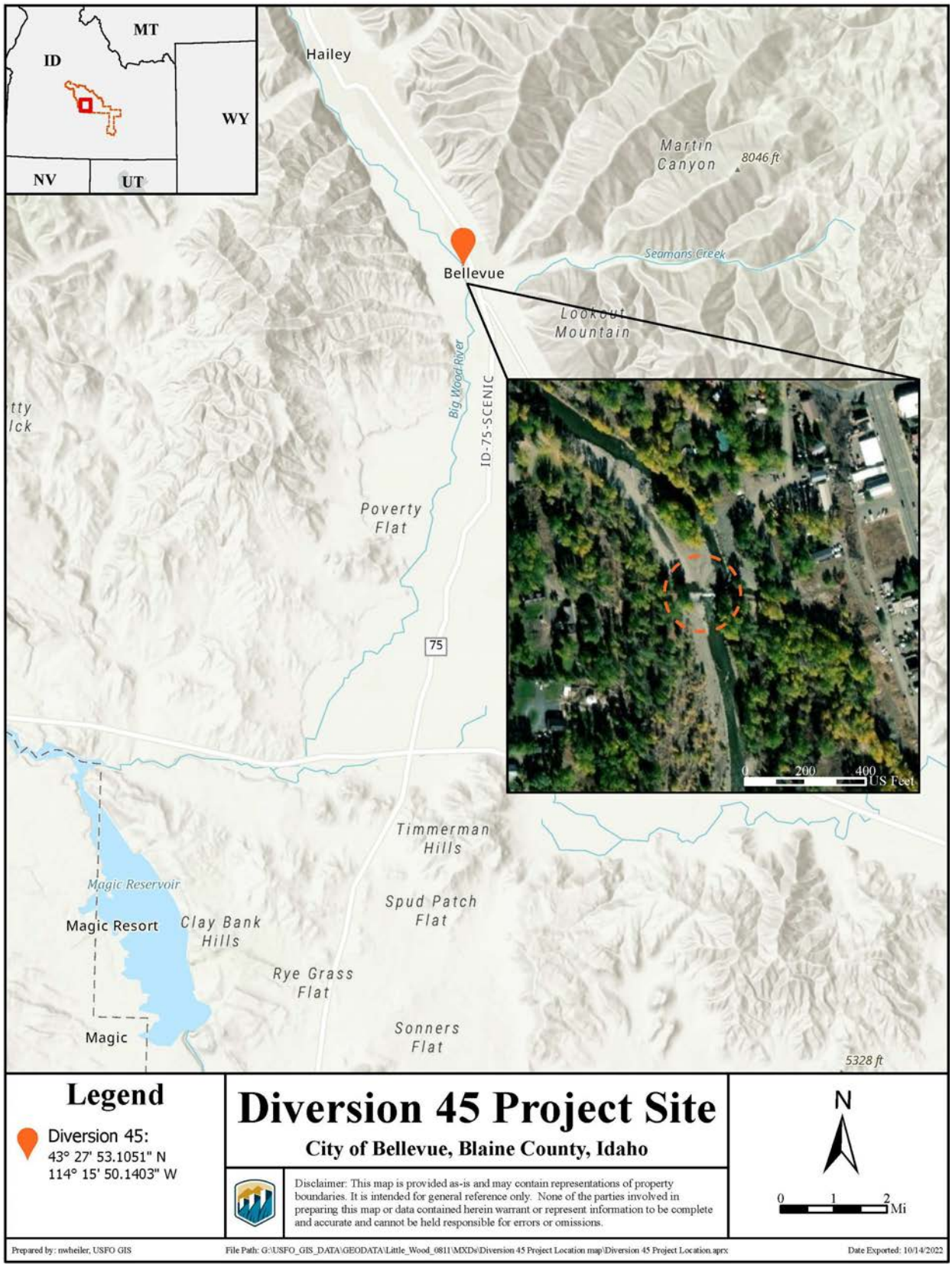

Figure 4. Project Location.

United States Department of the Interior
BUREAU OF RECLAMATION
Snake River Area Office
230 Collins Road
Boise, ID 83702-4520

IN REPLY REFER TO:
SRA-1212
2.1.4.17

VIA FEDERAL EXPRESS

Honorable Diane Teeman
Chairperson
Burns Paiute Tribes
100 Pasigo Street
Burns, OR 97720

Subject: Request for Comments Regarding a the Proposed Wood River Diversion 45 Stabilization and Fish Passage Remediation Project in Blaine County, Idaho

Dear Chairperson Teeman:

The Bureau of Reclamation has received a proposal from the Wood River Board of Control (BOC) for a WaterSMART (Sustain and Manage America's Resources for Tomorrow) grant to stabilize and improve an existing diversion structure on the Big Wood River in Bellevue, Idaho. The BOC manages this infrastructure for the Wood River Valley Irrigation District No. 45 and Triangle Irrigation District in Blaine County. Over time, the existing structure has caused sediment to accumulate upstream of the diversion and scour away downstream. This has created an unstable structure that is a passage barrier for fish and boaters. This project would improve passage conditions for fish and boaters while improving diversion functionality. The stream gradient at the diversion would be returned to a more natural 2 percent slope by filling the downstream area in with gravel and boulders. This would create a rock ramp approximately 300-feet long. The existing concrete cap on the structure itself would be replaced with a new concrete cap. This new cap would be bolted and epoxied to the existing vertical wall structures that span the river. A 10-foot wide low flow channel would be created in the rock ramp. This low flow channel would be connected to a 10-foot wide notch in the diversion structure itself. More details on the proposed project can be found in the enclosed scoping information package.

Please help us identify important issues and concerns regarding the proposed action by providing your written comments. Although your comments are always welcome, they can be best used if received by **January 31, 2023**. Written comments may be submitted electronically to sra-nepa-comments@usbr.gov, or mailed or hand-delivered to:

Mr. Anthony Prisciandaro
Fisheries Biologist
Bureau of Reclamation
Snake River Area Office
230 Collins Road
Boise, ID 83702

The primary contact for questions or comments for this analysis, accessibility needs, or other proposed project information is Mr. Prisciandaro at (208) 383-2233. Please direct any other concerns to Ms. Jessica Asbill-Case, Native American Affairs Advisor, by phone at (208) 383-2282 or by email at jasbillcase@usbr.gov.

If you are deaf, hard of hearing, or have a speech disability, please dial 7-1-1 to access telecommunications relay services.

