AGENDA

IDAHO WATER RESOURCE BOARD

Finance Committee Meeting No. 2-26
Monday, March 9, 2026
10:00 a.m. (MT) / 9:00 a.m. (PT)

Water Center
Conference Rooms 602 B – D
322 E. Front Street
BOISE

Livestream available at https://www.youtube.com/@iwrb

1. Introductions and Attendance
2. Idaho Department of Water Resources Budget Update
3. Water Management Account Spending Plan*
4. Aberdeen Springfield Canal Company Regional Water Sustainability Project Proposal*
5. Little Wood Canal Company Regional Water Sustainability Project Proposal*
6. Raft River Loan and Regional Water Sustainability Project Proposal*
7. Minidoka Irrigation District Surface Water Coalition Operations Efficiencies Project Proposal*
8. Farmers Land & Irrigation Company Loan*
9. Other Items
10. Adjourn

Committee Members:
Chair Jo Ann Cole-Hansen, Jeff Raybould, Marc Gibbs, Dale Van Stone, and Dean Stevenson.

*Action Item: A vote regarding this item may be made at this meeting. Identifying an item as an action item on the agenda does not require a vote to be taken on the item. **Americans with Disabilities Act**: If you require special accommodation to attend, participate in, or understand the meeting, please contact the Department no later than five days before the meeting. To request an accommodation, please send an email to milin.ream@idwr.idaho.gov or call (208) 287-4800.

MEMO

To: Idaho Water Resource Board Finance Committee

Date: March 6, 2026

Subject: Idaho Department of Water Resources Budget Update

INFORMATIONAL ITEM

Deputy Director Brian Patton will provide the Finance Committee with an update on the Idaho Department of Water Resources Budget.

MEMO

To: Idaho Water Resource Board (IWRB) Finance Committee

From: Cynthia Bridge Clark

Date: March 6, 2026

Subject: Water Manage Account Fiscal Year (FY) 2026 Spending Plan

REQUIRED ACTION: No action required

Background:

The Idaho Water Resource Board (IWRB) manages three accounts to fund programs and provides financial assistance for water development projects: the Revolving Development Account (RDA), Water Management Account (WMA), and the Secondary Aquifer Planning, Management and Implementation Fund (Secondary Fund). Since 2019, the Idaho Legislature has appropriated a total of $362.4 million to the IWRB's Water Management Account (WMA) to support water project development and water sustainability programs. In addition, the 2022 Idaho Legislature allocated approximately $250 million of the State's American Rescue Plan Act (ARPA) funding to support IWRB-approved projects.

The RDA funds specific programs and projects, including loans for water development projects. The IWRB approves annual budgets and spending plans for the Secondary Fund and WMA respectively to direct funding to regional water sustainability projects, grants, loans, and other IWRB-approved projects.

To help guide investment in projects that support water supply sustainability on a regional, basin-wide, or statewide scale in accordance with legislative direction, the IWRB maintains a list of priority projects: Regional Water Sustainability Projects Priority List (RWSP Priority List). The IWRB also implements grant programs that target aging infrastructure, flood management, groundwater to surface water conversion projects, measurement and monitoring activities, and water delivery system efficiency.

Finance Committee Meeting:

The IWRB passed the Second Amended FY 2026 Water Management Account Spending Plan on November 21, 2025 (Resolution No. 51-2025). At the March 9, 2026, IWRB Finance Committee meeting, staff will review updates to the spending plan based on actions taken at the January 23, 2026 IWRB meeting, reconciliation of grant contracts, and anticipated project funding requests.

MEMO

To: Idaho Water Resource Board (IWRB)

From: Neeley Miller, Planning & Projects Bureau

Date: March 5, 2026

Subject: Aberdeen-Springfield Canal Company Regional Water Sustainability Project Proposal

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REQUESTED ACTION: Recommendation to add project to the Regional Water Sustainability Project Priority List

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The Aberdeen-Springfield Canal Company (ASCC) has submitted a proposal to have a project added to the IWRB's Regional Water Sustainability Project Priority List. Representatives from the ASCC will provide a presentation to the Committee on the proposed project.

Attachments:

- *Aberdeen-Springfield Canal Company Water Efficiency and Recharge Projects Proposal*

Idaho Water Resource Board Regional Water Sustainability Projects Priority List

Aberdeen-Springfield Canal Company Water Efficiency and Recharge Projects

Project Sponsor:
Aberdeen-Springfield Canal Company
144 South Main Street
PO Box 857
Aberdeen, Idaho 83210

Applicant Contact:
Brad Shackelford
Board Chairman
(President)
(208) 397-4192

December 1, 2025

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Appendices

1.0 Project Background

The Aberdeen-Springfield Canal Company (ASCC) currently operates and maintains approximately 140 miles of earthen-constructed main and lateral canals it uses to deliver irrigation water to approximately 62,000 acres of productive agricultural land in Bingham and Power Counties. Currently, flow from the Snake River is diverted to the Aberdeen-Springfield canal and subsequent main line and laterals.

The canal network consists of three main canals (Aberdeen-Springfield, Highline, and Lowline) and laterals feeding the irrigated lands. Five existing recharge ponds are located along the canal network. The region has soil with high seepage properties, and subsequently a significant amount of the diversion is lost to incidental seepage, causing the end of the canal network to experience no or low flow. The irrigation water within the ASCC place of use is often substituted with ground water pulled through wells, causing increased strain on the Eastern Snake Plain Aquifer.

The delivery system is extremely inefficient in terms of system water loss. This is because a significant amount of water is being lost to seepage. The proposed projects involve constructing an efficient pressurized pipeline system and lining sections of canals to reduce seepage as needed to increase delivery efficiency and convey water to patrons of the ASCC. Existing turnout locations are to be replaced with electric actuated headgates to measure and accurately deliver water.

Additionally, the proposed projects include plans and projects for the ASCC to continue to recharge the aquifer, through the use of injection wells, recharge basins, and reduction of groundwater usage for irrigation. The projects will be coupled with recharge to maintain the water balance and sustain regional water supply. The projects parallel goals are to increase efficiency to minimize recharge during the peak of the irrigation while recharging incidental recharge historic to the system during the early irrigation season when recharge flows are readily available.

Finally, increasing the efficiency of the system will reduce storage water usage from the Upper Snake River, which is typically relied upon during the tail end of the irrigation season when water supplies are in high demand. The combination of efficiency, recharge, and reduced storage water usage within the ASCC place of use will increase the regional resiliency by reducing demand for groundwater users within ASCC. By doing so, the projects will enable soft and hard conversion from groundwater from the ESPA. The groundwater pumping reductions and the recharge coupled projects sustain and increase the available water supply for the region and state.

1.1 Infrastructure Description

ASCC has identified several proposed projects aimed at improving the irrigation infrastructure. The below list was evaluated and prioritized by the ASCC based on the opportunity for recharge coupling and impacts to late season irrigation water deliveries.

These projects include:

a) Piping sections of the Highline Canal and Lateral S (Lateral S Improvement Project)
b) Aberdeen Springfield Canal Lining
    - Aberdeen Springfield Canal Lining-ASCC private land
    - Aberdeen Springfield Canal Lining-BLM land
c) Lowline Canal Lining
    - Adding a weir to meet delivery elevations at lower flows
    - Recharging/regulating Big Fill Reservoir
d) Pleasant Valle Desert Drain Spill Reduction
e) Hilton Recharge Reservoir and BLM Recharge Facilities
f) Lateral D Piping
    - Piping sections of the Aberdeen-Springfield Canal in high-seepage lateral
g) Lining Replacement Aberdeen-Springfield Canal.
h) Automating the delivery headgates at takeouts

1.2 Improvement Needs

The canal system was originally constructed more than 115 years ago and has struggled to meet deliveries throughout the system's history. The ASCC system is also difficult and expensive to maintain. As a result, the farmers are often faced with water shortages and inconsistent deliveries—with increased impacts during dry years and drought conditions. The system is so inefficient that current estimates show we ASCC is required to divert more than double the amount of water required just to maintain sufficient water surface elevation to the end of the longest. This means the patrons within the ASCC have been using a significant amount of groundwater and storage water to supplement water deliveries to meet shareholder delivery requirements. Reducing inefficiency will enable shareholders to have a reliable source of water at a time when there is an urgent need to reduce demand within the Eastern Snake River Plain Aquifer (ESPA) region.

The ASCC urgently needs to complete the proposed improvement projects to ensure long-term water resource stability and sustainability for its shareholders as well as for other water users within the ESPA region. Water loss rates and energy requirements are expected to continue at higher levels than can be sustained over the long term. The ASCC needs to complete these

projects so it can continue to provide the farms in its service area with a reliable water supply and reduce demands on the ESPA.

Planned improvements include replacing the antiquated delivery headgates, lining or piping areas of high seepage and/or highly erodible soils, construction of infrastructure to improve water efficiency, and creation or improvement of intentional aquifer recharge areas. Completing all the proposed projects would enable the ASCC to reduce estimated delivery losses of 74,500 acre-feet of water per year in addition to continuing to provide its users with long-term water stability and sustainability. The amount of water saved is nearly equivalent to the storage water allocation the ASCC has within the upper Snake River Reservoir system. This increase in efficiency would allow ASCC to also achieve the project objectives described below.

1.3 Objectives

The objectives of the proposed projects are as follows:

- Reduce supplemental and primary groundwater diversions from the ESPA
- Reduce diversions from the Snake River System
    - Natural flow
    - Storage Water
- Increase recharge to the ESPA
    - The efficiency projects will be coupled with recharge injection wells/recharge basins (as indicated by hydrogeology) to sustain and increase recharge to the ESPA
- Reduce and mitigate impacts of flooding in the Pleasant Valley Desert Drain
- Provide pressurized irrigation to patrons lower in the system on laterals
- Reduce maintenance and operational supply difficulties for demand by automating deliveries

1.4 Benefits

Completing the proposed projects will allow the company to make vital improvements to its century-old irrigation delivery infrastructure that will allow the company to optimize flow rates, make more precise water deliveries, and increase delivery efficiency and equity so it can provide more reliable and consistent water deliveries. The project benefits will maintain and increase recharge during the wettest years to the ESPA while also reducing operations and maintenance costs for its shareholders. Anticipated benefits due to the proposed projects are listed below.

- The project would provide reservoir storage water to be leased, used for soft/hard conversion from groundwater and maintain carryover for drought years.
    - secondary recreational and water quality benefits in the Snake River as well as the Jackson Lake, Palisades, and American Falls Reservoir by allowing for water levels to be maintained for longer periods of time. This would provide increased and improved recreation opportunities, such as fishing, hiking, camping, swimming, and boating.
- Improve efficiency of water deliveries along the canal network. The existing headgates within the canal system are up to 110 years old, with many at risk of failure. Replacing the antiquated manual headgates with automated solar-powered headgates will optimize flow rates while increasing delivery efficiency and equity for shareholders.
- Promote Eastern Snake Plain Aquifer stability through increased recharge and reductions in withdrawals by providing soft and hard conversion opportunities within the ASCC system
    - Converting groundwater irrigation to surface water irrigation saves an estimated 2.3 acre-ft per acre of irrigated land
- Eliminate excessive spills. Low flow sections require significant amounts of meet delivery water surface elevations maintain necessary pressures, resulting in ASCC having to either accept unnecessary spills at the tail end of canals such as Lateral S or reduce the amount of water available for all shareholders. Lining or piping sections of along with strategic weir and recharge/reregulating the canal system will improve long-term water supply stability, sustainability, and drought resilience for all shareholders.
- Eliminate problems caused by soil erosion. The Natural Resources Conservation Service (NRCS) identifies portions of the existing canal system to have soils characterized as fragile or highly fragile. These soils are more likely to cause sedimentation, reduce water quality, and require significant maintenance work to keep the canal free of sediment build up and prevent canal washouts. Lining or piping the canal will reduce maintenance and improve water quality.
- Eliminate excessive vegetation growth. Excessive vegetation grows within and alongside the canal. While ASCC does perform annual vegetation management, dense and overgrown canal vegetation is an ongoing problem that impedes proper water flow, reduces functionality of the canal system, poses a potential safety risk, impacts water quality, requires intensive and costly maintenance, and consumes a significant amount of water. By lining or piping portions of the canal system, ASCC can eliminate or significantly reduce problems related to excessive vegetation.

2.0 Project Sponsor

The project sponsor is the Aberdeen Springfield Canal Company.

2.1 Organization Type

The project sponsor is a nonprofit canal and irrigation company located in Aberdeen, Idaho.

2.2 Background

The ASCC was originally established in 1895 as the American Falls Canal and Power Company. This was the first canal company established in Idaho under the terms of the Carey Act of 1894. After entering a contract with the State of Idaho, the company began construction on the Aberdeen-Springfield Canal in 1901. However, by 1905, the American Falls Canal and Power Company went bankrupt due to cost overruns, and a holding company called the American Falls Canal Security Company took over to complete construction of the canal. In 1910, the contract with the state was completed, and the project was turned over to the ASCC The company currently has 452 shareholders, and the day-to-day operations are managed by the nine members of the ASCC Board of Directors.

2.3 Revenue Sources

Revenue is mainly derived from annual shareholder assessments, and some additional revenue is derived from fees charged for headgate installations, share transfers, and lost certificate fees. The amount of the shareholder assessment fluctuates each year based on the current cost of operating and maintaining the system.

2.4 Current Operations

The ASCC currently delivers irrigation water to nearly 62,000 acres of productive agricultural land in Bingham and Power counties. The company currently operates and maintains 190 miles of main and lateral canals that stretch from the western bank of the Snake River near Blackfoot to just west of American falls. Most of this system consists of earthen-constructed canals, and the company has been working to modernize and improve its expansive system of canals and control structures to provide more reliable water deliveries to all its shareholders. This includes installing underground pipes in areas that are especially prone to erosion or flooding and replacing nearly all the original control structures. The company also began installing supervisory control and data acquisition (SCADA) monitoring devices in 2001, and almost all the primary control structures are now fully automated.

3.0 Project Description

3.1 Narrative

The proposed projects involve a variety of work to increase water efficiency in the canal network and recharge to the Eastern Snake Plain Aquifer (ESPA). The canal company service area consists of over 140 miles of canals and laterals along with 5 existing recharge reservoirs. The system is also permitting four new recharge injections wells (in progress-estimated to provide 40 cfs of recharge capacity). Evaluation for the projects included calculating estimated seepage loss, approximate water savings, and potential benefits to the aquifer through increased surface water use to replace or substitute groundwater.

The evaluation helped to determine 12 projects to improve efficiency in the canal network and stability in the ESPA. The projects focus on reducing incidental seepage loss, increasing planned and managed aquifer recharge, and better management of the deliveries to the shareholders. For projects reducing the incidental seepage losses, the reductions in recharge from the incidental losses will be coupled with recharge injection wells or basins (as indicated by the hydrogeology of the area).

a. Lateral S Improvement Project

The first project (Lateral S Improvement Project) is the installation of a pipeline along Lateral S and a portion of the Highline Canal between the Junction at Lateral S and an existing piped section. This project is expected to reduce incidental seepage loss by 1,460 to 3,450 acre-ft per water year. Additionally, 14 existing delivery gates are to be replaced with electrically actuated headgates.

b. Aberdeen-Springfield Canal Lining

The second and third projects include lining high seepage sections of the Aberdeen-Springfield Canal between Lateral C and the Big fill Reservoir. The projects are divided into areas within the ASCC boundary and areas in the adjacent BLM areas. These projects include replacing up to 37 existing delivery gates with electrically actuated headgates.

c. Lowline Canal Lining

Another similar project includes lining some or all of the 19.9 miles of the Lowline Canal. This project provides seepage loss reductions of up to 35,300 acre-ft per water year. Additionally, existing headgates along the Lowline may be replaced with electric actuated headgates.

To improve overall efficiency in the network, a weir is recommended in the Aberdeen-Springfield Canal near I-15 to raise the elevation in the channel. The increased elevation improves flow to help ensure water reaches the end of the network.

d. Pleasant Valley Desert Drain Spill Reduction

The existing Pleasant Valley Desert Drain has overtopped and spilled regularly. A proposed project to reduce the overtopping is recommended to ensure the diverted water remains in the canal and losses are minimized during the late irrigation season while enabling recharge during the early season.

e. Hilton Recharge Reservoir and BLM Recharge Facilities

Two more projects include the development of the Hilton Recharge Reservoir and the construction of an additional reservoir located in BLM lands with high seepage areas. This would increase recharge to the ESPA, improving stability.

f. Lateral D Piping

Lateral D has a 0.5-mile section with sinkholes causing water quality concerns. The project piping this section will provide an approximate reduction in incidental seepage of 1,270 acre-ft per water year. The project may replace the existing headgates along the stretch with electric actuated headgates along the piped section.

g. Lining Replacement

A section of the liner along the Aberdeen-Springfield Canal near Moreland, ID is deteriorating and in need of repair. Approximately 4,600 ft of the liner is to be replaced, increasing the longevity of the seepage loss reduction methods.

h. Automating Headgates

In 2024, 382 out of the 830 delivery locations were not known to receive their full deliveries. Replacing the existing headgates with electric actuated headgates will allow these deliveries to be better managed and improve efficiency in the canal network. Many of these existing deliveries can be replaced as parts of the other projects.

3.2 Map

The Aberdeen-Springfield Irrigation District Water Efficiency and Recharge Projects is in Power County and Bingham County and extends the entirety of the irrigation districts service area and into some of the surrounding BLM land. As shown in Attachment A, the ASCC service area

extends from the diversion of the Aberdeen Springfield Canal Company from the Snake River to the south end of the American Falls Reservoir.

3.3 Conceptual Plan and Design

Conceptual plans will be designed and developed as needed for each project through funding with grants and shareholder assessments.

3.4 Land Entitlements

ASCC uses the 50-foot easement established with the Carey act from the toe of the bank for the existing canal and lateral alignments for operation and maintenance. Additional permanent and temporary easements and rights-of-way may be needed for piped sections with landowners that deviate from those historical alignments for the canals and laterals. Within the ASCC boundary, agreements with the landowners are in progress for the proposed projects and recharge facilities. Many agreements are in place and are specific to the project. For additional information related to private landowner agreements-the ASCC will provide a summary as requested. The existing canal on BLM land may be maintained and modified as needed within the controlling entitlement. Within the BLM areas outside of historical boundaries, permits and easements will be developed as needed on a project basis.

a. Permanent Construction Easement Requirements

Permanent construction easements will be required depending on which project is constructed. Projects within the existing easement will not require additional easements.

b. Temporary Construction Easement Requirements

Temporary construction easements will be required depending on which project is constructed for lands that deviate from the canal right of way or impact BLM land outside of the controlling entitlement.

c. Floodway Easements

Floodway easements are not anticipated. Spill is anticipated to be reduced.

d. Permits and Compliance

The following permits and approvals may be required for the projects. All required permits and approvals will be obtained prior to construction and developed during the design phase.

Federal

- NEPA—Related to Federal Funding and Modifications to BLM related projects

Agency: Bureau of Land Management
Reason: Preliminary write-ups for the proposed projects will be sent to the Snake River Area Office for review. Local Land Management Staff will advise on NEPA as necessary.

State

- **Road Crossing Permit**
  Agency: Idaho Transportation Department
  Reason: Crossing of State Highway, if necessary

Local

- **Power County Road Crossing Permit(s)**
  Agency: Power County Highway District
  Reason: Excavating within street, if necessary
- **Bingham County Road Crossing Permit(s)**
  Agency: Bingham County Road and Bridge Department
  Reason: Excavating within street, if necessary

3.5 Known Environmental Issues

An environmental assessment has not been conducted but there are no known environmental issues associated with the projects. Most of the projects lie within existing canal alignments and will involve minimal ground disturbance. Recharge ponds will have a larger ground disturbance, but environmental issues are not expected based on historical success with recharge facilities and positive public support for recharge projects within the ASCC area. Further project specific environmental issues are to be determined as each project is advanced.

4.0 Cost Estimate and Budget

The ASCC received a preliminary cost estimate from Ardurra for all projects. The current costs for all the Lowline and Aberdeen Springfield Canal and Lateral S improvements (a-c) are estimated to be $22,800,000. The ASCC requests consideration for funding of all the projects and will continue to coordinate with the IWRB to prioritize and fund based on regional and ASCC shareholder benefit. Cost estimates for the additional projects (d-h) are in development and or in funding consideration. The ASCC is pursuing federal and state funding for the top three projects, and the recharge facility projects (pending and ongoing).

5.0 Project Funding Sources

ASCC recently were selected for partial funding through the Aging Infrastructure Grant funding for the Lateral S Improvement Project (November 2025). They are currently pursuing funding for the Lateral S Improvement Project through NRCS (pending).

The ASCC continues to pursue funding assistance for these projects. The ASCC plans to implement projects using a combination of grants and loans as well as matching funds provided by the ASCC. The projects will be implemented as funding is available as shown in the priority list (a-h). (The top priority is project a. Lateral S piping. The lowest priority project is h. Automating Headgates.)

6.0 Project Implementation Schedule

The ASCC will implement the projects depending on the cost, available funding, and priority of the project as shown on the list (a-h). Each project will have differing project implementation schedules based on the project priority and time of completion.

The highest priority project is the Lateral S Improvement Project, which includes installation of a pipeline along Lateral S and a portion of the Highline Canal downstream of the junction. The next priority projects are lining the Aberdeen-Springfield Canal in a high seepage section both in the canal company boundary and in the adjacent BLM land.

Following these projects, additional high priority projects include lining all or part of the Lowline Canal and adding the weir near I-15.

The other priority projects include the development of the Hilton Recharge Reservoir, the development of additional recharge locations in the adjacent BLM land, piping areas along Lateral D with high seepage areas, regulate seepage at Big Fill Reservoir, and preventing overtop at the Pleasant Valley Desert Drain.

The lowest priority project is replacing the existing liner in the Aberdeen-Springfield Canal near Moreland. Automating the delivery headgates, while high priority, will be incorporated in the other projects as available by funding.

7.0 Stakeholder Support

There is wide-ranging support for the ASCC Water Efficiency and Recharge Projects from the public and affected irrigated agricultural property owners.

Appendix A. Project Vicinity Maps

Appendix B. Project Cost-Funding Memo

MEMO

To: Idaho Water Resource Board (IWRB)

From: Neeley Miller, Planning & Projects Bureau

Date: March 5, 2026

Subject: Little Wood River Irrigation District Regional Water Sustainability Project Proposal

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REQUESTED ACTION: Recommendation to add project to the Regional Water Sustainability Project Priority List

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The Little Wood River Irrigation District (LWRID) has submitted a proposal to have a project added to the IWRB's Regional Water Sustainability Project Priority List. Representatives from the LWRID will provide a presentation to the Committee on the proposed project.

Attachments:

- *Little Wood River Irrigation District Pressurized Pipeline Project Proposal*

PO Box 355, 20484 Main Carey ID 83320
(208) 823-4014 fax (208) 823-4422

December 1, 2025

Idaho Water Resource Board
322 E. Front Street, Statehouse Mail
Boise, Idaho 83720

Subject: Regional Water Sustainability Projects Priority List

Dear Idaho Water Resource Board:

The Little Wood River Irrigation District respectfully requests the Idaho Water Resource Board include the District's Pressurized Pipeline Project on the Regional Water Sustainability Projects Priority List as a Tier 1 project. This project is important for the region because it is expected to conserve approximately 20,000 acre-feet of water per year and approximately 7,910,000 kWh of electricity per year. It would also provide a whole host of other benefits, such as helping to stabilize the aquifer, improving water quality, and providing increased flood protection, while also allowing the District to increase the amount of water released into the Little Wood River and the Carey Lake Wildlife Management Area.

As explained in greater detail in the enclosed application, completing this project is essential for the District to be able to provide the farms in its service area with a reliable water supply. The District has not been able to meet demand on a regular basis for decades and several studies have shown that current water loss rates and energy requirements will continue at higher levels than can be sustained over the long term. The Pressurized Pipeline Project will modernize the District's irrigation water delivery system so it can provide its users with long-term water stability and sustainability.

Phase 1 of the proposed project, which includes updating the design and completing an new environmental assessment, will cost an estimated $4.75 million. Phase 2 is construction of the proposed project, which is estimated to cost $47.5 million, includes the following aspects:

- Approximately 32 miles of new pipeline
- A new headworks facility with a screened intake structure and flow meter
- Two new pump stations
- Pressurized connections at farm turnouts
- A dedicated turnout to Carey Lake
- Regrading approximately 1.5 miles of the existing canal system to create farmable floodways to reduce impacts of flooding in the Little Wood River

The main benefits of this project extend well beyond the District's operations because it was designed to allow for continued aquifer recharge as well as increased flows to the Little Wood River and the Carey Wildlife Management Area. This is also expected to result in several secondary and indirect benefits for the region, including beneficial effects to water resources, fisheries, wildlife, recreation, the local economy, and more.

Thank you for considering our request to include the Pressurized Pipeline Project on the IWRB Regional Water Sustainability Projects Priority List. This project is essential to achieve water sustainability for the nearly 12,000 acres of productive agricultural land in the District's service area and having the support of the IWRB by identifying this project as a priority is an important step in completing this project as quickly as possible.

Sincerely,

Dusty Simpson
Board Chairman

Idaho Water Resource Board Regional Water Sustainability Projects Priority List

Little Wood River Irrigation District Pressurized Pipeline Project

Little Wood River Irrigation District
Blaine County, Idaho

Project Sponsor:
Little Wood River Irrigation District
20484 North Main Street
PO Box 355
Carey, Idaho 83320

Applicant Contact:
Dusty Simpson
Board Chairman
(208) 823-4014

December 2025

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Cover Image: Little Wood River

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1. Project Background

The Little Wood Irrigation District (**LWRID**) currently operates and maintains approximately 36 miles of earthen-constructed main and lateral canals it uses to deliver irrigation water to nearly 12,000 acres of productive agricultural land in Blaine County, Idaho. Currently, flow from the Little Wood River is diverted via the Little Wood River Dam into two open channel canals referred to as the East and West canals. These canals convey water south to the farms through unimproved stone-lined channels that were excavated at the turn of the 20th century.

Irrigation water is withdrawn from these two primary canals, and from a series of secondary canals, at more than 100 farm turnouts. Water is then pressurized by individual pumps for sprinkler irrigation at a majority of the farm turnouts while a small percentage of the turnouts provide water for flood irrigation.

This antiquated delivery system is extremely inefficient, both in terms of system water loss and total energy requirements. This is because a significant amount of water is being lost to seepage and evaporation, and energy requirements are elevated due to the large number of individual farm pumps required to irrigate cropland. The proposed project involves constructing a new, more efficient pressurized pipeline system to convey water to members of the LWRID at the existing turnout locations. This would significantly decrease energy use in the region because it would reduce the number of pumps required for both the District and at an individual farm level.

Additionally, the proposed project has been designed to maintain the existing aquifer recharge by coupling the efficiency aspect of this project with managed recharge. It will also allow the District to continue to provide water to Carey Lake Wildlife Management Area, preserve the existing riparian vegetation in the upper reaches of the East and West canals, release water to the Little Wood River, provide water for fire flow in the event of an emergency, and reduce impacts of flooding in the Little Wood River. The overall goal is to maintain the water balance while improving reliability and service to the District.

A series of studies on the existing LWRID irrigation delivery system have been completed in the past 50 years. This includes a resource study of the existing canal and delivery ditch system prepared by the Natural Resource Conservation Service (**NRCS**) in 1972, a feasibility study for converting the existing open channel, gravity delivery system to a gravity pressurized pipeline distribution system prepared by EHM Engineers in 1981, and an updated feasibility study on the economics of the 1981 study prepared by J-U-B Engineers in 1997.

The project was awarded a congressional appropriation in 2001 to prepare a detailed feasibility study and an engineering design for the project. The NRCS determined an environmental impact statement (**EIS**) would be required because it was a congressionally mandated action. The District contracted CH2M HILL (Jacobs) to plan and design the pressurized irrigation distribution, and the final EIS was completed and published in April 2004.

The design identified as the preferred alternative in the final EIS was later refined, and an environmental assessment (**EA**) was prepared in 2010 by the U.S. Bureau of Reclamation and the Little Wood River Irrigation District to address the environmental impacts of the construction and operation of the optimized system upgrade (**Appendix A. Draft Environmental Assessment**). However, the project has since remained dormant due to the lack of funding needed to complete the project. The District would like to update and optimize the design based on current hydraulic modeling and finally complete construction on this decades-long vision to have a more efficient water delivery system.

A. Infrastructure Description

The proposed pressurized pipeline project includes the following components:

Pipeline

- Approximately 32 miles of new pipeline. **Table 1** summarizes the estimated pipe lengths required by diameter.
- A new headworks facility with a new screened intake structure, and a new flow meter.

Pump Stations

- Pump Station 1 would be constructed on the north side of Little Wood Reservoir Road located approximately 0.3 mile east of Hunt Lane. Pump Station 1 would house two 200-horsepower pumps to pressurize one 10-inch-diameter lateral and two 18-inch-diameter laterals.
- Pump Station 2 would be constructed just west of Little Wood Reservoir Road and would be located approximately 0.60 mile south of Barton Road. Pump Station 2 would house two 150-horsepower pumps to pressurize one 30-inch-diameter lateral.

Recharge and Flood Control

- Three sections of the existing canal system, totaling approximately 1.5 miles in length, would be regraded and converted into farmable floodways to reduce impacts of flooding in the Little Wood River. The remaining sections of the existing canal system would not be altered.
  - The first floodway would be constructed along the East Canal. It would start just south of Little Wood Reservoir Road (approximately 0.3 mile east of Hunt lane) and continue south for approximately 2,233 linear feet.
  - The second floodway would be constructed along the East Canal. It would start just south of Little Wood Reservoir Road (approximately 0.5 mile north of Dry Creek Road) and continue south for approximately 2,392 linear feet.
  - The third floodway would be constructed along the West Canal near Dry Creek. It would start just south of Jodi Lane and continue south for approximately 2,791 linear feet.

Regional Benefits

- Pressurized connections at more than 100 farm turnouts.
- A dedicated turnout to Carey Lake.

Table 1. Distribution System Pipe Summary

Diameter (inches)	Length (feet)
72	15,576
66	11,728
54	10,627
48	5,504
42	8,574
36	8,011
30	25,334
24	10,913
18	17,577
15	18,595
12	6,732
10	10,353
8	4,087
6	10,115
4	5,895
3	689
Total Length	**32.26 miles**

B. Improvement Needs

The majority of the farms in the LWRID service area use sprinkler irrigation while a small percentage still use flood irrigation. The current sprinkler irrigation methods used by require 55,000 to 60,000 acre-feet of water to be released from the reservoir per growing season to deliver 40,000 to 42,000 acre-feet to the users. This is more efficient than the previous practice of flood irrigation. However, as of 2009, the District was still not able to meet this demand at least 18% of the time.

The series of studies conducted to examine the existing system have shown that current water loss rates and energy requirements will continue at higher levels than can be sustained over the long term. The LWRID needs to complete this project so it can continue to provide the farms in its service area with a reliable water supply.

Completing the proposed project is expected to allow the District to conserve approximately 20,000 acre-feet of water per year and 7,910,000 kWh of electricity per year in addition to continuing to provide its users with long-term water stability and sustainability. This increase in efficiency would allow the District to also achieve the project objectives.

C. Objectives

The objectives of the proposed project are as follows:

- Continue to recharge the aquifer
- Conserve energy
- Preserve riparian vegetation in upper ends of the East and West canals
- Provide year-round flow to the Carey Lake Wildlife Management Area
- Deliver increased flows to the Little Wood River
- Reduce and mitigate impacts of flooding in the Little Wood River
- Provide pressurized irrigation to farms and other LWRID members
- Facilitate improved fire protection

D. Benefits

The following are just a few of the benefits described in the environmental assessment:

- The proposed project is expected to conserve approximately 20,000 acre-feet of water per year and approximately 7,910,000 kWh of electricity per year.
- Flow discharged into the Little Wood River would be increased from the existing rates. The increased amount of water that would be available to the river between the diversion dam and the confluence of Silver Creek can be quantified using historical water data for 2006, 2007, and 2008. If the proposed project had been in place in 2006, the overall percentage of water available to the river would have increased by nearly 15%, 13% in 2007, and 75% in 2008.
- The project would provide recreational benefits because the project would also allow for water levels to be maintained in the Little Wood Reservoir for longer periods of time in addition to increased river flows. This would provide increased and improved recreation opportunities, such as fishing, hiking, camping, swimming, and boating.
- To allow for continued aquifer recharge, approximately 25 cubic feet per second (**cfs**) of water would be diverted to the West Canal and 30 cfs would be diverted to the East Canal each day in addition to the water released into the Little Wood River. This would allow for approximately 4,950 afa of recharge. (1 cfs = 2 af/day; typical recharge season = 45 days; 45 x (25+30) x 2 = 4,950 afa) These flows would be measured with a Parshall flume located 150 feet downstream of the intake screening structure and would be carefully managed to prevent significant changes to groundwater levels.
- The project would provide the ability to bypass a portion of the Little Wood River near Carey during large flood events. This is expected to reduce the impacts of flooding in the Little Wood River and decrease the amount of erosion in this section of channel along the river.
- The project would benefit water quality due to a reduction in the amount of sediments and nutrients, especially phosphorous, that would be delivered to the Little Wood River below the project area. Surface water runoff resulting from over-irrigation of fields would enter dry canals and infiltrate as

opposed to being conveyed downstream.

- The project includes the release of six to 20 cfs of water to the Carey Lake Wildlife Management Area to ensure a reliable flow of water to support wetlands, wildlife habitat, and fisheries. Additionally, the project would allow for better management of water delivered to Carey Lake as needed to enhance the Wildlife Management Plan.
- A long-term increase in stability to the local economy is expected because a more reliable water supply would result in increased crop production. This is in addition to the economic benefits that would occur due to construction and operation of the proposed facilities.
- The increased flows in the Little Wood River would potentially benefit fisheries and aquatic resources within the project area and downstream. This includes the fishery at Carey Lake and the fishery downstream of the confluence with Silver Creek.
- The project would conserve approximately 7,910,000 kWh of electricity per year which would have a direct benefit on energy resources in the project area by reducing loads and energy consumption, reducing annual energy expenditures, and increasing available capacity in the local power grid.
- The project would provide the ability for the local fire department to install hydrants at specified locations to provide water for fire flow in the event of an emergency.
- Increased flows in the Little Wood River would provide additional water for adjacent riparian vegetation which would potentially make a significant improvement to wildlife habitat. This includes increased breeding bird habitat, increased amphibian habitat if standing water is allowed to remain longer, and may provide additional habitat for shorebird nesting (e.g., killdeer, avocet, and stilts).

Figure 1. Carey Lake Wildlife Management Area

2. Project Sponsor

The project sponsor is the Little Wood River Irrigation District (**LWRID**).

A. Organization Type

The project sponsor is an irrigation district that was formed in accordance with the provisions of Idaho Code § 43 et seq.

B. Background

The Little Wood River Irrigation District, which was formed in 1935, manages and delivers surface water from the Little Wood River Dam located approximately eight miles north of Carey, Idaho. The dam was initially constructed between 1936 and 1941. Dam reconstruction was completed in the 1950s to raise the height of the dam by 35 feet. The original construction was funded by the Works Progress Administration, and the reconstruction was funded by a loan from Reclamation to LWRID. The Bureau of Reclamation (**BOR**) currently holds title to the Little Wood River Dam and the land associated with the reservoir while the LWRID holds title to the remaining lands in the reservoir area and the water rights for the water stored in the reservoir.

In 1984, a hydroelectric generation plant was constructed at the outlet of the dam that is now owned by the LWRID. Prior to 1996, two entities were responsible for the operation and maintenance of the reservoir and the delivery system, LWRID and Little Wood Canal Company, respectively. In 1996, the LWRID and Little Wood Canal Company merged to form one combined entity under the name of the Little Wood River Irrigation District.

C. Revenue Sources

The District receives revenue from the following sources:

- The District levies an annual assessment on each share of water.
- Idaho Power has a power sales agreement with the Little Wood Irrigation District to purchase electric energy generated by the Little Wood River Reservoir Hydro project.
- Interest on investments

D. Current Operations

The Little Wood River Irrigation District service area encompasses approximately 10,678 acres in Blaine County that generally extends from the Little Wood River Reservoir north of Carey to the confluence with the Little Wood River and Silver Creek to the south. The District currently operates and maintains approximately 36 miles of earthen-constructed main and lateral canals it uses to deliver irrigation water to nearly 12,000 acres of productive agricultural land.

Flow from the Little Wood River is diverted via the Little Wood River Dam into two open channel canals referred to as the East and West canals. The East and West canals convey the diverted water south through unimproved stone-lined channels that were excavated at the turn of the 20th century. Irrigation water is

then withdrawn from the canal system at more than 100 farm turnouts. At a majority of the farm turnouts, the water is then pressurized by individual pumps for sprinkler irrigation. A small percentage of the turnouts provide water for flood irrigation systems. The District releases an average of 55,000 to 60,000 acre-feet of water from the reservoir per growing season to deliver 40,000 to 42,000 acre-feet to the users.

The District also owns and operates the 2.85 megawatt nameplate capacity hydroelectric generation plant that was constructed at the outlet of the dam.[1]

3. Project Description

A. Narrative

The proposed project involves upgrading the existing open channel canal irrigation delivery system by installing a pressurized pipeline delivery system. This system consists of approximately 32 miles of new pipeline, a new headworks facility, two new pump stations, pressurized connections at more than 100 farm turnouts, and a dedicated turnout to Carey Lake.

The project has been designed to provide irrigation service to the nearly 12,000 acres within the LWRID service boundary. The main delivery pipelines have been sized to convey a total of 180 cubic feet per second (**cfs**) of water during the irrigation season and would be capable of delivering a peak flow rate of 7.0 gallons per minute per acre to the farm turnouts. The new pipe would have a minimum depth of cover of three feet in non-farmed lands and four feet in famed lands to prevent damage during and after potato harvest.

The proposed project reflects data gathered from years of studying environmental and economic impacts to determine project feasibility. This includes evaluating delivery needs of District farmers, identifying system turnout locations, and determining the most efficient pipeline alignment in an effort to provide our users with long-term water supply stability, sustainability, and drought resiliency. This also includes conducting a thorough examination of how it would affect nearby surface water, groundwater, and other water resources in an effort to ensure they would not be negatively impacted. However, the District understands the design would need to be updated based on current hydraulic modeling to show how the project would affect regional water resources.

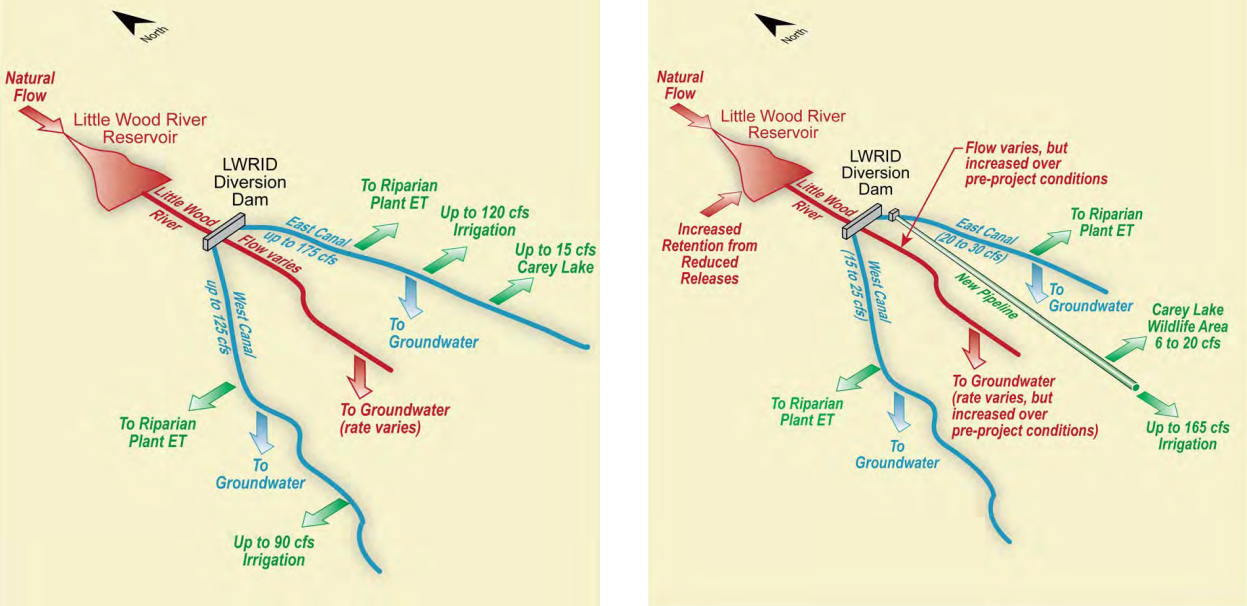
The existing diversion structure allows varying amounts of water to flow into the canals and river channel. As shown in **Figure 2**, up to 125 cfs is currently diverted to the West Canal, up to 175 cfs is diverted to the East Canal, and a variable amount flows through the river channel during the irrigation season. At the peak of the growing season (in terms of water usage), a maximum of 90 cfs from the West Canal and 120 cfs from the East Canal is actually used for crop irrigation. The remaining water is lost to seepage, evaporation, and consumption by riparian vegetation. Approximately 10 to 15 cfs is delivered to Carey Lake from the East Canal through the entire irrigation season. Therefore, up to 35 cfs from the West Canal and up to 40 cfs from the East Canal is returned to groundwater or lost to evapotranspiration (**ET**).

The proposed project is expected to reduce water loss by approximately 20,000 acre-feet of water per year. The increased efficiency of the updated water delivery system would allow the Little Wood Irrigation District to meet demand yet decrease the amount of water diverted for crop irrigation. This would allow the District to increase the amount of water released into the Little Wood River and provide

1 Each power generating facility has a nameplate capacity that indicates the maximum output that the generator can produce.

the ability to better manage flow for other uses that benefit from the current water delivery system. As shown in **Figure 2**, varying amounts of water would continue to be released into the Little Wood River from the existing diversion structure, and approximately six cfs of flow would be released to the Carey Lake Wildlife Management Area during the irrigation season and 20 cfs, as needed, during the non-irrigation season. Additionally, 15 to 30 cfs of water would be passed through the existing canals to allow for groundwater recharge and to preserve the existing riparian vegetation in the upper reaches of the East and West canals.

Figure 2. Pre-Project Water Budget (left) and Post-Project Water Budget (right)



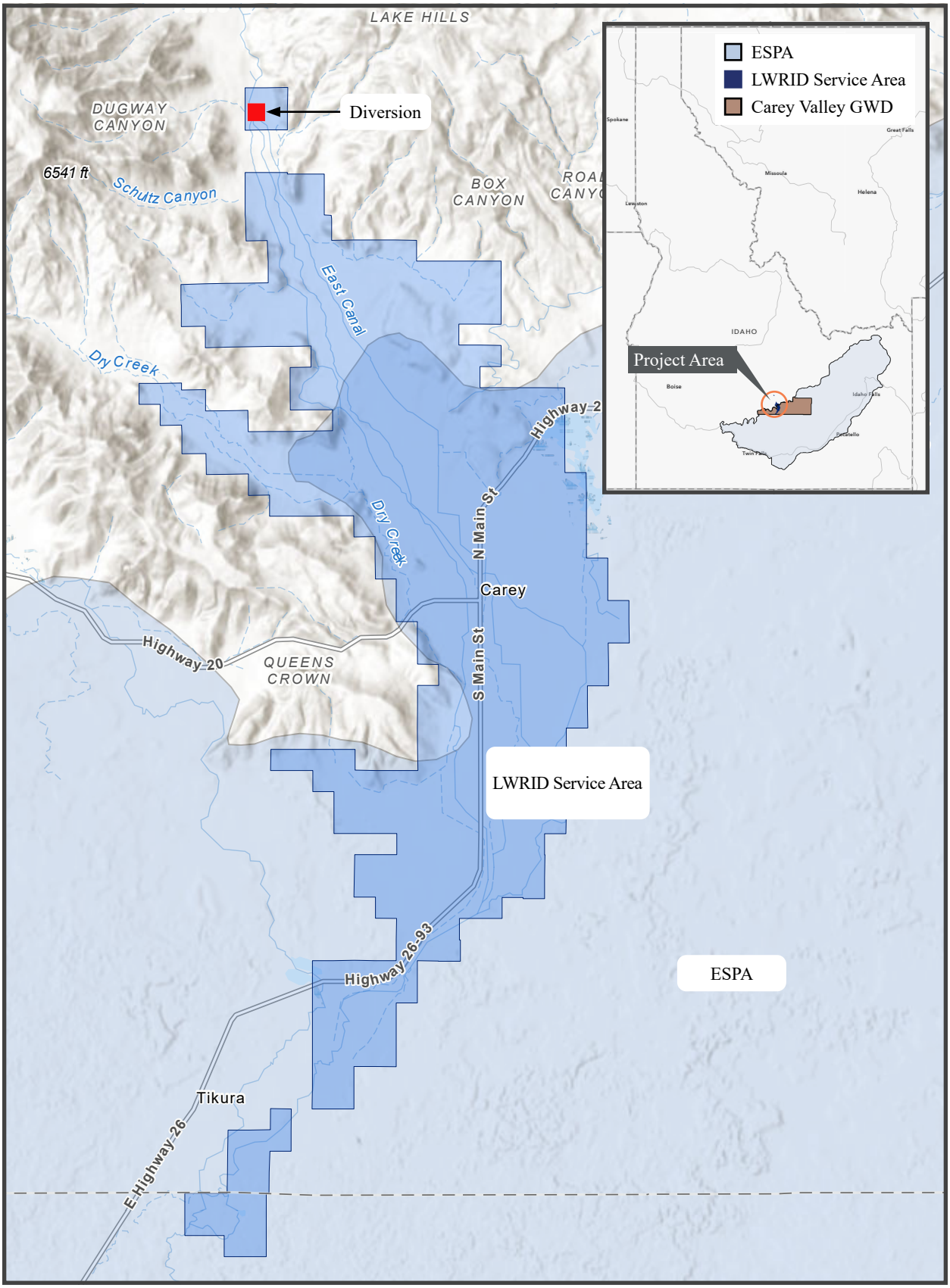
Source: U.S. Department of the Interior, Bureau of Reclamation. Draft Environmental Assessment for the Little Wood River Irrigation District Pressurized Pipeline Irrigation Delivery System. 2010.

B. Maps

The Little Wood River Irrigation District Pressurized Pipeline Project is located in Blaine County, Idaho, and will extend throughout the 10,678-acre Little Wood River Irrigation District (**LWRID**) service area. As shown in **Figure 3**, the LWRID service area generally extends from the Little Wood River Reservoir north of the city of Carey to the confluence with the Little Wood River and Silver Creek to the south.

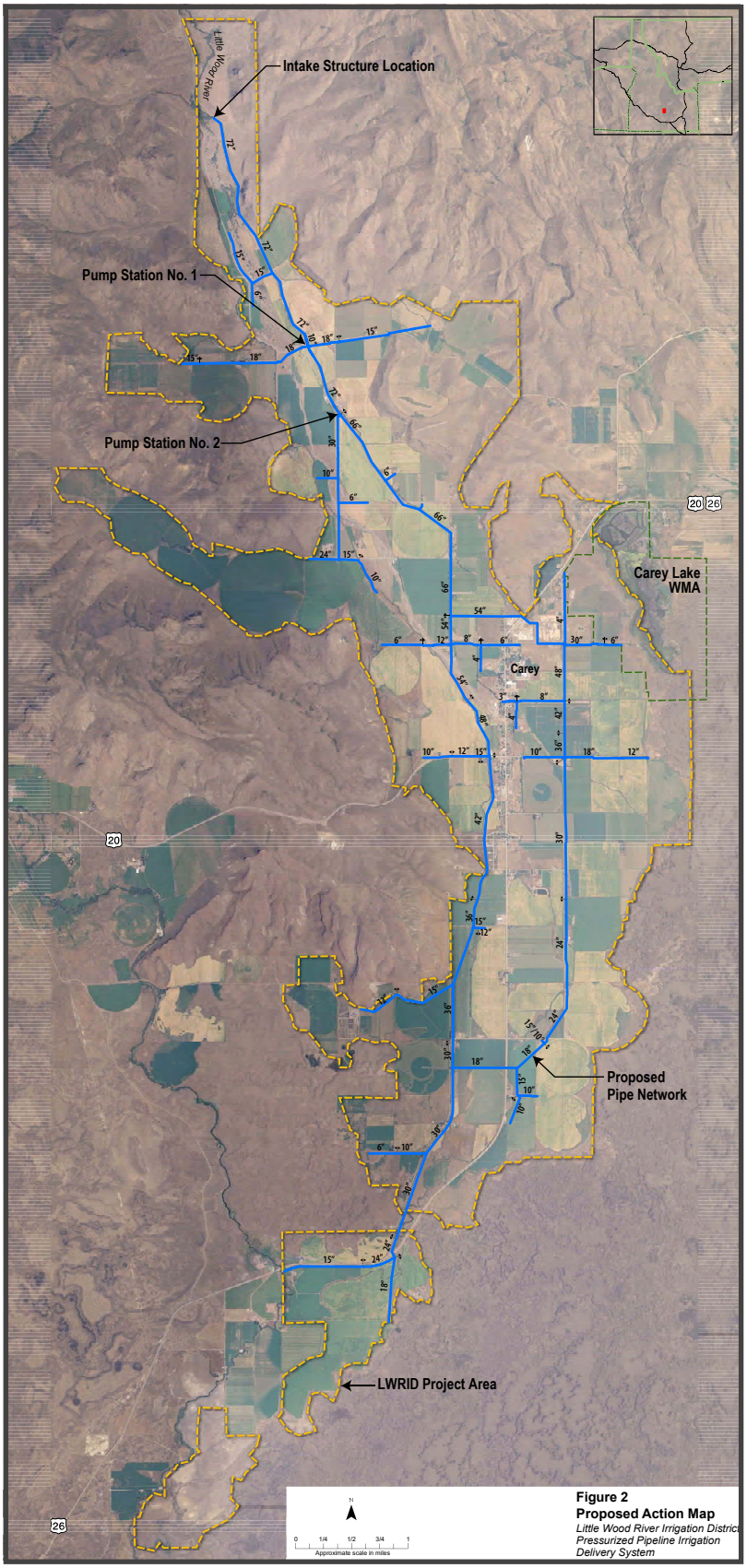
As shown in **Figure 4**, the existing open channel canal system would be replaced with a with a pressurized pipeline delivery system that would follow the general route of the existing East and West canals through the project area.

Figure 3. Project Vicinity Map



Source: State of Idaho. Idaho Department of Water Resources. Irrigation Organizations Map. 2025.

Figure 4. Pressurized Pipeline Delivery System



Source: U.S. Department of the Interior, Bureau of Reclamation. Draft Environmental Assessment for the Little Wood River Irrigation District Pressurized Pipeline Irrigation Delivery System. 2010.

C. Conceptual Plan and Design

The 90% design drawings prepared by CH2M HILL (Jacobs) in 2005 for the LWRID are included as **Appendix B. Design Drawings**. Please note that this design will need to be refined and updated to meet the current standard of care for construction.

D. Land Entitlements

The Little Wood River Irrigation District currently has an operations and maintenance easement that is approximately 33 feet wide (two rods) along the existing canal system. However, additional easements or rights-of-way are needed to prevent development in locations selected for pump stations, pipeline, and appurtenances.

Temporary Construction Easement Requirements

The Little Wood River Irrigation District would need to obtain temporary construction easements. Width requirements for these easements are estimated to be approximately 150 feet along the upper reach of the planned pipeline route and approximately 50 to 75 feet along the lower reaches.

Permanent Operations and Maintenance Easement Requirements

The Little Wood River Irrigation District would need to obtain a permanent operations and maintenance easement of approximately 30 to 50 feet along the pipeline route.

Floodway Easements

The LWRID will need to acquire and maintain floodway easements.

Permits and Compliance

Federal

- **Section 404 Clean Water Act Permit and Section 401 Water Quality Certification**
  Agency: U.S. Army Corps of Engineers (**USACE**)
  Reason: Required for construction resulting in temporary and permanent impacts to wetlands and waters of the U.S.

- **Section 402 Clean Water Act Permit and National Pollutant Discharge Elimination System (NPDES) for stormwater discharges from construction activities**
  Agency: U.S. Environmental Protection Agency (**EPA**)
  Reason: Stormwater discharge prevention

State

- **Stream Alteration Permit**
  Agency: Idaho Department of Water Resources
  Reason: Installing pipeline within or across a stream channel

- **Water Quality Certification**
  Agency: Idaho Department of Environmental Quality
  Reason: Construction activities that may impact water quality standards

- **Encroachment Permit**
  Agency: Idaho Transportation Department
  Reason: Pipeline installation within state right-of-way

Local

- **Street Excavation Permit**
  Agency: City of Carey
  Reason: Excavating within a city street

- **Street Repair and Excavation Permit**
  Agency: Blaine County Road and Bridge Department
  Reason: To excavate, dig in, trench or otherwise disturb the surface or subsurface of any public street

- **Encroachment Permit**
  Agency: Blaine County Road and Bridge Department
  Reason: Installing pipes parallel to a county road, installing pipeline across a county road, installing pipeline through existing culvert, and attaching small-diameter pipeline to county bridges

- **Access and Approach Permit**
  Agency: Blaine County Road and Bridge Department
  Reason: Driveway access for pump stations

- **Conditional Use Permit**
  Agency: Blaine County
  Reason: Pipelines and structures in floodplains; Pipelines and structures in wetlands

- **Stream Alteration Permit**
  Agency: Blaine County
  Reason: Stream alteration

E. Known Environmental Issues

The 2010 environmental assessment found some minimal and mostly short-term impacts that were mainly related to construction of the proposed project (**Table 2**). Most of the impacts noted in the environmental assessment are typical for construction projects and are not expected to cause significant environmental issues. The environmental assessment also identified the best management practices that will be used to minimize impacts and included a summary of mitigation measures that will be implemented to compensate for and reduce potential impacts from implementation of the proposed project.

In fact, the environmental assessment found the proposed project would have several, mostly long-term beneficial effects and stated, "If the Proposed Action were not implemented, the current water loss rates and energy requirements will continue at higher levels than can be sustained over the long term."

Table 2. Summary of Potential Environmental Consequences

Environmental Resource	Short-Term Impacts [a]	Long-Term Impacts [b]	Mitigation Required
Soils	Minimal impact, if any	No impact	Yes
Water Resources	No impact	Beneficial effect	Yes
Fisheries	No impact	Beneficial effect	Yes
Vegetation	Minimal impact	No impact to beneficial effect	Yes
Wildlife	Minimal impact	No impact to beneficial effect	Yes
Federally Protected Species	No to minimal impact	No impact to beneficial effect	Yes
Wetlands	Minimal impact	No impact to beneficial effect	Yes
Recreation	Minimal impact, if any	Potential minimal indirect impact to beneficial effect	Yes
Land Use	Minimal impact	Minimal impact to beneficial effect	No
Visual Resources	Minimal impact	Minimal to no impact	No
Socioeconomics	Beneficial effect	Beneficial effect	No
Transportation and Traffic	Minimal impact	No impact	Yes
Energy	No impact	Beneficial effect	No
Cultural Resources	Minimal impact	Minimal impact	No
Environmental Justice	No impact	No impact	No

a. Short-term impacts are considered those that would occur for less than 1 year after constructing the proposed project.
b. Long-term impacts are considered those that would occur for greater than 1 year after constructing the proposed project.

4. Cost Estimate and Budget

The Little Wood River Irrigation District received a preliminary cost estimate from CH2M HILL (Jacobs) in early 2004. At that time, the total construction cost was estimated to be $27,634,000. However, based on the increased cost for materials and labor, construction is now estimated to cost approximately $47,514,680. Additionally, updating the design and completing an new environmental assessment for the project will cost an estimated $4.75 million.

5. Project Funding Sources

The Little Wood River Irrigation District continues to look for funding assistance for this project and is hoping this project can be completed through a combination of federal and state grants, loans, and cash provided by the Little Wood River Irrigation District. However, depending on funding availability, the LWRID may have to implement the project in phases.

6. Project Implementation Schedule

The Little Wood River Irrigation District expects it will take approximately two years to complete construction of the proposed project once the design and an updated environmental assessment have been completed. The final design and engineering is expected to take approximately 12 months to complete, and the environmental assessment is expected to take another 12 months to complete.

7. Stakeholder Support

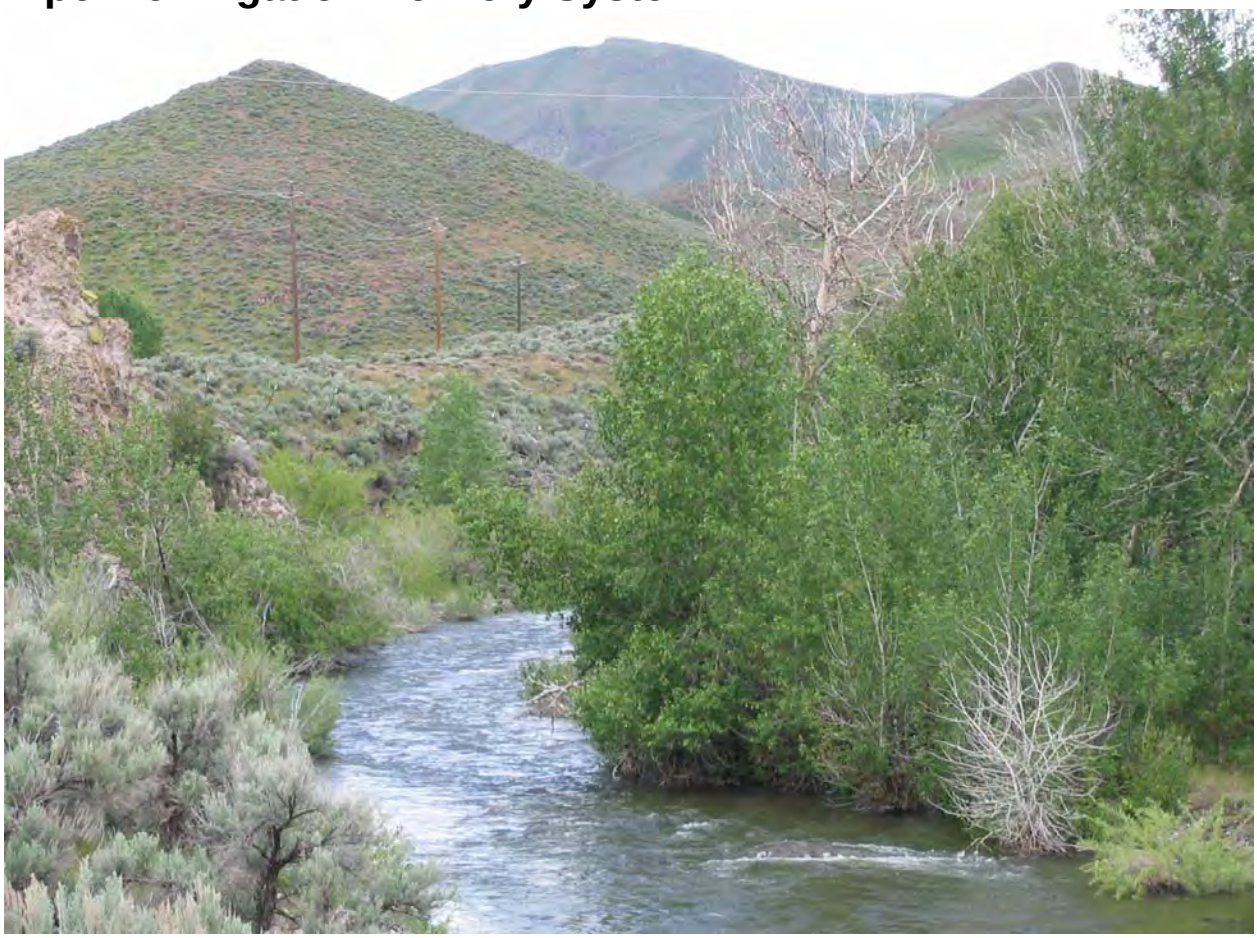
There is wide-ranging support for the Little Wood River Irrigation District Pressurized Pipeline Project. Rep. Mike Simpson, R-Idaho has been an ardent supporter of the project and helped LWRID secure $2.25 million in funding through agriculture appropriations in 2001 for the feasibility study and an engineering design for the project. The Little Wood River Irrigation District has also been working with the Carey Valley Ground Water District and Fish Creek Irrigation District to sustain farming in the Carey Valley. These two organizations are supportive of this project and will provide letters of support if requested. There is also public support for this project as well as a general recognition of the value of this type of project due to the numerous ways it would benefit the region. If requested, the District can provide recent letters of support for the project.

Appendix A. Draft Environmental Assessment

RECLAMATION

Managing Water in the West

Draft Environmental Assessment for the Little Wood River Irrigation District Pressurized Pipeline Irrigation Delivery System



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

March 2010

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to tribes.

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.

RECLAMATION

Managing Water in the West

Draft Environmental Assessment for the Little Wood River Irrigation District Pressurized Pipeline Irrigation Delivery System

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

March 2010

Acronyms and Abbreviations

BLM	U.S. Bureau of Land Management
BPC	Bonneville Pacific Corporation
cfs	cubic feet per second
DEQ	Idaho Department of Environmental Quality
DPS	Distinct Population Segment
EA	environmental assessment
EIS	environmental impact statement
EPA	U.S. Environmental Protection Agency
FONSI	Finding of No Significant Impact
IDFG	Idaho Department of Fish and Game
IDWR	Idaho Department of Water Resources
kWh	kilowatt-hours
LWRID	Little Wood River Irrigation District
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act of 1966
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
PEM	palustrine emergent
PSS	palustrine scrub-shrub
Reclamation	U.S. Bureau of Reclamation
RPW	Relatively Permanent Water
SCI	Soil Condition Index
SHPO	State Historic Preservation Office
SISL	Surface Irrigation Soil Loss Model
TMDL	Total Daily Maximum Load
TNW	Traditional Navigable Water
USDA	U.S. Department of Agriculture
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

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1.0 Introduction and Background

1.1 General

This Environmental Assessment (EA) has been prepared for the U.S. Bureau of Reclamation (Reclamation) and the Little Wood River Irrigation District (LWRID) to address the environmental impacts of the construction and operation of a new proposed pressurized pipeline irrigation delivery system.

The National Environmental Policy Act (NEPA) of 1969 requires Reclamation to explore possible alternative approaches and the environmental effects that would be likely to occur as a result of this action. Two alternatives were evaluated and compared in this document: a No Action Alternative and the Proposed Action, Optimized System Upgrade Alternative. The potential impacts of each alternative were evaluated for the following resource areas:

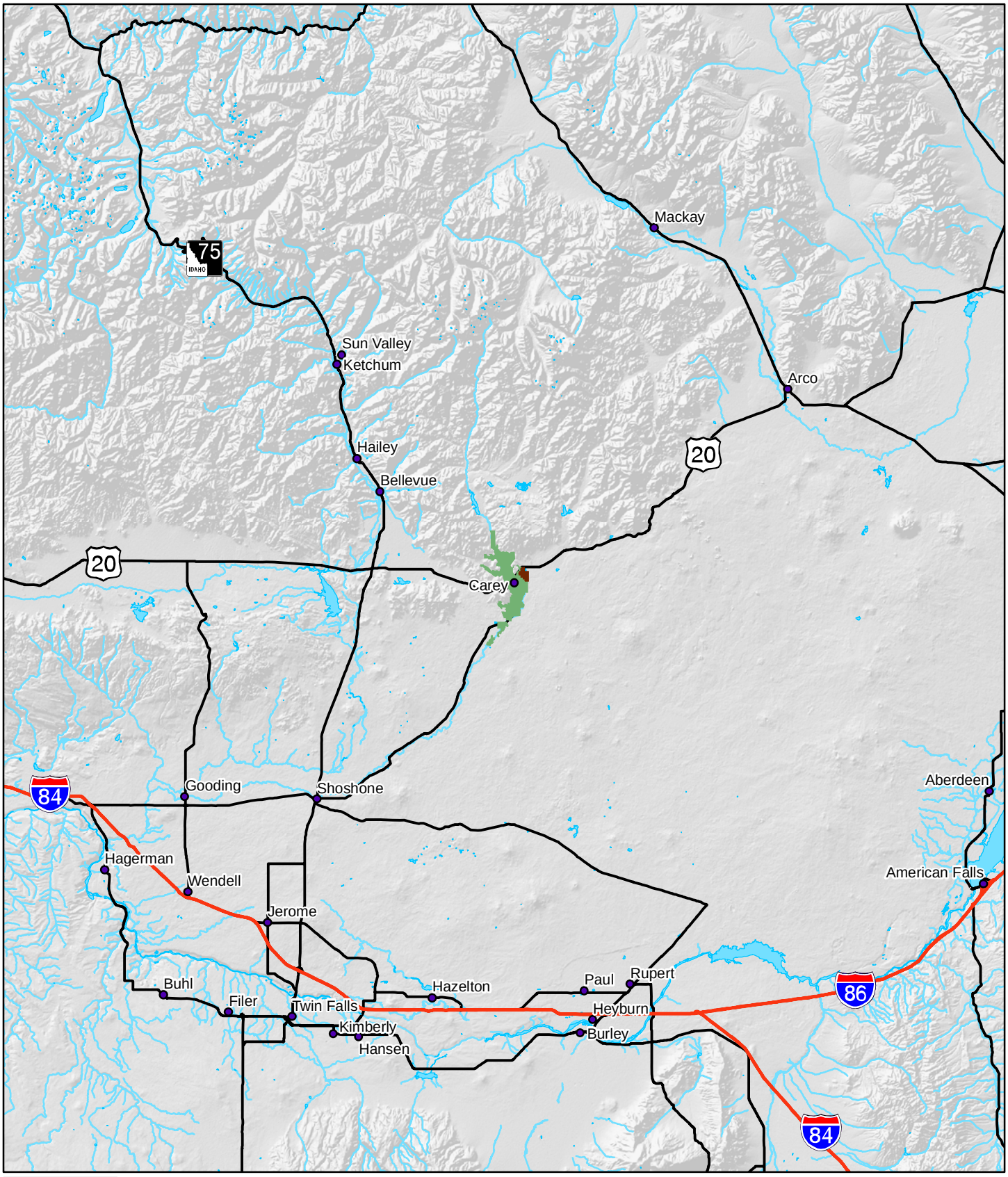
- Geology
- Noise
- Wild and Scenic Rivers
- Air Quality
- Soils
- Water resources
- Fisheries
- Vegetation
- Wildlife
- Federally protected species
- Wetlands
- Recreation
- Land use
- Visual resources
- Socioeconomics
- Transportation and traffic
- Energy
- Cultural resources
- Cultural resources
- Environmental justice

1.2 Location

The Proposed Action extends throughout the service area of the LWRID, which generally encompasses the land from the Little Wood River Reservoir north of Carey, Idaho, to the confluence with the Little Wood River and Silver Creek to the south (see Figure 1, *Location Map*). The LWRID boundary encompasses approximately 10,678 acres. The project is located in Township 1 North, 1 South, and 2 South of Range 21 East of the Boise Meridian, including the city of Carey, Blaine County, Idaho.

1.3 Background

The Little Wood River Dam was initially constructed between 1936 and 1941. Dam reconstruction was completed in the 1950s to raise the height of the dam by 35 feet. The original construction was funded by the Works Progress Administration and the reconstruction was funded by a loan from Reclamation to LWRID. Reclamation owns the dam and part of the land associated with the reservoir, while the LWRID owns the remaining land in the reservoir area and holds the water rights for the water impounded by the dam. In 1984, a hydroelectric generation plant was constructed at the outlet of the dam. It is now owned by the LWRID. Prior to 1996, two entities were responsible for the operation and



Source: ESRI base data, INSIDE Idaho, NRCS, LWRID

Figure 1
Vicinity Map
Little Wood River Irrigation District Pressurized Pipeline Irrigation Delivery System

CH2MHILL

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maintenance of the reservoir and the delivery system, LWRID and Little Wood Canal Company, respectively. In 1996, the LWRID and Little Wood Canal Company merged to form one combined entity under the name of the Little Wood River Irrigation District.

A series of studies have previously been conducted on the existing LWRID irrigation delivery system. A resource study of the existing canal and delivery ditch system was prepared by the Natural Resource Conservation Service (NRCS) in 1972. In 1981, EHM, Inc., prepared the original feasibility study for converting the existing open channel, gravity delivery system to a gravity pressurized pipeline distribution system. Funding for implementing the 1981 study was not available and no action was taken. An updated feasibility study on the economics of the 1981 study was prepared by J-U-B Engineers, Inc., in 1997. The project was awarded a $500,000 Congressional appropriation in 2001 to prepare a detailed feasibility study. Because this was a Congressionally mandated action, NRCS determined that an Environmental Impact Statement (EIS) would be required based on the provisions of NEPA. A Final EIS was completed and published by NRCS in April 2004.

1.4 Proposed Action and Project Description

LWRID proposes to replace the existing open channel canal irrigation delivery system to district members with a pressurized pipeline delivery system. CH2M HILL was contracted to plan and design a pressurized irrigation distribution system as proposed by LWRID. This process involved working with LWRID staff to evaluate the delivery needs of district farmers, identify system turnout locations, and locate a pipeline alignment to provide an efficient network delivery system. The design that was prepared for the Proposed Action consists of constructing approximately 32 miles of new pipeline, a new headworks facility, two new pump stations, three farmed floodways totaling approximately 1.5 miles in length, pressurized connections at over 100 farm turnouts, and a dedicated turnout to Carey Lake (see Figure 2, *Proposed Action Map*).

The Proposed Action would provide irrigation service to approximately 10,678 acres within the LWRID boundary and be capable of delivering a peak flow rate of 7.0 gallons per minute per acre to the farm turnouts. The mainlines have been sized to convey a total of 180 cubic feet per second (cfs) of water during the irrigation season. The Proposed Action would provide for 6 cfs of flow to Carey Lake Wildlife Management Area during the irrigation season and 20 cfs, as needed, during the non-irrigation season. To reduce the impacts of flooding in the Little Wood River, the distribution system is sized to convey 180 cfs from the inlet screening structure to discharge points at abandoned gravel pits and the Little Wood River south of Carey. Preservation of the existing riparian vegetation in the upper reaches of the east and west canal would be accomplished by passing 15 to 30 cfs of water through the existing canals. Varying amounts of water would continue to be released into the Little Wood River from the existing diversion structure. Recharging of the Carey water supply well would occur through seepage from the water released into the Little Wood River and east and west canals. The local fire department may, in cooperation with LWRID, ultimately install hydrants at specified locations to provide water for fire flow in the event of an emergency. The new pipe would have a minimum

depth of cover of 3 feet in non-farmed lands and 4 feet in famed lands to prevent damage during and after potato harvest.

The Proposed Action presented in this EA differs from the recommendations of the previous feasibility studies and the preferred alternative identified in the Final EIS prepared by NRCS. Figure 3, *Pipe Route Comparison Map*, depicts the difference in the pipe alignment previously studied and the current pipe alignment design. The gravity pressurized pipeline contained in the NRCS Final EIS consisted of approximately 43 miles of pipeline and required 13 booster pumps. The Proposed Action consists of approximately 32 miles of pipeline, 2 pump stations, and 18 booster pumps, with the changes resulting from hydraulic modeling and optimization of the delivery system for reduction in cost and more efficient water delivery.

1.5 Purpose and Need

The purpose of the project is as follows:

- Maximize the conservation and use of available water for irrigation of cropland and municipal areas within the service district boundary.
- Conserve energy required to deliver the irrigation water.
- Continue to provide water to the upper end of the existing east and west canals to preserve riparian vegetation.
- Continue to recharge the aquifer.
- Provide water to Carey Lake Wildlife Management Area during the non-irrigation season.
- Facilitate improved fire protection.

The project is needed because water in the existing open channel canal delivery system is being lost to seepage and evaporation, and energy requirements are elevated because of the large number of individual farm pumps required to irrigate the cropland.

Implementing the Proposed Action would reduce the number of pumps required throughout the system on both a district and individual farm level, thereby reducing energy requirements. Additionally, the proposed pipeline would reduce the amount of system water loss and improve the overall efficiency of the delivery system. If the Proposed Action were not implemented, the current water loss rates and energy requirements will continue at higher levels than can be sustained over the long term.

1.6 Public Involvement

The NEPA process is designed to involve the public in federal action decision making. Public involvement and intergovernmental coordination and consultation are recognized as essential elements in developing a NEPA document. Formal notification and opportunities for public participation, as well as informal coordination with government agencies and planners have occurred and will continue to occur throughout the EA process. Specifics on public involvement for this project are discussed in Chapter 4, *Consultation and Coordination*.

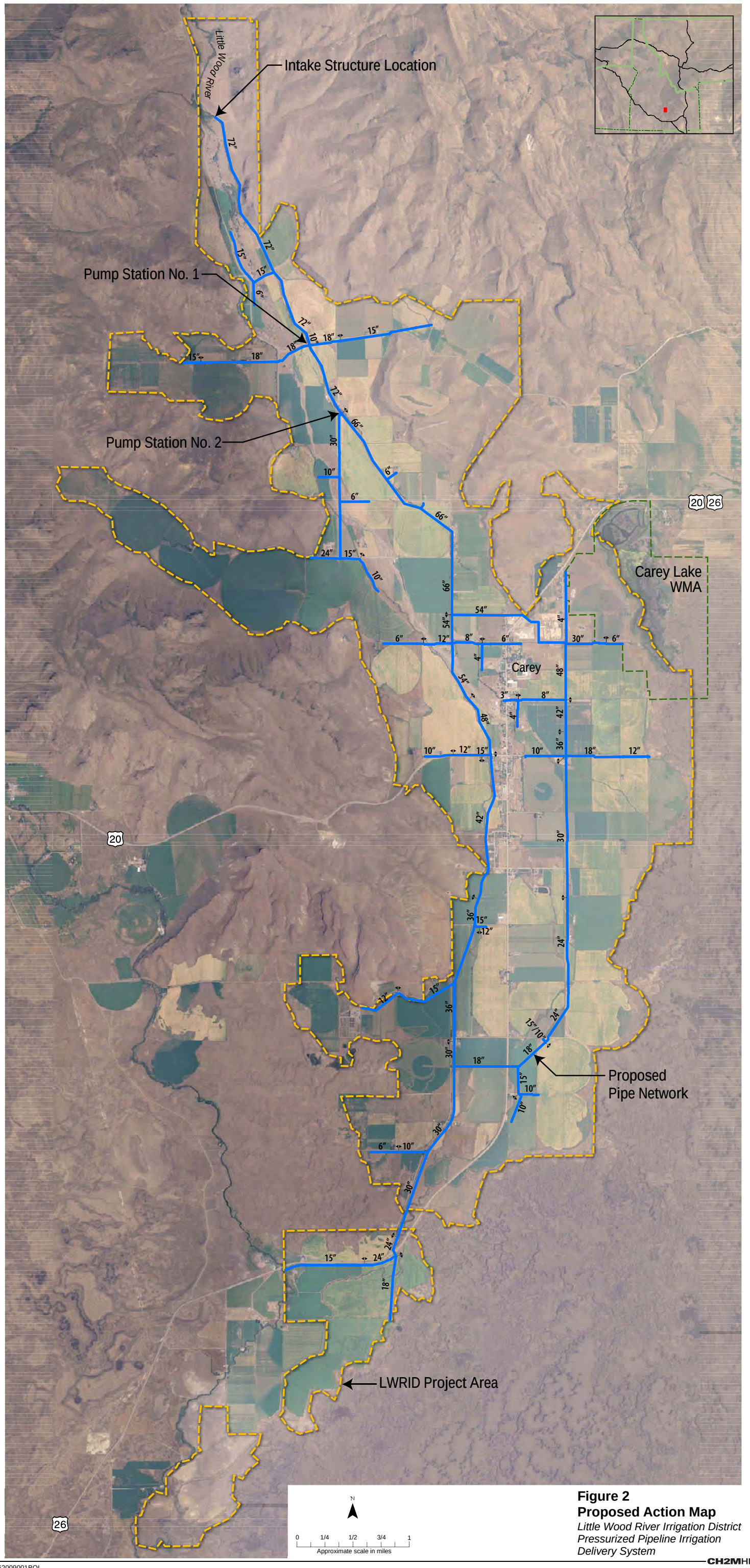


Figure 2
Proposed Action Map
Little Wood River Irrigation District Pressurized Pipeline Irrigation Delivery System

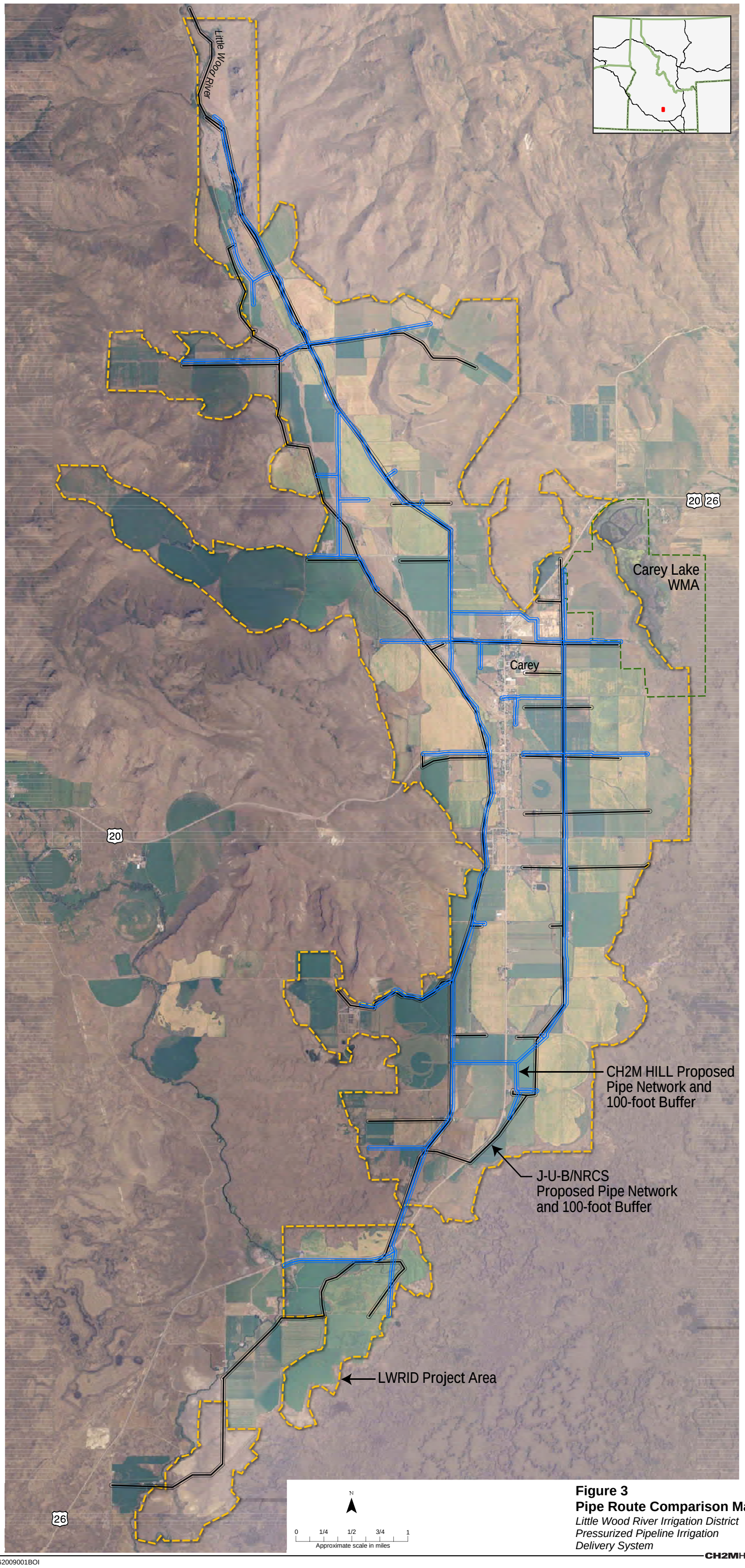


Figure 3
Pipe Route Comparison Map
Little Wood River Irrigation District
Pressurized Pipeline Irrigation
Delivery System

1.7 Permits

All project activities would occur on private land. Several local, state, and/or federal permits would be required for construction. The LWRID will be responsible for securing them and payment of any related costs incurred. Table 1 shows the list of the potential required permits.

TABLE 1
List of Permits Potentially Required for the Little Wood River Gravity Pressurized Pipeline Construction

Permit Name	Issuing Agency	Work Description/Coverage	Permit Expiration	Responsible Party
Local Permits				
Street Excavation Permit	City of Carey	Excavating within a City street	ND	LWRID
Street Repair and Excavation Permit	Blaine County Road and Bridge Dept.	To excavate, dig in, trench or otherwise disturb the surface or subsurface of any public street	ND	LWRID
Encroachment Permit	Blaine County Road and Bridge Dept.	Installing pipes parallel to a County road	1 year	LWRID
		Installing pipeline across a County road	1 year	LWRID
		Installing pipeline through existing culvert	1 year	LWRID
		Attaching small-diameter pipeline to County bridges	1 year	LWRID
Access/Approach Permit	Blaine County Road and Bridge Dept.	Driveway access for pump stations	1 year	LWRID
Conditional Use Permit	Blaine County	Pipelines and structures in floodplains	2 year (may extend with Board)	LWRID
Conditional Use Permit	Blaine County	Pipelines and structures in wetlands	2 year (may extend with Board)	LWRID
Stream Alteration Permit	Blaine County	Stream alteration	1 year (may extend with Board)	LWRID

TABLE 1
List of Permits Potentially Required for the Little Wood River Gravity Pressurized Pipeline Construction

Permit Name	Issuing Agency	Work Description/Coverage	Permit Expiration	Responsible Party
State Permits				
Stream Alteration Permit	Idaho Department of Water Resources	Installing pipeline within or across a stream channel	ND	LWRID
Water Quality Certification	Idaho Department of Environmental Quality	Construction activities that may impact water quality standards	ND	LWRID
Encroachment Permit	Idaho Transportation Department	Pipeline installation within state R/W	ND	LWRID
Federal Permits				
Section 404 Clean Water Act Permit (including 401 water certification)	U.S. Army Corps of Engineers	Construction resulting in temporary and permanent impacts on wetlands and waters of the U.S.	ND	LWRID
Section 402 Clean Water Act Permit (including NPDES for construction sites)	U.S. Environmental Protection Agency (EPA)	Stormwater discharge prevention	ND	LWRID

ND = Not determined

2.0 Alternatives

2.1 General

This chapter presents the alternatives considered for improving the current irrigation delivery system within the LWRID service boundary and a summary of the potential environmental impacts associated with each of the alternatives. For this EA, two primary alternatives are presented: the No Action Alternative and the Optimized System Upgrade Alternative. Depending on funding availability, the LWRID may have to implement the Proposed Action in phases; however, it is assumed that the Proposed Action would be implemented in its entirety for the purpose of this report and comparison of the alternatives.

2.2 Description of the Proposed Action

The LWRID proposes to improve the existing method of irrigation delivery to its members. Currently, flow from the Little Wood River is diverted via a concrete dam structure into two open channel canals referred to as the East and West Canals. The current diversion structure allows varying amounts of water to flow into the canals and river channel. The East and West Canals convey the diverted water south through unimproved stone-lined channels that were excavated at the turn of the 20th century. Irrigation water is then withdrawn from these two primary canals or from a myriad of secondary canals at farm turnouts. The current open channel delivery system is comprised of approximately 36 miles of primary and secondary canals. At a majority of the farm turnouts, the water is then pressurized by individual pumps for sprinkler irrigation. A small percentage of the turnouts provide water for flood farm irrigation systems.

The Proposed Action would entail constructing a new pressurized pipeline system to convey the water withdrawn from the Little Wood River to members of the LWRID at the existing turnout locations. This proposed system would allow for more efficient delivery in terms of system water loss and total energy requirements.

2.3 Courses of Action or Alternatives

The LWRID has the option of following two courses of action or alternatives that would meet the following needs of LWRID and its members:

- Continue operation of the existing irrigation delivery system (No Action Alternative).
- Construct a new delivery system for improved efficiency (Proposed Action).

The objectives of the alternatives and the basis of the Proposed Action are as follows:

- Conserve water.
- Conserve energy.
- Preserve riparian vegetation in upper ends of the East and West Canals.
- Provide year-round flow to the Carey Lake Wildlife Management Area.
- Continue to provide flow to the Little Wood River.

- Continue to recharge the aquifer.
- Reduce the impacts of flooding in the Little Wood River.
- Mitigate the impacts of flooding in the Little Wood River.
- Facilitate pressurized irrigation to farms and other LWRID members.
- Facilitate improved fire protection.

2.3.1 No Action Alternative

Under the No Action Alternative, it is assumed that the LWRID would continue use, operation, and maintenance of the existing open channel canal delivery system, with sprinkler irrigation pressure provided by pumps at individual farm turnouts. The No Action Alternative does not meet the stated objectives, but serves as a baseline against which the Proposed Action can be compared.

2.3.2 Proposed Action

The Proposed Action is to construct an optimized pressurized pipeline irrigation delivery system as depicted in Figure 2, *Proposed Action Map* in Chapter 1. The *Proposed Action Map* is based on the construction plans at 99 percent completion dated April 2005. The drawings were prepared by CH2M HILL for the LWRID. As part of the iterative design process, the system was continuously evaluated to provide an efficient layout in terms of required pipe diameter, pipe length, and size and location of pump stations while meeting the needs of the farms and other LWRID members. A new screened intake structure would be constructed in the East Canal downstream of the existing diversion structure to provide water withdrawal for the approximate 32 miles of proposed new pipeline. Table 2 provides a summary of the pipe lengths by diameter for the proposed distribution system.

TABLE 2
Distribution System Pipe Summary

Pipe Diameter (inches)	Total Pipe Length (feet)
72	15,576
66	11,728
54	10,627
48	5,504
42	8,574
36	8,011
30	25,334
24	10,913
18	17,577
15	18,595
12	6,732
10	10,353
8	4,087
6	10,115
4	5,895
3	689

Flow measurement in the mainline of the pipe downstream from the new intake structure would be accomplished by constructing a flow meter structure. Two new pump stations would be constructed as part of the Proposed Action. One station, Pump Station 1, would be located on the north side of Little Wood Reservoir Road, approximately 0.3 mile east of Hunt Lane. Pump Station 1 would house two 200-horsepower pumps to pressurize one 10-inch-diameter lateral and two 18-inch-diameter laterals. The second pump station, Pump Station 2, would be located west of Little Wood Reservoir Road,

approximately 0.60 mile south of Barton Road. Pump Station 2 would contain two 150-horsepower pumps to pressurize one 30-inch-diameter lateral.

Installing the distribution pipe would require a temporary construction zone that would be a maximum of approximately 100 feet wide along the pipeline. This temporary construction work space could shift horizontally in relation to the pipe centerline to avoid existing roadways or environmentally sensitive areas. The actual trench width would vary between 3 and 15 feet depending on the pipe diameter and depth of installation. The remainder of the temporary work space would be needed for material staging, soil excavation stockpiles, and construction equipment. Pipe installation at some roadway crossings would be bored rather than installed in open trenches.

The existing canals would remain in place and not be altered with the exception of three locations that would be regraded and converted into farmable floodways to mitigate for the potential impacts of flooding. These floodways would be wide at the bottom with gently sloping sides as required to allow for cultivation. One farmable floodway totaling 2,233 linear feet would be constructed in the East Canal south of Little Wood Reservoir Road and approximately 0.3 mile east of Hunt Lane. A second floodway, totaling 2,392 linear feet, would be constructed along the East Canal south of the Little Wood Reservoir Road crossing located approximately 0.8 mile north of Dry Creek Road. The third farmable floodway, totaling 2,791 linear feet would be constructed along the Dry Creek/West Canal just west and south of the terminus of North Griffin Loop.

In addition to the items described in Section 1.4, the design meets the objectives of the Proposed Action by conserving approximately 20,000 acre-feet of water per year and more than 4,000 horsepower. As much as 25 cfs of water would continue to be diverted to the West Canal and as much as 30 cfs would continue to flow past the new intake structure in the East Canal. The flow discharged into the Little Wood River at the existing diversion structure would be increased from the existing rates. Aquifer recharge would be achieved by seepage from water released into the East Canal, West Canal, and the Little Wood River channel. Recharge flows in the East Canal would be measured with a Parshall flume 150 feet downstream of the intake screening structure.

2.4 Alternatives Eliminated from Further Study

The other alternative that was considered was the preferred alternative as published in the 2004 Final EIS by NRCS. This alternative was not fully developed in terms of construction plans and specifications, but would require more pipe and increased construction cost than the Proposed Action of this EA. Therefore, this NRCS-preferred alternative was not recommended for consideration as an alternative for evaluation in this EA.

2.5 Summary of Impacts

Table 3 summarizes the impacts associated with the No Action Alternative and the Proposed Action. The information provides a brief description of the potential environmental consequences based on each of the resources identified for evaluation. This summary is based on the detailed information in Chapter 3 of

this EA. A list of environmental commitments that are part of the Proposed Action is included in Appendix A, *Environmental Commitments*.