Sincerely,

MELANIE PAQUIN

Digitally signed by MELANIE PAQUIN
Date: 2022.12.19 18:51:50 -07'00'

Melanie Paquin
Area Manager

Enclosure

cc: Ms. Calla Hagle
Natural Resources Director
Burns Paiute Tribes
71210 Foley Drive
Burns, OR 97720

Mr. Brandon Haslick
Fishery Program Manager
Burns Paiute Tribes
71210 Foley Drive
Burns, OR 97720

Mr. Brandon Palmer
Wildlife Program Manager
Burns Paiute Tribes
71210 Foley Drive
Burns, OR 97720

Mr. Jason Fenton
Environmental Manager
Burns Paiute Tribes
71210 Foley Drive
Burns, OR 97720
(w/encl to each)

United States Department of the Interior
BUREAU OF RECLAMATION
Snake River Area Office
230 Collins Road
Boise, ID 83702-4520

IN REPLY REFER TO:
SRA-1212
2.1.4.17

VIA FEDERAL EXPRESS

Honorable Nathan Small
Chairman, Fort Hall Business Council
Shoshone-Bannock Tribes
85 W. Agency Rd., Building #82
Fort Hall, ID 83203

Subject: Request for Comments Regarding a the Proposed Wood River Diversion 45 Stabilization and Fish Passage Remediation Project in Blaine County, Idaho

Dear Chairman Small:

The Bureau of Reclamation has received a proposal from the Wood River Board of Control (BOC) for a WaterSMART (Sustain and Manage America's Resources for Tomorrow) grant to stabilize and improve an existing diversion structure on the Big Wood River in Bellevue, Idaho. The BOC manages this infrastructure for the Wood River Valley Irrigation District No. 45 and Triangle Irrigation District in Blaine County. Over time, the existing structure has caused sediment to accumulate upstream of the diversion and scour away downstream. This has created an unstable structure that is a passage barrier for fish and boaters. This project would improve passage conditions for fish and boaters while improving diversion functionality. The stream gradient at the diversion would be returned to a more natural 2 percent slope by filling the downstream area in with gravel and boulders. This would create a rock ramp approximately 300-feet long. The existing concrete cap on the structure itself would be replaced with a new concrete cap. This new cap would be bolted and epoxied to the existing vertical wall structures that span the river. A 10-foot wide low flow channel would be created in the rock ramp. This low flow channel would be connected to a 10-foot wide notch in the diversion structure itself. More details on the proposed project can be found in the enclosed scoping information package.

Please help us identify important issues and concerns regarding the proposed action by providing your written comments. Although your comments are always welcome, they can be best used if received by **January 31, 2023**. Written comments may be submitted electronically to sra-nepa-comments@usbr.gov, or mailed or hand-delivered to:

Mr. Anthony Prisciandaro
Fisheries Biologist
Bureau of Reclamation
Snake River Area Office
230 Collins Road
Boise, ID 83702

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If you are deaf, hard of hearing, or have a speech disability, please dial 7-1-1 to access telecommunications relay services.

Sincerely,

MELANIE PAQUIN

Digitally signed by MELANIE PAQUIN
Date: 2022.12.19 18:52:15 -07'00'

Melanie Paquin
Area Manager

Enclosure

cc: Mr. Wes Jones
Emergency Manager
Shoshone-Bannock Tribes
85 W. Agency Rd., Building #82
Fort Hall, ID 83203-0306

Mr. Cleve Davis
Environmental Program Manager
Shoshone-Bannock Tribes
85 W. Agency Rd., Building #82
Fort Hall, ID 83203-0306

Mr. Chad Colter
Fish and Wildlife Director
Shoshone-Bannock Tribes
85 W. Agency Rd., Building #82
Fort Hall, ID 83203-0306

Mr. Candon Tanaka
Tribal Water Engineer
Water Resources Department
Shoshone-Bannock Tribes
85 W. Agency Rd., Building #82
Fort Hall, ID 83203-0306

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Ms. Christina Cutler
Environmental Specialist
Shoshone-Bannock Tribes
85 W. Agency Rd, Building #82
Fort Hall, ID 83203-0306

Mr. Lester Galloway
Tribal Water Resources Commissioner
Shoshone-Bannock Tribes
85 W. Agency Rd., Building #82
Fort Hall, ID 83203-0306

Ms. Gail Martin
Tribal Water Resources
Shoshone-Bannock Tribes
85 W. Agency Rd., Building #82
Fort Hall, ID 83203-0306

Mr. Frances Roy
Tribal Water Resources Sergeant At Arms
Shoshone-Bannock Tribes
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Tribal Water Engineer
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Mr. Claudeo Broncho
Supervisor, Natural Resources and Fish and Wildlife Policy Representative
Shoshone-Bannock Tribes
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Ms. Carolyn B. Smith
Cultural Resources Coordinator
Water Resources Department
Shoshone-Bannock Tribes
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Fort Hall, ID 83203-0306
(w/encl to each)

Scoping Information Package

Proposed Wood River Diversion 45 Stabilization and Fish Passage Remediation Project in Blaine County, Idaho

This information package summarizes a U.S. Department of the Interior's WaterSMART (Sustain and Manage America's Resources for Tomorrow) program project proposal from the Board of Control (BOC) for Wood River Valley Irrigation District No. 45 (WRID45) and Triangle Irrigation District (TID) to stabilize and modify the existing irrigation diversion to provide fish passage and improve sediment transport. The project is located on the Big Wood River in the city of Bellevue, in Blaine County, Idaho. The associated canal serves both WRID45 and TID who jointly own and manage the diversion structure as the BOC.

The WaterSMART program establishes a framework to provide Federal leadership and assistance on the efficient use of water; integrate water and energy policies to support the sustainable use of all natural resources; form strong diverse partnerships with states, tribes and local entities; and coordinate with other Department bureaus and offices on water conservation activities. Through the WaterSMART grants program, the Bureau of Reclamation provides cost-share funding to entities promoting the sustainable use of water resources, improving the ecological resilience of rivers and streams, and conserving water for multiple uses through collaborative conservation efforts.

Federal actions are analyzed in accordance with the National Environmental Policy Act (NEPA) and other relevant Federal and State laws and regulations to determine potential environmental consequences. Reclamation is asking for comments to better identify issues and concerns associated with this proposal.

Purpose and Need of Action

Reclamation's purpose for the Proposed Action is to fulfill the WaterSMART grant proposing to rehabilitate aging water delivery infrastructure. This project would improve safety for boaters, restore fish passage and improve sediment transport at the diversion dam while improving diversion functionality and stabilizing the existing structure. A low flow channel would be notched into the existing structure to allow for fish, sediment, and boater passage. Currently the structure is undercut and unstable. Scour immediately downstream of the structure has created a drop that acts as a fish barrier and is a danger to boaters. Recent warm and dry years have caused high summer water temperatures and fish die off events downstream of the diversion. Over 12,000 salmonids were captured downstream of the diversion and released upstream during a salvage event in 2021. Due to sediment trapped upstream of the structure, BOC has to conduct instream work annually to move gravel to provide water to the canal. Overall, the project would improve public safety, water reliability, and fish passage while reducing maintenance.