TABLE 3
Summary of Potential Environmental Consequences under the Action Alternatives

Resources	No Action Alternative [a]	Optimized System Upgrade Alternative (Proposed Action) [a]	Mitigation Required [b]
Soils	Short-term: No impact Long-term: No impact	Short-term: Minimal impact, if any Long-term: No impact	Yes
Water Resources	Short-term: No impact Long-term: No impact	Short-term: No impact Long-term: Beneficial effect	Yes
Fisheries	Short-term: No impact Long-term: No impact	Short-term: No impact Long-term: Beneficial effect	Yes
Vegetation	Short-term: No impact Long-term: No impact	Short-term: Minimal impact Long-term: No impact to beneficial effect	Yes
Wildlife	Short-term: No impact Long-term: No impact	Short-term: Minimal impact Long-term: No impact to beneficial effect	Yes
Federally Protected Species	Short-term: No impact Long-term: No impact	Short-term: No to minimal impact Long-term: No impact to beneficial effect	Yes
Wetlands	Short-term: No impact Long-term: No impact	Short-term: Minimal impact Long-term: No impact to beneficial effect	Yes
Recreation	Short-term: No impact Long-term: No impact	Short-term: Minimal impact, if any Long-term: Minimal impact to beneficial effect	Yes
Land Use	Short-term: No impact Long-term: No impact	Short-term: Minimal impact Long-term: Minimal impact to beneficial effect	No
Visual Resources	Short-term: No impact Long-term: No impact	Short-term: Minimal impact Long-term: Minimal to no impact	No
Socioeconomics	Short-term: No impact Long-term: No impact	Short-term: Beneficial effect Long-term: Beneficial effect	No
Transportation and Traffic	Short-term: No impact Long-term: No impact	Short-term: Minimal impact Long-term: No impact	Yes
Energy	Short-term: No impact Long-term: No impact	Short-term: No impact Long-term: Beneficial effect	No
Cultural Resources	Short-term: No impact Long-term: No impact	Short-term: Minimal impact Long-term: Minimal impact	No
Environmental Justice	Short-term: No impact Long-term: No impact	Short-term: No impact Long-term: No impact	No

[a] Short-term impacts are considered those that would occur for less than 1 year after constructing the proposed project. Long-term impacts are considered those that would occur for greater than 1 year after constructing the proposed project.

[b] See Environmental Commitments (Appendix A)

3.0 Affected Environment

3.1 Introduction

3.1.1 Overview

Chapter 3 is organized by resource topic. This is not a comprehensive discussion of every resource topic within the study area, but rather focuses on those aspects of the environment that were identified as issues during scoping or may be affected by the alternatives. Resource topics analyzed in detail include soils, water resources, fisheries, vegetation, wildlife, federally protected species, wetlands, recreation, land use, visual resources, socioeconomics, transportation and traffic, energy, cultural resources, cultural resources, and environmental justice.

Within each resource area, the affected environment is addressed first and describes the current conditions for the resource in the study area. The potential impacts of the alternatives are described next within each resource topic in the environmental consequences section. Under the alternatives subheading, the specific impacts of each of the alternatives are discussed in terms of the actions that would occur and specific information about the potential impact. The depth of analysis of the alternatives corresponds to the scope and magnitude of the potential environmental impact. Overarching impact determinations for each resource area range from no impact to minimal impact (which is considered not significant), to having potentially beneficial effects. A summary of impacts for each alternative is provided in Chapter 2, Table 3.

3.1.2 Resource Areas not Discussed in Detail

Preliminary analysis indicated that the new LWRID proposed gravity pressurized pipeline irrigation delivery system has no potential to affect certain resource areas or is anticipated to affect certain resources to such a limited extent that a detailed discussion of those areas is not justified. These resource areas are geology, noise, Wild and Scenic Rivers, and air quality. Because there is either no affect or very limited potential for affect, these resource areas would not influence the decision to be made regarding the Proposed Action and are not discussed in detail. The rationale for eliminating these resource areas from detailed discussion and further consideration is provided in the following sections.

3.1.2.1 Geology

No impacts on geologic resources would occur; therefore geology will not be addressed further in this EA.

3.1.2.2 Noise

A temporary increase in noise would occur during construction. This temporary, short-term impact would occur mostly in rural areas during daylight hours. The areas where the pipeline would be constructed is typically impacted by large machinery associated with farming and the additional temporary noise associated with construction is not expected to be a significant impact. Construction would be limited to daylight working hours (8 a.m. to 5 p.m.) in locations where sensitive receptors, such as residential areas, are located.

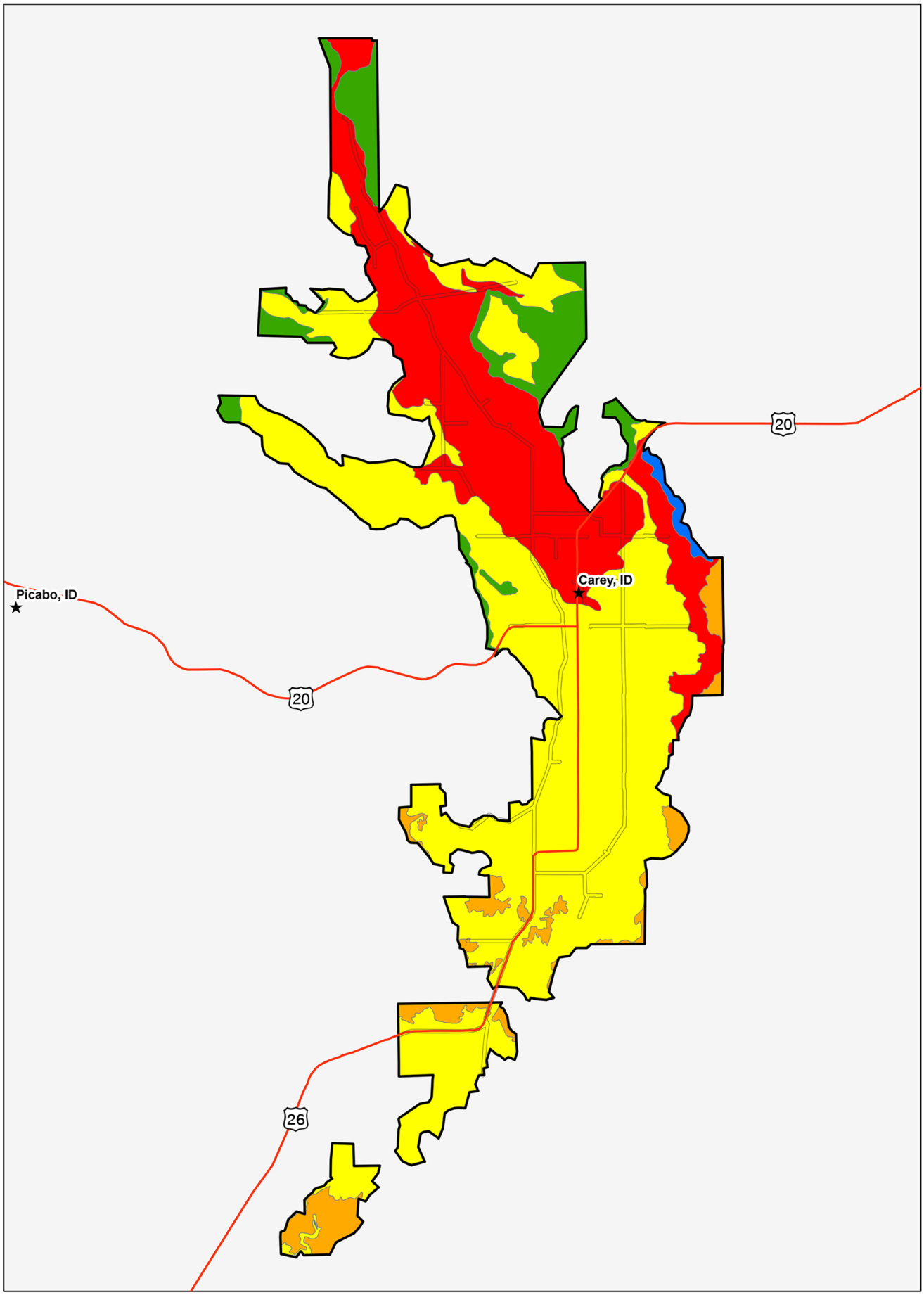
3.1.2.3 Wild and Scenic Rivers

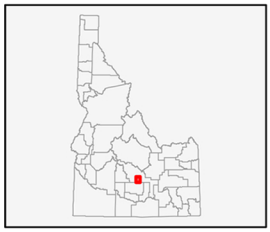
No Wild and Scenic Rivers occur within the project area. None could be potentially

affected by the Proposed Action; therefore this Wild and Scenic Rivers will not be addressed further in this EA.

3.1.2.4 Air Quality

There may be an increase in fugitive dust during construction. Mitigative measures such as application of water to bare dirt areas during construction would be used to reduce any potential impacts.





Irrigation District Boundary
Pipe Network Buffer 100ft
Highways

General Soils
Little Wood-Balaam-Adamson
Carey Lake-Bringmee
McCarey-Justesen-Lava flows
Justesen-Molyneux-Peevywell
Water

0 0.5 1 2 Miles

N

Source: LWRID GIS Data

Figure 4
General Soils
Little Wood River Irrigation District
Pressurized Pipeline Irrigation
Delivery System

CH2MHILL

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3.2 Soils

This section addresses the affected environment and environmental consequences of the proposed project on soil. Prime Farmland, Farmland of Statewide Importance, and soil erosion and sedimentation are the main issues addressed for soil resources.

3.2.1 Affected Environment

3.2.1.1 Overview

The *General Soils Map* (Figure 4) gives a broad overview of the soils within the project area. A soil association is a landscape that has a distinct proportional pattern of soils. It normally consists of one or more major soils and at least one minor soil and is named for the major soils. Soils in one association may occur in another, but in a different pattern.

Soils in the project area developed primarily in water-deposited material on stream terraces and fan terraces along the Little Wood River. A small area in the southern part of the project area is influenced by recent lava flows that have soils formed from basalt bedrock being weathered (NRCS and LWRID, 2004).

Five different soil-mapping units are present within the project area occurring on three landforms. The three landform associations are "stream and river terraces" (Little Wood-Balaam-Adamson and Carey Lake-Bringmee map units), "lava flows" (McCarey-Justesen-Lava Flows map unit), and "fan terraces" (Justesen-Molyneux-Peevywell map unit). The remaining soil map unit is "water."

3.2.1.2 Prime Farmland

Prime farmland is one of several kinds of important farmland defined by the United States Department of Agriculture (USDA). It is of major importance in meeting the nation's short- and long-range needs for food and fiber. Because the supply of high-quality farmland is limited, the USDA recognizes that responsible levels of government, as well as individuals, should encourage and facilitate the wise use of our nation's prime farmland.

A recent trend in land use in the project area is the loss of prime farmland to other uses, mainly urban/residential. This typically puts pressure for agricultural uses on marginal lands that generally are more erodible, droughty, less productive, and difficult to cultivate.

Nearly all of the 10,800 acres of cropland in the project area are designated as prime farmland or statewide important farmland. Some of the units meet the requirements only if an adequate and dependable supply of irrigation water is available. Urban or built-up areas of the soils listed are not considered prime farmland. This does not constitute a recommendation for a particular land use.

3.2.1.3 Farmland (Soils) of Statewide Importance

This is land, in addition to prime and unique farmlands, that is of statewide importance for the production of food, feed, fiber, forage, and oilseed crops. Criteria for defining and delineating this land are to be determined by the appropriate state agency or agencies. Generally, farmlands (soils) of statewide importance include those that are nearly prime farmland and that produce high economic yields of crops when treated and managed according to acceptable farming methods. Some may produce as high a yield as prime farmlands if conditions are favorable. Approximately 2,362 acres of

Farmland Soils of Statewide Importance exist in the project area.

3.2.1.4 Soil Erosion and Sedimentation—Sheet and Rill, Gully, Irrigation-Induced Erosion

Sheet and rill erosion was evaluated using the Revised Universal Soil Loss Equation. Erosion rates from the current agronomic program are estimated at less than 1 ton per acre per year. Sustainable erosion rates are 5 tons per acre per year (NRCS and LWRID, 2004).

Irrigation induced erosion was evaluated using the Surface Irrigation Soil Loss Model (SISL) to determine erosion and sediment generated from irrigated cropland. The results of the SISL analysis showed an estimated average annual soil loss of less than 1 ton per acre year (NRCS and LWRID, 2004).

There is no gully erosion on cropland within the project area.

The effects of the current agronomic program were evaluated to determine if it has an overall positive or negative effect on soil condition. The Soil Condition Index (SCI) was used to make this determination. SCI considers climate, soil erosion, tillage, crop rotation and residue management to determine if the agronomic program is depleting, sustaining or building soil condition. SCI showed that the agronomic program currently followed in the project area has a positive-building effect on soil condition (NRCS and LWRID, 2004).

3.2.2 Environmental Consequences

3.2.2.1 Significance Criteria

Impacts on soils would be considered significant if either of the following would occur:

- Project implementation would be expected to reduce soil productivity or negatively impact the ability of local producers to continue farming operations.
- Project implementation would be expected to lead to increased erosion and sedimentation.

3.2.2.2 No Action Alternative

Soils

Under the No Action Alternative, conditions would remain the same as currently found in the project area. Therefore the No Action Alternative would have no direct, indirect, or cumulative impacts.

Sheet and Rill, Gully, and Irrigation Induced Erosion

Under the No Action Alternative, no changes in current operation of the reservoir and irrigation system would occur. Therefore, the No Action Alternative would have no direct, indirect, or cumulative impacts.

3.2.2.3 Proposed Action—Optimized System Upgrade Alternative

Soils

No crop or soil management changes, other than more efficient delivery of irrigation water, would be implemented under the Proposed Action. Soil productivity would remain at current levels. Topsoil will be removed and stockpiled during pipeline construction and replaced as the top soil layer during pipeline trench backfilling. Therefore, no direct, indirect, or cumulative impacts would occur under the Proposed Action.

Sheet and Rill, Gully, and Irrigation-Induced Erosion
Sheet and rill erosion was evaluated by the NRCS using the Revised Universal Soil Loss Equation (NRCS and LWRID, 2004). Erosion rates from the current agronomic program were estimated at less than 1 ton per acre per year. Erosion rates of 5 tons per acre per year or less for these soils are acceptable for long-term crop production.

Irrigation induced erosion was also evaluated by the NRCS using the SISL, to determine erosion and sediment generated from irrigated cropland. The results of the SISL analysis predicted that the average annual irrigation induced soil loss would be less than 1 ton per acre per year.

There is no gully erosion on cropland within the project area.

Based on this analysis, significant erosion leading to sedimentation would not be expected to occur with implementation of the Proposed Action. Although over the short term, the risk of minimal erosion does exist, no direct, indirect, or cumulative impacts would occur over the long term.

3.3 Water Resources

Water resources evaluated for this EA include surface water, groundwater, and channel erosion and sedimentation.

3.3.1 Affected Environment

Surface water resources include the Little Wood River, the East and West Canals, and the Little Wood Reservoir (reservoir). Groundwater includes the subsurface hydrological resources of the physical environment. Groundwater properties are often described in terms of depth to the aquifer water table, water quality, and surrounding geologic composition.

Historic monitoring does not indicate any ground water quality problems in the project area, specifically in the Carey area. The construction of a pipeline does not add any chemical constituents to the groundwater that would result in impacts. Therefore groundwater quality will not be discussed further in this EA.

3.3.1.1 Surface Water

The segment of the Little Wood River that would be influenced by the Proposed Action is that section of river below the existing East Canal Diversion dam to the confluence of Silver Creek.

Surface Water Quality
The Idaho Department of Environmental Quality (DEQ) identified five segments of the Little Wood River to be assessed for water quality conditions:

- Headwaters to Little Wood Reservoir (Segment 1)
- Little Wood Reservoir
- Little Wood Reservoir to East Canal Diversion (Segment 2)
- East Canal Diversion to Silver Creek (Segment 3—Proposed Action Location)
- Silver Creek to Big Wood River (Segment 4)

According to IDAPA 58.01.02.101.01, beneficial uses that are to be protected for the Little Wood River within the Proposed Action Location (Segment 3, East Canal Diversion to Silver Creek) are cold water aquatic life, salmonid spawning, and primary contact recreation.

Pursuant to Section 303 of the federal Clean Water Act, DEQ developed and published the Section 303(d) List of water quality limited water bodies in 1998, which identifies those water bodies where at least

one of the beneficial uses is not supported or that exceed water quality standards. According to the DEQ 1998 303(d) List, the reach that contains the Proposed Action (Segment 3, East Canal Diversion to Silver Creek) was listed as impaired because of nutrients, sediment, and temperature.

In 2005, DEQ completed a Subbasin Assessment and total maximum daily load (TMDL) for the Little Wood River (DEQ, 2005). This report summarizes available biological data, chemical data, and hydrology. This segment of the Little Wood River is intermittent. River flows in the Proposed Action Location are dependent on spring melt flows beginning in April. Continued flow after June is determined by the year's precipitation, release rates from the reservoir based on storage requirements, and diversion for irrigation. A 1909 decree gives water users the right to chose to use their water, even if the Little Wood River in this segment gets dewatered (DEQ, 2005). Currently, return flows from the canals (after irrigation use) are the only source of water to this segment of the Little Wood River.

The Subbasin Assessment and TMDL recommended that this segment be delisted for all pollutants (sediment, nutrients, and temperature) and remain listed as impacted by flow alteration (DEQ, 2005). These recommendations were approved by EPA in 2005 and are reflected in the DEQ 2008 Integrated 303(d)/305(b) List that was published in May 2009. In this list, the Proposed Action Location (Segment 3, East Canal Diversion to Silver Creek) is included in Category 4c. This category includes waterbodies that are impaired but do not need a TMDL because nonsupport of the water quality standard is not caused by a pollutant.

Surface Water Quantity

The nearest U.S. Geological Survey (USGS) gage station (Stream Site 13148500) to the project site is 1.3 miles upstream from the East Canal and 0.3 mile upstream from the West Canal. This gage station is at an elevation of 4,990 feet above mean sea level and serves a drainage area of 312 square miles. This USGS gage station on the Little Wood River recorded the average annual watershed runoff as 123,667 acre-feet between 1971 and 2000.

Snowmelt is the primary source for annual peak flows on the Little Wood River. Peak flows can occur between the middle of March and the middle of June, but predominantly occur in May. Snowmelt runoff between March and July averages 96,524 acre-feet, or 78 percent of the average annual water year (October 1 to September 30) runoff. However, because of the large mid-elevation area in the basin the highest flow in a year can occur anytime between November and June, because of rain-on-snow events or the rapid melting of low elevation snowpack. In fact, 55 percent of annual precipitation in the Little Wood basin falls between November and March and is mostly stored until it melts in the spring and early summer. While summer does have localized, high-intensity precipitation events, they are too isolated to provide significant flows to the river, leaving late summer and early fall with the lowest annual stream flow levels.

Runoff for some years is insufficient to fill the Little Wood Reservoir. The smallest volume of March-July runoff recorded to date occurred in 1977, at only 21 percent of the average. Contrasting runoff of 217,500 acre-feet, recorded in March-July of 1983 (which had enough volume to fill the reservoir 7 times), demonstrates the high variability of this system.

Based on information provided by the LWRID, the current sprinkler irrigation methods require 55,000 to 60,000 acre-feet of water per growing season released

from the reservoir to deliver 40,000 to 42,000 acre-feet to the users (Simpson, 2009). While more efficient than the previous practice of surface irrigation, the resulting reduced demand still goes unmet 18 percent of the time. Currently during the irrigation season, up to 125 cfs and 175 cfs is diverted to the West Canal and East Canal, respectively, and a variable amount flows through the river channel as depicted in Figure 5. At the peak of the growing season (in terms of water usage), a maximum of approximately 90 cfs and 120 cfs is actually utilized for crop irrigation from the West and East Canals, respectively, with the balance of the water lost to seepage, evaporation, and consumption by riparian vegetation. Approximately 10 to 15 cfs is delivered to Carey Lake from the East Canal through the entire irrigation season. Therefore, up to 35 cfs are lost to groundwater and ET in the West Canal and up to 40 cfs are lost to groundwater and ET in the East Canal.

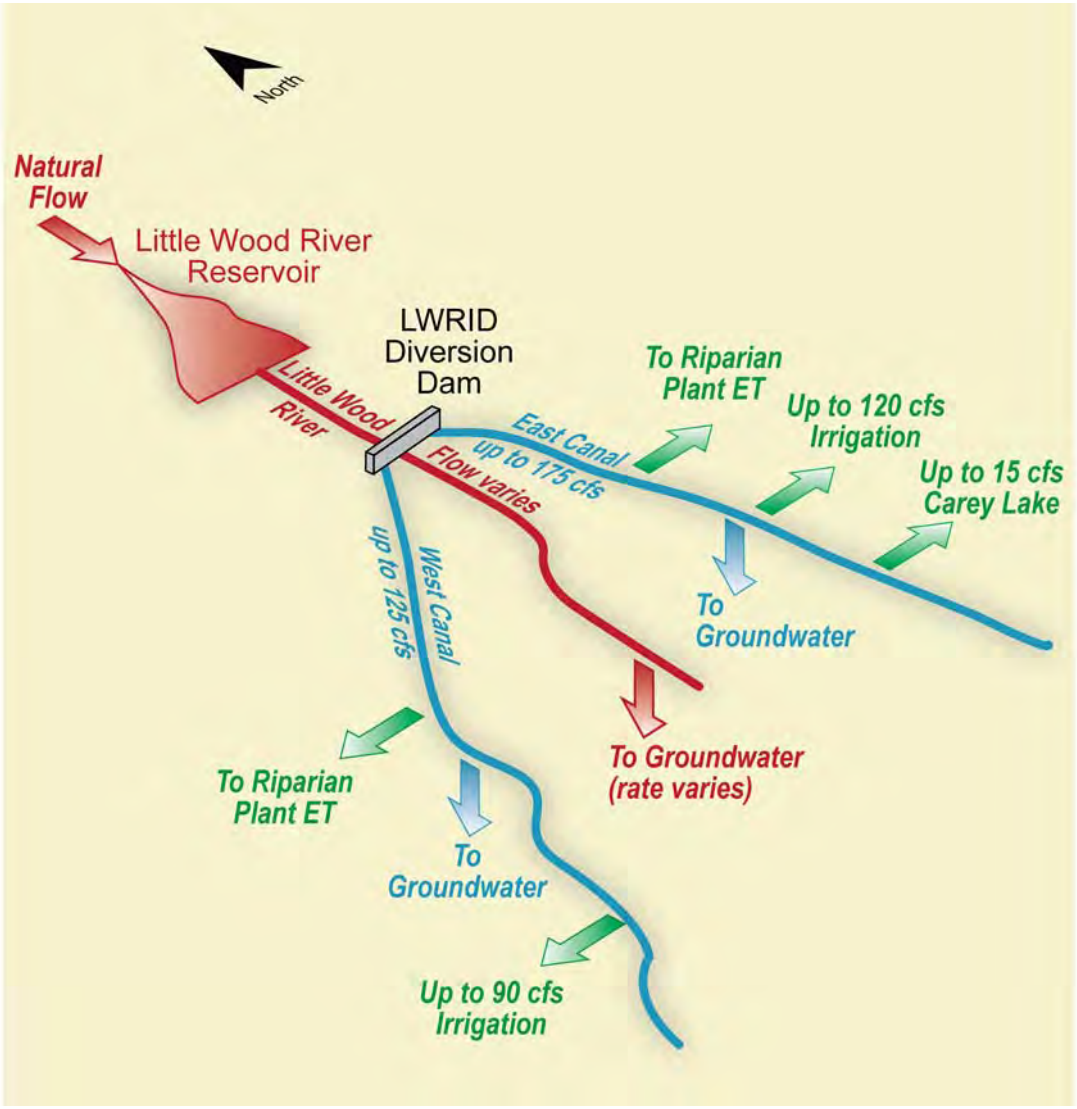


FIGURE 5
Pre-Project Water Budget

3.3.1.2 Groundwater

Groundwater Quantity

A shallow, perched (local) aquifer lies under the project area. It is primarily recharged through infiltration from the irrigation system canals, losses in the river channel, and surface irrigation in the upstream third of the basin. Snowmelt from the Pioneer Mountains to the north also contributes to the total aquifer recharge. The existing irrigation canal system provides a significant source of water for aquifer recharge. As stated previously, approximately 15,000 to 18,000 acre-feet is lost to seepage, evaporation, and riparian vegetation during a typical irrigation season in the existing canal and ditch delivery system with a relatively high percentage of this loss attributed to seepage that recharges the local aquifer. Visible surface flows through Carey do not normally begin until late April or early May, and quickly cease in June or July. An NRCS analysis of gage data showed that flows of up to 75 cfs in the river disappear shortly downstream of the diversion dam, and, therefore, must be contributing to groundwater recharge (NRCS and LWRID, 2004).

Groundwater is withdrawn from individual wells throughout the area and used domestically for irrigation and to water livestock. Additionally, Carey has two wells withdrawing from the aquifer. The individual wells located north of Carey are typically between 80 and 100 feet deep, but wells south of the town can reach depths of 600 feet. New wells have been drilled deeper to combat the fluctuations in water table depths and even failure of existing wells as a result of drought and changes in irrigation delivery techniques from flood irrigation to sprinkler irrigation. Groundwater levels increase in relation to the flow in the river and canals (NRCS and LWRID, 2004).

Wells surrounding Carey have had summer static water levels drop from around 20 feet below ground level to more than 60 feet below ground level recently. Since 2000, IDWR's groundwater level monitoring implies that groundwater levels have been increasing in wells near Carey. However, this inference was based on a limited number of data points. The long term dropping of the water table is thought to coincide with the installation of more efficient sprinkler irrigation systems which replaced the predominant gravity channel irrigation methods. While sprinkler irrigation has conserved water for surface application and decreased the number of water-short irrigation seasons, it appears to have lead to less recharging of the aquifer.

3.3.1.3 Channel Instability, Erosion, and Sedimentation

IDWR has declared the Little Wood River channel(s) from the Diversion to the confluence with Silver Creek a dry stream. The existing river channel(s) are currently used only during peak spring runoff when water storage in the Little Wood Reservoir has reached capacity and inflow exceeds irrigation requirements. This typically occurs from April to June. The Little Wood River in the project area does not experience "channel-forming flow" (about a 2-year runoff occurrence) typical of perennial streams. Channel-forming flow is the flow that essentially shapes perennial channels to transport both water and sediment most efficiently with the least amount of channel instability. Instead, the river flow characteristics are more like that of an ephemeral system. The channel is dry most of the year and may not ever flow in drier years.

Flows that do occur during high-water spring runoff (April to June) are greater than an average 2-year occurrence flow and generally are of longer duration. The existing channel geometries have readjusted to the "managed" or manipulated flows. Some of this readjustment has occurred naturally in response to the altered flows, and some channel sections have been mechanically changed.

On a gross scale the river channel(s) exhibits three separate reaches. The upper reach is from the Diversion to the Hill Road bridge crossing. The second reach is from Hill Road to the splitter structure near the center of Carey. The third reach is from the splitter to the confluence with Silver Creek and includes two channels through most of the reach.

Reach 1 is roughly 2-1/4 miles long. This reach exhibits remnant "natural" riparian characteristics with an existing floodplain, defined channel and multi-layer riparian vegetation. The channel is developed in coarse cobble and gravel. No areas of accelerated channel instability were noted in this reach. The lack of year-round flow and attenuation of the peak flood flows have probably resulted in the channel becoming underfit. That is, the bedload deposits in this reach likely exceed what would occur with a "natural" hydrograph. Capacity of the channel is also likely diminished. However, because of the presence of the available floodplain, any flooding that does occur in this reach does not result in greatly accelerated channel erosion or impacts on man-made structures or facilities within the reach.

Reach 2 is roughly 3-1/2 miles long. This reach is the most unstable channel section of the existing river. Frequent mechanical manipulation of the channel (bulldozers) has resulted in a channel that is too wide and shallow to transport bedload during the spring runoff and flooding events. The channel is developed in loose gravel and cobble, and frequent manipulation ensures that the channel bed and banks remain fairly mobile. This increases bedload movement and deposition, while decreasing associated channel stability, translating to capacity problems during higher flow events. The "channel maintenance" activities have also resulted in a nearly total lack of any type of riparian vegetation in this reach, further exacerbating channel instability. Gravel mining occurs in this reach, with the bedload materials in the channel used as an unofficial gravel pit.

Reach 3 is roughly 14 miles long, with two river channels in the upper 10 miles. These channels are also highly managed but have developed into fairly stable conveyances. The channels in this reach are more canal-like with established u-shaped channels, cobble and gravel bed with some sections of trash and riprap covered banks. The bed and bank materials get progressively finer downstream, with the lower parts developed in sandy-loamy banks and gravel bed. Very narrow bands of riparian vegetation consisting mainly of herbaceous vegetation bank cover and occasional sage, cottonwood and willow exist along most of the reach. There is very little evidence of any accelerated instability or erosion along reach 3.

3.3.2 Environmental Consequences

3.2.2.1 Significance Criteria

Impacts on water resources would be considered significant if any of the following would occur:

- The Proposed Action would result in degraded water quality to surface

waters within and downstream of the project area.

- Flows in the Little Wood River, East Canal, or the West Canal downstream of the diversion structure would decrease such that the riparian vegetation found in the upper section of the project area could not be sustained.
- Groundwater recharge would decrease from current levels resulting in a reduction to the groundwater table as a direct result of the Proposed Action.
- Flow diversions to Carey Lake could not be maintained at current levels.
- Project-related flow releases from Little Wood Reservoir would result in increased Little Wood River channel instability and bank erosion below the dam.

3.3.2.2 No Action Alternative

No impacts on floodplains or water resources would occur under the No Action Alternative. A slight change to groundwater levels would likely occur by conversion to sprinkler irrigation from the remaining flood irrigation systems.

3.3.2.3 Proposed Action

Surface Water Quality

The Proposed Action is expected to decrease the amount of water that is diverted into the Little Wood Irrigation District conveyance system. The water that will remain in the Little Wood River is expected to primarily seep into the underlying alluvium and basalt materials. While this hyporheic seepage may provide riparian benefits, there will not be enough flow to support aquatic beneficial uses within the channel itself and no change to the Integrated 303(d)/305(b) List is anticipated to be necessary.

With the Proposed Action eliminating planned flows in a majority of the existing canal network, delivery of sediments and nutrients, especially phosphorous, to the Little Wood River below the project area would be reduced since surface water runoff resulting from over-irrigation of fields would enter dry canals and infiltrate as opposed to being conveyed downstream. Potentially beneficial effects to surface water quality would likely occur over the long term.

Surface Water Quantity

As depicted in Figure 6, the new pipeline would carry approximately 165 cfs of water for irrigation, and 6 to 20 cfs to the Carey Lake Wildlife Area. This is in contrast with approximately 300 cfs historically diverted from the river into the East and West Canals, combined. The difference in the amount diverted is attributable to seepage, whereby the new system will not require additional diversions to yield sufficient water to farmers after seepage losses in the conveyance system. To address groundwater recharge and support riparian vegetation, 20 to 30 cfs would be sent to the East Canal and 15 to 25 cfs would be sent to the West Canal. As a result of the reduced flow requirements to the pipeline and East and West Canals, water may either be retained in the Little Wood River Reservoir or allowed to flow past the river diversion structure for a longer period of time. Flow in the Little Wood River would still be variable, but would be increased from pre-project conditions according to preliminary calculations. The water delivered to Carey Lake could be better managed to allow for delivery earlier or later in the season to enhance the Wildlife Management Plan.

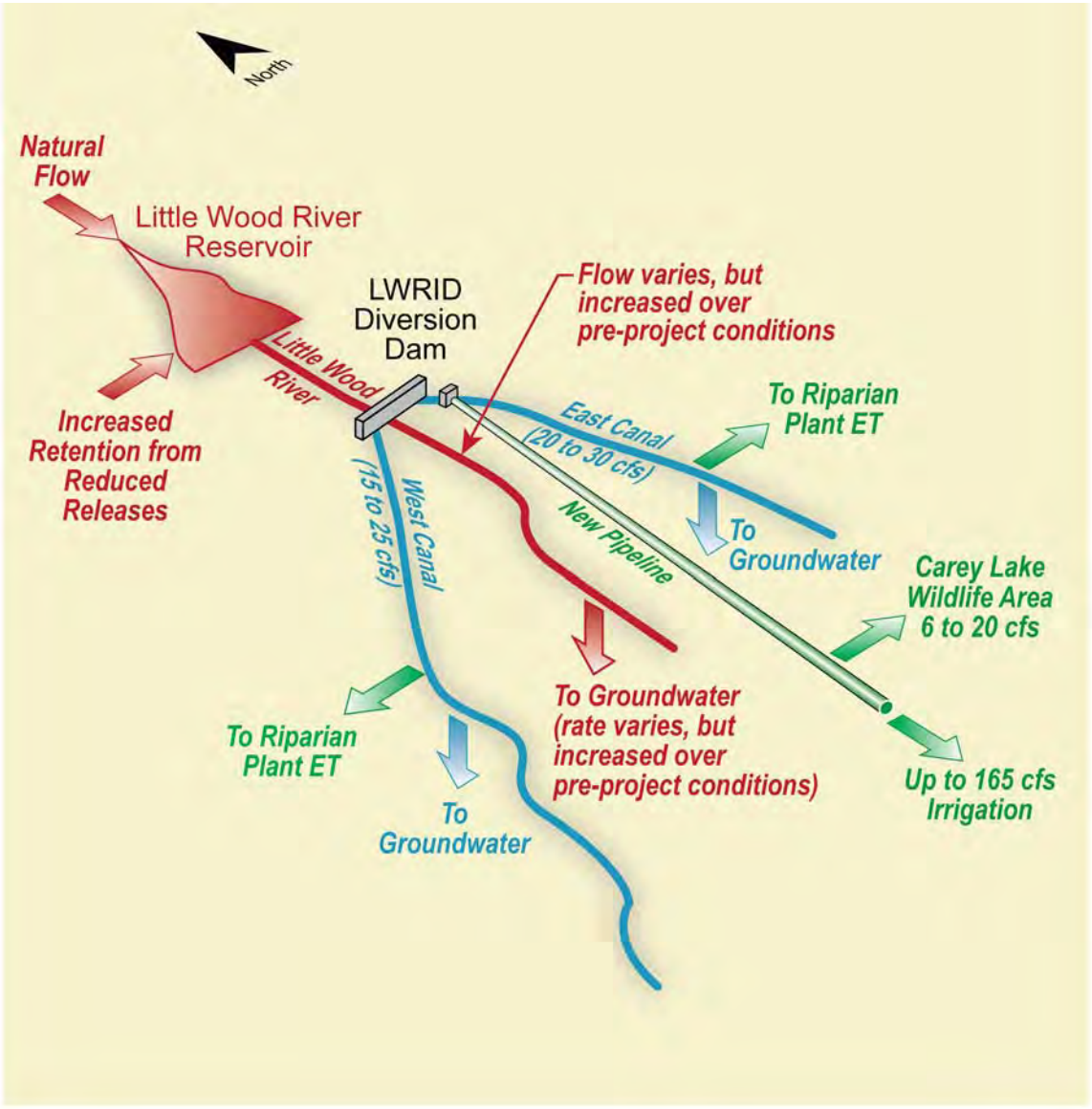


FIGURE 6
Post-Project Water Budget

Notes: Data provided by LWRID (Simpson, 2009). Water available to be released to Little Wood River past diversion structure dependent upon reservoir volume at the start of the irrigation season and daily reservoir inflow rates.

Using historical water data to project the Proposed Action onto 3 previous years during the irrigation season of April through September, the increased amount of water that would be available to the river between the diversion dam and the confluence of Silver Creek can be quantified, as illustrated in Figure 7. The overall reduction in diversions from the river, because of the elimination of most seepage losses in the conveyance system, permits more water to remain in the river channel under most circumstances. In 2006, had the Proposed Action been in place, more than 60 percent of the total flow from the reservoir would have been released to the river downstream of the diversion dam, a greater than 10 percent increase from the historical situation. In 2007, which was a low water year, the

Proposed Action would have increased the total flow to the river below the existing canal diversion by approximately 15 percent resulting in a slight increase to the overall percentage of water available to the river. The river's circumstances in 2008 would have been greatly modified if operating under the Proposed Action, with nearly 15 percent of the total flow going to the river downstream of the diversion structure as opposed to less than 10 percent flowing past the diversion under existing conditions. However, while flows to the Little Wood River below the diversion dam would most likely increase after the construction of the Proposed Action, providing potentially beneficial effects to surface water quantity, the gains in flow to the river will not be great enough to overcome the river channel's own seepage losses and change the river's status as an intermittent river.

Groundwater Quantity

While the new pipeline itself will have no seepage losses, the overall management of water by the Little Wood River Irrigation District will include seepage as a component of water usage. This seepage would most likely occur at different times, locations, and intensity from the existing open channel irrigation delivery system, so there is a potential for localized changes in groundwater levels. However, the careful maintenance of adequate flows to the Little Wood River and the existing East and West Canals would be instituted to prevent significant changes to the groundwater levels around Carey. With less evaporation loss from the irrigation system, the irrigation district should have more water available for groundwater recharge even while maintaining adequate irrigation water supply, resulting in potentially beneficial effects.

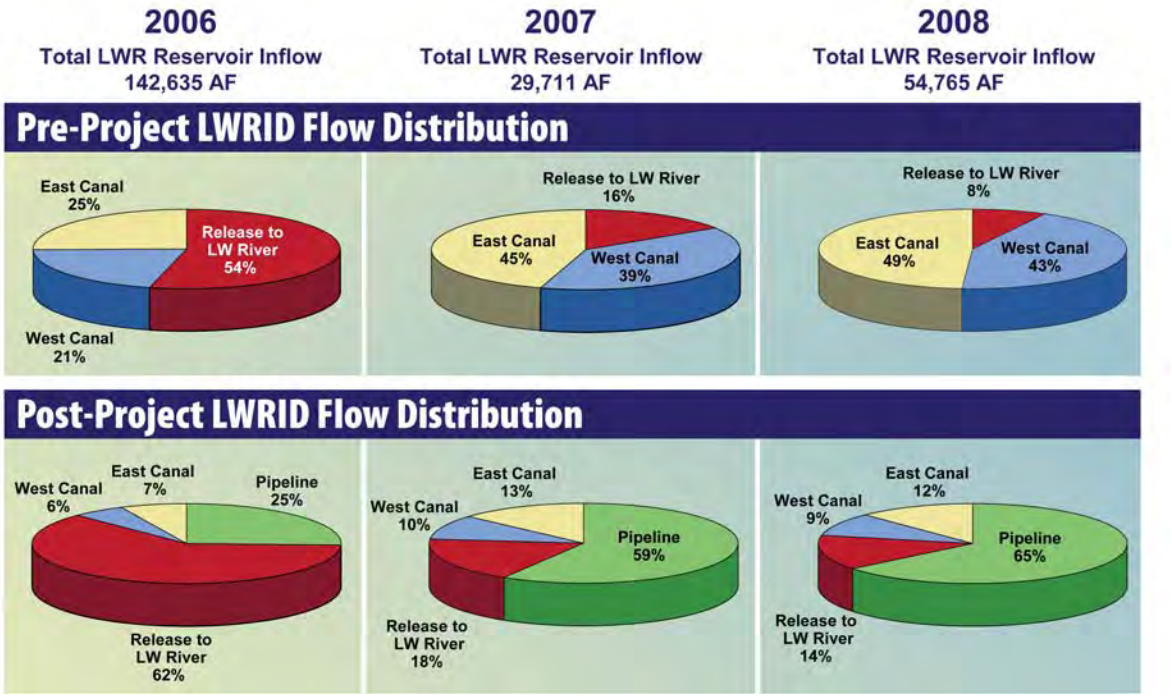


FIGURE 7
Pre- and Post-Project Flow Distribution

Channel Instability, Erosion, and Sedimentation

The Proposed Action's ability to bypass a portion of the Little Wood River near Carey during large flood events should decrease the amount of erosion in this section of channel along the river. A reduction in flow through the canals is anticipated to decrease the amount of sedimentation caused by the return of irrigation water to the river. While the Proposed Action will increase the flow sent through the river channel, this will be well within the traditional flow rates through the Little Wood River and is unlikely to cause noticeable change to the river bed.

Average river flows would increase under the Proposed Action. Flows would be higher all year than with present reservoir and river management. Most of the average monthly flows would remain at less than 50 cfs with no impacts on channel integrity. However April, May, and June flows would be higher with the Proposed Action. Projected flows for April, May, and June in the main channel below the diversion would average 245 cfs, 233 cfs, and 240 cfs respectively. These correspond to just less than a 5-year runoff event. These flows are not anticipated to result in any significant channel instability.

The proposed changes in flow would not be expected to result in direct, indirect or cumulative impacts.

3.4 Fisheries

Fisheries resources discussed in this EA include those found in the project area and surrounding areas that may be influenced by the proposed project.

3.4.1 Affected Environment

Historically, the Little Wood River provided habitat for redband trout *(Oncorhynchus mykiss gairdnerii),* a subspecies of the rainbow trout (*Oncorhynchus mykiss)*. Today, no evidence supports the presence of redband trout downstream of the Little Wood Reservoir and remaining populations or individuals above the Little Wood Reservoir are anecdotal (Megargly, 2009). Rainbow trout are native to the Upper Snake River Basin; however, the Little Wood River is separated from historic rainbow habitat in the Snake River by falls in the Little Malad River below Gooding, Idaho.

The Wood River sculpin *(Cottus leiopomus)* is endemic to the Wood River system. It was first collected in 1893 from the Little Wood River near Shoshone and has since been collected from the Little Wood River above the Little Wood Reservoir, the Big Wood River, and tributaries (Simpson and Wallace, 1978). Sculpin are often used as an indicator of high water quality (high oxygen, cool temperatures, and low levels of pollution) and in turn, land use strategies that degrade water quality in the system (for example, land development, water diversion and poor land management practices) pose an immediate threat to the species.

The U.S. Geological Survey sampled fish at 30 sites in the Upper Snake River Basin between 1993 and 1995 (Maret, 1997). One site was the Little Wood River above High Five Creek (upstream of the Little Wood Reservoir). The following species were collected:

- Wood River sculpin *Cottus leiopomus* (Native)
- Speckled dace *Rhinichthys osculus* (Native)
- Brook trout *Salvelinus fontinalis* (Introduced)
- Mountain whitefish *Prosopium williamsoni* (Native)
- Rainbow trout *Oncorhynchus mykiss* (native in the Snake River downstream from Shoshone Falls)

Currently no permanent fishery exists in the project area—primarily because of loss of surface flow during all but wet years. From the point of irrigation diversion to the confluence with Silver Creek no permanent water exists (except during wet years) and, therefore, no permanent fish habitat. Water does back up in the Little Wood river channel at the confluence, providing some permanent habitat, but this is a function of the flow supplied from Silver Creek and not water flowing through the project area.

There are adjacent fisheries upstream and downstream of the project area, as well as at Carey Lake. The Idaho Fish and Game Department (IDFG) manages the river between Little Wood Dam and the irrigation diversion structure as a put-and-take fishery. Catchable size hatchery rainbow trout are planted in this section of the river annually for recreation purposes. Trout are also planted in the Little Wood River Reservoir. As planting takes place yearly, it is inferred that natural reproduction is insufficient to support a self-sustaining fishery (Megargly, 2009).

When water supplies are adequate, the reservoir also provides opportunities as a coldwater sport fishery; however. the reservoir is primarily managed to store and deliver irrigation water. Rainbow trout, cutthroat trout (*Oncorhynchus clarki*), brook trout, and kokanee salmon (*Oncorhynchus nerka*) are the most common catches (Public Lands Information Center, 2009).

The outlet from the reservoir is currently unscreened and fish are likely lost to the river downstream between the reservoir and the diversion dam. This section of the Little Wood River is approximately 3 miles long. Anglers are successful in this incidental and augmented fishery, but access is limited by private land. The size of this fishery is dependent on planting, the number of fish escaping the dam, and flows maintained in this section of the river. Fish in this section of the Little Wood River are also subject to loss by going over the Diversion's spillway or down the irrigation canals. Planting of hatchery fish by the IDFG in this section is augmented by additional stocking underwritten by the LWRID to mitigate potential losses resulting from the unscreened outlet.

Downstream of the project area (below the confluence of the Little Wood River with Silver Creek) a fishery consisting of hatchery rainbow and brown trout *(Salmo trutta)* has become naturalized. This fishery is self-sustaining with minimal stocking. IDFG monitors this fishery by electrofishing at Beartrack Williams public access site.

Carey Lake is currently managed as a multi-species warm water fishery by IDFG, including largemouth bass (*Micropterus salmoides*), bluegill (*Leponis macrochirus*), brown bullhead (*Ictalurus nebulosus),* and channel catfish (*Ictalurus natalis*). Hot Springs east of the lake provide enough warm water during the winter to keep a portion of the lake ice free, promoting a self-sustaining fishery. When irrigation flows are released from Little Wood Reservoir, water is delivered from the East Canal to Carey Lake to manage the lake level for fish and wildlife.

3.4.2 Environmental Consequences

3.4.2.1 Significance Criteria

Impacts on fisheries would be considered significant if project implementation would be expected to reduce overall reproductive fitness of established fisheries and other aquatic resources through such means as the following:

- Increased introduction of invasive species
- Reduced habitat availability and function for established fisheries and aquatic resource populations (including deleterious impacts on the riparian corridor, increased erosion, decreased bank stability and/or altered flows)
- Mortality to fish or other aquatic resources that would not occur under current conditions

3.4.2.2 No Action Alternative

Under the No Action Alternative, conditions would remain the same as currently found in the project area. No changes in current operation of the reservoir and irrigation system would occur. Therefore, the No Action Alternative would have no direct, indirect, or cumulative impacts.

3.4.2.3 Proposed Action—Optimized System Upgrade Alternative

Average river flows would increase under the Proposed Action. Flows under the Proposed Action would be higher all year than those occurring under current reservoir and river management. Most of the average monthly flows would remain at less then 50 cfs with no impacts on channel integrity. However April, May, and June flows would be higher than 50 cfs under the Proposed Action. Projected flows for April, May, and June in the main channel below the diversion would average 245 cfs, 233 cfs, and 240 cfs respectively. These correspond to just less than a 5-year runoff event. These flows are not anticipated to result in any significant channel instability and may provide enough additional hydrology to improve habitat quality and availability to existing fisheries and aquatic resources in the area. The proposed changes in flow in the Little Wood River are anticipated to result in beneficial direct, indirect, and cumulative impacts for fisheries.

The proposed changes in flow would not be expected to result in deleterious direct, indirect or cumulative impacts. There may be insignificant indirect impacts on the incidental rainbow trout fishery between Little Wood Reservoir and the diversion structure that would occur under the Proposed Action. This would potentially occur through entrainment of fish from changes in the timing of releases from the reservoir. Such indirect impacts however are not anticipated because all intakes would be screened in accordance with IDFG standards.

Increased flows in the main channel of the Little Wood River have the potential to result in beneficial direct, indirect or cumulative impacts for fisheries and aquatic resources, both within the project area and downstream. These may occur through increased habitat quality and quantity available throughout the year. Additional flows and increased high flow events that would occur under the Proposed Action would create scour, transport sediment downstream, and provide additional water for adjacent riparian vegetation. The fishery at Carey Lake would also likely benefit from added flows. Additional flows that would be released into Carey Lake would need to be coordinated with IDFG so that no potential harm to resident wildlife populations and/or interference with spawning times of established warm water fishery populations would occur. Additionally, the fishery downstream of the confluence with Silver Creek is expected to benefit from increased flows and decreased water temperatures during times of year that flow would extend downstream.

3.5 Vegetation

Vegetation resources include native, agricultural, and disturbed habitats. Native habitats include riparian and wetland areas and upland shrub plant communities. Agriculture includes crop and livestock operations. Disturbed habitats include urban, farmstead, and roaded areas.

3.5.1 Affected Environment

General vegetation mapping was completed in April 2009. Resulting acres calculated from mapped boundaries are provided in Table 4. This table combines both native habitat and vegetation associated with various land use categories. Figures 8 and 9 provide map results for the project analysis area. Constructed structures and the vegetation associated with them (farm/urban dwellings) and roadways make up approximately 139 acres. These categories will not be discussed further. Although vegetation categories associated with wetland habitats, including cottonwood, reed canarygrass, and willow are described here, wetlands and their vegetation are described in detail in Section 3.8. The wetland associated habitats discussed in this section are not related to jurisdictional wetlands as defined under the Clean Water Act.

3.5.1.1 Agricultural Land

The majority of land in the project area has been converted from sagebrush steppe for agriculture use. Agricultural land varies and includes unimproved rangeland, dryland farmland, and irrigated tilled farmland. Approximately 506 acres of agricultural lands exist within the project analysis area. The short growing season in this area of Idaho limits primary agriculture crops to alfalfa, grains, and pasture land for a few dairy and beef cattle. Alfalfa hay is the predominant irrigated crop within the project area comprising more than half of the acres cropped (Stene, 1996). In a typical year, barley, oats, wheat, other hays, irrigated pasture, silage and ensilage, seed potatoes, and early potatoes make up remaining crop production on agriculture lands.

TABLE 4
Total Acres by Vegetation Cover Category or Land Use Classes for Proposed Project Area

Land Use/Habitat Category	Number of Mapped Units	Total Acres
Agriculture	68	505.7
Cottonwood	34	33.9
Sagebrush	27	71.1
Reed canarygrass	9	17.7
Willow	11	7.5
Road area	23	69.1
Farm or urban	40	69.9

3.5.1.2 Upland Vegetation

Sagebrush (*Artemisia tridentata*), sometimes with a component of bitterbrush (*Purshia tridentata*), is the most common upland vegetation type in the project area, and the only one with extensive enough acres to map and quantify. Approximately 71 acres of sagebrush habitat exist in the project area. Big sagebrush is the predominant overstory shrub in this vegetation type with an understory of forbs and grasses. Bluebunch wheatgrass (*Pseudoroegneria spicatum*) and Idaho fescue *(Festuca idahoensis*) are the common grass species with a large forb component, including arrowleaf balsamroot (*Balsamorhiza*

sagittata), Munro's globemallow (*Sphaeralcea munroana*), phlox, penstemon, and tapertip onion (*Allium acuminatum*).

3.5.1.3 Riparian and Riverine Cottonwood and Willow Vegetation

Diversion of the Little Wood River for irrigation has reduced riparian woodland vegetation in the river channel and extended it in areas along main canals. The resulting riparian and riverine vegetation along the Little Wood River channel and irrigation canals currently is dominated by approximately 34 acres of black cottonwood (*Populus balsamifera ssp. trichocarpa*), 8 acres of willows (*Salix lasiandra, Salix lemmonii, Salix exigua* and *Salix lutea*), and 18 acres of reed canarygrass (*Phalaris arundinacea*) habitat.

Black cottonwood in the upper regions of the system are dependant on water spilled over the diversion dam into the river channel and water seepage from the east and west canals. At the lowermost part of the irrigation system enough water is present to support willows on canal and riverbanks. Excess water collects as a result of problems with irrigation scheduling and system maintenance, as well as some tailwater from surface irrigated fields. This water runs through the canal system and into the old river channels.

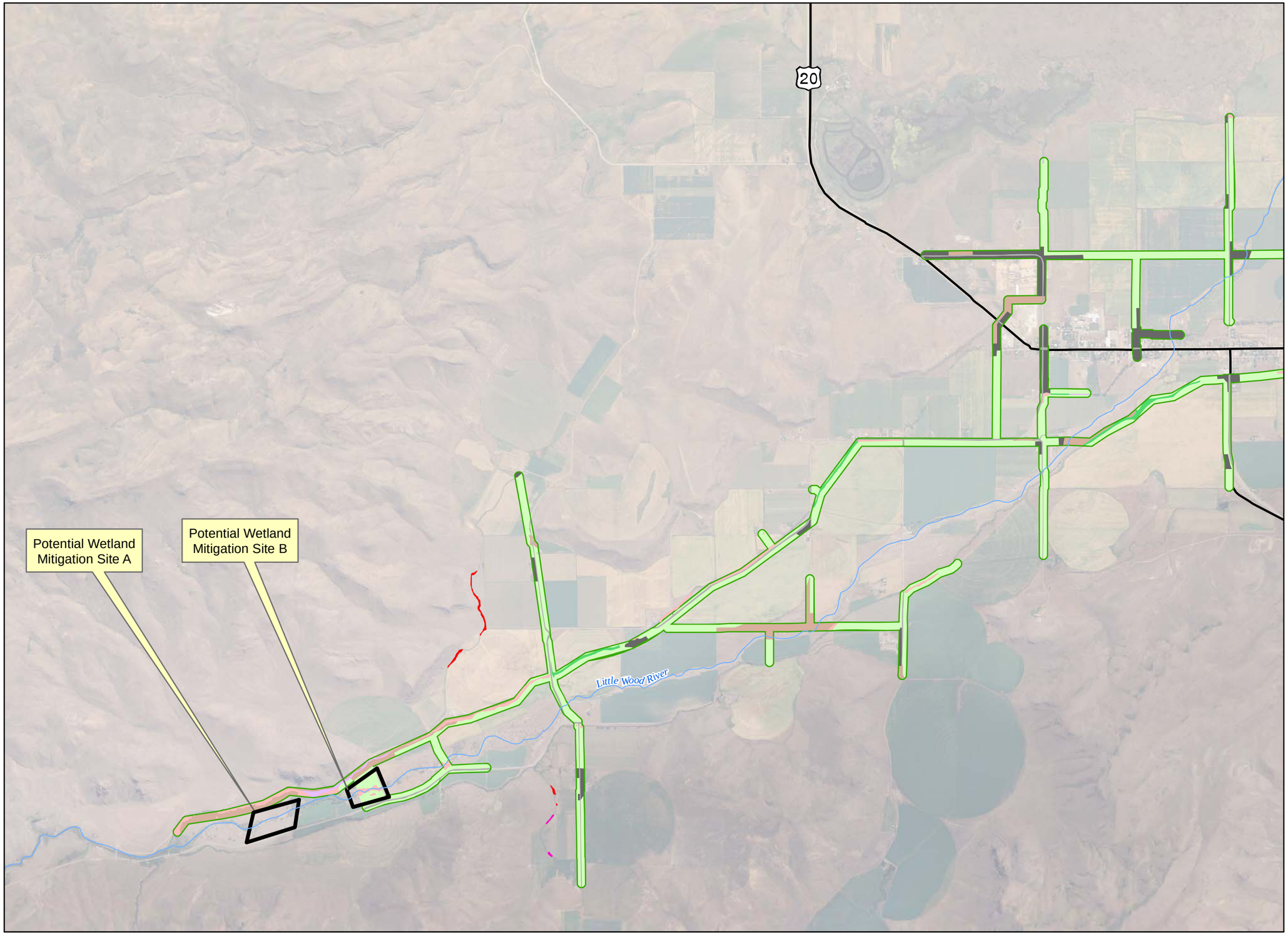
Cottonwood and willow scrub-shrub habitat must be supported by adequate hydrology to both survive and to reproduce. These habitats have survived near the dam and along the historic Little Wood River channel because enough water is available to support them early in the spring before irrigation demands are at their peak. They also occur as very linear habitat along irrigation channels in other areas. Loss of in-channel flows diverted for agriculture, as well as the naturally occurring porous soils that facilitate rapid transfer of surface flows subsurface, are the primary reasons these habitats are limited in their extent.

Other vegetation found in willow- and cottonwood-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*).

Reed canarygrass is the dominant vegetation along the lower reaches of the canal system and along the lower river reach where irrigation tailwater accumulates. This is an invasive wetland grass that tends to form monocultures. It is not considered to be native to this part of Idaho.

3.5.1.4 Noxious Weeds

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, was found throughout the area, but occurrences are primarily restricted to canal and ditch banks and to intensively used pasture. Other weeds, such as rough cocklebur (*Xanthium strumarium*), were also found in a few areas.



Little Wood River
Proposed Pipeline Area
Highways
Wetland Mitigation Area
Agriculture
Cottonwood
Cottonwood to be lost
Farm Urban Area
Reed Canarygrass
Road Area
Sagebrush
Willow
Willow to be Lost

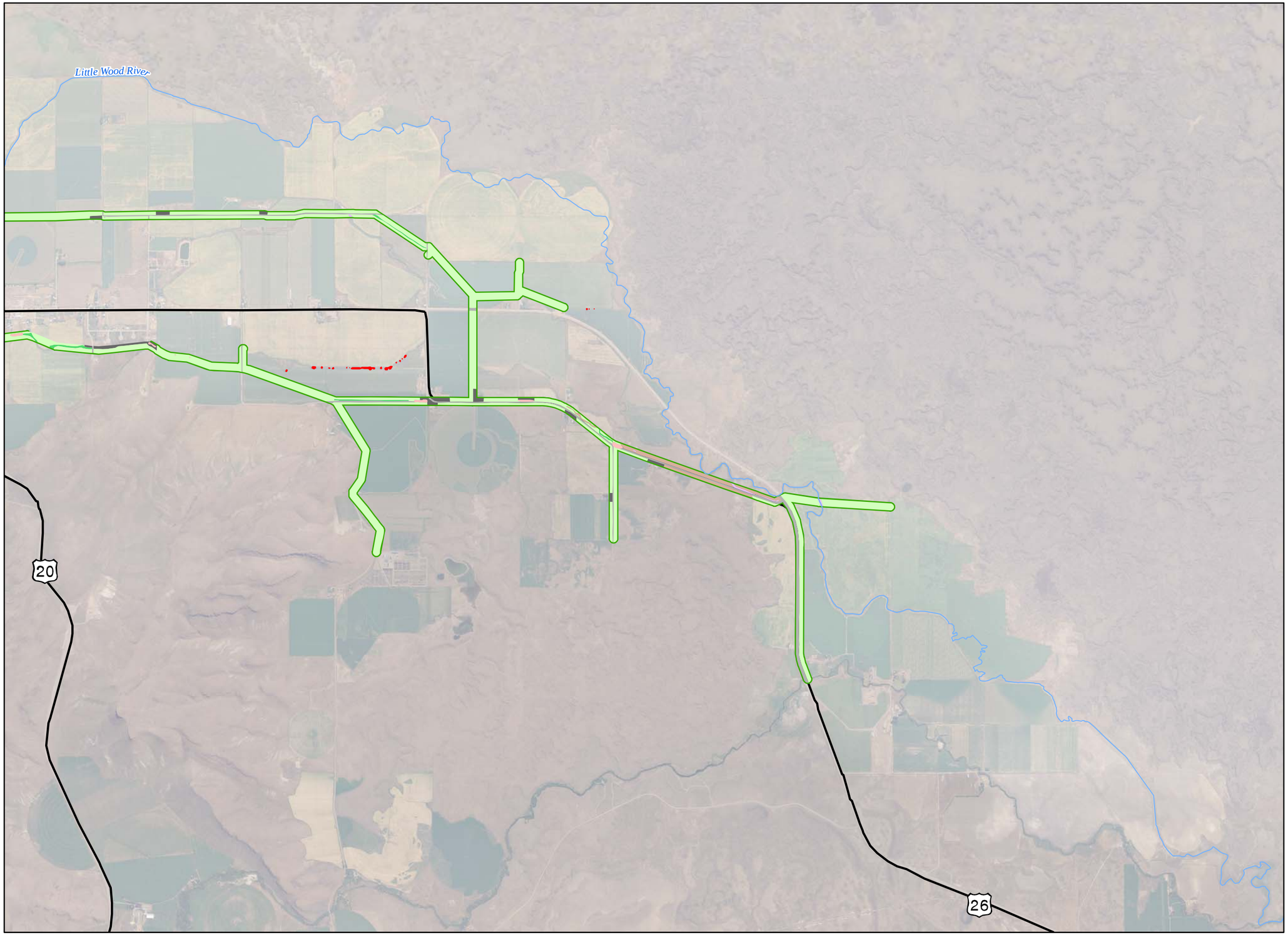
N

0 0.25 0.5 1 Miles

Source: ESRI base data,
INSIDE Idaho, NRCS, LWRID

Figure 8
Vegetation, North
Little Wood River Irrigation District
Pressurized Pipeline Irrigation
Delivery System

CH2MHILL



Little Wood River
Proposed Pipeline Area
Highways
Agriculture
Cottonwood
Cottonwood to be lost
Farm Urban Area
Reed Canarygrass
Road Area
Sagebrush
Willow
Willow to be Lost

N

0 0.25 0.5 1 Miles

Source: ESRI base data,
INSIDE Idaho, NRCS, LWRID

Figure 9
Vegetation, South
Little Wood River Irrigation District
Pressurized Pipeline Irrigation
Delivery System

CH2MHILL

3.5.2 Environmental Consequences

3.5.2.1 Significance Criteria

Impacts on vegetation resources would be considered significant if project implementation would be expected to reduce overall native vegetation resources through such means as the following:

- Increased introduction of invasive species, particularly of legally noxious weeds and/or cheatgrass
- Reduced habitat availability and function for wildlife habitat, especially breeding bird habitat, from reduction in riparian forested and/or shrub habitat from altered flows
- Mortality to native cottonwood and shrub-scrub that would result in a net long-term decrease in acres of these habitats compared to current conditions

3.5.2.2 No Action Alternative

Under the No Action Alternative, conditions would remain the same as currently found in the project area. No changes in current operation of the reservoir and irrigation system would occur. Therefore, the No Action Alternative would have no direct, indirect, or cumulative impacts.

3.5.2.3 Proposed Action—Optimized System Upgrade Alternative

Average river flows would increase under the Proposed Action. Flows under the Proposed Action would be higher all year, than those occurring under current reservoir and river management. Most of the average monthly flows would remain at less than 50 cfs with no impacts on channel integrity. However April, May, and June flows would be higher than 50 cfs under the Proposed Action. Projected flows for April, May, and June would average 245 cfs, 233 cfs, and 240 cfs, respectively. These correspond to just less than a 5-year runoff event. These flows may provide some additional hydrology to cottonwood and willow habitat quality along the Little Wood Channel.

Increased flows in the main channel of the Little Wood River have the potential to result in beneficial direct, indirect, or cumulative impacts for vegetation resources, both within the project area and downstream. Increased flows may allow natural revegetation to extend some degree downstream along the currently dry main channel of the Little Wood River. Additional flows and increased high flow events that would occur under the Proposed Action would create scour, transport sediment and cottonwood, willow, alder, and dogwood seeds downstream and provide additional water for adjacent riparian vegetation.

The proposed changes in flow are expected to reduce hydrology to approximately 5.7 acres of cottonwood along canals. This reduction in hydrology is expected to have an indirect but potentially lethal effect to linear cottonwood corridors that line the lower canals. In the same regard, approximately 0.6 acres of linear willow habitat are expected to die along lower canals. The loss of cottonwood and willow riparian habitat along canals would be compensated by planting an equal amount of habitat (5.7 acres of cottonwood and 0.6 acre of willow) along the Little Wood River and upper East and West Canals where water flows are expected to remain after project implementation. Plantings will be concentrated as inter-plantings along the upper river and canal channels

where woody vegetation is lacking, but where hydrology will be present. Cottonwood and willows will also be planted just downstream of the lowest present extent of similar vegetation along the river channel (see Figures 8 and 9).

Overall, only minimal impacts on vegetation resources would occur over the short term. Implementation of compensation measures would result in no direct, indirect, or cumulative impacts on vegetation resources over the long term.

3.6 Wildlife

This section describes the affected environment and potential impacts on wildlife and wildlife habitat from construction of the proposed pipeline and the potential dewatering of aboveground irrigation canals.

3.6.1 Affected Environment

The proposed project area primarily consists of three native vegetation cover types: riparian areas dominated by cottonwood; riparian scrub-scrub zones dominated by willows and alder with chokecherry and serviceberry; and sagebrush. These vegetation cover types will be analyzed based upon their potential habitat value to wildlife. Agriculture lands and disturbed lands may provide some useful habitat for some species. For example gray partridge (*Perdix perdix*) and coyote (*Canis latrans*) may use such areas. However, the majority of high quality wildlife habitats are associated with native vegetation communities. Weed infested lands have virtually no value as wildlife habitat and will not be discussed further in this section. Descriptions of mapped vegetation types, habitat each provide, and wildlife species noted in each are described below by vegetation type. Because of the linear nature of most habitats within the project area, especially riparian and wetland habitat, primary potential impacts are expected to affect bird species.

3.6.1.1 Cottonwood-Dominated Forested Riparian Corridors

Black cottonwood stands are found along many areas of the Little Wood River and current irrigation canals. Sometimes they are mixed with yellow willow (*Salix lutea*), which is a tree willow. Cottonwood is present along some canals in a fringe of almost pure cottonwood. They are also present in many areas dominated by shrub willows and alder. Many of these will not be dewatered or will receive high flows every 3 to 4 years, which will allow some regeneration and continuation. Cottonwood stands are high value wildlife habitats that are essential for reproduction for many species and used for hiding cover for others.

Wildlife 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*), red-tailed hawk (*Buteo jamaicensis*), mule deer (*Odocoileus hemionus*), and Swainson's hawk (*Buteo swainsoni*) were all observed in this habitat. These raptors also likely use cottonwood stands for nesting substrate. Even relatively narrow cottonwood riparian corridors along irrigation canals had large numbers of birds, particularly orioles, mourning doves, western wood pewees, and robins.

3.6.1.2 Willow-Dominated Shrub-Scrub Habitats

Willow-dominated riparian and shrub-scrub wetlands are some of the most productive bird nesting habitat within the project area. This habitat typically included 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 were found in this habitat. The following species were all observed in

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*).

3.6.1.3 Sagebrush-Dominated Upland Habitats

In Idaho, sagebrush is primary habitat for a number of high priority or target bird species: sage grouse (*Centrocercus urophasianus*), ferruginous hawk (*Buteo regalis*), long-billed curlew (*Numenius americanus*), Brewer's sparrow (*Spizella breweri*), sage sparrow (*Amphispiza belli*), Swainson's hawk (*Buteo swainsoni*), sharp-tailed grouse (*Tympanuchus phasianellus columbianus*), burrowing owl (*Athene cunicularia*), sage thrasher (*Oreoscoptes montanus*), loggerhead shrike (*Lanius ludovicianus*), prairie falcon (*Falco mexicanus*), and western meadowlark (*Sturnella neglecta*) (Ritter, 2000). In the project area, one long-billed curlew was observed flying across sagebrush habitat in April.

Bitterbrush, which is present in some areas in association with sagebrush, is important winter browse for wild ungulates, particularly mule deer (Griffith and Peek, 1989). Loggerhead shrikes, a priority species in Idaho, nest primarily in sagebrush (60 percent) but bitterbrush is chosen as nesting substrate 20 percent of the time (Woods and Cade, 1996). Bitterbrush is an important food source for microtines, which eat the large seeds. Deer mice (*Peromyscus maniculatus*) harvest and store the large seeds for later consumption (Clements and Young, 1996).

Species observed using this habitat in the project area include western meadowlark (*Sturnella neglecta*), turkey vulture (*Cathartes aura*), northern harrier (*Circus cyaneus*), short-eared owl (*Asio flammeus*), western kingbird (*Tyrannus verticalis*), common raven (*Corvus corax)* and black-billed magpie (*Pica pica*).

3.6.2 Environmental Consequences

3.6.2.1 Significance Criteria

Impacts on wildlife resources would be considered significant if project implementation would be expected to reduce overall wildlife resources through such means as the following:

- Reduced habitat availability and function for wildlife habitat, especially breeding bird habitat, from reduction in riparian forested and/or shrub habitat from altered flows
- Mortality to wildlife species

3.6.2.2 No Action Alternative

Under the No Action Alternative, conditions would remain the same as currently found in the project area. No changes in current operation of the reservoir and irrigation system would occur. Therefore, the No Action Alternative would have no direct, indirect, or cumulative impacts on wildlife resources compared to current conditions.

3.6.2.3 Proposed Action—Optimized System Upgrade Alternative

Average river flows would increase under the Proposed Action. Flows under the Proposed Action would be higher all year, than those occurring under current

reservoir and river management. Most of the average monthly flows would remain at less than 50 cfs with no impacts on channel integrity. However April, May, and June flows would be higher than 50 cfs under the Proposed Action. Projected flows for April, May and June average 245 cfs, 233 cfs, and 240 cfs, respectively. These correspond to just less than a 5-year runoff event. These flows may provide some additional hydrology to cottonwood and willow habitat quality along the Little Wood Channel.

Increased flows in the main channel of the Little Wood River have the potential to result in beneficial direct, indirect or cumulative impacts for vegetation resources in the historic channel and its floodplain, both within the project area and downstream. Increased flows may allow natural revegetation to extend some degree downstream along the currently dry main channel of the Little Wood River. Additional flows and increased high flow events that would occur under the Proposed Action would create scour, transport sediment and cottonwood, willow, alder, and dogwood seeds downstream and across the historic floodplain and provide additional water for adjacent riparian vegetation and potentially significant improvement to wildlife habitat. These changes would be expected to increase breeding bird habitat to some degree. They would also be expected to increase amphibian habitat if they allow standing water areas to remain longer and thus provide additional time for tadpoles and young salamanders to mature. They may provide additional habitat for shorebird nesting (for example, killdeer, avocet, and stilts).

As discussed under vegetation resources, there are expected losses of linear woody vegetation along some canals. These cottonwood galleries are known to support nesting Bullock's orioles, American robins, western wood pewees and nesting raptors. This reduction in hydrology is expected to have an indirect but potentially lethal effect to linear cottonwood and willow corridors that line the lower canal. This would result in indirect affects to breeding birds. However, the impacts would occur over time and would not be responsible for direct mortality to migratory bird species. The indirect impacts from the loss of linear habitats may be offset, in time, with an increase in riparian habitat along the historic Little Wood channel, as well as by planting of cottonwood and willow as compensation measures for vegetation loss (see Section 3.5.2.3). Although over the short term minimal impacts on wildlife resources may occur, no direct and/or cumulative impacts are anticipated over the long term with the implementation of proposed mitigation measures.

3.7 Federally Protected Species

The Endangered Species Act protects species that are listed as endangered or threatened, or proposed for listing, from activities that may harm or harass them. Pursuant to the Endangered Species Act, a federal agency must consult with the U.S. Fish and Wildlife Service (USFWS) or the National Oceanic and Atmospheric Administration (as appropriate) to ensure that its actions would not jeopardize the continued existence of the listed species.

Hawks, eagles, and owls are federally protected by the Bald and Golden Eagle Protection Act. All migratory birds are also protected from "take," which includes destruction of nests, eggs, and young by the Migratory Bird Treaty Act. All native bird species found to occur along the proposed right-of-way are protected from "take" by these two federal acts.

3.7.1 Affected Environment

No Endangered Species Act-listed wildlife or plant species are known to occur near the proposed project footprint. One federal Endangered Species Act candidate species, the yellow-billed cuckoo (*Coccyzus americanus occidentalis*), has been found in riparian shrub cottonwood areas in Blaine County (Reynolds and Hinckley 2005). Habitat for this species occurs in or near the project analysis area.

3.7.1.1 Yellow-Billed Cuckoo

The USFWS received a petition to list the yellow-billed cuckoo as an Endangered species in 1998. The petitioners stated that "habitat loss, overgrazing, tamarisk invasion of riparian areas, river management, logging, and pesticides have caused declines in yellow-billed cuckoo." In 2000, the USFWS found that the petition presented substantial scientific and commercial information to indicate that the listing of the yellow-billed cuckoo may be warranted. In that finding, the USFWS indicated that the factors noted by the petitioners may have caused loss, degradation, and fragmentation of riparian habitat in the West, and that loss of wintering habitat may be adversely affecting the cuckoo. In 2001, the USFWS determined that listing the yellow-billed cuckoo was warranted but precluded by higher priority species (66 FR 38611). The Western Distinct Population Segment (DPS) of the yellow-billed cuckoo was thereby given status as a Candidate species by the USFWS.

3.7.1.2 Life History and Habitat Requirements

Yellow-billed cuckoos may go unnoticed because they are slow-moving and prefer dense vegetation. In the West, yellow-billed cuckoos prefer sites with a dense understory of willow combined with mature cottonwoods and generally within 100 meters of slow or standing water (Gaines and Laymon, 1984). The yellow-billed cuckoo is also known to use non-riparian, dense vegetation such as wooded parks, cemeteries, farmsteads, tree islands, Great Basin shrub-steppe, and high-elevation willow thickets (DeGraff et al., 1991). They feed on insects (mostly caterpillars), but also beetles, fall webworms, cicadas, fruit, and, especially, berries. Breeding often coincides with the appearance of massive numbers of cicadas, caterpillars, or other large insects (Ehrlich et al., 1988).

3.7.1.3 Status of the Yellow-Billed Cuckoo in the Project Analysis Area

Recent surveys were completed across Idaho for all areas with historic records of

yellow-billed cuckoos. Although yellow-billed cuckoos in Idaho are mainly associated with cottonwood galleries along the Snake River in southeast Idaho, the species was also found during both years of surveys on the Big Wood River near Bellevue and near SH-20 in Blaine County (Reynolds and Hinckley, 2005).

For this reason, call-back surveys for yellow-billed cuckoos were completed along riparian habitats with willow and cottonwood in the project area on June 5, 2009. Five callback points were established along the project pipeline analysis area. One potential response was heard at the far north end of the project alignment. The response was at a distance and appeared to come from a wide riparian habitat outside the project area boundary on a site that will not be disturbed by the project. An additional survey point (Figure 10, ybcu-5) was established outside the analysis area in this riparian zone in order to determine if the call was the yellow-billed cuckoo. The response was not repeated and the bird did not come any closer so that it could be definitely identified. It is possible that yellow-billed cuckoos use the propose project area incidentally. They do not appear to use it for nesting.

3.7.2 Environmental Consequences

3.7.2.1 Significance Criteria

Impacts on federally protected species would be considered significant if project implementation would be expected to reduce overall federally protected species resources through the following means:

- Reduced habitat availability and function of yellow-billed cuckoo habitat, especially breeding habitat, from a reduction in riparian forested and/or shrub habitat from altered flows
- Mortality to yellow-billed cuckoos

3.7.2.2 No Action Alternative

Under the No Action Alternative, conditions would remain the same as currently found in the project area. No changes in current operation of the reservoir and irrigation system would occur. Therefore, the No Action Alternative would have no direct, indirect, or cumulative impacts on yellow-billed cuckoos compared to current conditions.

3.7.2.3 Proposed Action—Optimized System Upgrade Alternative

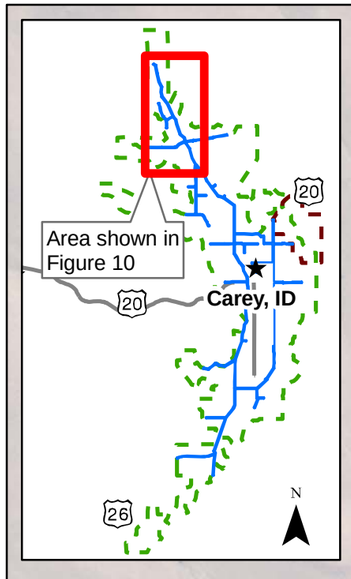
Yellow-billed cuckoos require large expanses of cottonwood and willow scrub-shrub habitats for breeding. These habitats are more diverse in areas along the historic Little Wood River channel that receive enough water to support a variety of tree and shrub species along both the historic canal and along the historic floodplains. These wider areas of high quality habitat are the best potential habitat for yellow-billed cuckoos, and these areas will either not be impacted or will improve slightly.

Irrigation has produced areas of very linear habitat along irrigation channels in other areas that produce no suitable nesting habitat for yellow-billed cuckoos. Loss of in-channel flows diverted for agriculture, as well as the naturally occurring porous soils that facilitate rapid transfer of surface flows subsurface, are the primary reasons these habitats are limited in their extent. Loss of these linear habitats is not expected to impact this species.

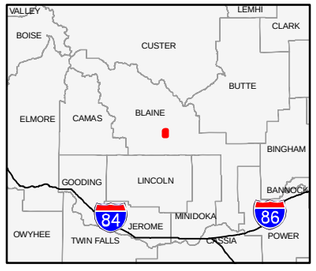
Average river flows would increase under the Proposed Action as described in Section 3.3.2.3. These flows may provide some additional hydrology to cottonwood

and willow habitat quality along the Little Wood channel.

No yellow-billed cuckoos were found during callback inventories within the proposed project analysis area. Nesting habitat within the project analysis area would provide extremely marginal canopy cover and is very linear in nature. Neither of these characteristics is considered as nesting habitat for this species. Higher quality larger extents of riparian habitat do occur in the vicinity. If nesting occurs, it would be expected to occur in these areas. No direct and/or cumulative impacts on this species are expected to occur from implementation of the Proposed Action. Indirect affects from loss of potential corridors for movement are expected to be minimal.



ybcu-6
East Canal
Mount View Rd
East Canal
Hunt Ln
Little Wood River
West Canal
ybcu-4
East Canal
ybcu-2
ybcu-3
ybcu-5
ybcu-1
West Canal



- ybcu - yellow-billed cuckoo survey point
- Little Wood River Irrigation District Boundary
- Carey Lake WMA
- Study Area

0 0.125 0.25 Miles

N

Source: NRCS, LWRID, 2004 NAIP, ESRI Base data.

Figure 10
Yellow-Billed Cuckoo Survey
June, 2009
Little Wood River Irrigation District Pressurized Pipeline Irrigation Delivery System

3.8 Wetlands

Wetlands and Waters of the U.S. were identified using methods described in the *U.S. Army Corps of Engineers Wetland Delineation Manual* (USACE, 1987) and the *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Western Mountains, Valleys, and Coast Region* (USACE, 2008). The current functional condition of existing wetlands in the project area were based on the *Montana Department of Transportation Wetland Assessment Method* (Berglund, 1999). National Wetlands Inventory data (USFWS, 2009) and Blaine County soil survey information (USDA-NRCS, 2009a and 2009b) were reviewed prior to the field investigation to identify areas of potential wetlands within the study area. All field verified wetlands were classified using the Cowardin classification system (Cowardin et al. 1979). A preliminary assessment of jurisdictional status of all delineated wetlands and Waters of the U.S. for USACE's final determination, as described in the *U.S. Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook* (USACE and EPA, 2007), was prepared. *The Little Wood River Irrigation District Pressurized Irrigation Project Wetland Delineation and Request for Jurisdictional Determination* (CH2M HILL, 2009) was submitted to USACE in August 2009. A preliminary assessment of jurisdictional status for delineated wetlands and Waters of the U.S. for the LWRID project was included in this document. The report also provides a description of wetlands and Waters of the U.S. in the project area with maps and functional assessments for each. USACE's jurisdictional determination is included in Appendix B, *Agency Correspondence*.

3.8.1 Affected Environment

A total of 0.21 acre of jurisdictional palustrine wetlands and 1,391,959 linear feet of riverine wetlands (Waters of the U.S.) have been identified within the wetland study area. Palustrine wetland areas include Wetland Complex A (0.02 acre of fringe Palustrine Emergent [PEM] and 0.18 acre of fringe Palustrine Scrub-shrub [PSS]) and Wetland B (0.01 acre of PEM fringe wetland) located on the banks of the East Canal. All wetlands in the project area are influenced by irrigation water flows in canals.

Riverine wetlands and preliminary Waters of the U.S. identified within the wetland study area include the Little Wood River (43,425 linear feet), Little Wood River overflow channel (270 linear feet), East Canal (667,757 linear feet), West Canal (599,408 linear feet), and the Carey Lake Wildlife Management Area feeder canal (81,099 linear feet). The preliminary Waters of the U.S. jurisdictional determination for riverine wetlands includes the Little Wood River (Traditional Navigable Water [TNW]), Little Wood River overflow channel (non-navigable Relatively Permanent Water [RPW]), East Canal (non-navigable RPW), West Canal (non-navigable RPW), and the Carey Lake Wildlife Management feeder canal (non-navigable RPW). Waters of the U.S. are federally regulated and require permitting under Section 404 of the Clean Water Act for fill or excavation between their ordinary high water marks. In general, mitigation for riverine wetland types is not typically required by the USACE. Table 5 summarizes wetland resources identified within the project study area.

TABLE 5
Wetlands and Waters of the U.S. Identified within the LWRID Study Area

Wetland or Waters of the U.S.	Cowardin Classification [a] Jurisdictional Determination	Area or Length	Category [b]
Wetland Complex A	PEM/Jurisdictional	0.02 acre	III
	PSS/Jurisdictional	0.18 acre	III
Wetland B	PEM/Jurisdictional	< 0.01 acre (0.004)	III
	PSS/Jurisdictional	0.01 acre	
Little Wood River	Riverine[c]/Jurisdictional	1.00 acre (43,425 linear feet)	-
Little Wood River, overflow channel	Riverine[c]/Jurisdictional	0.11 acre (270 linear feet)	-
East Canal	Riverine[c]/Jurisdictional	15.33 acres (667,757 linear feet)	-
West Canal	Riverine[c]/Jurisdictional	13.76 acres (599,408 linear feet)	-
Carey Lake Wildlife Management feeder canal	Riverine[c]/Jurisdictional	1.86 acres (81,099 linear feet)	-
Total Palustrine Wetland by Cowardin Classification			
	PEM	0.02 acre	
	PSS	0.19 acre	
	Total	**0.21 acre**	
Total Riverine/Waters of the U.S.		**32.06 acres (1,391,959 linear feet)**	

[a] Cowardin et al., 1979
[b] Berglund, 1999
[c] Acres/linear feet included under Total Riverine/Waters of the U.S.
PEM = Palustrine Emergent
PSS = Palustrine Scrub-shrub

Wetland Complex A and Wetland B are Category III PEM or PSS fringe wetlands associated with the East Canal. Dominant species within wetland communities include red osier dogwood in the shrub layer and reed canarygrass in the emergent layer. These wetlands provide moderate to low functional potential for wildlife habitat, shoreline stabilization, and biochemical functions. Wetland Complex A and Wetland B are likely subject to federal regulation because they directly abut the East Canal (non-navigable RPW) with direct connection to a TNW (Little Wood River). Palustrine wetlands are federally regulated under the Clean Water Act therefore any dredge or fill activities within their boundaries require permitting under Section 404. Mitigation for impacts on palustrine wetland types are typically required by the USACE in proportion to their functional potential.

In general, mitigation for riverine wetland types are not typically required by the USACE as they occur below the ordinary high water mark. Waters of the U.S./riverine wetlands identified within the wetland study area include the Little Wood River, Little Wood River overflow channel, and irrigation features (East

Canal, West Canal, and the Carey Lake Wildlife Management Area feeder canal).

3.8.2 Environmental Consequences

3.8.2.1 Significance Criteria

Impacts on wetlands or Waters of the U.S. would be considered significant if either of the following would occur:

- Impacts on wetland resources would be considered significant if project implementation would result in a net loss of jurisdictional wetlands after implementation of mitigation.
- Impacts on Waters of the U.S. would be considered significant if project implementation resulted in a loss of linear feet of Waters of the U.S. following construction regrading.

3.8.2.2 No Action Alternative

Under the No Action Alternative, conditions would remain the same as currently found in the project area. No changes in current operation of the reservoir and irrigation system would occur. Therefore, the No Action Alternative would have no direct, indirect, or cumulative impacts.

3.8.2.3 Proposed Action—Optimized System Upgrade Alternative

Direct Impacts

Under the Proposed Action flows in the East Canal would be reduced to 20 to 30 cfs. Flows in the West Canal would be reduced to 15 to 25 cfs. Flows are expected to completely infiltrate upstream of the City of Carey under normal circumstances. Direct impacts on Waters of the U.S. include 7,416 linear feet of existing canals to be regraded into farmable floodways to mitigate for the potential impacts of flooding. Direct temporary impacts on Waters of the U.S. include 686 linear feet of canal features that will be regraded to original contour and revegetated with a native seed mix.

Direct impacts on Waters of the U.S. (East and West Canals—7,416 linear feet) are expected to occur in three locations that would be regraded and converted into farmable floodways to mitigate for the potential impacts of flooding. These floodways would be wide at the bottom with gently sloping sides as required to allow for cultivation. Flows within the farmable floodways are anticipated during high precipitation and following snow melt events (potential flood conditions). Farmable floodway include 2,233 linear feet on the East Canal south of Little Wood Reservoir Road and approximately 0.3 mile east of Hunt Lane; 2,392 linear feet, constructed along the East Canal south of the Little Wood Reservoir Road crossing located approximately 0.8 mile north of Dry Creek Road; and 2,791 linear feet would be constructed along the Dry Creek/West Canal just west and south of the terminus of North Griffin Loop. Mitigation is not typically required for impacts on Waters of the U.S.

Temporary impacts on Waters of the U.S. resources (686 linear feet) are expected to result from construction activities in locations where pipe installation crosses the east and west canals. Installing the distribution pipe would require a temporary construction zone that would be a maximum of approximately 100 feet wide along the pipeline. This temporary construction work space could shift horizontally in relation to the pipe centerline to avoid existing roadways or environmentally sensitive areas (the Little Wood River overflow channel). The actual trench width would vary between 3 and 15 feet depending on the pipe diameter

and depth of installation. The remainder of the temporary work space would be needed for material staging, soil excavation stockpiles, and construction equipment. The temporary construction work space including the pipe trench will be regarded to original contour and revegetated with a native seed mix. Overall, impacts on Waters of the U.S. would be minimal.

No direct impacts on wetlands would occur.

Indirect Impacts

As a result of the reduced flows an indirect loss of 0.21 acre of PEM (0.02 acre)/PSS (0.19 acre) fringe wetland along the east and west canals is expected.

Indirect impacts on fringe wetlands located on low terraces of the East and West Canals (0.21 acre) are expected as a result of reduced flows associated with the Proposed Action. Current flow rates within the canal system ranges from 200 to 250 cfs. Reduced flow rates are not anticipated to provide wetland hydrology requirements that support wetland vegetation and hydric soil conditions.

Mitigation for wetland losses are proposed along the East and West canals along the Proposed Action ordinary high water mark. Mitigation will include installation of native wetland shrub communities along the east and west canals to replace lost ecological function associated with the Proposed Action. The mitigation wetlands would be located at a lower terrace elevation and would be supported hydrologically by the anticipated reduced flows in the canals. Mitigation ratios will be determined by the USACE in conjunction with the LWRID.

Indirect impacts of the Proposed Action may provide a net benefit to wetland resources adjacent to and within the Carey Lake Wildlife Management Area. Under the Proposed Action, 6 to 20 cfs of flow could be delivered to Carey Lake Wildlife Management. The water delivered to Carey Lake could be better managed to allow for delivery earlier or later in the season and are anticipated to support and stabilize wetland hydrology yielding a net benefit to wetlands resources in this area. In addition, flow in the Little Wood River although still variable, would be increased from pre-project conditions according to preliminary calculations. The anticipated flow increases in the Little Wood River may promote wetland habitat establishment adjacent to the Little Wood River and above its confluence with Silver Creek. Overall, impacts on wetland resources over the short term would be minimal. Over the long term, with the implementation of mitigation measures and increased flow available in the Little Wood River, indirect impacts on canals would be offset. In turn, no indirect impacts are anticipated.

No indirect impacts on Waters of the U.S. are anticipated.

Cumulative Impacts

No cumulative impacts on wetland or Waters of the U.S. are anticipated as a result of the Proposed Action.

3.9 Recreation

Recreation facilities can be private, city, county, state, federal (U.S. Forest Service [USFS], National Park Service, and U.S. Bureau of Land Management [BLM]), or Tribal owned/operated. Recreation facilities include developed facilities such as campgrounds, swimming pools and parks, and dispersed recreation opportunities include camping (at undeveloped sites), fishing, hiking, hunting, and wildlife viewing.

3.9.1 Affected Environment

A wide range of recreation facilities and opportunities is available in Blaine County. USFS lands total 488,538 acres in the county. Recreation facilities include six small campgrounds, one picnic area, and approximately 300 miles of trails. Recreation activities include hiking, jogging, mountain biking, motor biking, horseback riding, fishing, sightseeing, skiing, snowmobiling, hunting, camping, and picnicking.

A portion of the Sawtooth National Recreation Area is located in Blaine County. Recreation facilities include six developed campgrounds, seven picnic sites, and approximately 143 miles of trails. Use is primarily sightseeing, hiking, backpacking, camping, picnicking, horseback riding, fishing, and mountain biking.

Recreation opportunities exist on 790,000 acres of BLM lands throughout the county. Activities include boating, picnicking, hiking, camping, hunting, fishing, and sightseeing.

Craters of the Moon National Monument, administered by the National Park Service, is also located in Blaine County and offers a campground, trails, and a visitor center.

Other recreation areas in the county include the Silver Creek Preserve; Reinheimer Ranch; Idaho Foundation for Parks and Lands nature preserve; and various waterways, geothermal sites, and natural springs. In addition, local city parks and recreation facilities are located in the various cities and towns.