Proposed Action

The existing dam has created and maintained a profile discontinuity, resulting in upstream aggradation and downstream channel incision (Figure 1). The instream portion of the work is proposed for the low flow period of late summer through fall 2023. The diversion structure is shaped like an upside down "U" (Figure 2). The proposed project actions include removing the existing horizontal cap, stabilizing the vertical walls with compacted gravel, and pouring a new concrete cap (Figure 2). The compacted gravel would be extended below the structure walls to fill

the scour holes. The downstream side of the dam would be backfilled up to the dam crest to help prevent subsurface flows and associated scour issues. A 1.3-feet-deep and 10-feet-wide notch would be cut into the existing downstream wall within the diversion structure. A 300-foot roughened rock ramp would be built to transition the stream bed above the dam through the notch to the stream bed below the dam (Figure 3). This would allow for sediment transport past the top of the canal and facilitate fish migration. This notch and channel would act as the low flow channel enabling fish to move up to higher elevation cooler water. Riprap, planting, and log jam structures would be included to offer diversion and channel stabilization.

Figure 1. Existing condition of Diversion 45 on the Big Wood River, Bellevue, Idaho.

Downstream of the diversion, the existing channel is entrenched and confined. A bankfull bench is proposed to be excavated in the unvegetated right bank along the rock ramp. The bench would maintain conveyance width along the ramp to reduce stress during flood conditions. In addition, plantings would be installed along the bench face and crest to improve stability and shading of the elevated gravel bar along the right bank, which is a consequence of the historic downcutting that has resulted from the diversion dam profile discontinuity. Included in the bench are ballasted 2-log structures (wood jams). Wood jams promote the longevity of the proposed bench, improve sediment sorting, and tend to accumulate natural debris over time. A native transitional seed mix would be dispersed throughout the treatment area after construction has been completed, including all temporary haul roads and equipment and material storage areas.

Location and Background

The project is located on the Big Wood River in the city of Bellevue, Blaine County, Idaho (Figure 4). The associated canal serves both WRID45 and TID who jointly own the diversion structure. In 2015, legislation divided the original Wood River Valley Irrigation District into two subdistricts: WRID45 and the TID. With some exceptions, the WRID45 now includes the smaller acreage properties generally located in the northern section of the Bellevue Triangle, while the TID consists

of the larger acreage properties generally located in the southern section. The same legislation allowing the WRID to be partitioned into two subdistricts also created a third entity: the BOC, which is the applicant for this grant. The BOC facilitates the operation and management of the mutually owned infrastructure (Diversion 45). The BOC Board is comprised of members from both irrigation districts and operates and maintains the structures and personnel to deliver water through the canals to each private diversion.

The water delivery system (canals and diversion structure) was constructed around 1915-1925. A major upgrade on Diversion 45 was done in the early 1960s. The structure currently diverts up to 380 cubic feet per second to serve approximately 9,000 acres of land and roughly 200 users.

Preliminary Alternative Development

The environmental assessment would include consideration of the Proposed Action Alternative and the No Action Alternative. Additionally, alternatives could be developed with the identified issues throughout the NEPA scoping process.

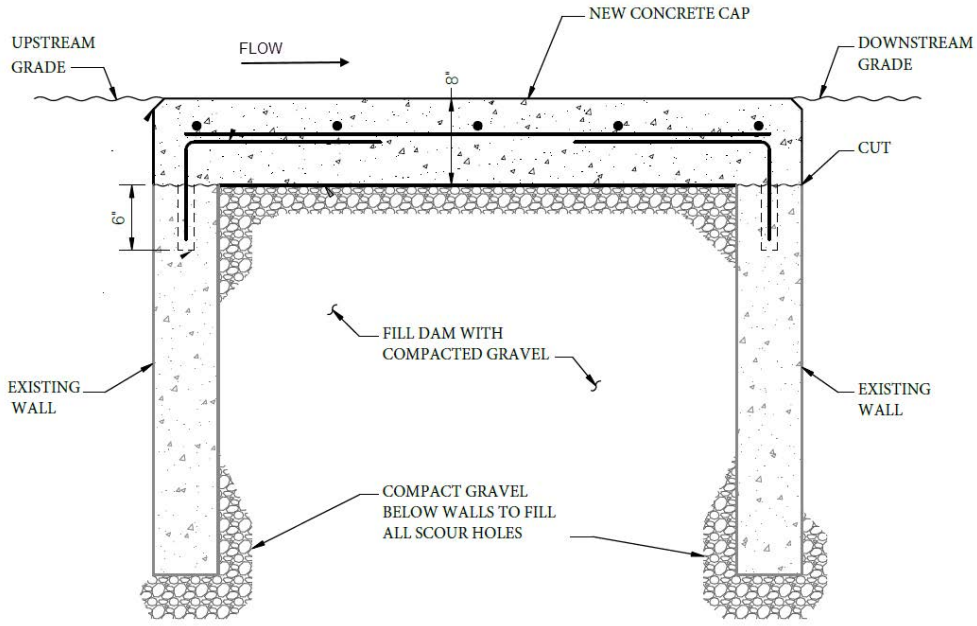

Figure 2. Proposed modifications to the concrete diversion structure.