Sun Valley Resort, including Bald Mountain, is mostly located on USFS and BLM land. Skiing is the primary recreation activity at this privately-owned resort. Other private industry-owned/maintained recreational facilities in the county include swimming pools, golf courses, tennis courts, gun clubs, polo grounds, and cross country ski centers (Blaine County, 1994).

Little Wood Reservoir, located 10 miles northwest of the City of Carey, Idaho, has a picnic area and campground. Fishing opportunities are also available at the reservoir, Carey Lake, and the Carey Lake Wildlife Management Area. Additional recreation activities in the surround area include ice fishing, hunting, snowmobiling, and hiking (USDA NRCS and LWRID, 2003).

Blaine County, in Title 8, Section 14 Recreation (Blaine County, 1994), has expressed its goals to:

- Protect the health and lifestyles of Blaine County's residents and visitors.
- Preserve and enhance the recreational opportunities available for residents and visitors of Blaine County.
- Cooperate with the Blaine County Recreation District and other local, state, and federal agencies to ensure recreation, parks, and open space needs of residents are met.

- Support a recreation, parks, and open space master plan for Blaine County, and when completed, integrate it into the Comprehensive Plan.
- Encourage all developed recreation facilities to provide for public use.

Recreation plays an important role in the lives of the residents of Carey. Within the City, recreation facilities are provided at the school, City Park, and Rodeo and County Fairgrounds. By facility, they include the following improvements:

- School—playground, two tennis courts, two indoor gymnasiums, track and football field, and a baseball field
- City Park—water facility, playground with swings, picnic tables, barbecue area, volleyball court, and one basketball hoop
- Rodeo and County Fairgrounds—rodeo arena, parking, fenced and grassed picnic area, unimproved community building, and fair buildings (City of Carey, 1997)

Average standards for public park lands in the Pacific Northwest and elsewhere in the United States vary from as little as 8 acres per 1,000 residents in Gresham, Oregon, to 36 acres of park land for every 1,000 persons in Kansas City, Missouri. Currently, in Blaine County, the ratio is slightly over 32 acres per 1,000 residents for neighborhood, community, regional and linear parks. In the Carey, the ratio is 28 acres per 1,000 residents (City of Carey, 1997).

The recreation section of the Carey Comprehensive Plan (City of Carey, 1997) includes the following goals and objectives regarding recreation:

- Protect the health and lifestyles of Carey's residents and visitors.
- Preserve and enhance the recreational opportunities available for residents and visitors of Carey.
- Work in conjunction with the Blaine County Recreation District, School District, other agencies and private industry to ensure recreation, parks, and open space needs of residents are met.
- Encourage all developed recreational facilities to provide for public use, and encourage all new subdivisions to dedicate park land and facility improvements for residents and the public.
- Study and adopt standards and fees for subdivisions and developments to provide recreation facilities for the needs of the public.

A children's camp has historically been held at the Jevne Ranch, and the children at the camp occasionally swam and floated in inner tubes in the irrigation canals. Such recreational use of the irrigation canals has ceased. Such use is estimated at fewer than 5 days in the past 15 years and has not occurred in the past 5 years (Simpson, pers. comm., 2009).

3.9.2 Environmental Consequences

3.9.2.1 Significance Criteria

The project would have a significant impact on recreation if any of the following would occur:

- The removal, degradation, or rendering useless of existing recreation facilities.
- The need for recreation facilities would increase as a result of the Proposed Action.
- Existing recreation opportunities were eliminated or adversely affected.

3.9.2.2 No Action Alternative

Implementation of the No Action Alternative would not result in a change in current conditions; therefore, no impacts on recreation resources or opportunities would occur.

3.9.2.3 Proposed Action

Although construction of the Proposed Action would take approximately 2 years to complete, Proposed Action construction crossings along the county road to Little Wood Reservoir would cause only short-term delays for local and regional traffic traveling to Little Wood Reservoir because construction activities would occur for only a short time in any given location. In addition, increased heavy equipment traffic may discourage recreation use of the area. These are considered short-term indirect impacts on recreationists.

The Proposed Action would result in a change in irrigation from canals to pipelines serving the local agricultural fields, but would not affect any existing recreation facilities. Project implementation would result in a more efficient water delivery system (lower water losses [seepage] in the canals). This means that there would be less water demand downstream of the LWRID diversion dam. With implementation of the Proposed Action, water would be released to the proposed new pipeline, releases would be made to the East Canal and the West Canal, and releases to the Little Wood River in all water year types (dry, normal, wet) would be increased when compared to pre-project conditions.

In addition, water levels would be maintained in the Little Wood Reservoir for longer periods of time. The Little Wood Reservoir has a 30,000 acre-feet storage capacity, and is at capacity typically March through June, depending on water year type, the amount of snowpack at higher elevations, and the previous year's flow. Because system losses would decline with the Proposed Action, its implementation would result in more water being retained in the reservoir. Both the increased flows in the river, and the higher water surface elevations in the reservoir, would be sustained for more days, weeks, or months each year than is currently the case, depending on the water year type and the water levels at the beginning of the water year.

Providing more water in the river, and higher water surface levels in the reservoir for a longer period of time, is likely to result in indirect beneficial impacts. These would translate to increased and improved water-dependent and water-enhanced recreation opportunities, such as fishing, hiking, camping, swimming, and boating.

Recreationists engaged in viewing wildlife and the associated vegetation and change in vegetation colors during the different seasons may not enjoy the viewing experience as much as before the project was implemented due to the removal of trees and shrubs from project construction along the canals and rivers. In turn, a potential long-term indirect impact to wildlife viewing is anticipated and would be minimal.

No impact on recreation use associated with the Jevne Ranch (children's camp) is expected from implementation of the Proposed Action because recreational use of the irrigation canals by children at the camp has ceased.

3.10 Land Use

Land use classifications characterize the natural and/or human activities that occur at, or are planned for, a given location. Natural land uses include open grassland, open space, forest, open water, and other undeveloped uses. Developed land uses are generally classified as residential, commercial, industrial, airfield, and other types of human-made development. Comprehensive plans, policies, and zoning regulate the type and extent of land uses allowable in specific areas, and often protect environmentally sensitive resources. Land use impacts typically result from actions that negatively affect or displace an existing use, or the suitability of an area for its current, designated, or formally planned use.

3.10.1 Affected Environment

The Proposed Action is comprised of lands within the city of Carey and in unincorporated Blaine County adjacent to, and near, the city. Land uses within the project area are primarily agricultural—mostly Agricultural-40, some Agricultural-20, with Residential-10, Rural Remote RR-40, and incorporated city land within the city's boundaries (Blaine County, no date—map).

Carey is a rural agriculturally based residential community with a population of 730 located in southeastern Blaine County. The land around the City is irrigated agricultural land fed by the Little Wood River, Fish Creek Reservoir and Little Wood Reservoir. The major land use in the area is agriculture, with active farming, ranching and production uses. The majority of uses in the City are commercial (gas station, maintenance shops, bar, cafes, grocery store, and post office) located along main street (U.S. 93). Extensive commercial business development is not present in Carey because many residents are employed in other cities in Blaine County that provide these conveniences. The residential area is concentrated around Main Street (City of Carey, 1995).

The basic objective of the Land Use section of the City of Carey Comprehensive Plan is to plan patterns of future land use that will preserve and enhance the rural atmosphere and character of agricultural, residential, open space, and recreational uses balanced by a respect for private property rights in regulating development and growth (City of Carey, 1995).

The City of Carey's Comprehensive Plan's goals and objectives include the following:

- Arrange future land uses so they are orderly, convenient, and compatible with each other and their natural settings. For example, whenever possible, like uses in land should face like uses across streets, and dissimilar uses should back up to each other across alleys.
- Anticipate and provide for a variety of land uses that meet the needs of the community. This should be done in a manner that keeps complementary uses in contiguous areas, provides for smooth transitions among land uses, and is done in an aesthetic manner that enhances the safety and welfare of the citizens while protecting and enhancing property values.

In agricultural/residential low density areas, the following recommendation is applicable:

- Viable agricultural lands within the City should be reasonably protected from conflicts with inappropriate uses, residential and otherwise (City of Carey, 1995).

The basic objective of the Blaine County land use code is to plan patterns of future land use that will preserve and enhance the rural atmosphere and character of agricultural, open space, and recreational uses balanced by a respect for private property rights in regulating development and growth (Blaine County, 1995).

In determining future land uses in the Carey area, the County should consider the following goals:

- Preserve productive agricultural areas and soils.
- Plan for reasonable commercial and industrial growth with industrial growth preferred in the southeastern corner of the community.
- Encourage residential development to occur adjacent to existing infrastructure and out of productive agricultural areas (Blaine County, 1995).

There are 10,800 acres of irrigated cropland in the project area, 780 acres of which are surface irrigated, and 10,020 acres of which are sprinkler irrigated. Nearly all of the irrigated cropland is designated Prime Farmland or Statewide Important Farmland (USDA NRCS and LWRID, 2003). Alfalfa is raised for 5 years, and is then rotated to small grains typically consisting of malting barley and feed grains. Yields are 127 bushels barley with sprinkler irrigation and 90 bushels with surface (furrow) irrigation. Hay yields are typically 5.5 tons per acre with sprinkler irrigation, and 4.5 tons per acre with surface irrigation. One producer raises approximately 750 acres per year of seed potatoes (USDA NRCS and LWRID, 2003).

Seventeen livestock feeding operations exist in the project area. They are grouped in two size ranges: 100 to 350 cow/calf pairs with calves that average 500 pounds, and small operations that have 10 to 50 head (two operations are horses). Two small dairy operations, one swine operation, and two sheep operations of approximately 6,000 head each are also present. In addition, there are numerous small, 5- to 10-acre pasture units scattered throughout the project area. Most are odd areas with marginal soils that could not be farmed or are small units adjacent to the farmstead (USDA NRCS and LWRID, 2003).

3.10.2 Environmental Consequences

3.10.2.1 Significance Criteria

The project would have a significant impact on land use if any of the following would occur:

- A change to the existing land use that would be incompatible with adjacent or surrounding land uses
- A proposed land use that would be inconsistent with the zoning of the land
- A proposed land use that would be inconsistent with the goals, objectives, or policies of a comprehensive plan that is applicable to the project area

3.10.2.2 No Action Alternative

The No Action Alternative would not result in impacts on land use because there would be no change in land use within the project area.

3.10.2.3 Proposed Action—Optimized System Upgrade Alternative

During construction of the Proposed Action, yield losses on farmland that is along the pipeline alignment are expected. This is considered a direct short-term impact to agricultural production. Yields would be expected to return to pre-project levels during the next growing season.

The land within the project area that is outside of the city limits is zoned mostly agricultural. Residential and City land uses are also designated within the project area. The Proposed Action would result in land use that would be consistent with the current zoning. Direct affects are anticipated to occur with the proposed conversion of some land in three areas along the canals from currently undeveloped open space to agricultural land (farmed floodways). This conversion would increase the crop production in the area. One farmable floodway totaling 2,233 linear feet would be constructed in the East Canal south of Little Wood Reservoir Road and approximately 0.3 mile east of Hunt Lane. A second floodway that would total 2,392 linear feet would be constructed along the East Canal south of the Little Wood Reservoir Road crossing located approximately 0.8 mile north of Dry Creek Road. A third farmable floodway that would total 2,791 linear feet would be constructed along the Dry Creek/West Canal west and south of the terminus of North Griffin Loop.

Depending on personal values relative to open space and agricultural lands, long-term impacts on land use would vary from minimal to potentially beneficial effects.

No indirect and/or cumulative impacts are anticipated to occur as a result of the Proposed Action.

In addition to providing increased crop production in the area once the proposed pipeline is installed, the Proposed Action would potentially increase the yield on the irrigated acres because of the decrease in irrigation supply inefficiencies that are expected with Proposed Action implementation.

With implementation of the Proposed Action, several or most of the animal feeding operations that currently use canal water for their livestock will need to install new or modified livestock watering facilities.

No significant management changes are expected on the 10,800 acres of irrigated cropland (Prime Farmland or Statewide Important Farmland).

3.11 Visual Resources

Visual resources refer to the natural and constructed features that give a particular environment its aesthetic qualities. In undeveloped areas, landforms, water surfaces, and vegetation are the primary components that characterize the landscape. Constructed elements such as buildings, fences, and streets also may be visible. These may dominate the landscape or be relatively unnoticeable. Attributes used to describe the visual resource value of an area include any significant views or vistas, landscape character, perceived aesthetic value, and uniqueness.

3.11.1 Existing Environment

The project area is within the Wood River Valley in Blaine County. The project area is primarily an agricultural area with a few rural residences outside of the city limits of Carey. The agricultural landscape contributes to the open space and rural character of the area. Cottonwoods exist along the river channel and canal. The trees provide a visual transition from irrigated cropland to the Little Wood River and Little Wood Reservoir upstream from the project.

Blaine County is an area of historic mining and sheep ranching, and is currently known for summer and winter recreation and tourism because of the Sun Valley Resort.

Carey is a rural community with a population of 730 (City of Carey, 2009) with farm animals and easy access to open spaces and fields. As a working farm community, typical landscaping features are hedge rows along fields, native grasses along fence lines, native riparian plants along waterways, and shade and fruit trees around home sites. The neighborhoods of Carey are mostly single-family dwellings. In downtown Carey, there are few sidewalks, and landscaping and the planning of public spaces have only been addressed in an ad hoc fashion. Carey has not developed design standards for the community (City of Carey, 1997).

The City of Carey's Comprehensive Plan desirable goals and objectives include the following:

- The City should encourage the development of an aesthetically pleasing community.
- Enhance the image of Carey as a good place to live, work, and visit (City of Carey, 1997).

Blaine County addresses aesthetics in its Comprehensive Plan Title 8, Chapter 1, Section 6. Preservation of visual scenic quality, clean air, high water quality, absence of noise pollution and other aspects of the natural environment are important to the residents of the County as well as to the recreational economy. Primary areas of consideration are as follows:

- Rivers and streams are a recreational focal point in Blaine County. An unobstructed visual corridor along streams and rivers shall be maintained without the intrusion of structures that prevent natural views of such streams and rivers.
- Hillside areas provide the back drop for most of the scenic vistas, and have a high degree of visibility. The scars created by roads, vegetation clearing, and building construction can have a major impact on scenic quality.
- Roads provide access to a changing series of visual experiences and are a significant element in the landscape.

The visual experience afforded the local resident and tourist traveling on U.S. 93, 75, and 20 determines the primary way that the Wood River Valley is perceived. Roadside development denies visual access to the landscape. The containment of development in the cities, along with limited access and collector road systems, encourage alternate rural development patterns.

- Consideration should be given to setting a reasonable limitation on the duration of construction time for commercial, industrial, and residential building sites beyond normal building completion.
- Due to the shrinking availability of land in the Wood River Valley and the high demand for residential construction, it is declared public policy to preserve as much open space and recreational space as possible.
- It is the County's policy to have all commercial and industrial structures and improvements, as well as all residential properties seeking a variance or conditional use permit, to be subject to design review by the Planning and Zoning Commission.
- U.S. 93, 75, and 20 are designated as Scenic Corridors. Development in areas of high visibility shall be restricted based on objective visual analysis criteria.
- The location and alignment of roadways can preserve or enhance specific scenic qualities, which should be considered in future alignment planning. Location of necessary, but often unsightly, public utilities should be placed out of the view corridors whenever possible (Blaine County, 1994).

Blaine County's Comprehensive Plan Title 8, Section 15 indicates the County's desire to preserve the scenic characteristics of the County (Blaine County, no date).

3.11.2 Environmental Consequences

3.11.2.1 Significance Criteria

The project would have a significant impact on visual resources if either of the following would occur:

- Negative impact on landscape scenic quality
- Negative impact on views of residents, recreationists, and motorists on U.S. 93, U.S. 20, U.S. 26, and local roadways

3.11.2.2 No Action Alternative

No new construction, development activities or changes in operation are proposed if the No Action Alternative is implemented; therefore, no impacts on visual resources would occur.

3.11.2.3 Proposed Action—Optimized System Upgrade Alternative

Implementation of the Proposed Action would result in impacts on the landscape along the pipeline alignment. Although impacts on the landscape would be inevitable as a consequence of implementing the pipeline improvements, the landscape changes would not adversely impact the overall scenic quality of the project area. Development of the Proposed Action would result in direct affects through the reduction of trees and shrubs along certain canals, in the construction work areas, and in the three

canal areas that would be converted to farmable floodways. Project development would also reduce the visual transition from cropland to the Little Wood River corridor. These changes may affect the views from the roadways where the pipeline improvements are proposed; however, because the pipeline would be installed underground, few aboveground project facilities would be visible once the project is constructed and the disturbed areas are revegetated. In addition, because there would be less demand for water downstream of the LWRID diversion dam if the Proposed Action is implemented, and because of a more efficient water delivery system, water may stay in the Little Wood Reservoir and Little Wood River for longer periods of time. Increased water levels may be sustained for more days, weeks, or months each year than is currently the case, depending on the water year type and the water levels at the beginning of the water year. These changes in water levels may be perceptible to the frequent visitor to the area, or someone who is very familiar with the historical water situation of the area, but may not be perceptible to the casual or infrequent visitor to the area.

The visual impacts from constructing the pipeline improvements would depend on the degree of change to the visual resource and the viewers' response to that change. Potential impacts on visual resources during construction would be direct and short-term in any given location (1 to 3 days), and would include dust and the presence of the construction equipment, personnel, and activities. Dust would be emitted from vegetation removal, earthmoving, construction vehicles and equipment, construction worker vehicles, materials delivery vehicles, from areas within the construction zone that have been disturbed. Fugitive dust would be controlled through application of water to bare areas during construction, and would therefore not impair or degrade existing views, resulting in no adverse impacts on visual resources.

Depending on their values, interests, and preconceived notions and expectations, some people viewing the area may see the presence of the construction equipment, personnel, and the associated activities as detracting from the views currently experienced. For other people, the presence of these activities would be interesting and would add visual variety to the landscape. For those people whose views would be adversely affected, a temporary adverse impact would occur; for those who would find the construction to be visually interesting, no impacts would occur.

3.12 Socioeconomics

Socioeconomic resources are defined as the basic attributes associated with the human environment, particularly population and economic activity. Population is described as the magnitude, characteristics, and distribution of people. Economic activity is described in terms of employment distribution, personal income, and business growth.

3.12.1 Affected Environment

Table 6 displays the population demographics for the City of Carey, Blaine County, and the state of Idaho.

Table 7 presents employment and income characteristics for the City of Carey, Blaine County, and the state of Idaho.

TABLE 6
Population Demographics from the 2000 US Census

Geographic Area	Total Population	Population Age 3 and Older in School	Population Age 25 and Older	Education (High School Graduate or Higher)	Place of Birth		Language Spoken		Veteran
					In U.S.	Outside U.S.	English	Other	
Carey	513	35%	59%	82.7%	96.9%	3.1%	95.3%	4.7%	16.3%
Blaine County	18,991	23%	68%	90.2%	88.2%	11.8%	87.5%	12.5%	11.5%
Idaho	1,293,953	28%	61%	84.7%	94.2%	5.8%	90.7%	9.3%	14.8%

Source: U.S. Census Bureau, 2000

TABLE 7
Employment and Income Data from the US Census

Parameter	City of Carey		Blaine County		State of Idaho	
	Number	%	Number	%	Number	%
Total population	513		18,991		1,293,953	
Population 16 and older	390	100	15,000	100	969,872	100
In labor force	272	69.7	11,316	75.4	641,068	66.1
Employed	263	67.4	10,846	72.3	599,453	61.8
Unemployed	9	2.3	470	3.1	36,784	3.8
Median household income	$39,861		$50,496		$37,572	
Per capita income	$14,027		$31,346		$17,841	
Occupation						
Management, professional, and related	67	25.5	3,857	35.6	188,094	31.4
Service	34	12.9	1,939	17.9	93,467	15.6
Sales and office	69	26.2	2,709	25.0	151,835	25.3
Farming, fishing, and forestry	10	3.8	216	2.0	16,249	2.7
Construction, extraction, and maintenance	48	18.3	1,481	13.7	64,747	10.8
Production, transportation, and material moving	35	13.3	644	5.9	85,061	14.2

TABLE 7
Employment and Income Data from the US Census

Parameter	City of Carey		Blaine County		State of Idaho	
	Number	%	Number	%	Number	%
Industry						
Agriculture, forestry, fishing and hunting, and mining	29	11	430	4.0	34,503	5.8
Construction	37	14.1	1,524	14.1	48,388	8.1
Manufacturing	21	8.0	468	4.3	78,625	13.1
Wholesale trade	8	3.0	255	2.4	21,495	3.6
Retail trade	46	17.5	1,305	12.0	75,477	12.6
Transportation and warehousing, and utilities	18	6.8	333	3.1	27,891	4.7
Information	2	0.8	282	2.6	13,779	2.3
Finance, insurance, real estate, and rental and leasing	7	2.7	792	7.3	30,618	5.1
Professional, scientific, management, administrative, and waste management	14	5.3	1,593	14.7	47,744	8.0
Educational, health, and social services	40	15.2	1,418	13.1	115,154	19.2
Arts, entertainment, recreation, accommodation, and food services	22	8.4	1,648	15.2	47,902	8.0
Public administration	8	4.2	286	2.6	30,649	4.5
Other (except public administration)	11	3.0	512	4.7	27,228	5.1

Source: U.S. Census Bureau, 2000

As Table 7 shows, the City of Carey and Blaine County have a diversified economic base. The Sun Valley Resort draws visitors from around the world to enjoy skiing, scenic beauty, and recreation of the surrounding area—including Silver Creek, a world class trout stream. Hailey and Bellevue are supported in large part by traffic through them on the way to Sun Valley. Carey is a small agricultural-based community in Blaine County. From 1990 through 2000, Blaine County's population increased by 46 percent, and Carey's population increased by 20 percent (USDA NRCS and LWRID, 2003).

Farming and ranching have been a tradition in Carey for over 100 years, but agriculture is changing. Farms in Carey have expanded for efficiency, with a consequent decrease in mid-size farms. Many people with off-farm income are moving to the rural areas to raise horses, other livestock, and hay, resulting in an increase in 5- to 40-acre farms. In addition, Carey's proximity to Craters of the Moon National Monument has a positive economic impact on the community because travelers to the area make purchases at local gas stations, convenience stores, and restaurants (USDA NRCS and LWRID, 2003).

A total of 148 water users in the LWRID project area produce crops and raise livestock. The local climate is ideal for

raising high quality barley. Major breweries have had contracts with local farms for approximately 25 years for the production of malt barley. These contracts bring profit and stability to the local agricultural community. Other crops grown in the area include alfalfa hay, wheat, potatoes, and oats, all of which are possible because of the existing irrigation system (USDA NRCS and LWRID, 2003).

3.12.2 Environmental Consequences

3.12.2.1 Significance Criteria

The project would have a significant impact on socioeconomics if any of the following would occur:

- Job losses
- A need for trades that is strong enough to induce a sufficient number of people to move to the area and result in a housing shortage or an impact on existing public services and/or utilities
- Displacing people from their current home

3.12.2.2 No Action Alternative

No new construction or development activities are proposed if the No Action Alternative is implemented; therefore, no impacts or benefits to socioeconomic resources would occur.

3.12.2.3 Proposed Action

The Proposed Action would not result in adverse direct, indirect, or cumulative impacts on socioeconomic resources. In fact, implementation of the Proposed Action would result in temporary indirect beneficial impacts on the local economy from construction activities associated with the Proposed Action. It should be noted that construction of the Proposed Action would create a minor number of temporary jobs, which would not result in a large influx of workers and their families moving to the area. The operation of the Proposed Action would create a minor long-term indirect beneficial economic impact from the creation of operation and maintenance jobs for the new facilities, in addition to the minor amount of operation and maintenance that is anticipated to already be occurring at the existing facilities. No people would be displaced from their homes as a result of implementation of the Proposed Action. Although the impacts that would occur from implementing the Proposed Action would be beneficial, these impacts would be localized and are not anticipated to significantly change the economics of the region.

In addition to the benefits that would occur from the installation and presence of the proposed facilities, a long-term increase in stability to the local economy is expected because of increased crop production resulting from provision of a more reliable water supply (the Proposed Action would reduce water losses and increase the efficiency of the water delivery system). Converting a portion of the existing open canal in three locations to farmable floodways would also increase crop production in the area.

3.13 Transportation and Traffic

Transportation and traffic resources generally include the roadway and street systems surrounding the affected environment. This section also considers the movement of vehicles, pedestrian and bicycle traffic, and mass transit.

3.13.1 Affected Environment

Three U.S. Highways pass through the project area: U.S. 93, U.S. 20, and U.S. 26, but they represent only two highways. U.S. 20/26 comes into Carey from the west and U.S. 93 comes in from the south. Both highways merge at the south end of Carey to form U.S. 20/26/93. There are also several miles of rural county roads (USDA NRCS and LWRID, 2003). All of these roads serve the Carey area. An average of 2,100 cars and trucks per day pass through Carey. Carey has approximately 5 miles of streets, most of which are paved. Streets and bridges are in fair to good condition. Currently no alternate transportation opportunities, such as bike paths or walking trails, are available. No commercial bus service is available to or from Carey (City of Carey, 1997).

Blaine County's Comprehensive Plan (no date) indicates the County's desire to provide safe and efficient circulation systems in the County. U.S. 93 is a part of the highway system that connects Mexico and Canada; traffic through the project area is usually light. In the county, U.S. 93 connects Carey with Challis, Shoshone, and Twin Falls. It is in good condition. U.S. 20 is the major east-west arterial through the center of the county; it connects Carey with Fairfield and Mountain Home to the west, and Arco and Idaho Falls to the east. The highway structure is in good condition (Blaine County, no date).

3.13.2 Environmental Consequences

3.13.2.1 Significance Criteria

The project would have a significant impact on traffic if any of the following would occur:

- An increase in vehicle trips that would disrupt or alter local circulation patterns
- Lane closures or other impediments to traffic
- Activities that would create potential traffic safety hazards
- Increase conflict with pedestrian and bicycle routes or fixed-route transit
- Parking demand that exceeds the supply

3.13.2.2 No Action Alternative

Implementation of the No Action Alternative would not result in a change in current conditions; therefore, no impacts on transportation or traffic would occur.

3.13.2.3 Proposed Action

The Proposed Action would result in minor indirect impacts on traffic during its construction because the number of construction vehicles and equipment accessing the proposed pipeline routes is expected to be relatively minor, and traffic in the project area is relatively low. The proposed pipeline would cross the U.S. highways and local roads, which would require the slowing and detouring of local and regional traffic around the road crossings while the pipeline is either

installed in the trench or is bored under the road. Construction would involve traffic delays for 2 to 3 days at each highway crossing and 1 to 2 days at each roadway crossing.

To minimize the impact on traffic in the project area, LWRID shall implement the measures described in the following text.

Coordinate with the City of Carey and Blaine County regarding proposed construction activities, duration, and timing to obtain any necessary permits and implement a Transportation Management Plan. The plan would address, but not be limited to the following:

- Road detours and closures.
- Minimizing conflicts with existing traffic (such as avoiding or minimizing construction-related travel during peak hour traffic periods, periods of heavy traffic to/from Little Wood Reservoir, periods when agriculture commodities that are produced in the area are being trucked to market, periods of processionals and the moving of cattle in the City, and roads that are used by pedestrians and bicyclists).
- Providing ample parking for construction workers and materials and equipment delivery at each work site to avoid vehicles and equipment being parked in the roadway.

No long term indirect, direct or cumulative affects are anticipated as a result of the Proposed Action.

3.14 Energy

Energy resources related to the Proposed Action include generation of electricity at the Little Wood Reservoir Dam by water released for irrigation and energy required to operate pumps that pressurize irrigation water for sprinkler application.

3.14.1 Affected Environment

The project area has approximately 10,020 acres of sprinkler-irrigated agricultural lands. The annual electrical energy consumption for pumping on those lands is approximately 10,340,000 kilowatt-hours (kWh), based on a 135-day irrigation season. The annual cost for this electrical energy consumption is approximately $486,000 (Simpson, 2009). In addition, another 315 horsepower of diesel engine-driven pumping facilities are operated during the irrigation season.

In 1984, Bonneville Pacific Corporation (BPC) constructed a 3-megawatt hydroelectric plant in conjunction with the outlet works of Little Wood River Reservoir. BPC operated the hydroelectric plant for 2 years. The plant had several owners until 1994 when LWRID took over operation of the 300-cfs-capacity plant. The operation of the plant is in conjunction with the releases of water for irrigation and flood control of the Little Wood River Reservoir. The normal timing of these flows is between February and October. Flows higher than 300 cfs are released from the reservoir and bypassed around the hydroelectric plant (USDA NRCS and LWRID, 2003).

LWRID sells energy generated at the hydropower plant to Idaho Power Company under a long-term contract. Annual energy production depends on the availability of water and the timing of irrigation flows released during the year. Since 1986, annual energy production has ranged from approximately 2,500,000 to 12,000,000 kWh (USDA NRCS and LWRID, 2003 and Simpson, 2009). Average annual production is approximately 5,600,000 kWh (Simpson, 2009).

3.14.2 Environmental Consequences

3.14.2.1 Significance Criteria

The project would have a significant energy impact if either of the following would occur:

- An increase in energy consumption to operate the project
- A reduction of annual energy production

3.14.2.2 No Action Alternative

Implementation of the No Action Alternative would not result in any change to current conditions; therefore, no impacts on energy consumption or generation would occur.

3.14.2.3 Proposed Action

The annual irrigation pumping energy consumption for the Proposed Action is estimated to be approximately 2,430,000 kWh, based on a 135-day irrigation season. This electricity would cost approximately $114,000 per year (Simpson, 2009). The Proposed Action would conserve approximately 7,910,000 kWh of electricity per year, and would, therefore, result in an annual energy cost savings of approximately $372,000. In addition, engine-driven pumping and the associated fuel

consumption would be reduced in a similar proportion.

During most water years, the magnitude and duration of water releases from the Little Wood Reservoir Dam are governed primarily by rule curves specified by the USACE and Reclamation. As a result, annual energy production under the Proposed Action would likely change very little during most years. During low water years, energy production may increase slightly because of higher reservoir storage levels and an extended release season (Simpson, 2009).

In summary, the Proposed Action would have a direct beneficial impact on energy resources in the project area by reducing loads and energy consumption, reducing annual energy expenditures, and increasing available capacity in the local power grid. Changes in hydropower generation under the Proposed Action would likely be minor, but some improvement in generation in low-water years is expected. No indirect impacts on energy resources in association with the Proposed Action would be anticipated.

The Proposed Action, if implemented, would have no cumulative impacts. Although there would be a reduction in energy consumption in the project area with implementation, the reduction would not affect energy usage by others outside or within the project area.

3.15 Cultural Resources

Cultural resources include historic and prehistoric sites of interest and may include structures, archaeological sites, or religious sites of importance to Native American cultures. Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended (16 U.S.C. 40 et seq.), requires federal agencies to take into account the effects of their actions on properties listed or eligible for listing on the National Register of Historic Places (NRHP).

The process of evaluating impacts on cultural resources begins with the identification and evaluation of cultural resources for NRHP eligibility. The evaluation is followed by an assessment of effect on those eligible resources, and the analysis concludes after a consultation process with the State Historic Preservation Office (SHPO). A cultural resource considered eligible for listing on the NRHP is referred to as a historic property. When referring to impacts, the terms are applied relative to their meaning under NEPA.

Regulations implementing Section 106 of NHPA, 36 CFR Part 800.8, encourage the coordination of two processes: (1) the review of possible impacts on the environment under NEPA, and (2) the assessment of effects of undertakings required under NHPA. The lead federal agency will provide opportunities to comment on the impacts the project may have on cultural resources to the Idaho SHPO, Native American tribes, and other interested parties.

Reclamation, as the lead agency responsible for compliance with Section 106 of the NHPA, is responsible for ensuring that the appropriate cultural resource studies have been conducted, including Class I literature reviews and Class III pedestrian inventories. These literature reviews and pedestrian inventories have been completed, sites have been recorded, and draft reports have been submitted to Reclamation. These surveys provided the location of cultural resource sites within the project area.

Avoidance of cultural resources through project design remains the preferred method for mitigating impacts on cultural resources. Cultural resource impacts would be avoided, and best management practices would be implemented, including completion of Section 106 consultation, continuation of Native American consultation, and development of an avoidance strategy.

3.15.1 Affected Environment

3.15.1.1 Prehistoric and Historic Context

A comprehensive history and prehistoric and historic context of the project area is included in NRCS (2004). A brief summary is provided in the following text.

The archaeological record extends back nearly 12,000 years in Idaho. The first occupants were big game hunters associated with the Clovis cultures during the late Pleistocene and early Holocene during the Paleo-Indian period. During the middle Holocene the big game animals became extinct, and the substance strategy shifted to a focus on smaller game animals with smaller atlatls and darts instead of the spears of the earlier periods. Increasing evidence of plant processing materials indicate a greater variety in the diets of Archaic peoples. The Archaic period lasted until the introduction of the bow and arrow and the increase reliance on

even smaller game and plants in the diet. In many ways the prehistoric subsistence strategy remained largely unchanged for the last several thousand years with significant changes in technology with the atlatl and the bow and arrow demonstrating the greatest changes in the archaeological record.

The Lewis and Clark expedition first encountered local Shoshoni Bannock Indians in 1805 while crossing Lemhi Valley. Shorty after this initial contact, visits and contacts by fur traders and explorers became increasingly common. The Oregon Trail crossed southern Idaho following the Snake River taking emigrants to Oregon and California during the 1840s and 1850s. The Goodale's Cutoff, a route that crosses from Fort Hall through the Camas prairie to the Boise River, was heavily promoted between 1852 and 1854, but the route was most heavily used during the 1860s with new discoveries of gold. The Goodale's Cutoff became a stage and freight route before finally becoming part of the modern highway system of Idaho.

Mining became an important force for the settlement of the Wood River region with discoveries of lead and silver in the 1860s. The first claims were filed in 1879 and a lead silver rush was on in 1880. The settlement of Carey was established in 1880. The Oregon Short Line reached Hailey in 1883, aiding in the mining efforts and bringing more settlers to the region.

Irrigation became an important factor in bringing settlers to the Little Wood River Valley. In 1893 the Little Wood River Canal Company was created and began work on a diversion structure on the Little Wood River and two canals along the east and west sides of the valley. In order to control flooding and provide predictable sources of water, in 1936 the Little Wood River Irrigation District began construction on a dam 3 miles up the river from Carey. A flood in 1938 destroyed the West Canal diversion structure and damaged the diversion structure for the East Canal, prompting a creation of a single diversion structure in 1939.

3.15.1.2 Cultural Resources Within the Project Area

Intensive pedestrian surveys of the LWRID proposed pipeline system were conducted in 2003 (Burnham, 2003) and 2009 (Fergusson, 2009). The 2009 surveys addressed those areas not covered in the 2003 surveys. These surveys covered a 300-foot-wide corridor centered on the proposed pipeline centerline. All surveys were conducted utilizing parallel transects spaced no more than 30 meters apart, which is considered 100 percent survey coverage.

The cultural resource surveys documented three new cultural resource sites within the LWRID proposed project area. The sites include two historic canals, the East Canal and the West Canal (IHSI 13-016192 and 13-016193) and the diversion structure (IHSI 13-16191). The canals are active canals and part of the LWRID system. Construction began on the canals in 1893 and they are still in use today. The diversion structure was constructed in 1939. The canals and diversion structure are considered eligible for listing on the NRHP.

The Goodale's Cutoff of the Oregon Trail is shown on maps as passing through the project area from east to west, but it is no longer visible in the project area. A modern gravel road follows the route of what is likely the Goodale's Cutoff.

No prehistoric sites or resources are known within the LWRID proposed project area.

3.15.2 Environmental Consequences

3.15.2.1 Significance Criteria

If the Proposed Action changes in any way the characteristics that qualify the cultural or historic resource for inclusion on the NRHP, it is considered to have a significant impact.

3.15.2.2 No Action Alternative

Under the No Action Alternative, there would be no change in existing conditions. Therefore there would be no direct, indirect, or cumulative impacts on cultural or historic resources.

3.15.2.3 Proposed Action—Optimized System Upgrade Alternative

The Proposed Action will directly affect historic properties located in the project area. All known historic properties in the area are directly associated with the existing LWRID system, including the east and west canals and the diversion structure, all of which are considered eligible for listing on the NRHP. Both canals and the diversion structure are still in use to deliver water throughout the valley and will remain in use during construction of the pressurized pipeline delivery system.

The effect to the historic properties will come from the conversion of some sections of the canals to floodways. These floodways will remove sections of the canal in order to allow water to enter the canal at the same grade as the surrounding fields. While the floodways will affect the integrity of the canals, the overall canal system will remain intact and retain its eligibility to the NRHP. The location, setting, design, construction, and other important elements of integrity will remain intact during construction and operation of the pressurized pipeline system. Therefore no significant impacts would occur with implementation of the Proposed Action.

3.16 Environmental Justice

Environmental justice is defined by the EPA Office of Environmental Justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." Fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental, and commercial operations or policies. Meaningful involvement means that: (1) people have an opportunity to participate in decisions about activities that may affect their environment and/or health; (2) the public's contribution can influence the regulatory agency's decision; (3) their concerns will be considered in the decision making process; and (4) the decision makers seek out and facilitate the involvement of those potentially affected (EPA, 2008).

Executive Order (E.O.) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (59 Federal Register [FR] No. 32), was signed on February 11, 1994, by President Clinton. E.O. 12898 requires that each federal agency make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations (Federal Register, 1994). In his memorandum transmitting E.O. 12898 to federal agencies, President Clinton further specified that, "each federal agency shall analyze the environmental effects, including human health, economic and social effects, of federal actions, including impacts on minority communities and low-income communities, when such analysis is required by the National Environmental Policy Act of 1969."(Noise Pollution Clearinghouse, 1994).

Title VI of the Civil Rights Act of 1964 (Title VI) states that "No person in the United States shall, on the ground of race, color, or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance" (U.S. Department of Justice, 2000).

The intent is that no person in the United States shall, on the basis of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance. Where possible, measures should be taken to avoid negative impacts on these communities or mitigate the adverse impacts. Both E.O. 12898 and Title VI address persons belonging to minority and low income populations.

The U. S. Census Bureau indicates that a "minority population" includes persons who identify themselves as African American, Asian or Pacific Islander, American Indian or Alaskan Native, or Hispanic (U.S. Census Bureau, 2008a). Race refers to census respondents' self-identification of racial background. Hispanic origin refers to ethnicity and language, not race, and may include persons whose heritage is Mexican, Puerto Rican, Cuban, Central and South American, and other Spanish cultures (Office of Management and Budget, 1997).

According to USEPA guidelines, similar to the CEQ, a minority population refers to a minority group that has a population of greater than 50 percent of the affected area's general population or the minority

population percentage of the affected area must be meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (EPA, 1998).

The U. S. Census Bureau does not provide a specific definition for "low income." Rather, the term "poverty" is used, and poverty thresholds are established each year for statistical purposes (U.S. Census Bureau, 2008b). The U.S. Department of Health and Human Services issues poverty guidelines each year that are a simplification of the U.S. Census Bureau's poverty thresholds. The guidelines are another version of the federal poverty measure; they are used for administrative purposes (for example, determining financial eligibility for certain federal programs) (Institute for Research on Poverty, 2008).

3.16.1 Existing Environment

Table 8 displays the race breakdown of the population for the City of Carey, Blaine County, and the state of Idaho.

The data in Table 8 indicate that neither the City of Carey, nor Blaine County, is considered to have a minority population because the minority percentage of the total population in those areas does not exceed 50 percent. In addition, the minority population percentage in the City of Carey and Blaine County is not meaningfully greater than the minority percentage in the state of Idaho.

Table 9 presents population, income, and percent of the population living below the poverty level in the City of Carey, Blaine County, and the state of Idaho.

TABLE 8
Minority and Low-Income Population Information in 2000 (% of total)

Geographic Area	White	Black or African American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Some Other Race	Two or More Races	Hispanic or Latino
Carey	92.8	0.2	1.0	0.0	0.0	4.7	1.4	10.1
Blaine County	90.7	0.1	0.3	0.7	0.1	6.4	1.6	10.7
Idaho	91.0	0.4	1.4	0.9	0.1	4.2	2.0	7.9

Source: U.S. Census Bureau, 2000

TABLE 9
Employment and Income Characteristics from the 2000 US Census

Area	Population from 2000 US Census	Median Household Income[a]	Percent of Population Below Poverty Level[b]
City of Carey	513	$39,861	1.7
Blaine County	18,991	$50,946	7.8
State of Idaho	1,293,953	$37,572	11.8

Source: U.S. Census Bureau, 2000
[a] In 1999 US Dollars
[b] Based on 1999 US Dollars

The data in Table 9 indicate that both the City of Carey and Blaine County have a lower percentage of low-income populations than the state of Idaho, and also a higher median household income than that of the state.

3.16.2 Environmental Consequences

3.16.2.1 No Action Alternative

No new construction or development activities are proposed if the No Action Alternative is implemented; therefore, no disproportionate impacts on environmental justice populations would occur.

3.16.2.2 Proposed Action—Optimized System Upgrade Alternative

The Proposed Action (its construction or operation) would not result in indirect, direct, or cumulative adverse and disproportionate impacts on environmental justice populations because the Proposed Action is located in an area that does not contain a disproportionately high concentration of minority or low-income populations.

4.0 Consultation and Coordination

The NEPA process is designed to involve the public in federal action decision making. Public involvement and intergovernmental coordination and consultation are recognized as essential elements in developing a NEPA document. Formal notification and opportunities for public participation, as well as informal coordination with government agencies and planners have occurred and will continue to occur throughout the EA process.

All agencies, organizations, and members of the public having a potential interest in the Proposed Action are urged to participate in the decision making process. Agency consultation documentation was submitted to SHPO, USFWS, and USACE relative to the Proposed Action (Appendix B, *Agency Correspondence*). SHPO was consulted to request information regarding cultural resources. The USFWS was consulted relative to the Endangered Species Act. The USACE was consulted relative to wetlands in the proposed project area.

An initial public meeting was held on April 29, 2009, from 7:00 p.m. to 9:00 p.m. at Carey School. Representatives from the LWRID, Reclamation, and CH2M HILL were present to provide information to the public regarding the Proposed Action, status of the project, NEPA process, description of the EA, and potential path forward. Approximately 37 people attended. A copy of the meeting notice, attendance sheet, and meeting summary is included in Appendix C, *Public Involvement*. as is the one comment received at the meeting.

This Draft EA and draft Finding of No Significant Impact (FONSI) will be available to the public for comment for a period of 30 days. At the end of the 30-day period, Reclamation will consider all comments submitted by individuals, agencies, and organizations. If it is determined that implementing the Proposed Action would result in potential significant impacts, Reclamation will publish an NOI in the Federal Register to prepare an EIS or not to proceed with the Proposed Action. If significant impacts would not occur with implementation of the Proposed Action, a Final EA and FONSI will be prepared based on public comment and distributed for public review.

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6.0 Preparers

Table 10 lists the preparers of this EA.

TABLE 10

Preparers

Name	Title	Primary Responsibility
	U.S. Bureau of Reclamation	
Robert L. “Hap” Boyer	Resource Manager	Technical Review/Reclamation
Ray Leicht	Archaeologist	Cultural Resources Assistance
	Little Wood Irrigation District	
Bob Simpson	Watermaster	Water Resources Technical Review/LWRID
	CH2M HILL	
Denny Mengel	Senior Habitat Management and Planning Technologist	EA Document Lead Chapter 1, Chapter 2, Soils, Air Quality, Noise
Ron Fehringer	Water Resources Engineer	Project Manager and Senior Review
Perrin Robinson	Water Resources Engineer	Chapter 2, Water Resources
David Fornander	Aquatic Ecologist/Fisheries Biologist	Fisheries
Judy Ferguson	Biologist	Wildlife Resources, Vegetation Resources, Federally Protected Species
Gretchen Herron	Wetland Ecologist	Wetlands and Waters of the U.S.
Wendy Haydon	Planner	Recreation, Transportation and Traffic, Wild and Scenic Rivers, Energy, Environmental Justice, Socioeconomics, Land Use, Visual Resources
Aaron Fergusson	Environmental Planner	Cultural Resources
Jason Carr	GIS Analyst	GIS and graphics
Jody Fagan	Graphic Designer	Graphics
Larry Little	Reprographics Technician	Reprographics
Katie Miller	Document Production Specialist	Document processing
Eric Oden	Technical Publications Specialist	Editing

Appendix A

Environmental Commitments

APPENDIX A

Environmental Commitments

A.1 Overview

The following text is discusses environmental commitments made by the U.S. Bureau of Reclamation and the Little Wood Irrigation District to compensate for potential impacts from implementation of the proposed project. These environmental commitments will be implemented concurrently with construction of the project. Environmental commitments are being proposed to compensate for potential impacts on soils, water resources and fisheries, vegetation, wildlife and federally protected species, wetlands, recreation, and transportation. Environmental commitments are not necessarily resource specific and certain measures cover multiple resource areas. In addition to these commitments, various best management practices (BMPs) as discussed in individual resource sections (Chapter 3) will also be implemented. BMPs that will implemented are as follows:

- Keeping bare ground wetted to protect air quality from dust
- Constructing during daylight, working hours to avoid noise impacts
- Implementing erosion control measures to protect water and soil resources from erosion

A.2 Soils

In order to protect soil productivity, the top 12 inches of topsoil will be removed from the pipeline construction trench and stockpiled. As the overburden is placed into the trench over the pipeline, the reserved topsoil will be placed as the top layer. The backfill will be lightly compacted and reseeded with the appropriate seed mix that matches the surrounding vegetation.

Erosion control (for example, mulch, silt fencing, and coir logs) will be used where needed to protect soil from eroding until vegetation has become established on disturbed construction areas.

If soil becomes compacted from heavy equipment use, it will be ripped to remove compaction prior to seeding.

In addition to the environmental commitments stated above that will be implemented to reduce impacts on soil resources, the following mitigation measures are proposed:

- Prepare and implement a Storm Water Pollution Prevention Plan.
- Cover exposed piles of soil (or use other erosion control measures) if there is a threat of rain, to reduce erosion potential.
- Limit grubbing to the area around construction sites to lessen the impact on the roots of low-growing vegetation, so they may resprout.
- Minimize vegetation clearing at sides of pipeline and access roads to 2 feet or less, where appropriate, to minimize impacts on adjacent areas of native vegetation.

- Install sediment barriers and other suitable erosion and runoff control devices prior to ground-disturbing activities at construction sites to minimize offsite sediment movement.
- Leave erosion and sediment control devices in place and monitor their effectiveness until all disturbed sites are revegetated and erosion potential has returned to pre-project conditions.
- Retain existing low-growing vegetation where possible to prevent sediment movement offsite.
- Design access roads to control runoff and prevent erosion by using low grades, out sloping, intercepting dips, water bars, and ditch-outs as needed to minimize erosion.
- Revegetate or seed all disturbed areas with a native grass and forb seed mix suited to the site, to promote revegetation that will hold soil in place.
- Break up compacted soils where necessary by tilling or scarifying before reseeding.
- Monitor erosion control BMPs during construction to ensure proper function and nominal erosion levels.
- Monitor reseeding efforts for adequate growth. Implement contingency measures as necessary.

A.3 Water Resources and Fisheries

Water resource environmental commitments involve releasing a guaranteed flow into the East and West Canals and to Carey Lake Wildlife Management Area. Between 6 and 20 cubic feet per second (cfs) will be released to the Carey Lake Wildlife Management Area during the irrigation season to ensure a reliable flow of water to support wetlands, wildlife habitat, and fisheries in the Carey Wildlife Management Area. Between 20 and 30 cfs will be released into the East Canal, and between 15 and 25 cfs will be released into the West Canal, depending on the water year. Flow in the Little Wood River will still be variable, but will be increased from pre-project conditions according to preliminary calculations, as more water will be available to keep in the river.

The guaranteed flows and increased river releases, plus additional water stored in Little Wood Reservoir and Carey Lake, will provide water to recharge groundwater aquifers and continue a supply of water to the wells in the project area, including the city of Carey.

In addition, the following mitigation measures will further reduce or avoid potential impacts on water resources and fish habitat and species:

- Screen all new intakes constructed under the proposed project as appropriate and in accordance with Idaho Department of Fish and Game standards.
- Install sediment barriers and other suitable erosion and runoff control devices prior to ground-disturbing activities at construction sites to minimize off-site sediment movement.

- Rock new and existing access roads where needed to prevent erosion and rutting.
- Minimize grading, clearing or other construction work in wetlands or riparian corridors. Do not permit use of these areas for construction staging, equipment or materials storage, fueling of vehicles, or related activities.
- Develop and implement a Spill Prevention, Control, and Countermeasure Plan to minimize the potential for spills of fuels, oils, or other potentially hazardous materials to reach the seasonal perched water table or surface water bodies.
- Keep vehicles and equipment in good working order to prevent oil and fuel leaks.

A.4 Vegetation

The primary impact to vegetation is the loss of cottonwood and willow along some canals that will no longer convey water. Approximately 5.7 acres of linear cottonwood habitat and 0.6 acre of linear willow habitat may be lost along canals.

Woody vegetation removal along the pipeline construction alignment will be completed in the non-breeding season from fall to early winter. If this is not done, the construction schedule will be delayed until late August to avoid potential "take" of eggs or young of yellow-billed cuckoos and other migratory bird species.

The loss of cottonwood and willow riparian habitat along canals will be compensated by planting an equal amount of habitat (5.7 acres of cottonwood and 0.6 acres of willow) along the Little Wood River and upper East and West Canals where water flows are expected to remain after project implementation. Plantings will be concentrated as inter-plantings along the upper river and canal channels where woody vegetation is lacking, but where hydrology will be present. Cottonwood and willows will be planted just downstream of the lowest present extent of similar vegetation along the river channel as part of the compensation (see Figures 8 and A-1). Water will also be released into the West Canal during high water years below the point where it will return to the Little Wood River channel in normal operating years. This will serve to give the cottonwoods downstream of that location on the West Canal a periodic supply of water to ensure their long-term survival.

In addition, the following mitigation measures will further reduce or avoid identified potential adverse vegetation impacts:

- Clearing and site preparation
  - Limit grubbing to the area around tower sites to lessen the impact on the roots of low-growing vegetation, increasing the chances of plant survival and re-sprout.
  - Limit the amount of new roads constructed and re-grading of existing roads to the extent possible.
  - Minimize vegetation clearing at sides of access roads to 2 feet or less, where possible, to minimize impacts on adjacent forested areas.

  - Disallow grading, clearing, or other construction work in wetlands or riparian corridors.
  - Save topsoil removed for towers and new access roads (spur road) construction and use onsite for restoration activities, to promote re-growth from the native seed bank in the topsoil.

- Revegetation
  - Reseed disturbed sites as soon as possible. This will promote revegetation which will hold the soil in place and minimize erosion and dust. Vegetation type should be matched to existing vegetation on private lands.
  - Break up compacted soils where necessary by ripping, tilling, or scarifying before reseeding.
  - Monitor revegetation and site restoration work for adequate growth. Implement contingency measures as necessary.

- Weed control
  - Coordinate weed control activities with the Blaine County weed supervisor in order to reduce the threats of noxious and invasive weeds on the native plant community.
  - Plant tree seedlings in danger tree clearing areas to help control the spread of noxious weeds and restore native plant communities.
  - Monitor for weed populations, revegetation, and restoration success.

A.5 Wildlife and Federally Protected Species

In order to avoid impacts on the yellow-billed cuckoo and other migratory birds in the project area, the following mitigation measures will be initiated:

- Woody vegetation removal along the pipeline construction alignment will be completed in the non-breeding season from fall to early winter. If this is not done, the construction schedule will be delayed until late August to avoid potential “take” of eggs or young of yellow-billed cuckoos and other migratory bird species.
- Mitigation plantings to enhance or restore riparian vegetation along the historic Little Wood channel will include willow and shrub species favored by yellow-billed cuckoos and other migratory bird species.
- To reduce and/or avoid impacts on amphibians in the area, impacts on wetlands will be avoided to the extent possible. Buffer zones and construction fencing will be installed prior to construction so that construction vehicles do not drive across, push dirt into, or otherwise impact wetland areas.
- To reduce and/or avoid impacts on woodpeckers, snags with diameter at breast height greater than 12 inches or the largest diameter for the stand for all habitat types should be retained in clusters, where possible. If an active snag cannot be avoided, it will not be

removed until late summer or fall and until all eggs and nestlings are known to have hatched and fledged.

A.6 Wetlands

Mitigation for wetland losses are proposed along the East and West canals along the Proposed Action ordinary high water mark. Mitigation will include installation of native wetland shrub communities along the east and west canals to replace lost ecological function associated with the Proposed Action. The mitigation wetlands will be located at a lower terrace elevation and will be supported hydrologically by the anticipated reduced flows in the canals. Mitigation ratios will be determined by the USACE in conjunction with the Little Wood River Irrigation District.

In addition to the above environmental commitments, the following mitigation measures will further reduce or avoid potential impacts on wetlands:

- Install sediment barriers and other suitable erosion and runoff control devices prior to ground-disturbing activities at construction sites to minimize off-site sediment movement.
- Rock new and existing access roads where needed to prevent erosion and rutting.
- Minimize grading, clearing or other construction work in wetlands or riparian corridors. Do not permit use of these areas for construction staging, equipment or materials storage, fueling of vehicles, or related activities.
- Develop and implement a Spill Prevention, Control, and Countermeasure Plan to minimize the potential for spills of fuels, oils, or other potentially hazardous materials to reach the seasonal perched water table or surface water bodies.
- Keep vehicles and equipment in good working order to prevent oil and fuel leaks.

A.7 Recreation

A loss of fall color will be associated with the loss of vegetation along some canals, affecting the recreational experience of visitors traveling through the area to view fall colors. Replacement of cottonwoods and willows as discussed above under Vegetation Resources will eventually replace the lost foliage colors.

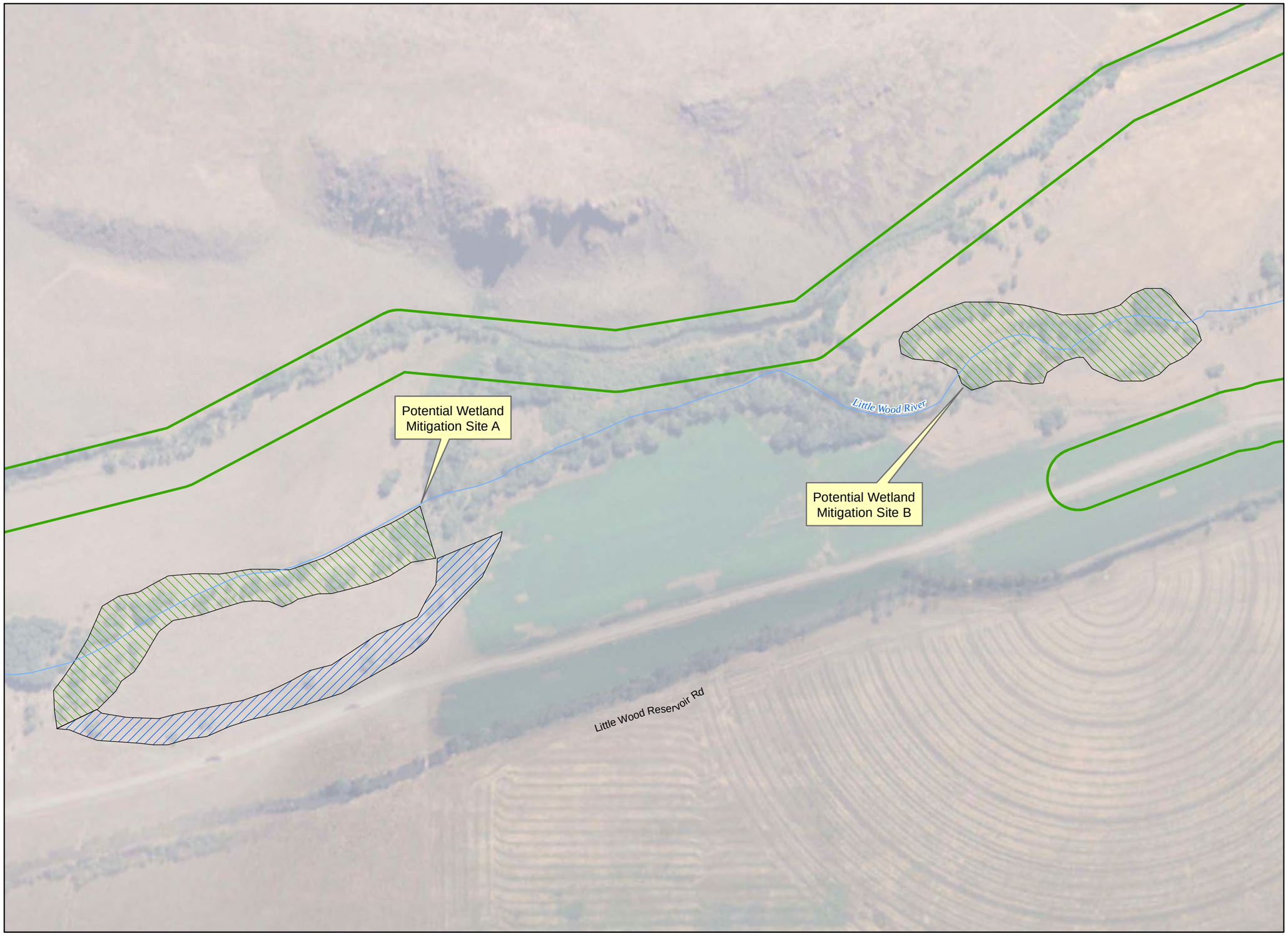
The following mitigation measures will be implemented to avoid or minimize the potential for project-related impacts on recreation activities:

- Send an information letter to the project mail list regarding the upcoming construction activities and schedule.

A.8 Transportation

Several measures will be developed to minimize the impacts of the project on transportation. These will be contained in the Transportation Management Plan, developed specifically for the project. The plan will address, but not be limited to the following:

- Road detours and closures.
- Minimizing conflicts with existing traffic (such as avoiding or minimizing construction-related travel during peak hour traffic periods, periods of heavy traffic to/from Little Wood Reservoir, periods when agriculture commodities that are produced in the area are being trucked to market, periods of processionals and the moving of cattle in the City, and roads that are used by pedestrians and bicyclists).
- Provide ample parking for construction workers and materials and equipment delivery at each work site to avoid vehicles and equipment being parked in the roadway.



Little Wood River
Proposed Pipeline Area
Highways

Wetland Mitigation Area

Enhancement
Restoration

N

0 100 200 400 Feet

Source: ESRI base data,
INSIDE Idaho, NRCS, LWRID

Figure A-1
Potential Mitigation Sites
Little Wood River Irrigation District
Pressurized Pipeline Irrigation
Delivery System

CH2MHILL

Appendix B

Agency Correspondence

DEPARTMENT OF THE ARMY
WALLA WALLA DISTRICT, CORPS OF ENGINEERS
BOISE REGULATORY OFFICE
10095 WEST EMERALD STREET
BOISE, IDAHO 83704-9754

REPLY TO
ATTENTION OF

November 13, 2009

Regulatory Division

SUBJECT: NWW-2009-689-B01

Mr. Perrin A. Robinson
CH2MHILL
322 East Front Street, Suite 200
Boise, Idaho 83702

Dear Mr. Robinson:

This is in response to your September 29, 2009 transmittal letter requesting that we review the August 2009 Draft EA Little Wood River Irrigation District Pressurized Pipeline Irrigation Delivery System and the July 2009 Little Wood River Irrigation District Pressurized Pipeline Delivery System Wetland Delineation and provide comment as to whether a Department of the Army permit would be required to implement the proposed project.

Section 404 of the Clean Water Act (33 U.S.C. 1344) requires a Department of the Army permit be obtained for the discharge of dredged or fill material into waters of the United States. This includes most perennial and intermittent rivers and streams, natural and man-made lakes and ponds, and wetlands, as well as irrigation and drainage canals and ditches that are tributaries to other waters. Other activities regulated under Section 404 include excavation and mechanized land clearing activities which result in the discharge of dredged material and destroy or degrade waters of the United States.

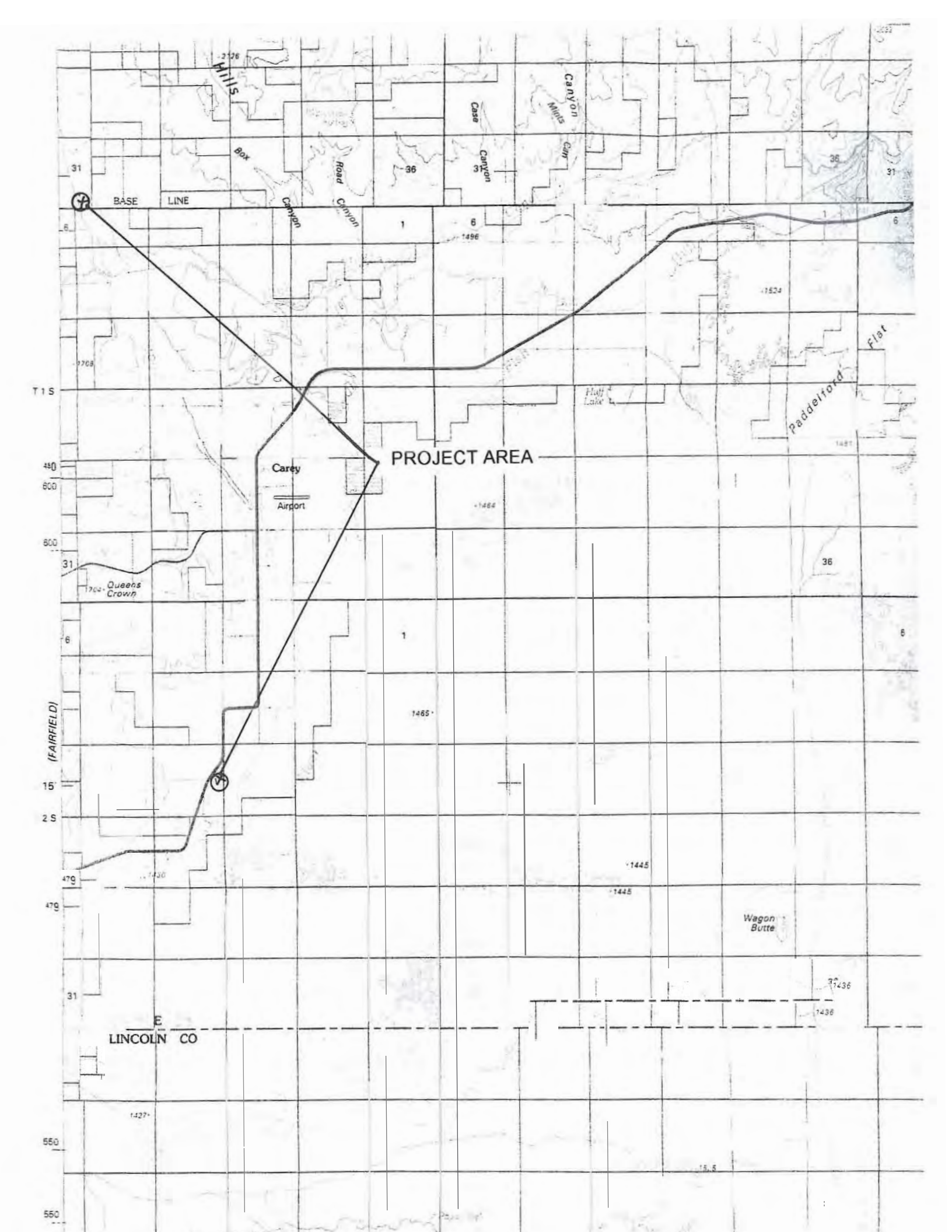
We have reviewed the draft EA which addressed two alternatives, the No Action Alternative and the preferred alternative which includes constructing a new diversion in the East Canal, two pumping stations, 18 booster pumps and 32 miles of new pressurized pipeline. The preferred alternative would also include modifying portions of the East and West Canals into farmable floodways. Based on the information provided, it appears that if the preferred alternative moves forward that much of it would fall under an irrigation exemption and thus not require Department of the Army approval. However, the farmable floodways that are proposed in both the East and West Canals do not appear to fall under the irrigation exemption and likely would need a permit. As you move forward to final design with this proposed project, please provide us with any new information and drawings as it becomes available so we can further evaluate the need for permits for all aspects of the proposed project especially the farmed floodway features.

We have also reviewed the July 2009 wetland delineation report prepared for the proposed project. As we discussed during the September 15, 2009 meeting, we can provide comments on the delineation report in several ways. The first being to provide you a preliminary jurisdictional letter which states we believe that the Little Wood River, the Little Wood River over flow channel, the East and West Canals, the Carey Lake Wildlife Management Area Feeder Canal and wetlands adjacent to the above waterways are waters of the United States and subject to regulation under Section 404 of the Clean Water Act. This process is simple and easy to do. The second option is for us to prepare an approved jurisdictional determination. This is more time consuming. Please let us know whether you want an approved jurisdictional determination (JD) or whether the preliminary jurisdictional determination (PJD) is adequate for your proposed project. If you decide at a later date that a PJD is not adequate we can at that time provide an approved JD.

We look forward to working you and the Little Wood River Irrigation District on this project. If you have any questions concerning these regulatory matters, please contact me at 208-345-2154. We are providing a copy of this letter to: Bob Simpson, Little Wood River Irrigation District, PO Box 355, Carey, Idaho 83320; and Megan Stelma, Blaine County Planning and Zoning Department, 219 1st Avenue South, Suite 208, Hailey, Idaho 83333.

Sincerely,

Gregory J. Martinez
Regulatory Project Manager


PROJECT AREA
BASE LINE
Carey
Airport
Hills
Box Canyon
Road Canyon
Case Canyon
Mills Canyon
Paddelford Flat
Hull Lake
Queens Crown
Wagon Butte
(FAIRFIELD)
LINCOLN CO
T1S
T2S
31
36
1
6

United States Department of the Interior

IDAHO FISH AND WILDLIFE OFFICE
1387 S. Vinnell Way, Room 368
Boise, Idaho 83709
Telephone (208) 378-5243
http://www.fws.gov/idaho

NOV 18 2009

Judy L. Ferguson
CH2MHILL
322 E. Front Street, Suite 200
Boise, Idaho 83702

Subject: Little Wood River Irrigation District Proposed Pressurized Pipeline Irrigation Delivery System—Blaine County, Idaho—Technical Assistance 970.0700 14420-2010-TA-0060

Dear Ms. Ferguson:

The Fish and Wildlife Service (Service) has received your request dated October 17, 2009, for a review and concurrence on CH2MHILL's determination of "no effect" to listed, proposed, or candidate species or designated critical habitat under section 7 of the Endangered Species Act of 1973 (Act), as amended, for the Little Wood River Irrigation District (LWRID) Proposed Pressurized Pipeline Irrigation Delivery System project in Blaine County, Idaho. In your letter, you indicate that you have been designated as a non-federal representative of the Bureau of Land Management and LWRID to conduct informal section 7 consultation with the Service. We provide the following comments regarding your request.

The Service does not typically provide concurrence for proposed actions with "no effect" determinations. However, we do acknowledge your "no effect" determinations for the yellow-billed cuckoo (*Coccyzus americanus*).

If you have any questions about your responsibilities under section 7 of the Act, or require further information, please contact Bob Kibler at the Idaho Fish and Wildlife Office at (208) 378-5255. Thank you for your continued interest in endangered species conservation.

Sincerely,

Jeffery L. Foss, State Supervisor
Idaho Fish and Wildlife Office

Appendix C

Public Involvement

LITTLE WOOD RIVER Irrigation District

Pressurized Pipeline Irrigation Delivery System

Environmental Assessme

U.S. DEPARTMENT OF THE INTERIOR BUREAU OF RECLAMATION

Welcome to the Open House

Please sign in

Public Open House Attendance Record

Pressurized Pipeline Irrigation Delivery System Environmental Assessment

Carey, Idaho
April 29, 2009
Carey School
7 p.m. to 9 p.m.

Name	Organization or Affiliation	Mailing Address
Allen Smetana	Jeune Ranch —	707 Nottingham Cir #2 Billings, MT 59105
Sara Meehan	City of Carey	
Cody Meeks		
Rick + Barbara Lee	Carey	
Brent & Judy Stygall	Carey	20534 N Main
Mike McDonald	IDFG	3195 417E Jerome 83338
Mike Kelsey	Carey	Box 291 Carey
Isidro Ornelas	CAREY	P.O Box 95 Carey
Richard Olsen	Carey	P.O. Box 45
Walt & Kay Boyer	Bureau of Reclamation Burley ID	1359 Hanse Ave Burley ID 83318
Dennis Patterson	Carey	7 River Lane Carey, Id 83320

Public Open House Attendance Record

Pressurized Pipeline Irrigation Delivery System Environmental Assessment

Carey, Idaho
April 29, 2009
Carey School
7 p.m. to 9 p.m.

Name	Organization or Affiliation	Mailing Address
Zeta Hansen	farmer	Box 44 Carey, ID. 83320
Greg Hansen	farmer	Box 44 carey, ID. 83320
Richard Kimball	City Dellar	Box 423 Carey Id 83320
Doreen Marks	Business	Box 111 Carey Id 83320
HAZEL THORNE	water user	NO BOX 717 PICABO, ID, 83348
Lane + Nancy Dwtschi	city dweller	005 Mountain View Carey, ID 83320
CINDY & GREG ANN	WATER USER	P.O. Box 96 CAREY, ID 83320
Paul Allen		Box 185 Carey Id 83320
Ron Young	H_2O user	Box 241 Carey, Id.
R. Spencer Ellsworth	Water user	P.O. Box 152 Carey, Id
	User	Hom View
Jack H Taylor	Water user	P.O. Box 272

Public Open House Attendance Record

Pressurized Pipeline Irrigation Delivery System Environmental Assessment

Carey, Idaho
April 29, 2009
Carey School
7 p.m. to 9 p.m.

Name	Organization or Affiliation	Mailing Address
Jamie Holman	None	~~Holmanjr@~~ PO Box 2384 Ketchum, ID

Public Open House Attendance Record

Pressurized Pipeline Irrigation Delivery System Environmental Assessment

Carey, Idaho
April 29, 2009
Carey School
7 p.m. to 9 p.m.

Name	Organization or Affiliation	Mailing Address
Lanita Hansen		Box 145
T. Verd Murdock		20447 N. Main
Dick Sain		P.O Box 3187 SV 83353
Brad Mecham		20458 main st. Carey ID, 83320
Nancy McAfee		Box 74 Carey
Jake Cutler		20415 S. Main St. Carey, ID
Joe D. Isworth		Box 388 Carey Id
Ken Mecham		Box 93 Carey, ID
Doug Simmons		P.O. Box 277 Carey Id
Jerry Peterson		48 Dry Creek Rd Carey ID.
Blaine Tingey		Box 4 Carey ID
Ray Azures		120 Scott Rd Carey

Little Wood River Irrigation District
Pressurized Pipeline Irrigation Delivery System Project
Public Information Meeting

ATTENDEES: Bob Simpson, LWRID
Hap Boyer, USBR
Public (37, see sign-in sheet)

Ron Fehringer, CH2M HILL
Denny Mengel, CH2M HILL
Perrin Robinson, CH2M HILL

FROM: CH2M HILL
Boise, Idaho
Water Business Group

DATE: May 8, 2009

PROJECT NUMBER: 375033

Meeting Date:	April 29, 2009
Meeting Time:	7:00 PM to 9:00 PM
Location:	Carey High School Auditorium Carey, Idaho

Project Presentation:

1) Public attendance sign-in sheets, comment forms, and project contact information provided at entrance table.
2) 10 display boards providing project information located along front of auditorium.
3) PowerPoint presentation of project background, objectives, benefits, and status by Bob Simpson.
4) Explanation of NEPA process, Environmental Assessment, and schedule of path forward presented by Denny Mengel.

Question / Answer Session:

1) How is a Significant Impact determined?

   A: Resource-dependent; threshold guidance material established as part of NEPA.

2) How will in-town irrigation be connected?

A: Turnouts for all water rights holders and meters; all turnouts, both farm and town, will be metered.

3) Will all pipes be buried?

A: Yes, 3-ft depth in non-farm areas and 4-ft depth in farm areas is typical.

4) What is total cost of project?

A: Described basis of previous estimate and recent changes in construction costs in current economy.

5) Is there a plan as to where maintenance dollars come from? What impact does this project have on future consumptive and non-consumptive uses?

A. All the water in the pipeline will be consumptive water except for the wildlife or mitigation water delivered in the lower part of the system. Non-consumptive water will remain in the river system and the upper canal system. The current plan is to have revenue from the hydroelectric facility cover maintenance costs.

6) How do you know that the amount of water released into East and West Canals will be enough to keep existing vegetation alive?

A: About 30 cfs has been released for the past month and it is flowing through the vegetated area and into town. This should be sufficient to allow the woody vegetation to survive.

7) Will wetland/riparian mitigation be done in same location as impact?

A: Yes, where possible. At a minimum, wetland mitigation must be handled in the same drainage area as the impact occurs.

8) How will the Public know if there is enough money to adequately cover mitigation?

A: Line item included in budget to cover planting is based on estimated mitigation requirement and recent historical cost data.

9) What is the prospect of getting federal stimulus money for project?

A: Unlikely at least from money flowing down to the State of Idaho, which has not allocated much money to water resource projects. Probably some chance of money coming down through Federal programs, but no real sense of how likely that is for this project.

10) If project goes through, does budget include line item covering risk that system will work and not leave the District with a project that doesn't perform?

A: CH2M HILL will be involved throughout construction and start-up and will provide inspection, services-during-construction, etc. with the intent of ensuring that the project is built as designed, and CH2M HILL stands behind its designs. System testing will be performed after construction is complete and prior to acceptance by the District. Extra capacity was factored into the pipeline design.

11) What is the project operating expense to service the project (O&M)?
A: It is expected that much of the historic effort to maintain ditches will shift over into the effort to service pump stations at the upper end of the project. District crews will take over operation of pumps in the locations where they are still needed. It is not known whether this will amount to somewhat more or somewhat less labor than historic levels. However, as noted previously, revenue from hydroelectric facility is expected to cover maintenance costs. The cost of an additional operator will be offset by the amount that is presently spent by hiring a contractor to keep unwanted trees and trash out of the present canal system.

12) Who do the farmers call when there is a problem and what will be the response time?

A: LWRID will be responsible for maintaining the system up to the turnouts and farmers will be responsible for individual systems after the turnouts. District is looking into placing backup pumps at pump stations. All the pump stations will be monitored by a SCADA alarm system similar to what is at the Hydro Plant that will sense a malfunction and keep calling until it is acknowledged by the on-duty operator or Watermaster.

13) As funding approaches, how will detailed aspects be worked out?

A: Technical documents are in place from the design effort in 2004-2005. These are 99% complete, but lack a little detail that can't be added until funding agency and funding mechanism is confirmed. Once that happens, final details and documents will be addressed prior to construction.

14) Concern expressed about signing easements at this time without all of the final documents in place.

A: 99% design documents that have been prepared show locations of pump stations, pipeline and appurtenances. Remaining details are mostly procedural or administrative and do not affect locations. Easements (or rights-of-way) are needed to tie down locations and prevent development in those locations. These locations are also critical to completing the environmental process and permitting, so they must be finalized as early as possible.

15) How will roads that get affected by construction be handled?

A: Contractor will be responsible for restoring roads to level equal to or better than conditions prior to the start of construction.

16) Will system allow for expansion?

A: Current state law does not allow for expansion of irrigation district service area.

17) Will look of the valley be preserved? Will there be any negative changes to the valley as a whole?

A: Won't see any major changes in vegetation in the valley.

18) If funding does not come through, will any portion of the project be constructed?

A: District will have to look at various programs; District would possibly pipe some of the laterals and look to improve canals, but pressurization and any major energy conservation may not be possible unless or until the whole system is constructed.

19) Will there be any mitigation to the private ditch going through the Mann's property that currently flows to adjoining property? Who cleans up the trees that may die along this ditch?

A: Mitigation will be provided for project related impacts, including loss of cottonwoods. If this major project is not completed there is a water conservation proposal submitted to NRCS to have the lateral north of Mann's property piped and with this upgrade the cottonwoods will likely disappear over time.

20) Are existing canal right-of-ways wide enough to place pipe in existing canal?

A: There is not enough right-of-way width to construct the pipeline completely outside the canal, and to keep costs down and limit the duration of construction; pipeline cannot be placed in existing canals. Must be able to keep the water flowing during growing seasons while construction is underway, and for cost purposes also must allow construction to occur during the summer when construction conditions are more favorable.

Meeting Adjourned

Provide Your Comments

We would like you to provide comments on the proposed Pressurized Pipeline Irrigation Delivery System project. Please use this form to express your opinions, concerns, and comments. You may complete and return this form before leaving the meeting, or you may complete the form later and mail it to:

BOB SIMPSON
LITTLE WOOD RIVER IRRIGATION DISTRICT
P.O. BOX 355
CAREY, ID 83320

You may also e-mail comments to Watermaster37N@aol.com.

The comment period ends May 27, 2009. Thank you for your participation.

PLEASE PRINT

Name: Dennis A. Patterson

Address: 7 River Lane Carey Id

My comments are as follows (if needed, attach additional pages):

Put a bike path on the finished right of way

208- 420-2474

Appendix B. Design Drawings

Please note that due to file size, the design drawings prepared by CH2M HILL (Jacobs) in February 2005 can be accessed via the SharePoint link included in the email.

MEMO

To: Idaho Water Resource Board Finance Committee

From: Justin Ferguson

Date: March 2, 2026

Subject: Raft River Regional Water Sustainability Project – Proposed Contract Terms

REQUESTED ACTION: Consider the proposed contract terms for the Raft River Pipeline Contract

Background

A proposal from the Raft River Recharge Group was received by the IWRB in December of 2022, requesting Regional Water Sustainability Program funding for their Raft River Watershed Project. Funding was awarded to the project the following July, pending the IWRB's approval of the contract terms and conditions. Since that approval, the Raft River Recharge Group has formed a District and is moving forward with construction, expected to begin in October 2026. The Raft River team have provided documentation affirming the formation of the district and judicial confirmation to take on debit, with the expansion documentation to be provided by their legal counsel.

The RRID was recently issued a Finding of No Significant Impact (FONSI) through their Watershed Plan Environmental Assessment and was selected for funding through the Bureau of Reclamation's Watershed Flood Prevention Operation (WFPO) program. The District will apply for $25,000,000 in funding through this program to cover construction costs for the project, as pre-construction and design are largely completed. With this finding, RRID is also pursuing funding through the Regional Conservation Partnership Program (RCPP), with awards to be made this year.

Additional Proposed Terms

Along with the standard IWRB contract terms and specific terms that were developed for all Regional Sustainability contracts, staff would recommend the following terms unique to the Raft River Watershed Project:

Invoice-Reimbursement Contract and Proposed Terms & Conditions

- This is an invoice-reimbursement not to exceed Contract where the IWRB has approved funding for the project. The sponsor shall pay the remaining project costs.
- 10% holdback on funds until Project Completion Form is submitted.
- When requested by the IWRB, provide a monthly progress report to the Contract Manager.
- The progress report shall include at a minimum:
    - Updated schedule to completion
    - Issues encountered in the reporting period
    - Final cost forecasts where applicable
    - Up-to-date project budget

- The Contractor shall provide the final invoice with a financial summary of the Project's costs, with a detailed list of the type and amount of funds used to pay for the Project. The financial summary shall include the following:
    - Total final cost of the Project based on expenditures.
    - List all funding sources and the amount used on any aspect of the Project.
    - If a Federal or State grant was awarded for any portion of the Project, include the amount awarded.

Attachments:

- *Draft Resolution*

BEFORE THE IDAHO WATER RESOURCE BOARD

IN THE MATTER OF THE RAFT RIVER IRRIGATION DISTRICT REGIONAL SUSTAINABILITY AWARD	RESOLUTION TO ADOPT TERMS AND CONDITIONS

WHEREAS, in July 2021 the IWRB adopted an initial Regional Water Sustainability Priority List to help guide the Idaho Water Resource Board's (IWRB's) spending for large, regional water sustainability projects from ARPA funds, state general funds, or other applicable sources. The IWRB also, in January 2022, adopted threshold criteria indicating that a project must help achieve water supply sustainability on a regional, basin-wide, or state wide basis to be included on the Regional Water Sustainability Priority List; and

WHEREAS, on July 21, 2023, the IWRB passed Resolution No. 31-2023 authorizing funding for nine Regional Water Sustainability Projects statewide for a total of $59.4 million. The regional projects were funded with federal American Rescue Plan Act (ARPA) monies and funds from the IWRB's Water Management Account; and

WHEREAS, in Resolution No. 31-2023 the Raft River Recharge Group (RRRG) was added to the Regional Water Sustainability Priority list and awarded funding in the amount of $7,000,000, and the IWRB directed staff to work with project sponsors to develop appropriate terms and conditions to be brought back to the IWRB for approval; and

WHEREAS, the project would construct a pipeline from the Snake River into the Raft River Basin to deliver private water rights, develop flood detention and recharge ponds, and pipe surface water delivery infrastructure to reduce the Basin's overall groundwater usage; and

WHEREAS, the RRRG will provide documentation of the formation of the Raft River Irrigation District (RRID) and will convey its interest in the project to said District, and the RRRG has requested the IWRB approve the change in project sponsor from the RRRG to the RRID; and

WHEREAS, the updated total Project costs are estimated to be $_____, with a target completion date of October 2026; and

NOW, THEREFORE BE IT RESOLVED that the IWRB approves the Terms and Conditions for the Raft River Pipeline Project as specified in Attachment A to this resolution.

NOW, THEREFORE BE IT FURTHER RESOLVED that the IWRB approves the change in project sponsor, from the Raft River Recharge Group to the Raft River Irrigation District.

NOW, THEREFORE BE IT FURTHER RESOLVED that the IWRB approves funding these projects using the Water Management Account.

NOW, THEREFORE BE IT FURTHER RESOLVED that contracts for these projects will also contain standard IWRB contract conditions and other project-specific Terms and Conditions not specified in this resolution.

DATED this 27th day of March 2026.

_____
JEFF RAYBOULD, Chairman
Idaho Water Resource Board

ATTEST _____
DEAN STEVENSON, Secretary

ATTACHMENT A: Terms & Conditions

Raft River Irrigation District Project

This project will include design work, legal work, permitting, and the construction of a new pump station, power substation, and conveyance infrastructure to allow the Raft River Irrigation District to deliver surface water to its users. Pulling from the Snake River, the pump station will convey the new surface water through a 13-mile pipeline, providing approximately 70 cfs for groundwater recharge and 30 cfs for irrigation. The project also includes the development of flood control and recharge basins, allowing the District to capture 620 acre-feet of water to reduce flood risk and provide recharge opportunities.

As part of the flood risk reduction, the District may also address bank stabilization issues along Heglar Creek. Along with erosion and sediment load controls, an 85-foot debris and storage facility may be constructed to decrease impacts to the creek during flood events.

The RRID will obtain all needed permits, approvals, certifications, and real estate interests needed to complete the project. Pre-construction activities began in March 2023. Construction is scheduled to begin in approximately October 2026 and is projected to be completed by approximately March 2030. All work is subject to weather, permitting, and construction delays.

Invoice-Reimbursement Contract and Proposed Terms & Conditions

- This is an invoice-reimbursement not to exceed Contract where the IWRB has approved funding for the project. The sponsor shall pay the remaining project costs.
- 10% holdback on funds until a Project Completion Form is submitted.
- When requested by the IWRB, provide a monthly progress report to the Contract Manager.
- The progress report shall include at a minimum:
    - Updated schedule to completion
    - Issues encountered in the reporting period
    - Final cost forecasts where applicable
    - Up-to-date project budget
- The Contractor shall provide the final invoice with a financial summary of the Project's costs, with a detailed list of the type and amount of funds used to pay for the Project. The financial summary shall include the following:
    - Total final cost of the Project based on expenditures.
    - List all funding sources and the amount used on any aspect of the Project.
    - If a Federal or State grant was awarded for any portion of the Project, include the amount awarded.

MEMO

To: Idaho Water Resource Board

From: Justin Ferguson

Date: March 2, 2026

Subject: Minidoka Irrigation District – Surface Water Efficiencies Program

REQUESTED ACTION: Consider a funding request for the Minidoka Irrigation District

1.0 INTRODUCTION

The Minidoka Irrigation District (MID) is requesting funding support for their South Side Project, including repairing their existing F-Waste syphon structure, improving and automating three existing check structures, and piping sections of the existing laterals extending from the main canal. These improvements will strengthen MID's ability to monitor, control, and conserve surface water resources across its service area.

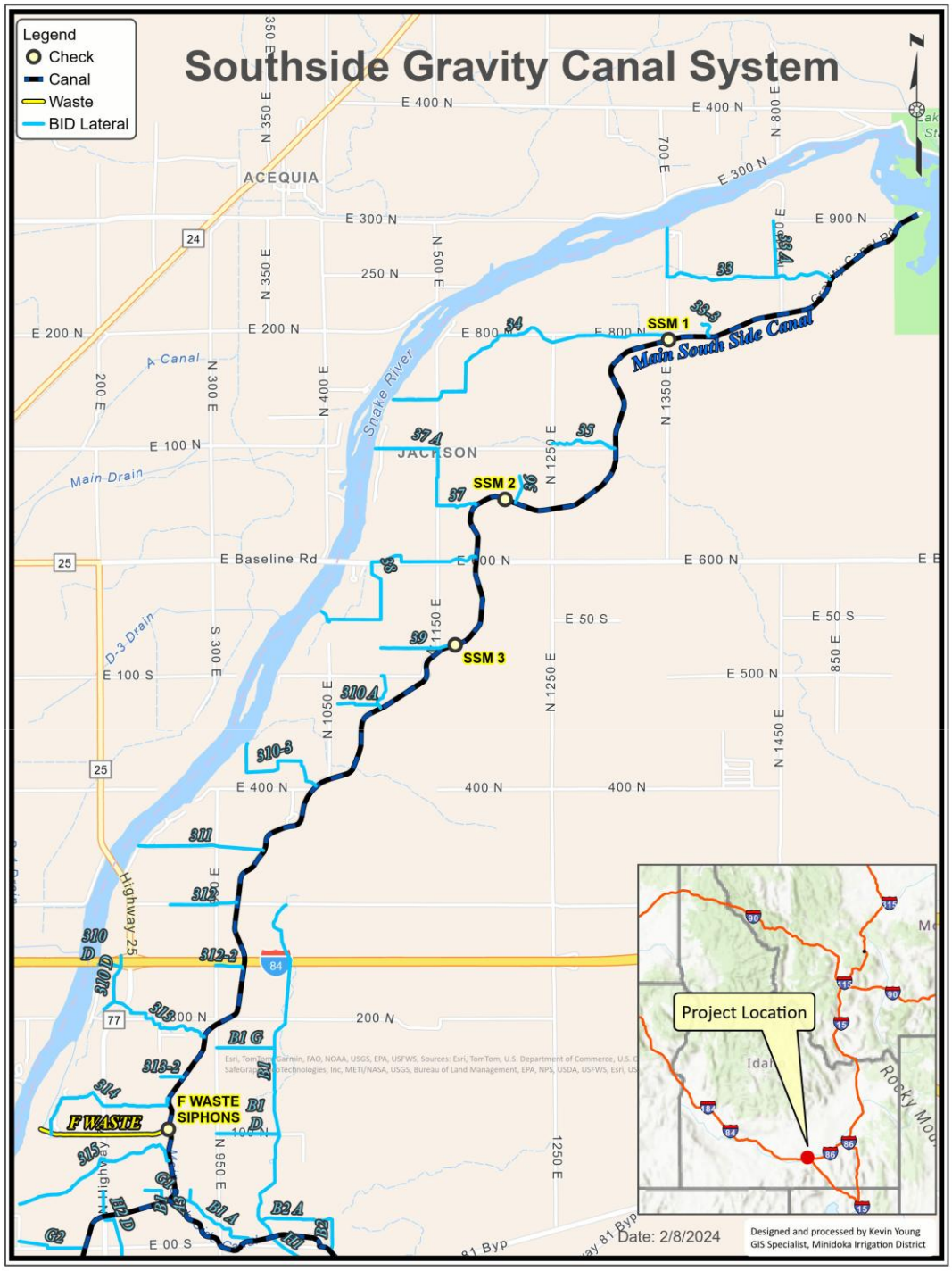
2.0 PROPOSED PROJECT

The South Side Project is split into three components. The first is the automation of all three existing check structures along the main South Side Gravity canal. Electrical infrastructure will be extended to the check structure sites, allowing MID to install float and pully assemblies, data loggers, radio transmitters, and antenna systems. With these upgrades, MID will be able to continuously monitor and operate the check structures, reducing manual response delays and operational spills caused by over-diversion. The map provided in the application shows the locations of the check structures (*Figure 1 - SSM 1:3, highlighted in yellow*).