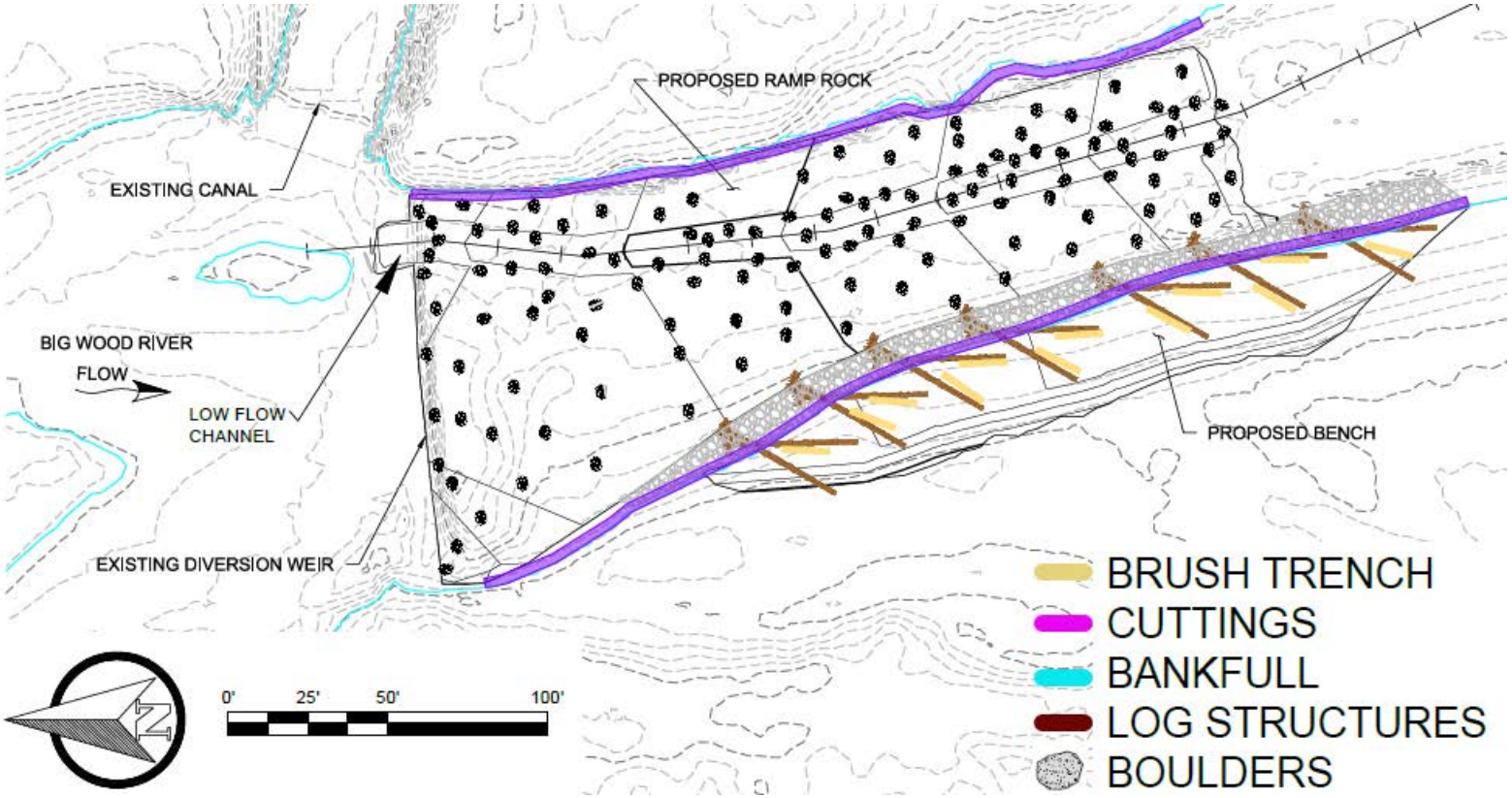

Figure 3. Drawing of the proposed modification to the stream channel at Diversion 45.

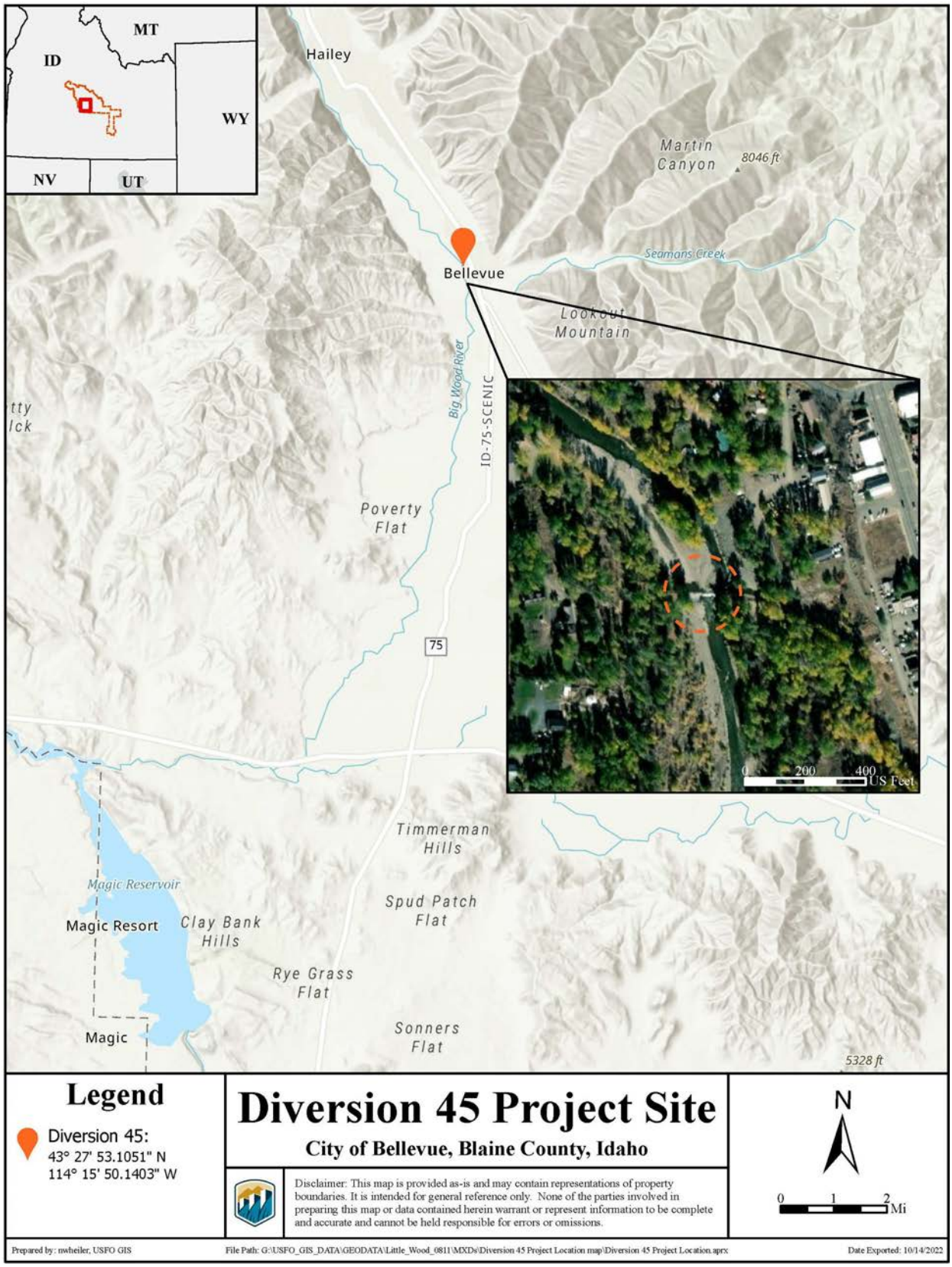

Figure 4. Project Location.