The second component of the South Side Project is the conversion of open-channel laterals to a closed-pipe system. MID has identified several benefits from the conversions, depending on site-specific variables, including reduced maintenance, reduced soil erosion, reduced operational seepage losses, and reduced or eliminated spills from canal overtopping events. The specific laterals to be converted from open-channel to pipe are noted in Figure 1 below, outlined in blue.

The final component of the South Side Project is a rebuild of MID's existing F-Waste structure. Built in the 1900s, the structure ensures safe, reliable operations during emergency discharge events for both the Minidoka and Burley irrigation districts. Core samples taken by Civil Science in 2021 indicated severe structural degradation, significantly reduced compressive strength, and an approximate annual leak of 5,700 acre-feet. Funding would be used in conjunction with an Aging Infrastructure Grant, awarded to the Burley Irrigation District, to rebuild the entire structure approximately 10 feet downstream. The location for this structure is noted on Figure 1 as F-Waste Siphons (yellow).

Figure 1. Minidoka Irrigation District – South Side Project worksite locations



3.0 PROJECT IMPLEMENTATION SCHEDULE & COST ESTIMATE

The MID proposes that the project would be phased across three years. Construction would take place during periods between irrigation seasons so as not to disrupt irrigation operations; generally between October and March each year.

4.0 EFFICIENCY RESULTS LIKELY TO BE ACHIEVED & 2024 SWC AGREEMENT IMPACTS

Through this project, MID will be able to reduce its seepage and operational losses by piping open laterals and automating check structures. Further, the District will be able to prevent unnecessary diversions and minimize conveyance losses. MID will also be able to better and more efficiently run its delivery systems for its patrons. By installing real-time telemetry equipment, MID will be able to better coordinate operations between surface and groundwater delivery systems, better aligning with statewide efforts to quantify and monitor conservation actions.

5.0 HYDROLOGIC REVIEW & ANTICIPATED IMPACTS

Because of the project's location, staff from the Idaho Department of Water Resources was consulted on potential impacts to both surface water through the Snake River and the underlying aquifer.

The impact of seepage loss on the ESPA storage and aquifer interaction with the Snake River was evaluated using the Eastern Snake River Plain Aquifer Model Version 2.2 (ESPAM 2.2). It is of note for this review that the ESPA is not hydraulically connected to the Snake River at the lower end of Lake Walcott, as well as between Minidoka and Milner. Model cells used and further in-depth discussions on impacts can be found in *Evaluation of hydrologic impacts of proposed South Side Improvement Project on Snake River reach gains and ESPA storage (attached).*

Through the review it was determined that much of the proposed project's impact to the Snake River will occur in the Minidoka to Milner reach through reductions in surface return flows. Additionally, the implementation of soft conversions will not offset streamflow reductions within the reach.

While the project would recharge the aquifer by approximately 1,345 AF/yr through the piping of lateral and a rebuild of the F-Waste structure. ESPAM 2.2 simulations estimate an overall reduction of 1,345 AF/yr in long-term Snake River streamflow by approximately 164 AF/yr in the above Blackfoot reach, 688 AF/yr in the near Blackfoot to Minidoka reach, and approximately 493 AF/yr in the Kimberly to King Hill reach. Based on the offsetting totals, recharge done in the area could move water into the aquifer at the expense of surface flows.

Further, the proposed project would reduce surface water return flows by between approximately 5,000 AF/yr and 7,000 AF/yr at the F-Waste structure and other spill locations throughout the area.

Depending on the extent of the conversion projects undertaken by MID, some of these impacts could be reduced; however, the timing and location of these reductions may not coincide with current operations. Per the review memo: "*Because no benefits of soft conversions are expected to accrue to the Minidoka to Milner reach, where most of the project impacts will occur, it is very likely the proposed project will have a net adverse impact on natural flow available between near Blackfoot and Milner Dam, particularly during drought years."*

Based on a review of the proposed project components and their locations, there may be impacts to the Snake River, including surface water return flows, and to the underlying aquifer. There may also be implications for the Minidoka Return Flow Credit storage adjustment through Water District 01.

6.0 CONCLUSION

As a Surface Water Coalition member, the Minidoka Irrigation District is working toward mitigation measures and canal efficiencies to meet the 2024 Surface Water Coalition Stipulated Mitigation Plan. These projects would help MID reduce operational losses, improve coordination of water management, and ensure safe and reliable operations during emergencies. However, there may also be impacts to water users within the area for the IWRB to consider in their approach to this funding application.

Attachments:

- *Minidoka Surface Water Efficiencies Proposal – South Side Improvements Project*
- *Evaluation of hydrologic impacts of proposed South Side Improvement Project on Snake River reach gains and ESPA storage*

MINIDOKA IRRIGATION DISTRICT
98 WEST 50 SOUTH
RUPERT, ID 83350
(208) 436-3188
www.minidokairrigationdistrict.org
"M.I.D. IS AN EQUAL OPPORTUNITY PROVIDER AND EMPLOYER"

22 October 2025

Idaho Department of Water Resources
Attn: Surface Water Efficiencies Program
PO Box 83720
Boise, Idaho 83720

Idaho Water Resource Board Funding Consideration Committee,

Enclosed is Minidoka Irrigation District's (MID) funding request for consideration under the Surface Water Efficiencies (SWE) Program. MID operates as part of the Minidoka Project, one of the earliest U.S. Bureau of Reclamation efforts established in 1903 following passage of the Reclamation Act. Building on this historic legacy, MID remains committed to improving water management, operational reliability, and conservation through targeted modernization efforts.

The South Side Improvement Project represents the next phase in MID's ongoing efficiency program. The project includes automation of critical check structures, replacement of open channel laterals with high quality plastic pipe, and reconstruction of an aging siphon to eliminate losses and enhance safety. These improvements will strengthen MID's ability to monitor, control, and conserve surface water resources across its service area.

The total estimated project cost is $5,887,097.00, and MID respectfully requests 100% funding under the SWE Program. This investment will ensure the District's capacity to meet irrigation demands while supporting statewide efforts to improve water use efficiency.

Thank you for your time and consideration. MID looks forward to collaborating with the Idaho Water Resource Board on this infrastructure improvement project.

Sincerely,

Dan Davidson
General Manager

Table of Contents

Project Sponsor

Type of organization, official name

Minidoka Irrigation District is an irrigation district located in Minidoka and Cassia Counties in South-Central Idaho.

A brief history of the sponsoring entity

The Minidoka Irrigation District (MID) was established in the early 1900s as part of the U.S. Bureau of Reclamation's Minidoka Project, one of the first five reclamation projects authorized under the Reclamation Act of 1902. The Minidoka Project was developed to bring irrigation to the Snake River Plain, transforming the region's arid desert into productive farmland through the construction of the Minidoka Dam and an extensive system of canals and laterals. MID was organized to operate and maintain the southern portion of this federal project and today manages water deliveries to approximately 77,000 acres of irrigated farmland.

The District provides water to more than 3,000 users through a network of over 500 miles of canals, laterals, and drainage systems. MID receives storage water from the Minidoka, American Falls, Palisades, and Jackson Lake Dams. As a key component of one of the Bureau of Reclamation's oldest and most historic developments, MID continues to modernize its infrastructure to enhance efficiency, reliability, and long-term water sustainability across its service area.

A description of the existing operations owned and/or operated by the entity.

Minidoka Irrigation District services 77,151.82 acres, and serves approximately 3,067 water users with over 502 miles of canals, laterals, and drainage systems.

Proposed Project Narrative

This section provides a brief overview of the project, including the infrastructure description, repair, rehabilitation, and improvement needs, objectives, and benefits.

The Minidoka Irrigation District (MID) South Side Improvement Project is a comprehensive infrastructure modernization project designed to improve operational efficiency, system reliability, and long-term water conservation throughout the District's eastern section. The project focuses on three major components:

1. Automation of all three check structures to enable real-time water management and data-driven decision-making;
2. Conversion of open laterals to enclosed pipe to reduce seepage and evaporation losses; and
3. Reconstruction of a deteriorating emergency discharge siphon to restore safe and reliable system function.

The identified infrastructure serves a portion of MID's 77,000-acre service area, which has experienced considerable wear due to age, sedimentation, and fluctuating delivery demands. Manual control gates, aging concrete structures, and open conveyance channels currently limit the District's ability to maintain precise flow control, leading to operational spills, seepage losses, and increased maintenance costs.

By integrating automated check structures equipped with telemetry, MID will achieve real-time visibility and control of water flows along the South Side Gravity Canal (SSGC). The conversion of open laterals to buried, closed-pipe systems will significantly reduce conveyance losses while minimizing vegetation growth, sediment accumulation, and maintenance labor. The reconstruction of the F Waste Emergency Discharge Siphon will restore full hydraulic capacity, prevent leakage, and ensure safe discharge operations under high-flow conditions.

Alignment with the 2024 Surface Water Coalition Stipulated Mitigation Plan

The 2024 Surface Water Coalition (SWC) Stipulated Mitigation Plan, approved in collaboration with the Idaho Department of Water Resources, established renewed commitments to conserving groundwater and protecting surface water reach gains within the Eastern Snake Plain Aquifer (ESPA). The agreement emphasizes cooperative

mitigation measures that preserve streamflow, enhance delivery efficiency, and strengthen the hydrologic connection between surface and groundwater systems.

This proposed project directly supports the goals and intent of the 2024 Stipulated Mitigation Plan by:

- **Reducing Seepage and Operational Losses:** Piping open laterals and automating check structures will prevent unnecessary diversions and minimize conveyance losses, conserving surface water supplies that would otherwise percolate to the aquifer or evaporate.
- **Enhancing Reach Gains and Flow Stability:** Improved flow control will help stabilize return flows to the Snake River system, supporting the Plan's objective of protecting and maintaining surface water reach gains critical to ESPA balance.
- **Improving Water Management Coordination:** Real-time telemetry will enhance coordination between surface water and groundwater delivery systems, aligning with statewide efforts to quantify and monitor conservation actions under the 2024 mitigation framework.
- **Contributing to Statewide Conservation Targets:** By optimizing delivery efficiency across more than 77,000 acres of irrigated farmland, MID's system-wide improvements will conserve significant volumes of surface water, reducing unnecessary losses and enhancing overall supply reliability. The water conserved through these delivery optimizations can, in turn, support soft conversions therefore allowing groundwater users to rely more heavily on available surface water supplies, reducing groundwater demand and contributing to long-term aquifer sustainability.

Collectively, the proposed improvements will enhance the Minidoka Irrigation District's ability to manage and deliver water with greater precision while significantly reducing system losses. The addition of automated controls will improve operational responsiveness and staff efficiency by allowing for real-time adjustments and data-driven management across the delivery network. These upgrades will also strengthen system safety, reliability, and longevity by replacing aging infrastructure with durable, modern materials and technology. Together, these efforts directly support Idaho's long-term goals under the Surface Water Efficiencies Program and advance the cooperative objectives of the 2024 Surface Water Coalition Stipulated Mitigation Plan. The South Side Improvement Project represents a forward-looking investment in the

future of Idaho's water management system, ensuring the District's continued capacity to provide dependable, efficient, and sustainable surface water supplies for generations to come.

Project Description

Project Description

Proposed project narrative, project map, scope of work (and supporting documents/designs if appropriate) & any other supporting information the applicant would like to include

The Minidoka Irrigation District (MID) South Side Improvement Project focuses on critical upgrades along the South Side Gravity Canal (SSGC) and its associated delivery laterals, located in Cassia County, Idaho. This section of the system serves a portion of the District's 77,000 irrigated acres and is essential for delivering surface water to agricultural users across the eastern service area.

The project includes three major components:

1. **Automation of Check Structures:** Installation of automation and telemetry on existing check structures along the South Side Gravity Canal. These systems will enable precise flow regulation, minimize operational lag, and provide real-time data to improve water management decisions.
2. **Lateral Piping Improvements:** Replacement of open earthen laterals with durable closed-pipe systems to reduce seepage and evaporation losses, increase flow capacity, and minimize maintenance needs.
3. **Emergency Discharge Siphon Upgrade:** Reconstruction of the aging siphon structure to restore full operational capacity, prevent leaks, and ensure safe and reliable function during emergency discharge events.

Together, these improvements will modernize one of MID's most critical water delivery structures. By replacing and upgrading aging infrastructure with reliable, automated, and low-maintenance systems, the project will reduce water losses, improve flow consistency, and enhance operational safety.

Anticipated Goals and Benefits:

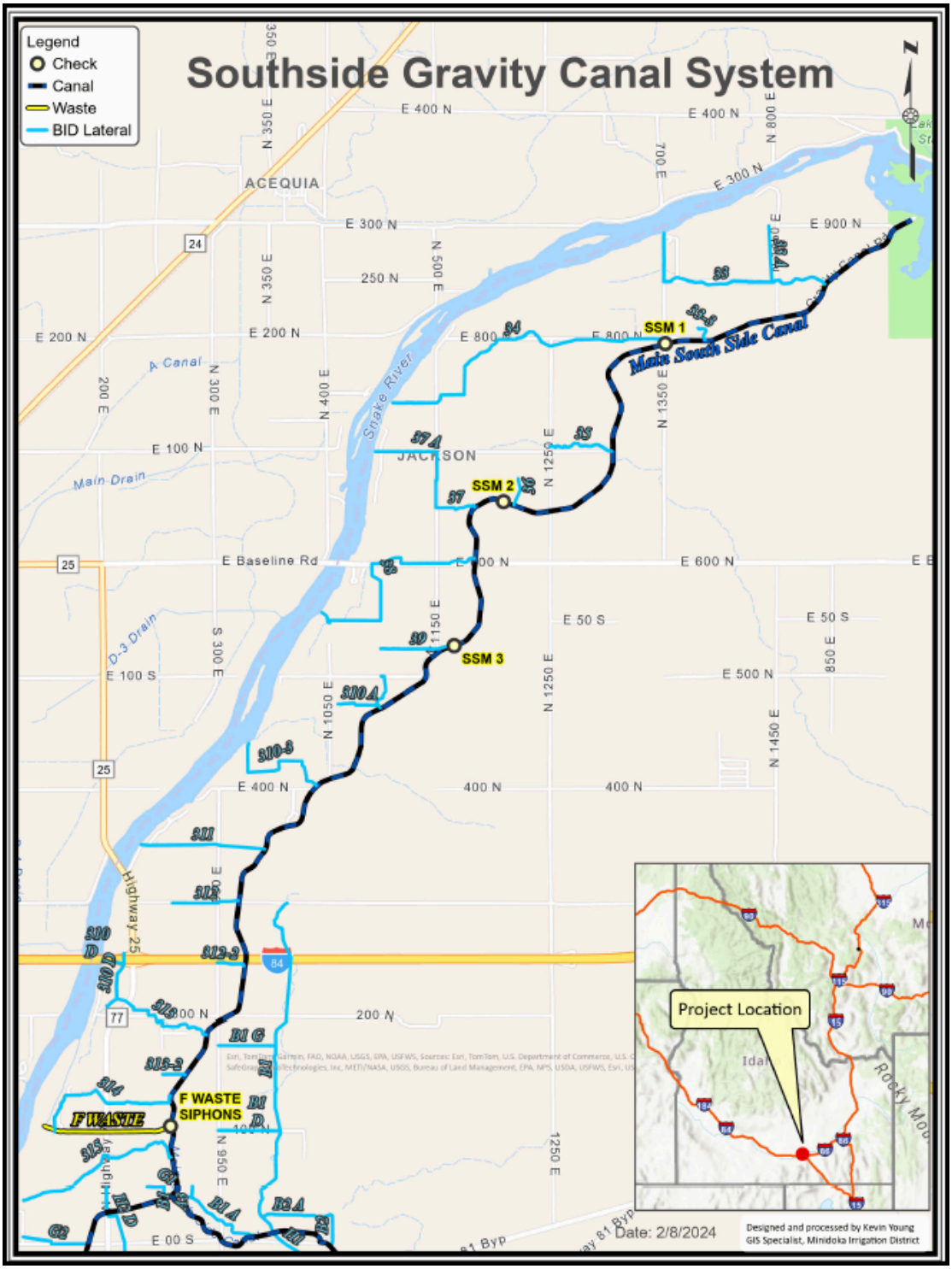
- Achieve measurable improvements in operational efficiency through automation and telemetry.

- Reduce seepage and evaporation losses, preserving valuable surface water resources.
- Extend the service life of existing infrastructure and reduce maintenance costs.
- Improve system responsiveness and water delivery accuracy for end users.
- Support statewide water management objectives, including the conservation and sustainability goals outlined in the 2024 Surface Water Coalition Agreement.

This project represents a strategic and cost-effective approach to improving surface water management, ensuring that MID continues to provide dependable and efficient irrigation service to its users while contributing to the long-term stability of Idaho's water resources.

Map

The map provided in this section is also included as a full sheet representation as **Attachment 2**. Dark blue lines represent MID canals, while lighter blue lines indicate MID laterals.



Conceptual Plan and Design Features

Includes layout and design features of the project. Layout and cross-section details of the proposed project repairs and/or improvements, which shall include dimensions and hydraulic properties of the waterway

The Minidoka Irrigation District South Side Improvement Project is a large-scale modernization effort encompassing multiple interrelated components across the South Side Gravity Canal (SSGC) and its adjacent laterals. The project extends from the northeast to the southwest portions of the District's eastern delivery network and addresses critical water loss, control, and reliability challenges through the automation of check structures, the conversion of open laterals to enclosed systems, and the reconstruction of aging conveyance infrastructure.

This project will significantly improve MID's operational efficiency by reducing seepage and evaporation losses, improving hydraulic control, and enabling real-time system monitoring. The following subsections describe each component of the project in sequence.

Check Structure #1

The first improvement site, known as The First Check, serves as a key flow regulation structure on the SSGC. It maintains water levels for multiple laterals upstream and regulates downstream deliveries. Currently operated manually, this structure will be fully automated using a combination of float and pulley assemblies, data loggers, radio transmitters, and antenna systems linked to a telemetry platform.

Electrical infrastructure will be extended to the site to support automation components. Real-time monitoring and control will allow instantaneous adjustment to flow fluctuations caused by user demand changes. The automation will operate continuously, 24 hours a day, reducing manual response delays and nearly eliminating operational spills caused by over-diversion at the canal headworks.

Lateral 33 Spill

At the Lateral 33 Spill site, approximately 2,640 feet of 24-inch pipe will be installed to replace a rock-lined open channel prone to daily seepage losses of 0.89 acre-feet, equivalent to 161.09 acre-feet per irrigation season. The conversion to a closed system will conserve water, reduce maintenance, and prevent soil erosion associated with the local soil structure.

Lateral 35

Lateral 35 is a 3,360-foot open channel lined with soil and rock that has become increasingly difficult to manage. The lateral serves 14 properties totaling 278.9 acres and currently experiences persistent seepage losses due to its lining composition. The

proposed upgrade includes installation of 18-inch PVC pipe (80 and 100 PSI) with navigator-style delivery valves at traditional diversion points.

This conversion will improve manageability and eliminate annual water loss of approximately 197.29 acre-feet, extending the lateral's useful life and improving delivery reliability for all users.

Lateral 36

Lateral 36, located immediately downstream of Lateral 35, faces similar challenges of seepage and sedimentation due to poor soils and limited spill access. Currently serving 143.97 acres, the lateral will be piped using 1,330 feet of 18-inch 80 PSI PVC pipe with four diversion points.

The closed system will prevent seepage, stabilize flow rates, and eliminate reliance on an informal private ditch spill area, conserving approximately 54.3 acre-feet per irrigation season.

Lateral 38

Lateral 38 is one of the most extensive components of the project, spanning 11,360 feet and serving 38 properties totaling 586.5 acres. Its sandy soil composition causes erosion and sediment deposition at the river spill outlet, requiring frequent maintenance.

The project will replace the open channel with 11,360 feet of 24-inch 80 PSI PVC pipe featuring 17 diversion points and navigator valves. This upgrade will provide direct water savings of approximately 259 acre-feet per season while also reducing annual equipment and labor hours by 16–20 hours. The conversion will minimize sedimentation, erosion, and compaction impacts along the delivery channel.

Check Structure #2

The second check structure, known as #2, will be retrofitted with the same automation package as The First Check, including floats, pulleys, data loggers, radios, and antennas. Due to its remote location, the structure will utilize solar power for continuous operation.

Automating this structure will enable instantaneous flow adjustments and further reduce operational spills, enhancing the precision of water management throughout the canal network.

Check Structure #3

The third and final check structure in the series will also be automated using identical technology and telemetry. The site has access to the power grid, allowing for both electric and solar power integration.

Together, Check Structures #1, #2, and #3 will function as an interconnected system, optimizing canal flow control and virtually eliminating the need for manual gate adjustments. This automation will substantially reduce operational water losses across the entire SSGC system.

Lateral 310-3

Lateral 310-3 serves 238.65 acres through nine diversion points and currently suffers from diminished flow capacity due to soil breakdown and sedimentation. The project will replace the open channel with 5,920 feet of 18-inch 80 PSI PVC pipe, providing a consistent and controlled flow rate.

The upgraded system will improve on-farm pumping efficiency, reduce debris intake, and prevent sand accumulation within both the lateral and pump systems.

Lateral 310-4

Lateral 310-4 is a short, 200-foot lateral with highly variable flow conditions directly influenced by SSGC head levels. Due to its short length and inability to self-regulate, it often overtops or runs dry despite fixed headgate settings.

Piping this lateral will stabilize delivery pressures, eliminate flooding, and ensure reliable service to adjacent cropland and pasture areas.

Lateral 311

Lateral 311, located just downstream of 310-4, currently includes a partial pipeline installed by water users. Extending this system 2,540 feet upstream to the head of the lateral using 18-inch 80 PSI PVC pipe will complete the conversion and improve flow management.

This upgrade will reduce sediment buildup, simplify maintenance, and conserve approximately 103.17 acre-feet of water per season while supporting 462.09 irrigated acres.

Lateral 312

Lateral 312 has been a persistent source of operational inefficiency and user conflict due to shallow depth, open exposure, and manual control. Frequent overtopping and downstream flooding occur as a result of uncoordinated adjustments among users.

The proposed upgrade includes 3,180 feet of 15-inch 80 PSI PVC pipe with six diversion points and navigator valves to ensure stable flow control and prevent losses associated

with flooding or uncontrolled withdrawals.

This improvement will enhance user relations, ensure equitable water delivery, and eliminate waste caused by overtopping events.

F Waste Emergency Diversion Structure Upgrade

The F Waste Siphon, part of the original 1900s-era irrigation infrastructure, has deteriorated beyond serviceable condition. Core samples collected by Civil Science in 2021 revealed severe structural degradation, with compressive strengths measuring 900–1,000 PSI, well below the original 3,000 PSI design strength.

The structure currently leaks approximately 5,700 acre-feet of water per irrigation season, posing significant risks to water conservation, energy efficiency, and agricultural productivity.

To address this, Minidoka and Burley Irrigation Districts will construct a new siphon approximately 10 feet downstream of the existing structure. The design, developed in partnership with Shannon & Wilson, will incorporate modern reinforced concrete and improved hydraulic transitions to ensure long-term performance and reliability.

This upgrade is vital for protecting downstream pumping stations, preventing flooding, and safeguarding over 41,000 acres of irrigated farmland served through this shared system.

Collectively, the South Side Improvement Project integrates advanced automation, durable materials, and modern design principles to enhance control, efficiency, and reliability across MID's southern delivery network. The system-wide improvements are expected to conserve more than 6,500 acre-feet of water annually, reduce maintenance costs, and extend the lifespan of critical infrastructure, supporting Idaho's long-term surface water conservation and operational efficiency goals.

Cost Estimate and Budget

Provide a detailed cost estimate for the proposed project. This would include the total project costs for planning, engineering design, construction, regulatory and permitting, administrative and legal, land and right-of-way acquisition, easements, construction inspection, and contingency costs.

The South Side Improvement Project represents a large-scale infrastructure modernization initiative designed to enhance surface water delivery efficiency, automation, and system reliability. The total estimated project cost is $5,887,097.00. MID is requesting 100% funding under the Idaho Water Resource Board Surface Water Efficiencies Program to fully implement the proposed improvements.

The cost estimate includes all phases of the project, from planning and engineering through construction, installation, and final inspection, as outlined in the table below.

Category	Description	Estimated Cost
Planning and Preliminary Engineering	Site surveys, data collection, feasibility evaluations, coordination with stakeholders, and conceptual design of automation and pipeline systems.	$215,000.00
Final Design and Engineering	Development of final design drawings, hydraulic modeling, structural analysis, and engineering specifications for automated check structures, pipelines, and the siphon upgrade.	$385,000.00
Regulatory Review and Permitting	Environmental compliance documentation, Idaho Department of Water Resources (IDWR) coordination, and necessary permits for in-channel work and structural improvements.	$65,000.00
Construction and Installation	Includes excavation, structure demolition, concrete work, installation of automated gates and telemetry, pipeline installation (PVC/HDPE), electrical/solar infrastructure, and associated materials and labor.	$4,502,500.00

Administrative and Legal	Project management, contract administration, coordination with IWRB staff, procurement oversight, and legal services.	$115,000.00
Construction Inspection and Quality Control	Field inspection, testing, commissioning, and verification of automation functionality and flow calibration.	$75,000.00
Contingency (10%)	Applied to total estimated construction and design costs to cover unforeseen conditions, material fluctuations, or schedule adjustments.	$529,597.00

Budget Summary

The project's largest cost component lies within construction and installation, which encompasses both material procurement and field implementation of automation systems, pipelines, and the F Waste Siphon upgrade. The estimate assumes all work will be performed using certified contractors under the direction of MID staff and in coordination with program requirements.

All estimates are based on recent comparable construction and automation projects within the Eastern Snake River Plain region and include allowances for inflation and current material pricing. MID will manage project oversight, contract coordination, and reporting to ensure compliance with IWRB funding terms.

Additional Project Funding Sources

A portion of the F Waste Emergency Discharge Siphon reconstruction is already being funded through a separate grant awarded to the Burley Irrigation District (BID) under the Idaho Water Resource Board (IWRB) ARPA Funding / Aging Infrastructure Program. That grant provides $891,000 toward the estimated $2.7 million total cost of the siphon replacement project. The portion of work covered by this ARPA-funded effort is not included in this proposal, as it is being implemented and administered through a different IWRB funding program. The remaining unfunded portion of the siphon reconstruction is incorporated into this proposal to ensure completion of the full structure and integration with the Minidoka Irrigation District's modernization and efficiency improvements.

Implementation Schedule

Provide a proposed project implementation schedule showing the timeline to complete the project, identifying each activity/milestone required for project implementation, including but not limited to planning, regulatory review and permitting, design, easements, construction, contracts, and land and right-of-way acquisition.

The South Side Improvement Project is planned as a three-year, phased construction effort, guided by the timeline presented in the accompanying Gantt chart (Attachment 4: Implementation Schedule). The chart is provided for ***illustrative purposes only***, based on the assumption that project funding approval and Notice to Proceed will occur by January 2026.

Construction activities will primarily be confined to times when the irrigation water is out of the system, typically October through March to prevent disruption to irrigation operations. The schedule organizes work across project components (check structures, laterals, and siphon improvements) and activity categories (planning, procurement, construction, and evaluation).

Year 1: Project Mobilization and Initial Construction

Focus: Procurement, mobilization, and installation of automation infrastructure.

- All three check structures (Check #1, Check #2, and Check #3) will be automated during Year 1.
- Activities include equipment procurement, site preparation, installation of gate automation systems, telemetry setup, and electrical/solar infrastructure work.
- Pipeline materials will be ordered, staged, and delivered in preparation for subsequent installations.
- Preliminary work will begin on Lateral 33 Spill, Lateral 35, and Lateral 36 during the Fall 2026 construction window.

Deliverables:

- Automation completed on all three check structures.
- Procurement of pipeline materials and staging for upcoming phases.
- Initial lateral conversions completed and inspected.
- Year 1 progress documentation submitted to IWRB in accordance with the agreed upon reporting schedule.

Year 2: Expanded Construction and Mid-Project Evaluation

Focus: Major pipeline construction and continuation of lateral conversions.

- Construction efforts will extend to Lateral 38, Lateral 310-3, and Lateral 310-4.

- Activities include trenching, pipe installation, turnout integration, and telemetry coordination where applicable.
- The F Waste Siphon replacement will proceed in coordination with the engineering firms Civil Science and Shannon & Wilson, in collaboration with Burley Irrigation District.
- Site evaluations and mid-project performance assessments will be conducted to verify flow efficiency and confirm savings estimates.

Deliverables:

- Substantial completion of lateral conversions.
- F Waste Siphon construction underway.
- Verified mid-project progress and field evaluations.
- Interim reporting and documentation to IWRB in accordance with the agreed upon reporting schedule.

Year 3: Final Construction, System Integration, and Closeout

Focus: Final installations, testing, and project closeout.

- Remaining pipeline work on Lateral 311 and Lateral 312 will be completed during the 2028 construction season.
- The F Waste Siphon will be finalized, tested, and commissioned.
- Comprehensive hydraulic testing, system calibration, and telemetry verification will be conducted across all automated structures and piped laterals.
- Site restoration and reseeding will be performed as needed.
- All final documentation, and financial reports will be completed and submitted by December 2028.

Deliverables:

- Fully commissioned automated and piped delivery system.
- Completion of siphon reconstruction and all field testing.
- Final as-built drawings and performance reporting.
- IWRB final completion report and closeout documentation in accordance with the agreed upon reporting schedule.

Attachment 1

Burley Irrigation District
Letter of Support

Burley Irrigation District
246 East 100 South
Burley, Idaho 83318
October 17, 2025

Idaho Water Resource Board
Attn: Surface Water Efficiencies Program
P.O. Box 83720
Boise, ID 83720-0098

Subject: Support for Minidoka Irrigation District's SWE Program Application

Dear Funding Consideration Committee Members,

Burley Irrigation District (BID) fully supports the Minidoka Irrigation District's (MID) request for funding under the Surface Water Efficiencies (SWE) Program for the South Side Improvement Project.

BID owns and operates the South Side Canal, while MID maintains several check structures within it. Because both districts share this system, the proposed upgrades will improve operations, reliability, and water efficiency for all users.

Of particular importance to BID is the F Waste Emergency Discharge Siphon replacement. This structure has severely deteriorated, leaking an estimated 5,700 acre-feet of water each season. BID has already received funding through the IWRB ARPA/Aging Infrastructure Program to begin this work, but additional funding through MID's proposal is needed to complete the project. Finishing this upgrade will restore full capacity, improve safety, and protect over 41,000 acres of farmland served through our shared canal system.

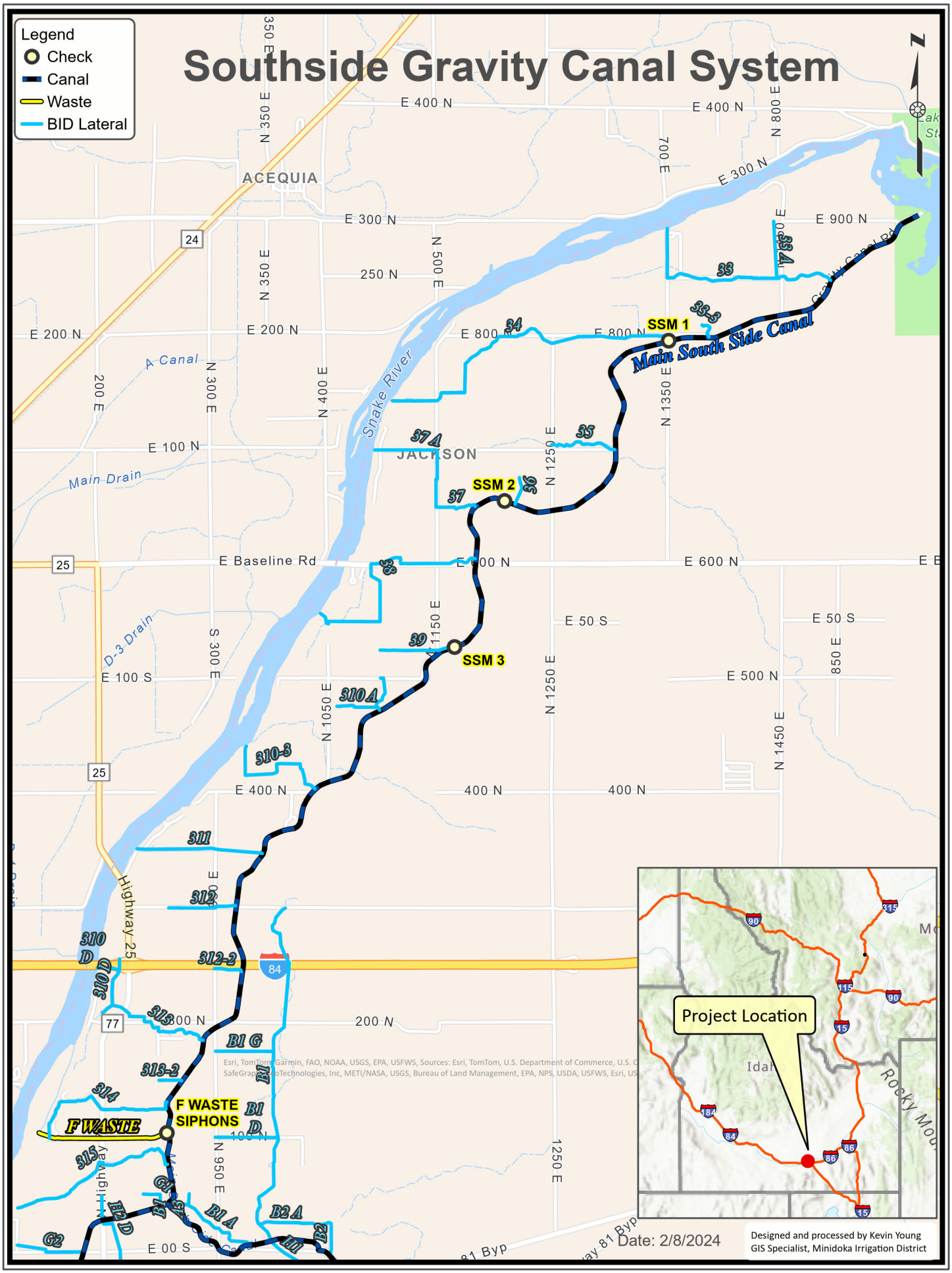
BID strongly supports this application and appreciates the Idaho Water Resource Board's continued efforts to assist with critical water infrastructure improvements that benefit both districts and the state's long-term water management goals.

Sincerely,

Don Terry
General Manager
Burley Irrigation District

Attachment 2

Larger Map


Legend
Check
Canal
Waste
BID Lateral
Southside Gravity Canal System
N
ACEQUIA
JACKSON
Snake River
A Canal
Main Drain
D-3 Drain
Main South Side Canal
SSM 1
SSM 2
SSM 3
F WASTE
F WASTE SIPHONS
Highway 25
E 400 N
E 300 N
E 200 N
E 100 N
E Baseline Rd
E 600 N
E 50 S
E 100 S
E 500 N
E 900 N
E 800 N
250 N
200 N
400 N
N 350 E
N 500 E
N 300 E
N 400 E
N 1350 E
N 1250 E
N 1150 E
N 1050 E
N 950 E
N 1450 E
S 300 E
200 E
700 E
850 E
24
25
77
84
Project Location
Idaho
Rocky Mountains
Date: 2/8/2024
Designed and processed by Kevin Young
GIS Specialist, Minidoka Irrigation District

Attachment 3

F Waste Engineering Report

CivilScience
Engineers | Surveyors | Solutions
376 Falls Avenue
Twin Falls, ID 83301
208-737-0007

F-WASTE DRAFT SUMMARY

1/11/2022
Burley Irrigation District

Rebar location and concrete coring were completed in December 2021. 9 locations were selected for test cores and Atlas located rebar for those 9 locations. Of those 9 locations 6 cores were taken. The cores were drilled by Strata. Strata used a bolt down core drill with a 4" diameter core bit. Cores were removed from 3 concrete bank and apron locations and 3 structural locations within the diversion. All cores from the structure had thorough internal cracking. Strata stored the cores in a water bath and then pressed the cores to determine compressive strength of the concrete. Each of the cores from the structure that were tested had compressive strengths in the 900psi to 1000 psi range. This is far below the assumed minimum design strength of 3,000 psi. Photos of some of the core locations are shown below as well as located on a google earth image. Figure 1. Shows core locating for cores 3 in the apron, 4 where the technician is located, and 5 at the far opening.

Figure 1

Figure 2 shows the location where core 6 was taken as indicated by the visible red rectangle. The technician is marking rebar in the side of the structure, but no cores were taken from the location he is marking in Figure 2.

Figure 2

After 3 cores had been taken with similar core conditions no further cores were extracted. It was apparent that the entire structure was suffering from the same problem. It is highly unlikely that the concrete used in the structure had entrained air since it wasn't invented until after the likely construction date of the project. The valve deck is visible cracked and broken in various places. Figure 3 shows the technician from Atlas locating rebar in the valve deck.

Technical data from Atlas and Strata are attached at the end of this document for review.
It is the preliminary recommendation that a replacement for the structure be planned in the near future. The cracking and testing photos indicate that water has likely penetrated all rebar locations. It is highly likely that the rebar is beginning to rust and this will cause continued fracture and expansion of the concrete worsening the existing condition.

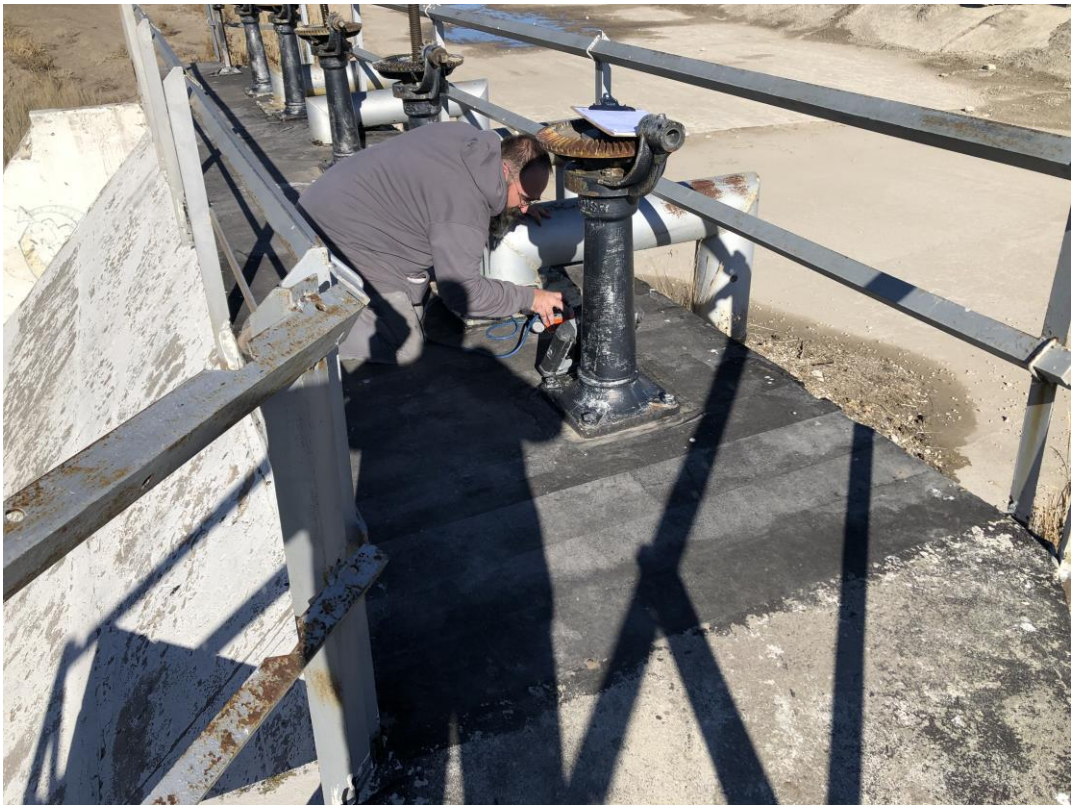
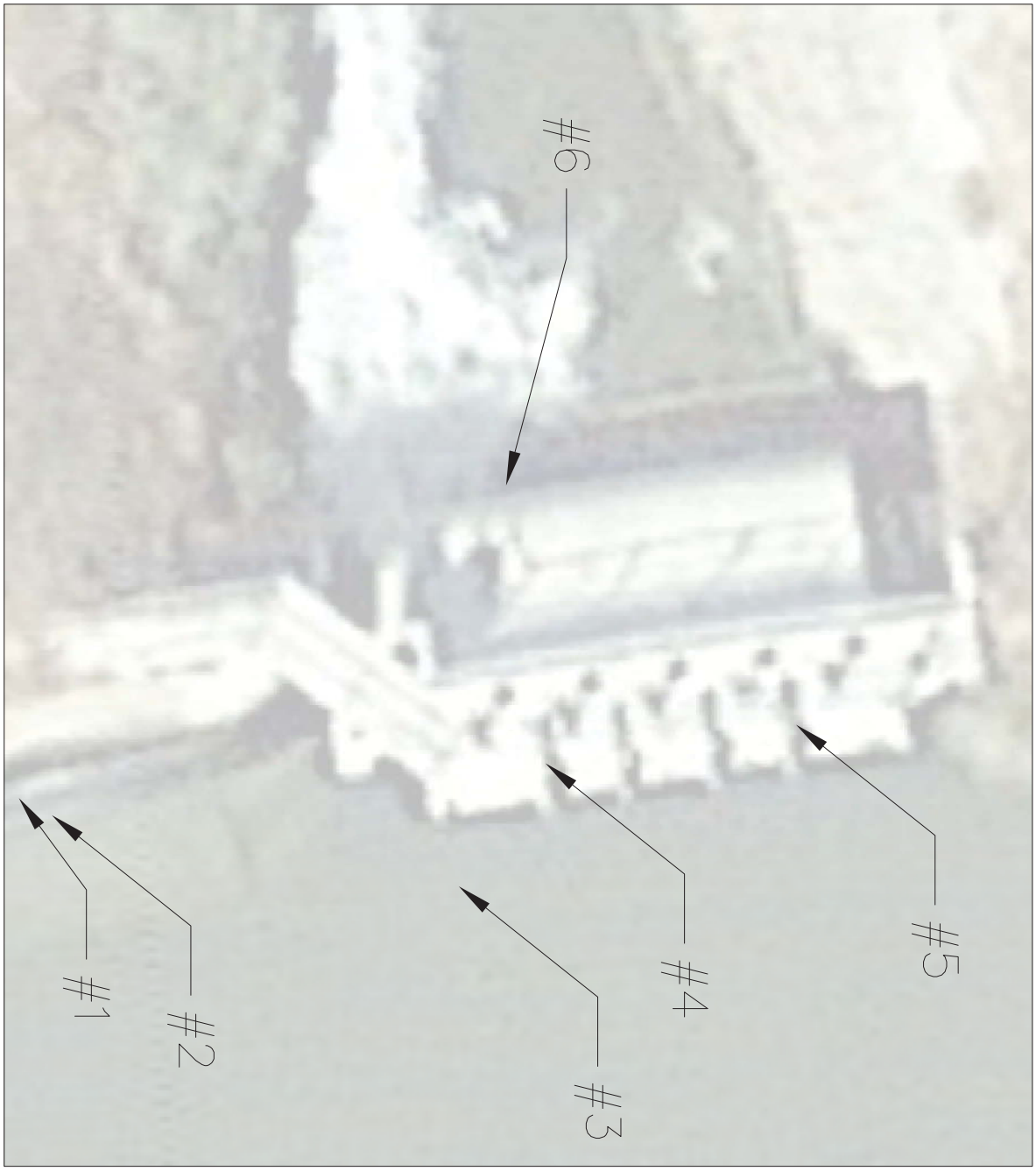


Figure 3

F-WASTE CORE LOCATIONS



F-WASTE CORE LOCATIONS

BURLEY IRRIGATION DISTRICT

PROJ. #: P-21044.10
DATE: JAN. 10 2022
DESIGN BY: SRA
CHECKED BY: JS

EX-1

1 OF 1

REVISION

NO.	DESCRIPTION	BY	APR	DATE

CivilScience
Engineers Surveyors Solutions
376 FALLS AVENUE
TWIN FALLS, ID 83301
208.737.0007

STRATA

COMPRESSIVE STRENGTH OF DRILLED CONCRETE CORES

REPORT TO: Civil Science
376 Falls Ave
Twin Falls, Idaho 83301

DATE: 12/15/2021
CLIENT NO: CIVSCI
PROJECT NO: TF21175A

PROJECT: Burley Irrigation F Waste

Sample Identification

On 12/08/2021 Strata personnel obtained six concrete core samples, cored by STRATA from the above referenced project at locations determined by Civil Science. At your request, we performed compressive strength tests on 12/15/2021 in general accordance with ASTM C-42 on five of the six cores obtained. The test results are summarized as follows:

Test Results:

Location	Lab No.	Age, Days	Dia. in.	Capping Length, in. Before	Capping Length, in. After	Area, in^2	Load, lbs	Comp. Strength psi	L:D Correction Factor
1		7	3.97	4.01	4.01	12.38	88,000	**6,180**	0.87
3		7	3.97	3.97	3.97	12.38	83,240	**5,850**	0.87
4		7	3.97	6.25	6.25	12.38	16,140	**1,160**	0.89
5		7	3.97	8.00	8.00	12.38	12,170	**880**	0.89
6		7	3.97	5.00	5.00	12.38	12,730	**920**	0.89

* Note: ASTM C 42 Note 3 - The compressive strengths of nominal 2-in. diameter cores are known to be somewhat lower and more variable than those of nominal 4-in. diameter cores. In addition, smaller diameter cores appear to be more sensitive to the effect of the length-diameter ratio.