United States Department of the Interior
BUREAU OF RECLAMATION
Snake River Area Office
230 Collins Road
Boise, ID 83702-4520

IN REPLY REFER TO:
SRA-1212
2.1.4.17

VIA FEDERAL EXPRESS

Honorable Brian Mason
Chairman
Shoshone-Paiute Tribes
1036 Idaho State Highway 51
Owyhee, NV 89832

Subject: Request for Comments Regarding a the Proposed Wood River Diversion 45 Stabilization and Fish Passage Remediation Project in Blaine County, Idaho

Dear Chairman Mason:

The Bureau of Reclamation has received a proposal from the Wood River Board of Control (BOC) for a WaterSMART (Sustain and Manage America's Resources for Tomorrow) grant to stabilize and improve an existing diversion structure on the Big Wood River in Bellevue, Idaho. The BOC manages this infrastructure for the Wood River Valley Irrigation District No. 45 and Triangle Irrigation District in Blaine County. Over time, the existing structure has caused sediment to accumulate upstream of the diversion and scour away downstream. This has created an unstable structure that is a passage barrier for fish and boaters. This project would improve passage conditions for fish and boaters while improving diversion functionality. The stream gradient at the diversion would be returned to a more natural 2 percent slope by filling the downstream area in with gravel and boulders. This would create a rock ramp approximately 300-feet long. The existing concrete cap on the structure itself would be replaced with a new concrete cap. This new cap would be bolted and epoxied to the existing vertical wall structures that span the river. A 10-foot wide low flow channel would be created in the rock ramp. This low flow channel would be connected to a 10-foot wide notch in the diversion structure itself. More details on the proposed project can be found in the enclosed scoping information package.

Please help us identify important issues and concerns regarding the proposed action by providing your written comments. Although your comments are always welcome, they can be best used if received by **January 31, 2023**. Written comments may be submitted electronically to sra-nepa-comments@usbr.gov, or mailed or hand-delivered to:

Mr. Anthony Prisciandaro
Fisheries Biologist
Bureau of Reclamation
Snake River Area Office
230 Collins Road
Boise, ID 83702

The primary contact for questions or comments for this analysis, accessibility needs, or other proposed project information is Mr. Prisciandaro at (208) 383-2233. Please direct any other concerns to Ms. Jessica Asbill-Case, Native American Affairs Advisor, by phone at (208) 383-2282 or by email at jasbillcase@usbr.gov.

If you are deaf, hard of hearing, or have a speech disability, please dial 7-1-1 to access telecommunications relay services.

Sincerely,

MELANIE PAQUIN

Digitally signed by MELANIE PAQUIN
Date: 2022.12.19 18:52:32 -07'00'

Melanie Paquin
Area Manager

Enclosure

cc: Ms. Marissa Snapp
Environmental Director
Shoshone-Paiute Tribes
1036 Idaho State Highway 51
Owyhee, NV 89832

Mr. Buster Gibson
Fish, Wildlife & Parks Director
Shoshone-Paiute Tribes
1036 Idaho State Highway 51
Owyhee, NV 89832

Ms. Nancy Egan
Interim Chief Executive Officer
Shoshone-Paiute Tribes
1036 Idaho State Highway 51
Owyhee, NV 89832

Mr. Pawan Upadhyay, PhD
Water Resources Director
Water Resources Department
Shoshone-Paiute Tribes
1036 Idaho State Highway 51
Owyhee, NV 89832

Continued on next page.

Continued from previous page.

Ms. Maurissa Bigjohn
Tribal Administrator
Shoshone-Paiute Tribes
1036 Idaho State Highway 51
Owyhee, NV 89832
(w/encl to each)

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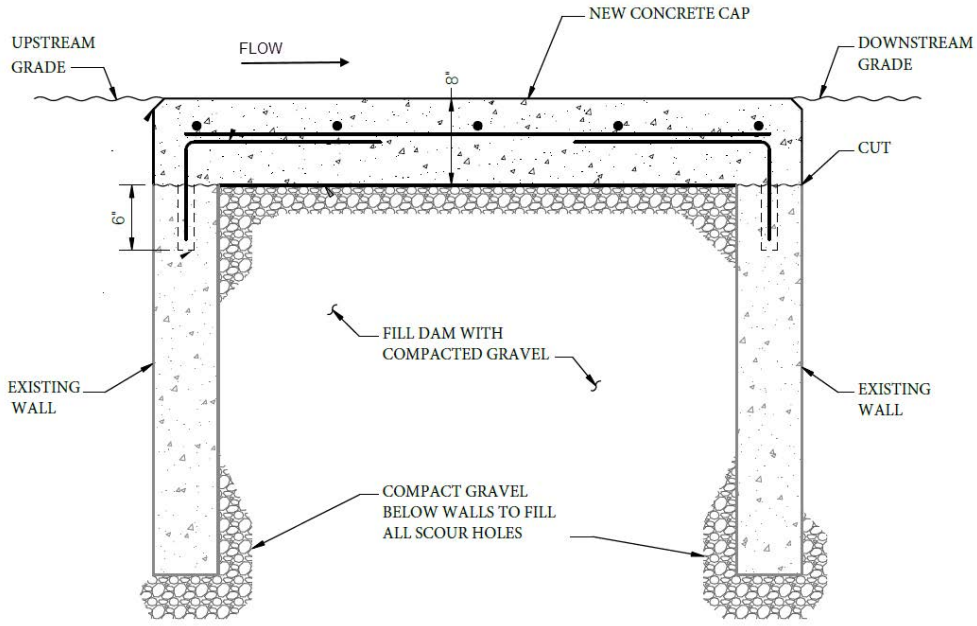

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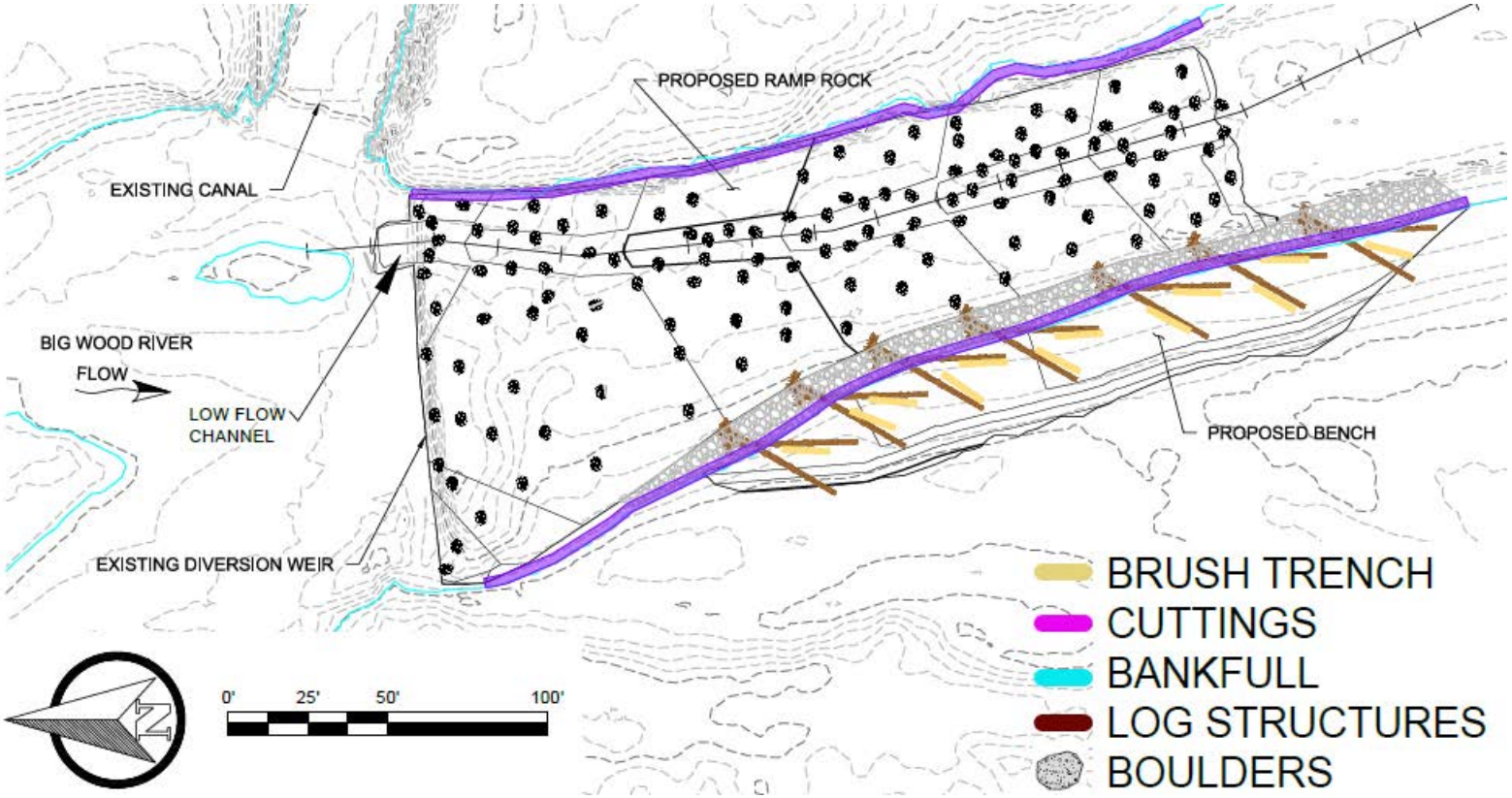

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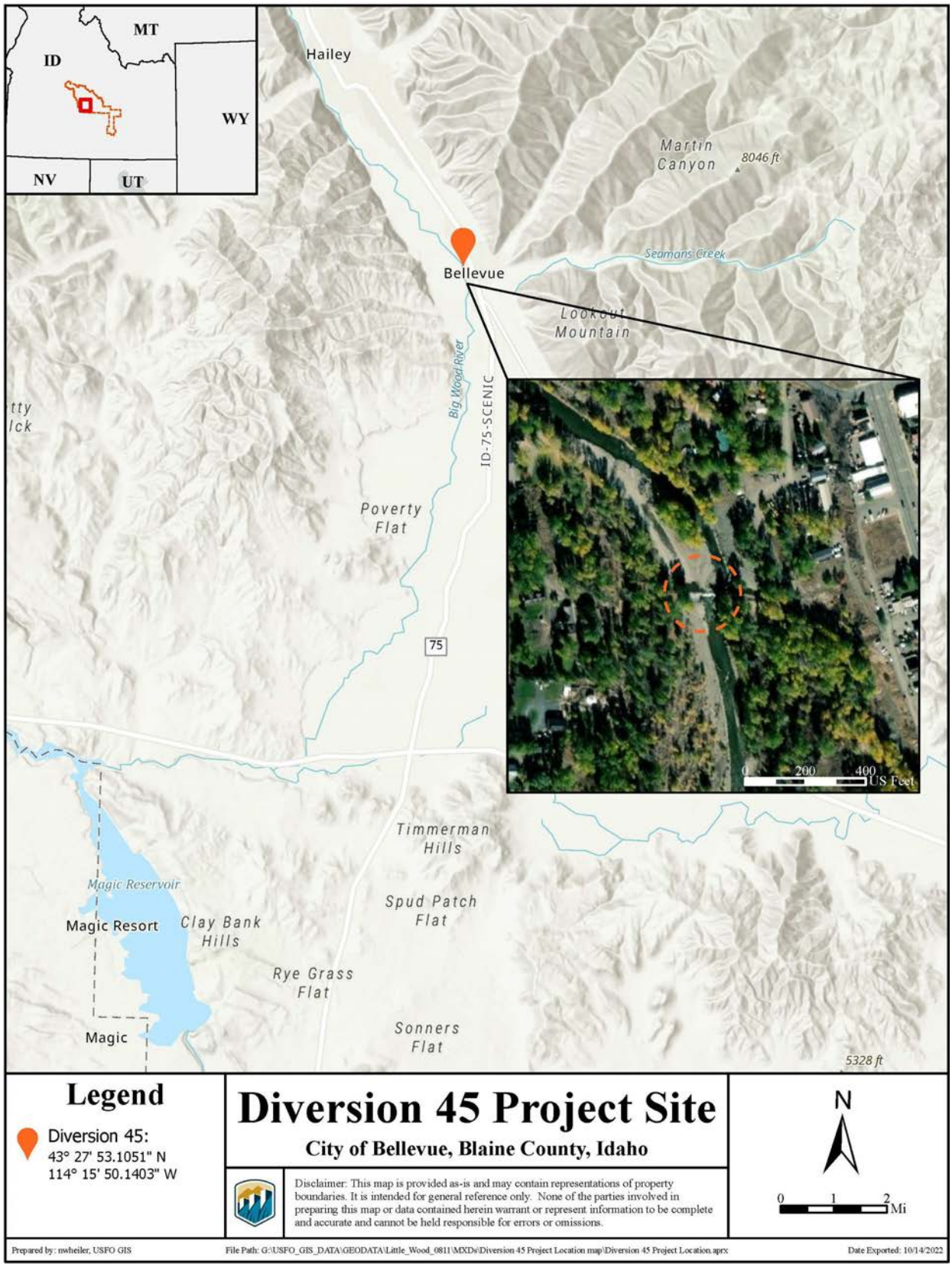

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770865052127	OWYHEE, NV
770867045882	FORT HALL, ID
770866898517	FORT HALL, ID
770866954841	FORT HALL INDIAN RESERVATION, ID
770865562279	FORT HALL, ID
770864973947	OWYHEE, NV
770863519758	BURNS, OR
770866982679	FORT HALL, ID
770864951975	OWYHEE, NV
770863195862	BURNS, OR
770863428727	BURNS, OR
770865535036	FORT HALL, ID
770867003636	FORT HALL, ID
770864882103	OWYHEE, NV
770863401032	BURNS, OR
770867023259	FORT HALL, ID
770865512848	FORT HALL, ID
770867072783	FORT HALL, ID
770864906424	OWYHEE, NV
770866933096	FORT HALL, ID
770863158239	BURNS, OR
770864998907	OWYHEE, NV