Reviewed By: _____

2332 Eldridge Avenue, Twin Falls, Idaho 83301 Phone 208.733.8200 Fax 208.733.8201
www.stratageotech.com

Burley Irrigation F Waste Concrete Cores

Initial Length	Initial Weight	7 Days in Cure Room	PSI
#1- 4 ¼”	2069.9	2074.7	6,180

Initial Length	Initial Weight	7 Days in Cure Room	PSI
#3- 4”	1993.4	1998.4	5,850

Initial Length	Initial Weight	7 Days in Cure Room	PSI
#4- 6 ¼”	2857.6	2875.8	1,160

Initial Length	Initial Weight	7 Days in Cure Room	PSI
#5- 10 ¾”	4636.8	4658.9	880

Initial Length	Initial Weight	7 Days in Cure Room	PSI
#6- 5 ¼”	2298.6	2309.8	920

Moisture throughout Core #5 After being Cut

Stephen Anderson
Civil Science,Inc.
376 Falls Avenue, Suite 100
Twin Falls, ID 83301

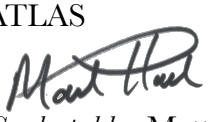
Project: Limited Ground Penetrating Radar Survey
Burley Irrigation District
Location: F Waste, Declo ID
Inspection Date (s): December 3rd, 2021
Project Manager: Chris Elzea
Atlas File #: T213157c

ATLAS has completed the limited Ground Penetrating Radar (GPR) survey of 8 core locations for core sampling. Found double and single mats of rebar at various locaitons. Avoid all rebar given by 1.5" minimum. Attached are photos of the findings.

ATLAS used a GSSI StructureScan Optical GPR device equipped with a 2 GHz antenna and TerraSIRch SIR-4000 digital control unit, which is capable of locating and imaging rebar and other targets in concrete slabs, decks, walls and masonry. The dielectric constant for this concrete was measured to be roughly 6.25 (dielectric is unit-less). Sampling rate was 16 bits/sample, 256 samples/scan, and 90 scans/foot. Some limitations of the technology exist depending upon the situation. Though not a foolproof system, the technology provides information on the location and depth of objects accurate to within ¼ of the radar wavelength, which equates to a spatial resolution of roughly 1/4-inch for a 2 GHz system. As with any Non-Destructive Evaluation (NDE) technique, interpretation of data is key to achieving accurate results. As with any Non-Destructive Evaluation (NDE) technique, interpretation of data is key to achieving accurate results. Because of inherent limitations with GPR locating, ATLAS cannot warranty our findings and is providing this service for information purposes only.

ATLAS appreciates this opportunity to be of service and looks forward to a continuing relationship as your concrete and NDE expert. If you have questions concerning this report, please contact us at (208) 376-4748.

Respectfully submitted,
ATLAS



Conducted by: Matt Hall
NDE Specialist
Attachments: *Photographs*

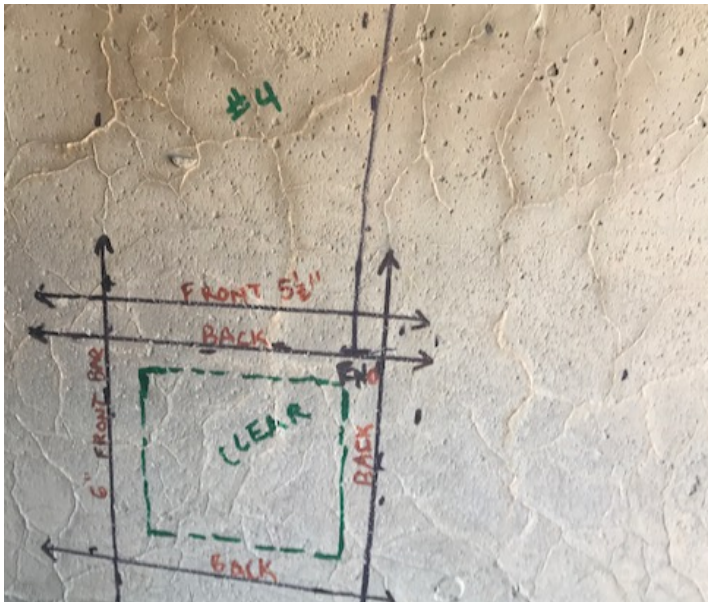
2791 S Victory View Way, Boise, ID 83709
208.376.4748 | oneatlas.com

Core Locations

Location 1:
Slab appears to be ~5 inches thick. Single mat of rebar appears to be ~#5 bar.

Location 2:
Slab appears to be ~6 inches thick. Single mat of rebar appears to be ~#5 bar.

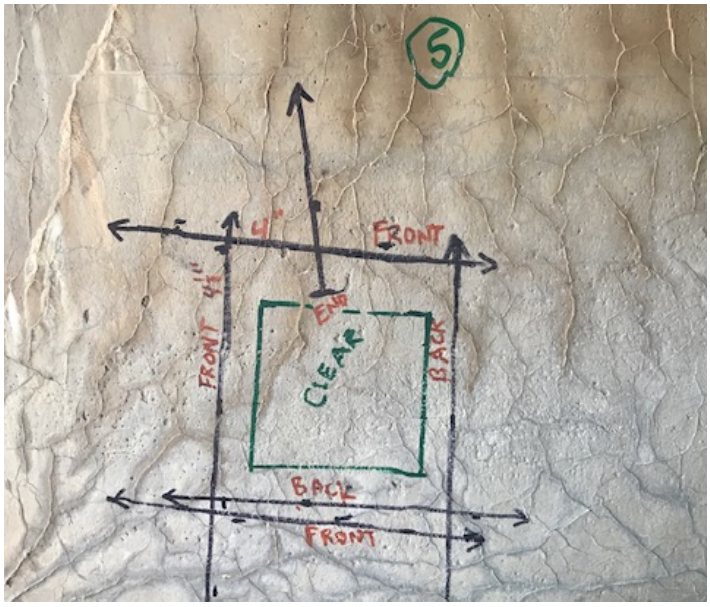
Location 3:
Slab appears to be ~5 inches thick. Single mat of rebar appears to be ~#5 bar.



Location 4:
Wall has a double mat of rebar that appears to be ~#4 bar.

2791 S Victory View Way, Boise, ID 83709
208.376.4748 | oneatlas.com

Core Locations



Location 5:
Wall has a double mat of rebar that appears to be ~#4 bar.

Location 6:
Wall has vertical rebar at ~ 5 inches on center. Cannot "see" below this mat of rebar.

Location 7:
Wall has a double mat of rebar that appears to be ~#4 bar.

Location 8:
Wall has vertical rebar at ~ 5 inches on center. Cannot "see" below this mat of rebar.

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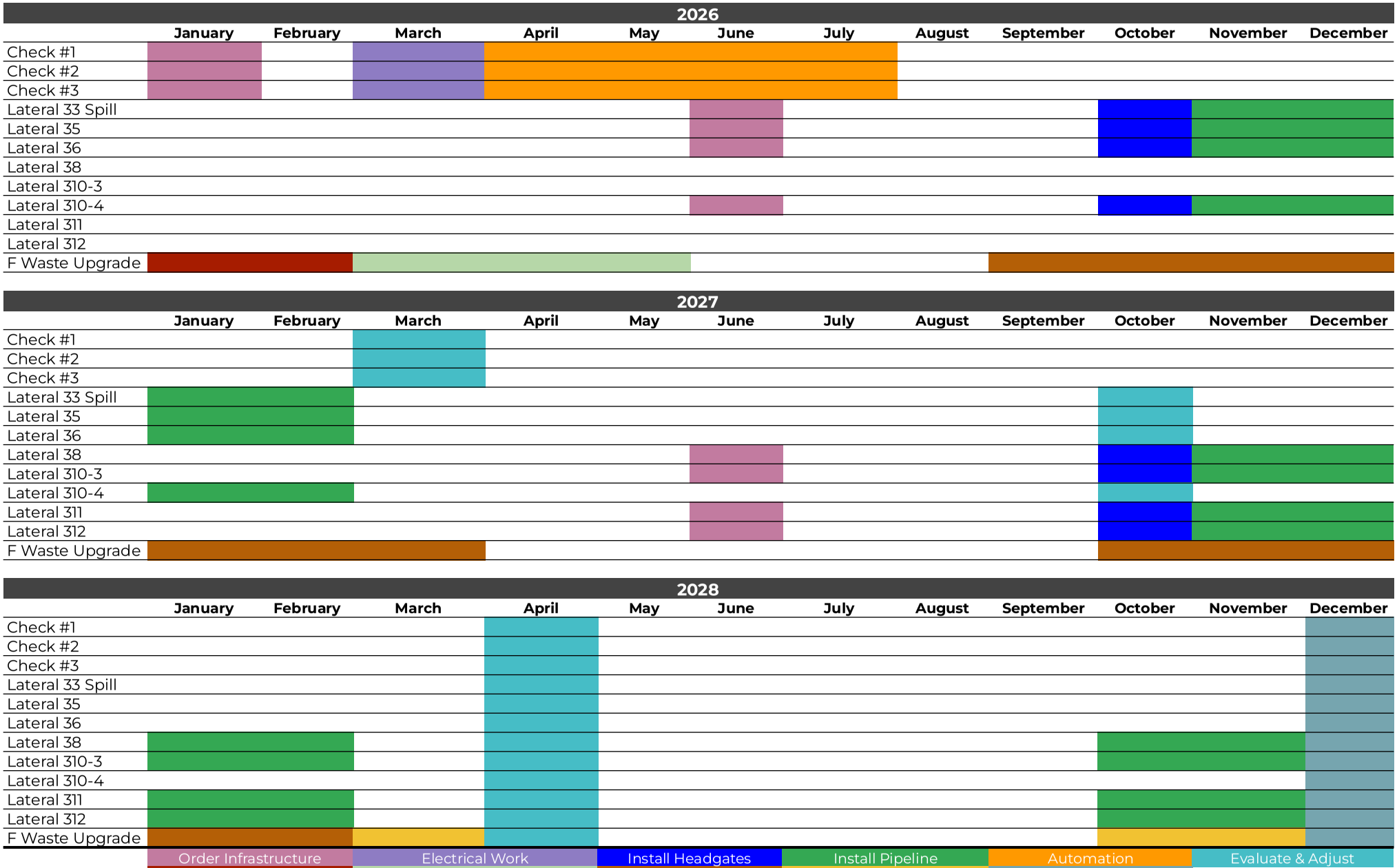
Attachment 4

Implementation Schedule



Progress reports will be filed according to the agreed upon schedule within the Notice Of Funding Award

MEMO

State of Idaho
Department of Water Resources
322 E Front Street, P.O. Box 83720, Boise, Idaho 83720-0098
Phone: (208) 287-4800 Fax: (208) 287-6700

Date: December 1, 2025

To: Justin Ferguson, P.G., Project Manager

Cc: Craig Tesch, P.G., Hydrology Section Manager

From: Jennifer Sukow, P.E., P.G. J S

Subject: Evaluation of hydrologic impacts of proposed South Side Improvement Project on Snake River reach gains and ESPA storage

The Minidoka Irrigation District (MID) submitted a funding request to the Idaho Water Resource Board (IWRB) Surface Water Efficiencies (SWE) Program, dated October 22, 2025. MID is requesting funding for a South Side Improvement Project, which proposes automation of check structures, piping several open-channel laterals, and replacement of the aging F Waste Siphon structure. This memorandum discusses the anticipated impacts of the proposed project on recharge to the Eastern Snake Plain Aquifer (ESPA), Snake River reach gains, and ESPA storage.

MID's proposal provides estimates of the annual reduction of seepage losses that will be achieved by piping open-channel laterals and the annual reduction of leakage that will be achieved by replacing the F Waste Siphon structure (Table 1). Most of the leakage through the F Waste Siphon structure returns to the Snake River as surface flow via the F Waste Channel. An unquantified portion of the leakage may seep into the ground. For this analysis, 90% of the leakage is assumed to return to the Snake River as surface flow and 10% is assumed to infiltrate to the ESPA. In addition to the quantified loss reductions, MID's proposal also notes that improvements to the check structures will nearly eliminate or substantially reduce operational spills.

Table 1. South Side Improvement Project components and quantified loss reductions

Project component	Seepage loss reduction (AF/yr)	Surface return flow reduction (AF/yr)
Check structure 1	--	reduce operational spill
Lateral 33 spill piping	161.09	--
Lateral 35 piping	197.29	--
Lateral 36 piping	54.3	--
Lateral 38 piping	259	--
Check structure 2	--	reduce operational spill
Check structure 3	--	reduce operational spill
Lateral 310-3 piping	--	--
Lateral 310-4 piping	--	--
Lateral 311 piping	103.17	--
Lateral 312 piping	--	--
F Waste	570	5,130

Modeled impacts to ESPA storage and Snake River reaches with hydraulic connection to ESPA

The impact of seepage loss reductions on ESPA storage and aquifer interaction with the Snake River was evaluated using the Eastern Snake Plain Aquifer Model Version 2.2 (ESPAM2.2)[1]. The location of the proposed project and Snake River reaches with a direct hydraulic connection to the ESPA are shown in Figure 1. Note that the ESPA is not hydraulically connected to the Snake River at the lower end of Lake Walcott, nor between Minidoka and Milner. Reduced recharge to the ESPA resulting from the proposed project was modeled at the locations shown in Figure 2.

[1] Sukow, J., 2021a. *Model Calibration Report, Eastern Snake Plain Aquifer Model Version 2.2*, Idaho Department of Water Resources, 181 p., https://research.idwr.idaho.gov/files/projects/espam/browse/ESPAM22_Reports/ModelCalibrationRpt/.

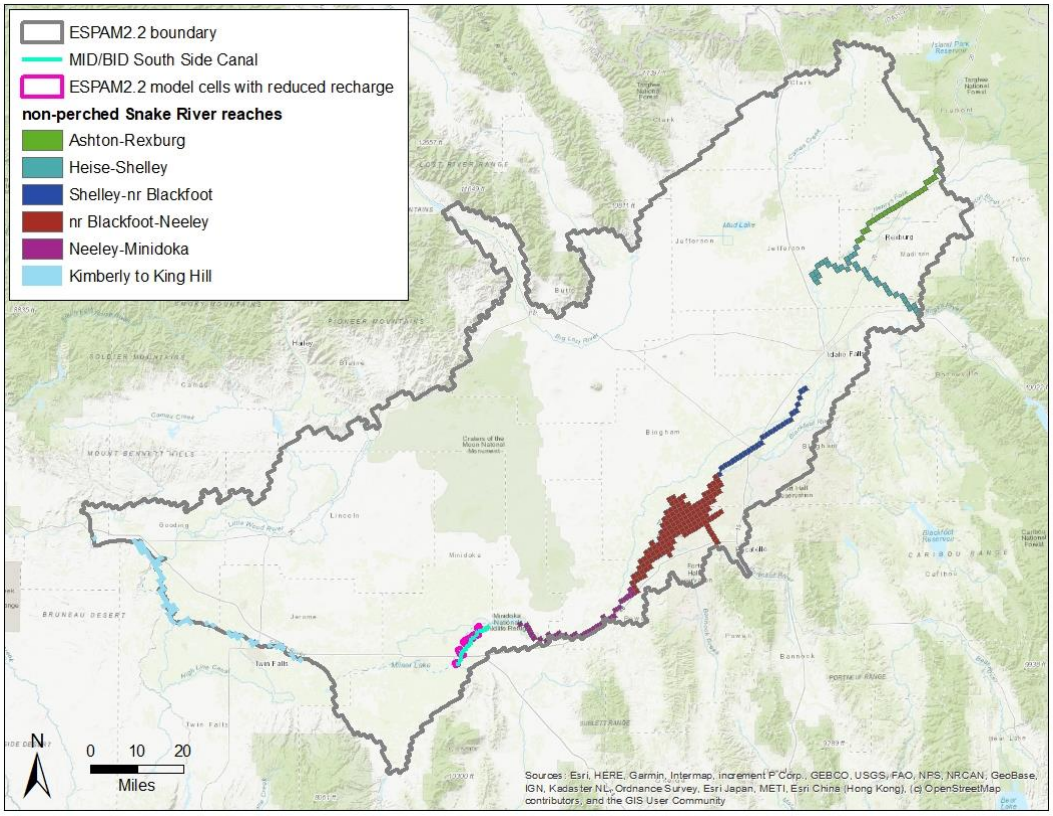


Figure 1. Location of MID South Side Canal Improvement Project

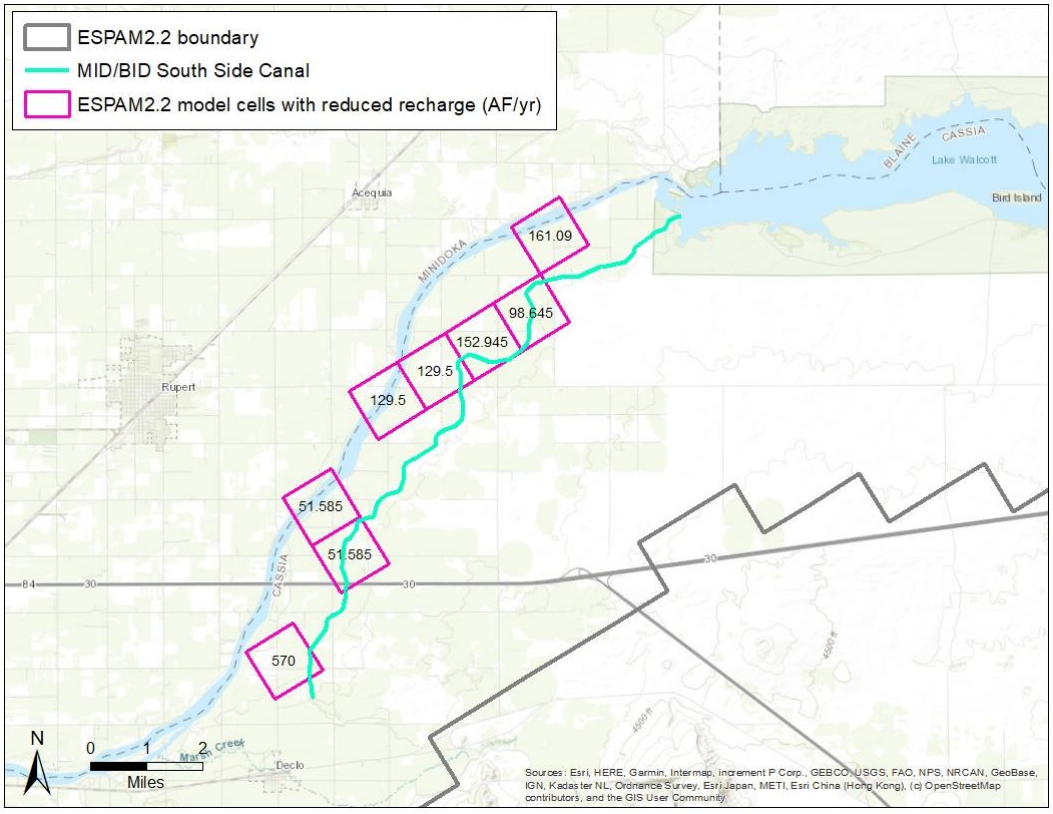


Figure 2. Location of ESPAM2.2 model cells with reduced recharge

Model simulations were performed with the superposition version[2] of ESPAM2.2 using a steady-state simulation to evaluate long-term impacts and a transient simulation to evaluate the timing of impacts. For the transient simulation, the annual reductions in aquifer recharge were distributed at a constant rate from April through October of each year for 100 years. Modeled long-term average annual depletions to Snake River streamflow resulting from increased induced aquifer recharge (above near Blackfoot) and reduced aquifer discharge (near Blackfoot to Minidoka and Kimberly to King Hill) are shown in Table 2. The timing of streamflow depletion responses is shown in Figure 3. Because the project location is relatively distant from the major aquifer discharge areas, recharge at this location has a relatively long retention time in the ESPA. The cumulative decrease in ESPA storage resulting from the proposed reduction in aquifer recharge is approximately 20,000 AF after 30 years and approximately 24,000 AF after 80 years (Figure 4).

Table 2. Long-term average annual streamflow depletion resulting from reduced aquifer recharge

Snake River reach	Streamflow depletion (cfs)	Streamflow depletion (AF/yr)
Ashton/Heise to near Blackfoot	0.23	164
near Blackfoot to Minidoka	0.95	688
Kimberly to King Hill	0.68	493
Total	1.86	1,345

[2] Sukow, J., 2021b. *Comparison of Superposition Model with Fully Populated Model for Eastern Snake Plain Aquifer Model Version 2.2*, Idaho Department of Water Resources, 14 p., https://research.idwr.idaho.gov/files/projects/espam/browse/ESPAM22_Reports/Scenarios/Super_FullyPop_Final.pdf.

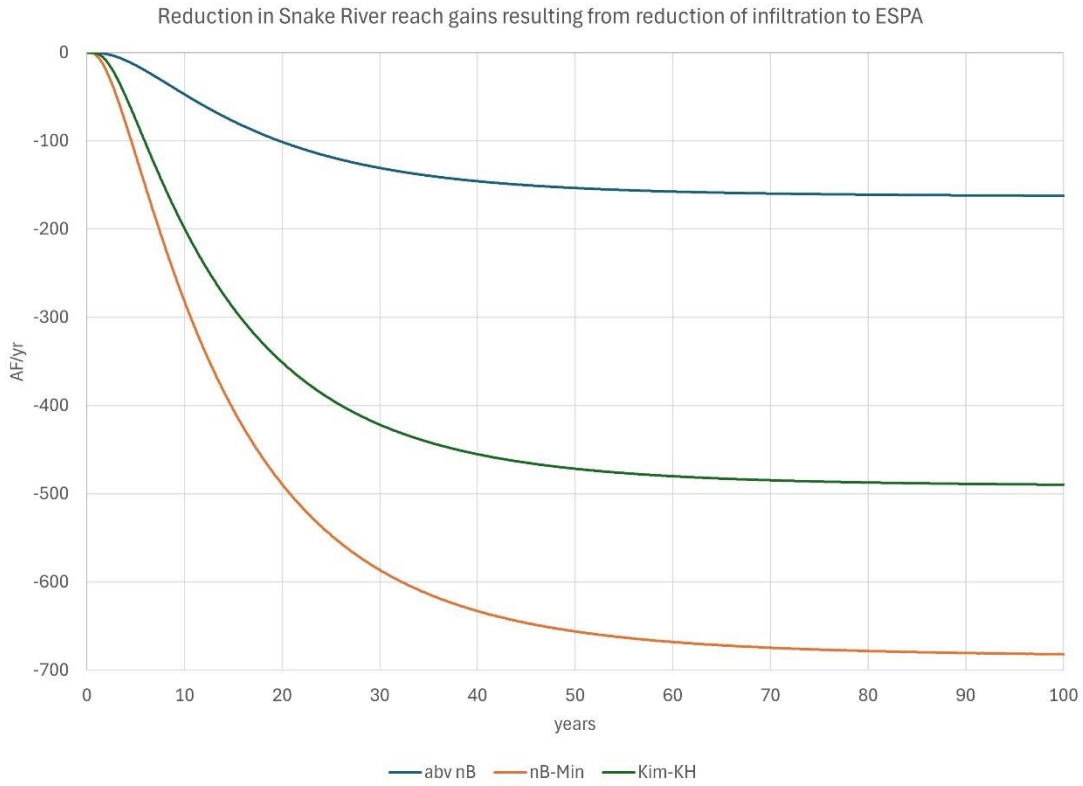


Figure 3. Streamflow depletion resulting from reduced aquifer recharge

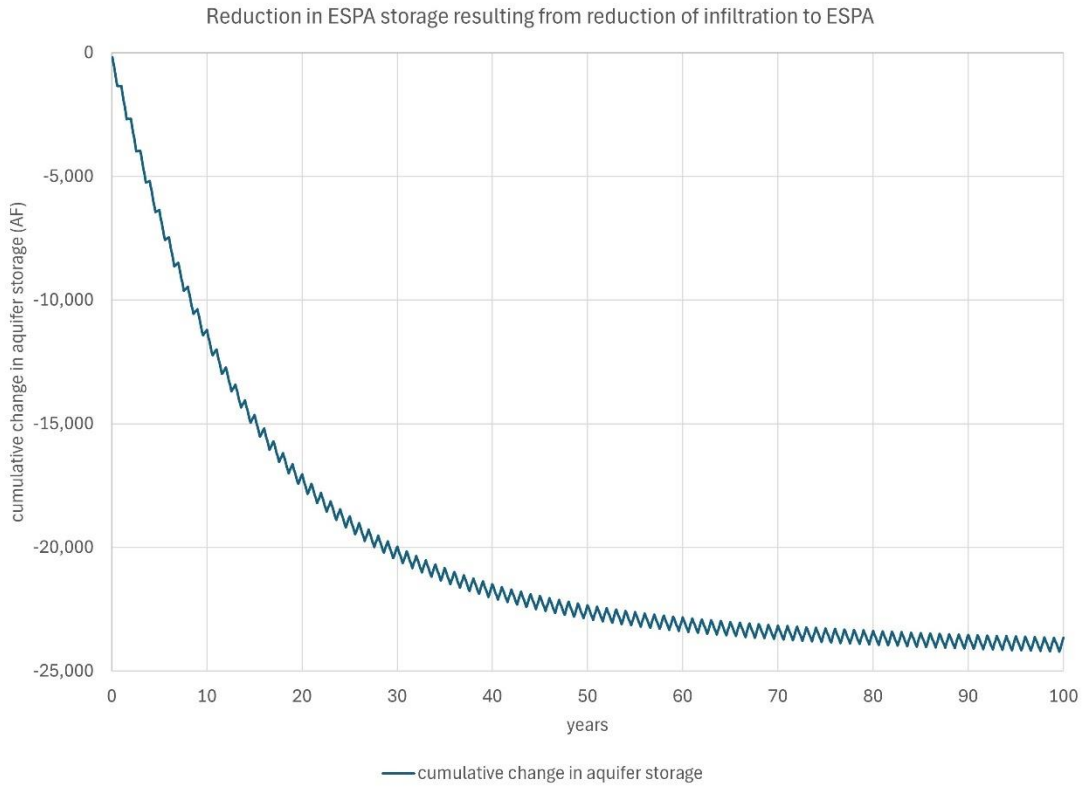


Figure 4. Cumulative storage change in ESPA resulting from reduced aquifer recharge

Reduction in surface return flow to Snake River

The largest depletion to Snake River reach gains resulting from the proposed project is expected to result from reduced surface return flow to the Snake River in the Minidoka to Milner reach. The project proposal estimates a reduction of 5,700 AF/yr of leakage at the F Waste Siphon structure. MID staff reports most of this estimate is water that passes through the aging structure and flows back to the river via the F Waste channel and that a portion may seep into the ground. For this analysis, 90% of the leakage (5,130 AF/yr) is assumed to return to the Snake River as surface flow and 10% is assumed to infiltrate to the ESPA. MID's proposal also notes that improvements to the check structures will nearly eliminate or substantially reduce operational spills.

The Idaho Department of Water Resources (IDWR) cooperates with Burley Irrigation District (BID) to maintain a continuous flow monitoring station on the F Waste return flow channel. Data were downloaded from https://research.idwr.idaho.gov/apps/hydrologic/aquainfo on November 19, 2025. Flow measurement began on April 20, 2002. Annual reported F Waste return flow volumes for 2002 through 2025 are shown in Figure 5. Daily flow rate (Figure 6) and monthly return flow volumes (Figure 7) are shown for 2018 through 2025. Data are provisional and subject to change.

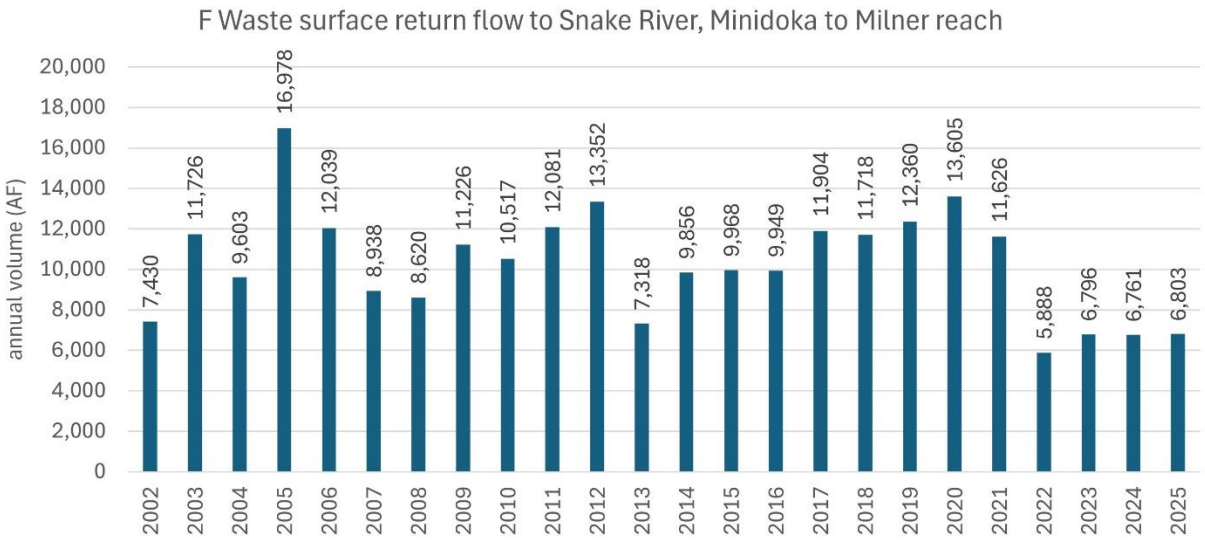


Figure 5. Annual return flow volume at F Waste

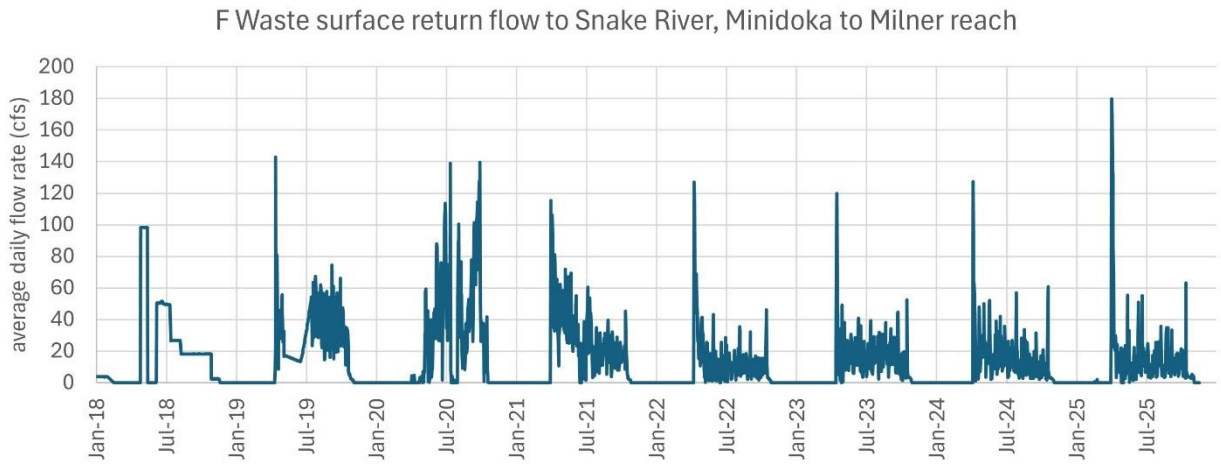


Figure 6. Daily return flow rate at F Waste

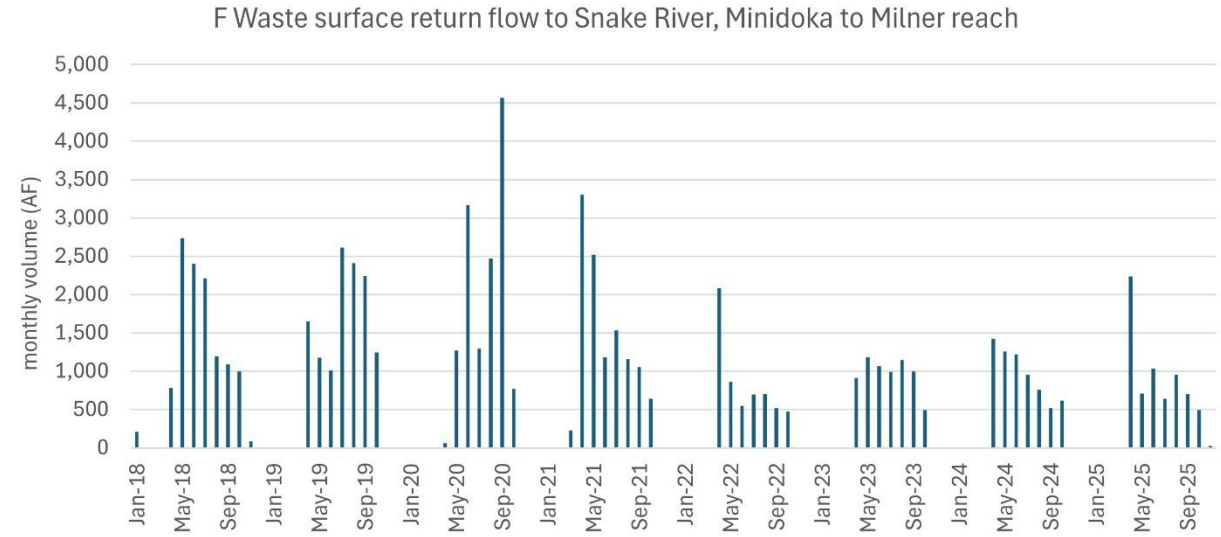


Figure 7. Monthly return flow volume at F Waste.

Between 2002 and 2021, reported return flow at the F Waste ranged from 7,300 to 17,000 AF/yr, with a median of 11,400 AF/yr and an average of 11,000 AF/yr. From 2022 through 2025, the reported return flow volume ranged from 5,900 to 6,800 AF/yr, with a median of 6,800 AF/yr and an average of 6,600 AF/yr. The estimated return flow resulting from leakage through the F Waste structure appears to be a substantial component of the total return flow in recent years.

Because the MID proposal indicates the check structure improvements are expected to substantially reduce operational spills, the reduction in F Waste return flow is likely to be greater than the estimated 5,130 AF/yr contributed by leakage through the aging siphon structure. The project map provided with the proposal suggests there are additional locations where spill to the

Snake River may occur at the end of laterals. Reduction of operational spills from laterals may further reduce return flow to the Minidoka to Milner reach.

Discussion

The proposal indicates that the water conserved by the South Side Improvement Project can support soft conversions, allowing groundwater users to rely more heavily on surface water. Because the location and timing of the conversions are unspecified, the impact of the conversions cannot be quantified. To the extent that water is delivered to soft conversions, this may offset some of the impacts of the South Side Improvement Project to aquifer storage and Snake River reaches above Minidoka and between Kimberly and King Hill. However, the timing and location of impacts are likely to be different than the impacts of this project. To the extent that some of the conserved water flows past Milner during high water supply years, there will be net adverse impacts to ESPA storage and Snake River reach gains in future years. To the extent that soft conversions are implemented in areas with shorter aquifer retention times than the South Side Improvement Project location, there are likely to be net depletions to the Snake River during drought years when less water is available for conversions.

Much of the proposed project's impact to Snake River flow will occur in the Minidoka to Milner reach through reduction in surface return flow. The implementation of soft conversions will not offset streamflow reductions within this reach. Benefits of soft conversions will be split between the reaches above Minidoka and the Kimberly to King Hill reach, with the proportionate response varying with the location of each conversion.

Conclusions

The proposed project is estimated to reduce recharge to the ESPA by approximately 1,345 AF/yr through piping of laterals and replacement of the aging F Waste siphon structure. ESPAM2.2 simulations of the proposed South Side Improvement Project indicate the project is expected to reduce long-term Snake River streamflow by approximately 164 AF/yr above near Blackfoot, approximately 688 AF/yr in the near Blackfoot to Minidoka reach, and approximately 493 AF/yr in the Kimberly to King Hill reach. The proposed project is expected to result in a long-term cumulative reduction in ESPA storage of over 24,000 AF.

The proposed project will reduce surface return flow at the F Waste and possibly other spill locations through replacement of the aging F Waste siphon structure and automation of three check structures. The proposed project is expected reduce return flow to the Snake River between Minidoka and Milner by approximately 5,000 to 7,000 AF/yr.

To the extent that conserved water is used to supply soft conversions, a portion of the adverse impacts of the project may be offset. The benefits of conversions are likely to accrue to different river reaches and with different timing. Because no benefits of soft conversions are expected to accrue to the Minidoka to Milner reach, where most of the project impacts will occur, it is very likely the proposed project will have a net adverse impact on natural flow available between near Blackfoot and Milner Dam, particularly during drought years.

MEMO

To: Idaho Water Resource Board

From: Justin Ferguson

Date: March 6, 2026

Subject: Farmers Land & Irrigation Company – New Water Project Loan Application

REQUESTED ACTION: Consider a loan request of $40,000

1.0 INTRODUCTION

Farmers Land & Irrigation Company (FLIC) is requesting a new loan in the amount of $40,000 from the Idaho Water Resource Board (IWRB) to install a SCADA system at their existing Soda Creek Diversion. These improvements would allow FLIC to more precisely control flows through the canal and to its patrons.

2.0 BACKGROUND

The Farmers Land & Irrigation Company, established in 1890, began diverting and delivering water from both Soda and Big Spring Creeks, through the Soda Creek Diversion works, in 1923. Since then, they have grown, serving 4,300 acres and 22 shareholders.

3.0 PRIOR LOANS

FLIC currently holds an existing loan with the IWRB for $185,333 from the Water Management account, for work on their Soda Creek Diversion works repair project. This loan would be consolidated into a single loan, for $225,333, through the IWRB for both projects under this new proposal.

FLIC is part of the Pooled Loan Program Revenue Bond, Series 2011A (October 7, 2011) to Caribou County. As such, they are responsible for an approximately $30,000 annual payment to Caribou County. At the time of this memo, a total of 6 payments (annual) remain on the outstanding balance.

4.0 PROPOSED PROJECT

The Project will install SCADA equipment at FLIC's existing Soda Creek diversion, allowing the Company to better control deliveries for its patrons. Specifically, FLIC will install a downstream flume, headgate actuators, measurement sensors, and SCADA-specific integrations software to provide the Company with automated diversion controls.

5.0 BENEFITS

Accomplishing the Project would provide FLIC with multiple benefits, most notably a more reliable system to consistently deliver water for its patrons. With the installation of the SCADA-integrated system, FLIC will be able to reduce man hours at the diversion site and provide a timelier regulation of flows through the nearly 10-mile stretch.

6.0 FINANCIAL ANALYSIS

The total Project cost is estimated at $35,000 with a $5,000 contingency for a total of $40,000. Additionally, FLIC is requesting this new application includes the existing $185,333 obligation into a single loan through the IWRB.

The current assessment per share is $27.00, representing 0.92 acres. Currently, there are 4,760 shares held by 22 shareholders for a total estimated income of $128,500. The estimated annual payment on the total $225,333, based on a 15-year term and an estimated 3 equal disbursements, would be $21,800 at a 4.88% interest rate. This would be a reduction in the overall estimated annual payment from their existing loan of approximately $700 per year.

Per the application information, FLIC plans to raise the shareholder assessment again in March 2026 for the term of the loan, including costs for operation and maintenance. Aside from the payment due to Caribou County, no other debits were listed in the application.

FLIC has also pursued an Aging Infrastructure grant through the IWRB in their most recent round of awards. This grant will offset 50% of the project costs for their Phase 1 proposal of $183,333.

7.0 WATER RIGHTS

Water Right	Source	Priority Date	Rate	Beneficial Use
11-432	Big Spring Creek	7/1/1905	20.00 cfs	Irrigation
11-531A	Soda Creek	5/1/1892	76.10 cfs	Irrigation
11-2109	Waste Water	4/23/1953	2.84 cfs	Irrigation
11-8081	Soda Creek	12/31/1965	50.00 cfs	Irrigation, Irrigation from Storage

8.0 SECURITY

As security for the loan, the applicant has authorized the Board to hold a lien against the company's infrastructure, including the reservoir dam, diversion works, water rights, and parcels of land under the reservoir. Ownership documentation has been provided in the application package from the applicant.

9.0 CONCLUSION AND RECOMMENDATION

The funds requested will be used to supplement the existing Soda Creek diversion works with both automation hardware and software, allowing the Company to better regulate diversions through the system. This project specifically will take advantage of work already in progress at the location, to make significant updates at reduced costs. As a non-profit organization, the Company plans to raise shareholder assessments to meet the estimated annual payment and will provide adequate collateral to secure the loan.

The applicant meets the qualification criteria, and the proposed project is consistent with the goals established by the Board in the Idaho State Water Plan. Staff recommends the approval of the loan request, for the total amount of $40,000, and a combined total with the existing IWRB loan No. IWRB1046 of $225,333.

Attachments:

- *Draft Resolution*

BEFORE THE IDAHO WATER RESOURCE BOARD

IN THE MATTER OF THE FARMERS LAND & IRRIGATION COMPANY LOAN REQUEST	RESOLUTION TO AUTHORIZE LOAN FUNDING FOR COSTS RELATED TO THE INSTALLATION OF AUTOMATION HARDWARE AND LOAN CONSOLIDATION

WHEREAS, Farmers Land & Irrigation Company (Company) submitted a loan application to the Idaho Water Resource Board (IWRB) in the amount of $40,000 to cover costs associated with the installation of SCADA software at the existing Soda Creek Diversion; and

WHEREAS, the IWRB previously approved a loan to the Company for $185,333 to cover costs associated with the repair and replacement of the existing Soda Creek diversion works; and

WHEREAS, the Company was established in the 1890s and currently delivers approximately 11,000 acre-feet of irrigation water across 4,300 acres for 22 shareholders; and

WHEREAS, the Soda Creek diversion works were constructed in 1923 with work underway to update and repair the diversion works; and

WHEREAS, the proposal is requesting funds to further work at the diversion site, installing SCADA automation equipment; and

WHEREAS, the Company will increase assessments to their shareholders, beginning in March 2026, to cover costs associated with the annual loan payments; and

WHEREAS, the Company is a qualified applicant, and the proposed Project is eligible for a loan from the Board's Water Management Account; and

WHEREAS, the proposed Project is in the public interest and is in compliance with the State Water Plan.

NOW THEREFORE BE IT RESOLVED that the IWRB provides authority to the Chairman of the Idaho Water Resource Board, or his designee, to enter into contracts, to effectuate the loan, with the Company on behalf of the IWRB.

NOW THEREFORE BE IT FURTHER RESOLVED that the IWRB approves a loan not to exceed $40,000 from the Revolving Development Account at 4.88% interest with a 15-year repayment term.

NOW THEREFORE BE IT FURTHER RESOLVED that the existing loan to Farmers Land & Irrigation Company, IWRB1046 from the Water Management account, will be combined with this approval into a single contract not to exceed $225,333 from the Revolving Development account at 4.88% interest with a 15-year repayment term.

NOW THEREFORE BE IT FURTHER RESOLVED that this resolution and the approval of the loan are subject to the following conditions:

1) The Company shall comply with all applicable rules and regulations that apply to the proposed Project.
2) Prior to the disbursement of any funds, the Company shall comply with all statutory requirements for incurring debt.
3) Prior to the disbursement of any funds, the Company will provide acceptable security for the loan to the IWRB.

DATED this 27rd day of March, 2026.

_____
JEFF RAYBOULD, Chairman
Idaho Water Resource Board

ATTEST _____
DEAN STEVENSON, Secretary