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Page 1 of 2

Date/Time: 2023

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Status:	**Delivered To:**
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Service type:	
Special Handling: Deliver Weekday; Adult Signature Required	
	Delivery date:

Shipping Information:

Tracking number:	**Ship Date:**
	Weight:

Recipient:
Ms. Maurissa Bigjohn, Shoshone-Paiute Tribes
1036 Idaho State Highway 51
OWYHEE, NV, US, 89832

Shipper:
Katy Hennequin,
230 Collins Road
Boise, ID, US, 83702

Reference Wood Rvr Diversion 45 Anthony

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[illegible] HIGHWAY

The following is the proof-of-delivery for tracking number: 770867045882

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Status:	**Delivered To:**
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Service type:	
Special Handling: Deliver Weekday; Adult Signature Required	
	Delivery date:

Shipping Information:

Tracking number:	**Ship Date:**
	Weight:

Recipient:
Mr. Claudeo Broncho, Shoshone-Bannock Tribes
85 W. Agency Road
Building #82
FORT HALL, ID, US, 83203

Shipper:
Katy Hennequin,
230 Collins Road
Boise, ID, US, 83702

Reference Wood Rivr Diversion 45 Anthony

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The following is the proof-of-delivery for tracking number: 770866898517

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Service type:	
Special Handling: Deliver Weekday; Adult Signature Required	
	Delivery date:

Shipping Information:

Tracking number:	**Ship Date:**
	Weight:

Recipient:
Mr. Chad Colter, Shoshone-Bannock Tribes
85 W. Agency Road
Building #82
FORT HALL, ID, US, 83203

Shipper:
Katy Hennequin,
230 Collins Road
Boise, ID, US, 83702

Reference Wood Rivr Diversion 45 Anthony

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The following is the proof-of-delivery for tracking number: 770866954841

Delivery Information:

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Service type:	
Special Handling: Deliver Weekday; Adult Signature Required	
	Delivery date:

Shipping Information:

Tracking number:	**Ship Date:**
	Weight:

Recipient:
Ms. Christina Cutler, Shoshone-Bannock Tribes
85 W. Agency Road
Building #82
FORT HALL INDIAN RESERVATION, ID, US, 83203

Shipper:
Katy Hennequin,
230 Collins Road
Boise, ID, US, 83702

Reference Wood Rivr Diversion 45 Anthony

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The following is the proof-of-delivery for tracking number: 770865562279

Delivery Information:

Status:	**Delivered To:**
Signed for by:	**Delivery Location:**
Service type:	
Special Handling: Deliver Weekday; Adult Signature Required	
	Delivery date:

Shipping Information:

Tracking number:	**Ship Date:**
	Weight:

Recipient:
Mr. Cleve Davis, Shoshone-Bannock Tribes
85 W. Agency Road
Building #82
FORT HALL, ID, US, 83203

Shipper:
Katy Hennequin,
230 Collins Road
Boise, ID, US, 83702

Reference Wood Rvr Diversion 45 Anthony

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The following is the proof-of-delivery for tracking number: 770864973947

Delivery Information:

Status:	**Delivered To:**
Signed for by:	**Delivery Location:**
Service type:	
Special Handling: Deliver Weekday; Adult Signature Required	
	Delivery date:

Shipping Information:

Tracking number:	**Ship Date:**
	Weight:

Recipient:
Ms. Nancy Egan, Shoshone-Paiute Tribes
1036 Idaho State Highway 51
OWYHEE, NV, US, 89832

Shipper:
Katy Hennequin,
230 Collins Road
Boise, ID, US, 83702

Reference Wood Rvr Diversion 45 Anthony

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The following is the proof-of-delivery for tracking number: 770863519758

Delivery Information:

Status:	**Delivered To:**
Signed for by:	**Delivery Location:**
Service type:	
Special Handling: Deliver Weekday; Adult Signature Required	
	Delivery date:

Shipping Information:

Tracking number:	**Ship Date:**
	Weight:

Recipient:
Mr. Jason Fenton, Burns Paiute Tribe
71210 Foley Drive
BURNS, OR, US, 97720

Shipper:
Katy Hennequin,
230 Collins Road
Boise, ID, US, 83702

Reference Wood Rvr Diversion 45 Anthony

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The following is the proof-of-delivery for tracking number: 770866982679

Delivery Information:

Status:	**Delivered To:**
Signed for by:	**Delivery Location:**
Service type:	
Special Handling: Deliver Weekday; Adult Signature Required	
	Delivery date:

Shipping Information:

Tracking number:	**Ship Date:**
	Weight:

Recipient:
Mr. Lester Galloway, Shoshone-Bannock Tribes
85 W. Agency Road
Building #82
FORT HALL, ID, US, 83203

Shipper:
Katy Hennequin,
230 Collins Road
Boise, ID, US, 83702

Reference Wood Rivr Diversion 45 Anthony

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The following is the proof-of-delivery for tracking number: 770864951975

Delivery Information:

Status:	**Delivered To:**
Signed for by:	**Delivery Location:**
Service type:	
Special Handling: Deliver Weekday; Adult Signature Required	
	Delivery date:

Shipping Information:

Tracking number:	**Ship Date:**
	Weight:

Recipient:
Mr. Buster Gibson, Shoshone-Paiute Tribes
1036 Idaho State Highway 51
OWYHEE, NV, US, 89832

Shipper:
Katy Hennequin,
230 Collins Road
Boise, ID, US, 83702

Reference Wood Rvr Diversion 45 Anthony

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[illegible] HIGHWAY

The following is the proof-of-delivery for tracking number: 770863195862

Delivery Information:		
Status:		**Delivered To:**
Signed for by:		**Delivery Location:**
Service type:		
Special Handling:	Deliver Weekday; Adult Signature Required	
		Delivery date:

Shipping Information:	
Tracking number:	**Ship Date:**
	Weight:

Recipient:
Calla Hagle, Burns Paiute Tribe
71210 Foley Drive
BURNS, OR, US, 97720

Shipper:
Katy Hennequin,
230 Collins Road
Boise, ID, US, 83702

Reference Wood Rvr Diversion 45 Anthony

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[illegible] Receptionist/Front Desk

The following is the proof-of-delivery for tracking number: 770863428727

Delivery Information:

Status:	**Delivered To:**
Signed for by:	**Delivery Location:**
Service type:	
Special Handling: Deliver Weekday; Adult Signature Required	
	Delivery date:

Shipping Information:

Tracking number:	**Ship Date:**
	Weight:

Recipient:
Mr. Brandon Haslick, Burns Paiute Tribe
71210 Foley Drive
BURNS, OR, US, 97720

Shipper:
Katy Hennequin,
230 Collins Road
Boise, ID, US, 83702

Reference Wood Rvr Diversion 45 Anthony

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Receptionist/Front Desk

The following is the proof-of-delivery for tracking number: 770865535036

Delivery Information:

Status:	**Delivered To:**
Signed for by:	**Delivery Location:**
Service type:	
Special Handling: Deliver Weekday	
	Delivery date:

Shipping Information:

Tracking number:	**Ship Date:**
	Weight:

Recipient:
Mr. Wes Jones, Shoshone-Bannock Tribes
85 W. Agency Road
Building #82
FORT HALL, ID, US, 83203

Shipper:
Katy Hennequin,
230 Collins Road
Boise, ID, US, 83702

Reference Wood Rvr Diversion 45 Anthony

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The following is the proof-of-delivery for tracking number: 770867003636

Delivery Information:

Status:	**Delivered To:**
Signed for by:	**Delivery Location:**
Service type:	
Special Handling: Deliver Weekday; Adult Signature Required	
	Delivery date:

Shipping Information:

Tracking number:	**Ship Date:**
	Weight:

Recipient:
Ms. Gail Martin, Shoshone-Bannock Tribes
85 W. Agency Road
Building #82
FORT HALL, ID, US, 83203

Shipper:
Katy Hennequin,
230 Collins Road
Boise, ID, US, 83702

Reference Wood Rivr Diversion 45 Anthony

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The following is the proof-of-delivery for tracking number: 770864882103

Delivery Information:

Status:	**Delivered To:**
Signed for by:	**Delivery Location:**
Service type:	
Special Handling: Deliver Weekday; Adult Signature Required	
	Delivery date:

Shipping Information:

Tracking number:	**Ship Date:**
	Weight:

Recipient:
Honorable Brian Mason, Shoshone-Paiute Tribes
1036 Idaho State Highway 51
OWYHEE, NV, US, 89832

Shipper:
Katy Hennequin,
230 Collins Road
Boise, ID, US, 83702

Reference Wood Rvr Diversion 45 Anthony

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[illegible] HIGHWAY

The following is the proof-of-delivery for tracking number: 770863401032

Delivery Information:

Status:	**Delivered To:**
Signed for by:	**Delivery Location:**
Service type:	
Special Handling: Deliver Weekday; Adult Signature Required	
	Delivery date:

Shipping Information:

Tracking number:	**Ship Date:**
	Weight:

Recipient:
Mr. Brandon Palmer, Burns Paiute Tribe
71210 Foley Drive
BURNS, OR, US, 97720

Shipper:
Katy Hennequin,
230 Collins Road
Boise, ID, US, 83702

Reference Wood Rvr Diversion 45 Anthony

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Receptionist/Front Desk

The following is the proof-of-delivery for tracking number: 770867023259

Delivery Information:

Status:	**Delivered To:**
Signed for by:	**Delivery Location:**
Service type:	
Special Handling: Deliver Weekday; Adult Signature Required	
	Delivery date:

Shipping Information:

Tracking number:	**Ship Date:**
	Weight:

Recipient:
Mr. Frances Roy, Shoshone-Bannock Tribes
85 W. Agency Road
Building #82
FORT HALL, ID, US, 83203

Shipper:
Katy Hennequin,
230 Collins Road
Boise, ID, US, 83702

Reference Wood Rivr Diversion 45 Anthony

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The following is the proof-of-delivery for tracking number: 770865512848

Delivery Information:	
Status:	**Delivered To:**
Signed for by:	**Delivery Location:**
Service type:	
Special Handling:	Deliver Weekday; Adult Signature Required
	Delivery date:

Shipping Information:	
Tracking number:	**Ship Date:**
	Weight:

Recipient:
Honorable Nathan Small, Shoshone-Bannock Tribes
85 W. Agency Road
Building #82
FORT HALL, ID, US, 83203

Shipper:
Katy Hennequin,
230 Collins Road
Boise, ID, US, 83702

Reference Wood Rvr Diversion 45 Anthony

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The following is the proof-of-delivery for tracking number: 770867072783

Delivery Information:

Status:	**Delivered To:**
Signed for by:	**Delivery Location:**
Service type:	
Special Handling: Deliver Weekday; Adult Signature Required	
	Delivery date:

Shipping Information:

Tracking number:	**Ship Date:**
	Weight:

Recipient:
Ms. Carolyn B. Smith, Shoshone-Bannock Tribes
85 W. Agency Rd.
Building #82
FORT HALL, ID, US, 83203

Shipper:
Katy Hennequin,
230 Collins Road
Boise, ID, US, 83702

Reference Wood Rivr Diversion 45 Anthony

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The following is the proof-of-delivery for tracking number: 770864906424

Delivery Information:

Status:	**Delivered To:**
Signed for by:	**Delivery Location:**
Service type:	
Special Handling: Deliver Weekday; Adult Signature Required	
	Delivery date:

Shipping Information:

Tracking number:	**Ship Date:**
	Weight:

Recipient:
Ms. Marissa Snapp, Shoshone-Paiute Tribes
1036 Idaho State Highway 51
OWYHEE, NV, US, 89832

Shipper:
Katy Hennequin,
230 Collins Road
Boise, ID, US, 83702

Reference Wood Rvr Diversion 45 Anthony

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[illegible] HIGHWAY

The following is the proof-of-delivery for tracking number: 770866933096

Delivery Information:

Status:	**Delivered To:**
Signed for by:	**Delivery Location:**
Service type:	
Special Handling: Deliver Weekday; Adult Signature Required	**Delivery date:**

Shipping Information:

Tracking number:	**Ship Date:**
	Weight:

Recipient:
Mr. Candon Tanaka, Shoshone-Bannock Tribes
85 W. Agency Road
Building #82
FORT HALL, ID, US, 83203

Shipper:
Katy Hennequin,
230 Collins Road
Boise, ID, US, 83702

Reference Wood Rivr Diversion 45 Anthony

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The following is the proof-of-delivery for tracking number: 770863158239

Delivery Information:

Status:	**Delivered To:**
Signed for by:	**Delivery Location:**
Service type:	
Special Handling: Deliver Weekday; Adult Signature Required	
	Delivery date:

Shipping Information:

Tracking number:	**Ship Date:**
	Weight:

Recipient:
Honorable Diane Teeman, Burns Paiute Tribe
100 PASIGO ST
BURNS, OR, US, 97720

Shipper:
Katy Hennequin,
230 Collins Road
Boise, ID, US, 83702

Reference Wood Rvr Diversion 45 Anthony

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Reception/Front Desk

The following is the proof-of-delivery for tracking number: 770864998907

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Status:	**Delivered To:**
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Service type:	
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	Delivery date:

Shipping Information:

Tracking number:	**Ship Date:**
	Weight:

Recipient:
Pawan Upadhyay PhD, Shoshone-Paiute Tribes
1036 Idaho State Highway 51
OWYHEE, NV, US, 89832

Shipper:
Katy Hennequin,
230 Collins Road
Boise, ID, US, 83702

Reference Wood Rvr Diversion 45 Anthony

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[illegible] HIGHWAY

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3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

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